

ALAMEDA COUNTY PUBLIC WORKS AGENCY

REVISED STANDARD SPECIFICATIONS

2024 Edition

*Revises Caltrans 2024 Standard Specifications
for contracts whose Special Provisions so stipulate.*



www.acpwa.org/acpwa-assets/docs/document-library/Engineering-Documents/2024-ACPWA-RSS.pdf

Alameda County Public Works Agency

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ORGANIZATION

Revised specifications 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 revised specification begins with a revision clause that describes or introduces a revision to the *Standard Specifications*.

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*.

REVISIONS SUMMARY

For convenience, a summary of revised specifications is provided below. This summary is not exhaustive. Thoroughly review all sections pertinent to a contract. Refer to a project's Special Provisions for possible further revision to these sections particular to that project. Per section 5-1.02, if there is a discrepancy between a project's Special Provisions and these Revised Standard Specifications, the Special Provisions govern.

DIVISION I • GENERAL PROVISIONS

1 General

Replaced, added or deleted are numerous abbreviations and definitions.

2 Bidding

Replaced, added or deleted are provisions pertaining to a pre-bid meeting, contingent bid items, and additive/deductive bid items, DBE commitments (for federal-aid projects) and adequate good faith efforts toward attaining DBE goals.

3 Contract Award and Execution

Replaced, added or deleted are provisions pertaining to bid protests, contract bonds, Project Stabilization/Community Benefits Agreement, CARB in-use, off-road, diesel fueled fleets regulation compliance, required use of Elation Systems, boilerplate contract, and bidder securities.

4 Scope of Work

Replaced, added or deleted are provisions pertaining to Contract intent, work description, changes and extra work, differing site conditions and Value Analysis Workshops.

5 Control of Work

Replaced, added or deleted are provisions pertaining to contract components, sub-contracting, the County's drug policy, submittals, record drawings, pre- and post-construction video documentation, construction surveys, survey monuments, and potential claims and dispute resolution.

6 Control of Materials

Replaced, added or deleted are provisions pertaining to Agency furnished materials.

7 Legal Relations and Responsibility to the Public

Replaced, added or deleted are provisions pertaining to ADA and the Civil Rights Act, Standard California Nondiscrimination Contract Specifications, Equal Employment Opportunity, prevailing wages, certified payroll records, apprentices, OSHA, public safety, indemnification, insurance, legal actions against the County, and prohibition of certain telecommunications and video surveillance equipment and services.

8 Prosecution and Progress

Replaced, added or deleted are provisions pertaining to the use of Microsoft Project, standard start, work suspensions, delays, liquidated damages for delays, termination, and a requirement to utilize Virtual PM.

9 Payment

Replaced, added or deleted are provisions pertaining to progress payments, materials on hand, stop notice withholds, final payment and claims and arbitration.

DIVISION II • GENERAL CONSTRUCTION

10 General

Revisions include work sequencing, time constraints, and required meetings.

12 Temporary Traffic Control

Revisions include placing construction area signs, need for a traffic control plan certified by an appropriately registered California engineer, and street closure requirements.

13 Water Pollution Control

Revisions include enforcement provisions and applicable permit reference are added.

14 Environmental Stewardship

Revisions include reference to County ordinances and programs, including the Alameda County Green Building Ordinance, the Alameda County Recycled Product Purchase Preference Program, the Alameda County Noise Ordinance, and the Alameda County Construction and Demolition Debris Ordinance.

15 Existing Facilities

Revisions include the added definition of facility to ensure understanding that even something as seemingly trivial as a mailbox or a picket fence is a facility to be protected, repaired, replaced, etcetera and the cost of doing so is included as part of the payment for the bid items involved, unless there exists a specific bid item.

DIVISION III • EARTHWORK AND LANDSCAPE

17 General

The clearing and grubbing description is revised. Provisions for tree trimming are added.

DIVISION IV • SUBBASES AND BASES

26 Aggregate Bases

Provisions are added to qualify the use of reclaimed aggregate base. A cushion material specification has been added (for use under curbs, sidewalks, and their appurtenances).

DIVISION V • SURFACINGS AND PAVEMENT

37 Seal Coats

Caltrans typically includes a separate bid item for crack treatment; the Agency usually does not. If a separate bid time for crack treatment is not provided, crack treatment is part of the seal item.

39 Asphalt Concrete

The Agency adopted (with some revision) specifications published by the California Asphalt Pavement Association (CalAPA). These specifications include provisions for Hot Mix Asphalt for Low (traffic) Volume (HMA-LV) roadways. Also included in this section are Agency standards for speed tables and humps.

DIVISION VI • STRUCTURES

56 Overhead Sign Structures, Standards, and Poles

County standard mast arms specifications are added.

DIVISION VII • DRAINAGE FACILITIES

65 Concrete Pipe

Revisions include the Agency requirement for video inspection of installed concrete pipes that are 36-inches and smaller in diameter. Concrete pipe measurement for payment differs from that of Caltrans.

70 Miscellaneous Drainage Facilities

Revision includes the added specification for sidewalks drains are provided.

DIVISION VIII • MISCELLANEOUS CONSTRUCTION

73 Concrete Curbs and Sidewalks

Revisions include subgrade preparation, addition of lamp black, and payment differences.

77 Local Infrastructure

Revisions include alteration of existing utility structures, relocation of gas and water services, and sanitary sewer systems.

78 Incidental Construction

Revisions include specifications for adjusting the protective cover and frame over an existing survey monument and for constructing new survey monuments.

DIVISION IX • TRAFFIC CONTROL DEVICES

82 Signs and Markers

Revisions include different sign specifications pertaining to retroreflective sheeting type, aluminum panels, and mounting hardware. Additionally, the Agency does not allow for the use of wood posts. Sign posts are to be 2"x2" Unistrut Telespar or approved equal. Measurement for payment also differs.

84 Markings

Revisions include a 72-hour advanced notice requirement before placing cat tracks and dribble lines. Approval is required prior to applying traffic stripes.

DIVISION X • ELECTRICAL WORK

86 General

Revisions include that identifying markings are to be "Alameda County" rather than "Caltrans;" some conductors are to be differently sized; aluminum cables are not allowed; controller cabinets and controller units must be of the specified type and must be tested by the Agency; battery backup systems, accessory pedestrian signals, and video detection cameras must be of the specified type.

87 Electrical Systems

Revisions include installation specifications for conduits, pull boxes, battery backup system cabinets, concrete pads, photoelectric controls, push button assemblies, video detectors, fiber optics, and the labeling of conductors and cables.

DIVISION XI • MATERIALS

90 Concrete

Revisions include the prohibition of reclaimed aggregate as a material for use in concrete. Additionally, the Agency requires the prequalification of minor concrete mix under section 90-1.01D(5), requiring 3600-psi at 28-days.

Main sections in the Standard Specifications that this document does not revise include those listed below. Refer to a project's Special Provisions for possible revisions to these sections.

- | | |
|---------------------------------------|--|
| 11 Welding | 59 Structural Steel Coatings |
| 16 Temporary Facilities | 60 Existing Structures |
| 18 Dust Palliatives | 61 (Drainage Facilities) General |
| 22 Finishing Roadway | 62 Stormwater Treatment |
| 24 Stabilized Soils | 63 Reserved |
| 25 Aggregate Subbases | 64 Plastic Pipe |
| 27 Cement Treated Bases | 66 Corrugated Metal Pipe |
| 28 Concrete Bases | 67 Structural Plate Culverts |
| 30 Recycled Pavement | 68 Subsurface Drains |
| 31 – 35 Reserved | 69 Overside Drains |
| 36 (Surfacing and Pavements) General | 71 Existing Drainage Facilities |
| 38 Reserved | 72 Slope Protection |
| 40 Concrete Pavement | 74 Pumping Equipment and Controls |
| 41 Existing Concrete Pavement | 75 Miscellaneous Metal |
| 42 Groove and Grind Concrete | 76 Wells |
| 43 – 44 Reserved | 80 Fences |
| 45 (Structures) General | 81 Miscellaneous Traffic Control Devices |
| 46 Ground Anchors and Soil Nails | 83 Railings and Barriers |
| 47 Earth Retaining Systems | 85 Reserved |
| 48 Temporary Structures | 88 Reserved |
| 49 Piling | 89 Aggregate |
| 50 Prestressing Concrete | 91 Paint |
| 51 Concrete Structures | 92 Asphalt Binders |
| 52 Reinforcement | 93 Reserved |
| 53 Shotcrete | 94 Asphaltic Emulsions |
| 54 Waterproofing | 95 Epoxy |
| 55 Steel Structures | 96 Geosynthetics |
| 57 Wood and Plastic Lumber Structures | 97 – 98 Reserved |
| 58 Sound Walls | 99 Building Construction |

Table of Contents

DIVISION I GENERAL PROVISIONS.....	1
1 GENERAL.....	1
2 BIDDING.....	5
3 CONTRACT AWARD AND EXECUTION.....	11
4 SCOPE OF WORK.....	21
5 CONTROL OF WORK.....	25
6 CONTROL OF MATERIALS.....	39
7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC.....	43
8 PROSECUTION AND PROGRESS.....	57
9 PAYMENT.....	63
DIVISION II GENERAL CONSTRUCTION.....	69
10 GENERAL.....	69
11 WELDING.....	71
12 TEMPORARY TRAFFIC CONTROL.....	73
13 WATER POLLUTION CONTROL.....	75
14 ENVIRONMENTAL STEWARDSHIP.....	79
15 EXISTING FACILITIES.....	89
16 TEMPORARY FACILITIES.....	91
DIVISION III EARTHWORK AND LANDSCAPE.....	93
17 GENERAL.....	93
18 DUST PALLIATIVES.....	95
19 EARTHWORK.....	97
20 LANDSCAPE.....	99
21 EROSION CONTROL.....	123
22 FINISHING ROADWAY.....	125
DIVISION IV SUBBASES AND BASES.....	127
23 GENERAL.....	127
24 STABILIZED SOILS.....	129
25 AGGREGATE SUBBASES.....	131
26 AGGREGATE BASES.....	133
27 CEMENT TREATED BASES.....	135
28 CONCRETE BASES.....	137
29 TREATED PERMEABLE BASES.....	139
30 RECYCLED PAVEMENT.....	141
31–35 RESERVED.....	143
DIVISION V SURFACINGS AND PAVEMENTS.....	145
36 GENERAL.....	145
37 SEAL COATS.....	147

38 RESERVED	149
39 ASPHALT CONCRETE.....	151
40 CONCRETE PAVEMENT	195
41 EXISTING CONCRETE PAVEMENT	197
42 GROOVE AND GRIND CONCRETE	199
43–44 RESERVED	201
DIVISION VI STRUCTURES	203
45 GENERAL	203
46 GROUND ANCHORS AND SOIL NAILS.....	205
47 EARTH RETAINING SYSTEMS	207
48 TEMPORARY STRUCTURES.....	209
49 PILING.....	211
50 PRESTRESSING CONCRETE.....	213
51 CONCRETE STRUCTURES	215
52 REINFORCEMENT.....	217
53 SHOTCRETE	219
54 WATERPROOFING	221
55 STEEL STRUCTURES	223
56 OVERHEAD SIGN STRUCTURES, STANDARDS, AND POLES	225
57 WOOD AND PLASTIC LUMBER STRUCTURES	227
58 SOUND WALLS	229
59 STRUCTURAL STEEL COATINGS.....	231
60 EXISTING STRUCTURES.....	233
DIVISION VII DRAINAGE FACILITIES.....	235
61 GENERAL	235
62 STORMWATER TREATMENT	237
63 RESERVED	239
64 PLASTIC PIPE	241
65 CONCRETE PIPE.....	243
66 CORRUGATED METAL PIPE	245
67 STRUCTURAL PLATE CULVERTS	247
68 SUBSURFACE DRAINS	249
69 OVERSIDE DRAINS	251
70 MISCELLANEOUS DRAINAGE FACILITIES	253
71 EXISTING DRAINAGE FACILITIES	255
DIVISION VIII MISCELLANEOUS CONSTRUCTION	257
72 SLOPE PROTECTION.....	257
73 CONCRETE CURBS AND SIDEWALKS.....	259
74 PUMPING EQUIPMENT AND CONTROLS	261

75 MISCELLANEOUS METAL	263
76 WELLS	265
77 LOCAL INFRASTRUCTURE	267
78 INCIDENTAL CONSTRUCTION.....	271
79 RESERVED	273
80 FENCES.....	275
DIVISION IX TRAFFIC CONTROL DEVICES	277
81 MISCELLANEOUS TRAFFIC CONTROL DEVICES.....	277
82 SIGNS AND MARKERS.....	279
83 RAILINGS AND BARRIERS	283
84 MARKINGS	285
85 RESERVED	287
DIVISION X ELECTRICAL WORK	289
86 GENERAL	289
87 ELECTRICAL SYSTEMS.....	311
88 RESERVED	319
DIVISION XI MATERIALS.....	321
89 AGGREGATE	321
90 CONCRETE	323
91 PAINT	325
92 ASPHALT BINDERS.....	327
93 RESERVED	329
94 ASPHALTIC EMULSIONS	331
95 EPOXY	333
96 GEOSYNTHETICS	335
97-98 RESERVED	337
DIVISION XII BUILDING CONSTRUCTION.....	339
99 BUILDING CONSTRUCTION	339

Add to section 1-1.07B, "Glossary"

Agency: Alameda County Public Works Agency representing the County of Alameda or the Alameda County Flood Control and Water Conservation District, whichever entity advertises the Project and awards the Contract.

Board: Alameda County Board of Supervisors when the Project's plans and specifications are issued by the Alameda County Public Works Agency.

Caltrans: Department of Transportation as defined in St & Hwy Code 20 and authorized in St & Hwy Code 90, its authorized representatives. Any coordination with Caltrans in Alameda County shall be through its District 4 office located at 111 Grand Ave, Oakland. Its mailing address is PO Box 23660, Oakland, CA 94623-0060. General telephone number: 510-286-4444. Email: Caltrans_d4@dot.ca.gov.

County: County of Alameda when the contract is authorized and executed by the Alameda County Board of Supervisors and the Project Specifications are issued by the Alameda County Public Works Agency; its authorized representatives

Replace matching terms in section 1-1.07B, Glossary" with:

Bid Item List: List of bid items, units of measure, and the associated quantities. The verified Bid Item List is the Bid Item List with verified prices. The Contract Proposal of Low Bidder is the verified Bid Item List. After contract award, interpret a reference to the Bid Item List as a reference to the verified Bid Item List.

California Test: Caltrans developed test for determining work quality. For California Tests, go to the Caltrans website: <https://dot.ca.gov/programs/engineering-services/california-test-methods>

day: 24 consecutive hours running from midnight to midnight; calendar day.

1. **business day:** Day on the calendar except a Saturday, Sunday, and a holiday.
2. **working day:** Time measure unit for work progress. A working day is any 24-consecutive-hour period except:
 - 2.1. Saturday, Sunday, and a holiday.
 - 2.2. Day during which you cannot perform work on the controlling activity for at least 50 percent of the scheduled work shift with at least 50 percent of the scheduled labor and equipment due to any of the following:
 - 2.2.1. Adverse weather-related conditions.
 - 2.2.2. Traffic maintenance under the Contract.
 - 2.2.3. Suspension of a controlling activity that you and the Engineer agree benefits both parties.
 - 2.2.4. Unanticipated event not caused by either party, such as:
 - 2.2.4.1. Act of God
 - 2.2.4.2. Act of a public enemy.
 - 2.2.4.3. Epidemic.
 - 2.2.4.4. Fire.
 - 2.2.4.5. Flood.
 - 2.2.4.6. Governor-declared state of emergency.
 - 2.2.4.7. Landslide.
 - 2.2.4.8. Quarantine restriction.
 - 2.2.5. Issue involving a third party, including:
 - 2.2.5.1. Industry or area-wide labor strike.
 - 2.2.5.2. Material shortage.
 - 2.2.5.3. Freight embargo.
 - 2.2.5.4. Jurisdictional requirement of a law enforcement agency.
 - 2.2.5.5. Workforce labor dispute of a utility or nonhighway facility owner resulting in a nonhighway facility rearrangement not described and not solely for the Contractor's convenience. Rearrangement of a nonhighway facility includes installation, relocation, alteration, or removal of the facility.

- 2.3. Day during a concurrent delay.
- 3. **original working days:**
 - 3.1. Working days to complete the work shown on the *Notice to Bidders* for a non-cost-plus-time-based bid
 - 3.2. Working days bid to complete the work for a cost-plus-time-based bid

Where working days is specified without the modifier *original* in the context of the number of working days to complete the work, interpret the number as the number of original working days as adjusted by any time adjustment.

Department: Depending on context, Department can mean Caltrans when referencing State webpages and publications or work occurring within the State right-of-way, otherwise it means the Construction and Development Department of the Alameda County Public Works Agency.

Director: Director of Alameda County Public Works Agency

Engineer: County Engineer or his authorized representatives.

highway: Whole right-of-way or area reserved for use in constructing the Project improvements.

holiday: Holiday shown in the following table:

Holidays	
Holiday	Date observed
New Year's Day	January 1st
Martin Luther King, Jr. Birthday	3rd Monday in January
Lincoln's Birthday	February 12th
Washington's Birthday	3rd Monday in February
Memorial Day	Last Monday in May
Juneteenth	June 19th
Independence Day	July 4th
Labor Day	1st Monday in September
Veterans Day	November 11th
Thanksgiving Day	4th Thursday in November
Day after Thanksgiving Day	Day after Thanksgiving Day
Christmas Day	December 25th

If January 1st, February 12th, June 19th, July 4th, November 11th, or December 25th falls on a Sunday, the Monday following is a holiday. If any of these fall on a Saturday, the preceding Friday is a holiday.

Informal-bid contract: Contract that has Informal Bid on the cover of the Notice to Bidders, Bid Book, and Special Provisions. Informal bidding authority is under the Uniform Construction Cost Accounting Act. The Agency follows Pub Cont Code 22032 et seq and Alameda County Admin Code sections 4.24.010 et seq. These provisions allow for informal bidding for contracts \$200,000 or less (up to \$212,500 upon BOS resolution).

plant establishment period: The period of time starting at final acceptance of the Contract and continuing for the duration of time shown on the *Notice to Bidders* for plant establishment work. A separate maintenance bond is required for plant establishment work for the duration of the plant establishment period as described under section 20-4..

specifications: Standard specifications, revised standard specifications, and special provisions.

- 1. **standard specifications:** Specifications standard to Agency construction projects. These specifications are in a book titled *Standard Specifications* published by Caltrans.

- 2. **revised standard specifications:** Specifications that revise the Standard Specifications. These specifications are in a book titled *Revised Standard Specifications* published by Alameda County Public Works Agency
- 3. **special provisions:** Specifications specific to the project. These specifications are in a section titled Special Provisions of a book titled *Notice to Bidders, Bid Book, Special Provisions, and Informational Handouts*.

mobilization: Preparatory work that must be performed or costs incurred before starting work on the various items on the job site.

Add a row to the table in section 1-1.11

Reference or agency or department unit	Website	Address	Telephone no.
Agency	www.acpwa.org	399 ELMHURST ST HAYWARD CA 94544	510-670-5480

2-1.06B Supplemental Project Information

The Agency makes supplemental information available as Information Handouts or as specified in the special provisions.

Logs of test borings are supplemental project information.

If other supplemental project information is available for inspection, you may view it by emailing a request to the addresses listed under the Special Notices.

Make your request at least 7 days before viewing. Include in your request:

1. Project Title
2. Project Specification number
3. Viewing date
4. Contact information, including telephone number

As-built drawings may not show existing dimensions and conditions. Where new construction dimensions are dependent on existing structure dimensions, verify the field dimensions and adjust the dimensions of the work to fit the existing conditions.

Add to section 2-1.07, “Job Site and Document Examination”

Submit notifications and bid related questions to both email addresses provided under Special Notices.

Following the receipt of any notifications or questions, an addendum addressing the issues raised may be published prior to the bid due date.

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

2-1.09 BID ITEM LIST

2-1.09A General

Submit a bid based on the bid item quantities shown on the Bid Item List.

When provided, the quantities shown on the Bid Item List are approximate and given for the purpose of comparing bids only. A quantity designated as a final quantity on the Bid Item List shall be the quantity for which payment will be made unless the work as shown is revised by the Engineer. The Agency does not expressly or by implication agree or guarantee that the actual amount of work will correspond to the preliminary estimate or to the quantities set forth, but reserves the right, insofar as authorized by law, to increase or decrease the amount of any class or portion of the work, or to omit portions of the work as may be deemed necessary or expedient by the Engineer.

2-1.09B Contingent Items of Work

A Bid Item shown as “contingent” on the Bid Item List shows a nominal quantity that represents no actual estimate. The quantity may be greatly increased or decreased or reduced to zero.

The increase or reduction of quantity as compared with that set forth on the Bid Proposal will not constitute a basis for claim for extra payment or damages. Payment for the actual work performed based upon the prices bid or work done for the items of work involved will be considered full compensation for the work.

2-1.09C Additive/Deductive Bid Items

A Bid Item designated as “additive” on the Bid Item List may be added to the Contract’s scope of work.

A Bid Item designated as “deductive” on the Bid Item List may be deducted from the Contract’s scope of work.

Failure to furnish a price for all additive and deductive items will result in the Bid being rejected as non-responsive. An additive or deductive bid of \$1.00 will be considered responsive.

The lowest bid by a responsible bidder will be the lowest total of the bid prices on the base contract plus all additive items and minus all deductive items. This lowest responsible bid will be the basis of award under Public Contract Code §20103.8.

After the lowest responsible bidder has been determined, the Agency will decide which, if any, additive items will be added to the Contract and which, if any, deductive items will be deducted from the Contract.

In evaluating bid alternatives, the Agency reserves broad discretion. Neither the judgment applied during the evaluation of alternatives nor the final decision reached is subject to appeal.

Add between paragraph 2 and 3 in section 2-1.12B(1), “General”

Take necessary and reasonable steps to ensure that DBEs have opportunity to participate in the Contract.

Replace section 2-1.12B(2), “DBE Commitment Submittal,” with:

2-1.12B(2) DBE Commitment Submittal

Submit DBE information under section 2-1.33.

Submit Exhibit 15-G Construction Contract DBE Commitment, included in the Bid book. If the form is not required to be submitted with the bid, you may remove the form from the Bid book and submit it as instructed.

Submit written confirmation from each DBE stating that it is participating in the contract. Include confirmation with the DBE Commitment form. A copy of a DBE's quote will serve as written confirmation that the DBE is participating in the contract.

If you do not submit the DBE Commitment form within the specified time, the Agency will find your bid nonresponsive.

Replace section 2-1.12B(3), “DBE Good Faith Efforts Submittal,” with:

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.

Good faith efforts documentation must include the following information and supporting documents, as necessary:

1. Items of work you have made available to DBE firms. Identify those items of work you might otherwise perform with your own forces and those items that have been broken down into economically feasible units to facilitate DBE participation. For each item listed, show the dollar value

and percentage of the total contract. It is your responsibility to demonstrate that sufficient work to meet the goal was made available to DBE firms.

2. Names of certified DBEs and dates on which they were solicited to bid on the project. Include the items of work offered. Describe the methods used for following up initial solicitations to determine with certainty if the DBEs were interested, and the dates of the follow-up. Attach supporting documents such as copies of letters, memos, facsimiles sent, telephone logs, telephone billing statements, and other evidence of solicitation. You are reminded to solicit certified DBEs through all reasonable and available means and provide sufficient time to allow DBEs to respond.
3. Name of selected firm and its status as a DBE for each item of work made available. Include name, address, and telephone number of each DBE that provided a quote and their price quote. If the firm selected for the item is not a DBE, provide the reasons for the selection.
4. Name and date of each publication in which you requested DBE participation for the project. Attach copies of the published advertisements.
5. Names of agencies and dates on which they were contacted to provide assistance in contacting, recruiting, and using DBE firms. If the agencies were contacted in writing, provide copies of supporting documents.
6. List of efforts made to provide interested DBEs with adequate information about the plans, specifications, and requirements of the contract to assist them in responding to a solicitation. If you have provided information, identify the name of the DBE assisted, the nature of the information provided, and date of contact. Provide copies of supporting documents, as appropriate.
7. List of efforts made to assist interested DBEs in obtaining bonding, lines of credit, insurance, necessary equipment, supplies, and materials, excluding supplies and equipment that the DBE subcontractor purchases or leases from the prime contractor or its affiliate. If such assistance is provided by you, identify the name of the DBE assisted, nature of the assistance offered, and date assistance was provided. Provide copies of supporting documents, as appropriate.
8. Any additional data to support demonstration of good faith efforts

The Agency considers DBE commitments of other bidders in determining whether the low bidder made good faith efforts to meet the DBE goal.

Delete section 2-1.15, “Disabled Veteran Business Enterprises”

Delete section 2-1.18, “Small Business and Non-small Business Subcontractor Preferences”

Delete section 2-1.27, “California Companies”

Delete section 2-1.31, “Opt Out of Payment Adjustments for Price Index Fluctuations”

Replace section 2-1.33, “Bid Document Completion and Submittal,” with:

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 Agency.

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 Agency either before opening bids or with the bid. Otherwise, the bid may be nonresponsive.

Complete and submit the *Bid* book as described in the Instruction to Bidders included with the forms. Do so by the deadline stipulated in the Notice to Bidders.

2-1.33B Bid Form Submittal Schedules

2-1.33B(1) General

The *Bid* book includes forms specific to the Contract.

Bid forms and information on the form that are due after the time of bid may be submitted at the time of bid.

Replace section 2-1.34, “Bidder’s Security,” with:

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. A bidder's bond executed by an admitted surety insurer

Submit cash, cashier’s check, certified check, or bidder's bond to the Agency before the bid opening time.

If using a bidder's bond, you must use the form in the *Bid* book.

Replace section 2-1.40, “Bid Withdrawal,” with:

2-1.40 BID WITHDRAWAL

Bids are not filed with the Agency until the date and time of bid opening.

A bidder may withdraw a bid after it has been submitted by submitting a written bid withdrawal request at the location where the bid was submitted. Withdrawing a bid does not prevent you from submitting a new bid.

After the bid opening time, you cannot withdraw a bid.

Replace section 2-1.47, “Bid Relief,” with:

2-1.47 BID RELIEF

The Agency may grant bid relief under Pub Cont Code § 5100 et seq. Submit any request for bid relief to the Engineer.

3. Be provided to all bidders affected by the decision
4. Inform as to whether or not the Agency's recommendation to the Board is going to change

3-1.04C Appeal of Agency's Decision

The decision of the Deputy Director may be appealed in writing to the Auditor-Controller's Office of Contract Compliance (OCC) by 5:00 pm on the 5th business day following the issuance of the decision, not the date it is received.

Submit an appeal to:

Office of Contract Compliance
Alameda County Auditor-Controller's Office
1221 Oak Street, Rm 249, Oakland, CA 94612
Fax: (510) 272-6502

The appeal must specify the decision being appealed and all the facts and circumstances relied upon in support of the appeal.

The appeal will be limited to:

1. The grounds raised in the original protest and the decision by the Agency's Deputy Director
2. The review of the bid process to determine if the Agency materially erred in following provisions, contracting policies, or other regulations and laws

The decision of the OCC is the final step of the appeal process.

Replace section 3-1.05, "Contract Bonds (...)," with:

3-1.05 CONTRACT BONDS (PUB CONT CODE §20129(b); CA CIVIL CODE §9554)

The successful bidder must furnish 2 bonds:

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 equal to at least 100 percent of the total bid.
2. Performance bond to guarantee the faithful performance of the Contract. This bond must be equal to at least 50 100 percent of the total bid.

The Agency provides bond forms to the successful bidder. Samples are provided under section 3-1.18, "Contract Execution."

Submit the bonds as part of the executed contract documents. The bonds must be:

1. Surety bonds
2. Executed by corporations licensed by the State of California
3. Issued at your expense
4. Maintained by you and at your expense for the duration of the Contract

Delete section 3-1.08, "Small Business Participation Report"

Replace *Reserved* in section 3-1.09 with:

3-1.09 PROJECT STABILIZATION / COMMUNITY BENEFITS

The County is a party to the "Project Stabilization/Community Benefits Agreement for the County of Alameda" (PSCBA). Comply with any and all applicable requirements of the PSCBA for projects described in Article 3 and Exhibit A of the PSCBA, including executing a Contractor Agreement as described in Exhibit B to the PSCBA "Contractor Agreement to be Bound." A copy of the "Contractor Agreement to be Bound" is included as an Informational Handout.

The County will not award contracts to perform Covered Projects as defined in the PSCBA, without an executed "Contractor Agreement to be Bound" from you, in which you agree to be party to and bound by the PSCBA. Your subcontractors performing any and all such Covered Project work, of whatever tier, must also become similarly bound by signing an identical "Contractor Agreement to be Bound."

Refer to the Project Stabilization/Community Benefits Agreement for the County of Alameda currently posted at: <https://www.acpwa.org/acpwa-assets/docs/document-library/codes/EXECUTED-Alameda-County-PSCBA-20201006-FINAL.pdf>.

Replace *Reserved* in section 3-1.10 with:

3-1.10 CALIFORNIA AIR RESOURCES BOARD (CARB) IN-USE OFF-ROAD DIESEL-FUELED FLEETS REGULATION COMPLIANCE

Beginning January 1, 2024, prime contractors and public works awarding bodies are subject to the requirements in Title 13 of the California Code of Regulations, section 2449(i)(1) – (4) below for all self-propelled off-road diesel vehicles 25 horsepower or greater and most two-engine vehicles (except on-road two-engine sweepers):

1. For a project involving the use of vehicles subject to this regulation, the prime contractor or public works awarding body, as applicable, must obtain copies of the valid Certificates of Reported Compliance, as described in section 2449(n), for the fleet selected for the contract and their listed subcontractors, if applicable, prior to entering into a new or renewed contract with that fleet.
2. No prime contractor or public works awarding body, as applicable, shall enter into a contract with a fleet for which it does not have a valid Certificate of Reported Compliance for the fleet and its listed subcontractors, if applicable, prior to entering into a new or renewed contract with that fleet.
3. The Certificates of Reported Compliance received by the prime contractor or public works awarding body, as applicable, for a project must be retained for three years after that project's completion. Upon request by CARB, these records must be provided to CARB within five business days of the request.
4. Situations in which prime contractors or public works awarding bodies, as applicable, are contracting for projects that are considered emergency operations, as defined in section 2449(c)(18), are exempt from the requirements in section 2449(i)(1)-(3), but must still retain records verifying vehicles subject to the regulation that are operating on the emergency operations project are actually being operated on the project for emergency operations only. These records must include a description of the emergency, the address or a description of the specific location of the emergency, the dates on which the emergency operations were performed, and an attestation by the fleet that the vehicles are operated on the project for emergency operations only.

All bidders must comply with these requirements and must submit valid Certificates of Reported Compliance for a covered fleet and listed subcontractors, if applicable, no later than 2:00 p.m. on the second business day following bid opening. Bidders may submit hard copies of the Certificates of Reported Compliance to 951 Turner Court, Room 300, Hayward, CA, or send PDF copies via email to ContractAdmin@acpwa.org.

Replace *Reserved* in section 3-1.12 with:

3-1.12 CONTRACT AND LABOR COMPLIANCE MANAGEMENT

3-1.12A General

To comply with legal and contractual reporting requirements, you and your subcontractors must use the Elation Systems online contract and labor compliance management system.

There is no charge for utilizing the system for the Project.

3-1.12B Requirements

You and your subcontractors are required to:

1. Be properly trained on the system
2. Maintain access to adequate information technology
3. Keep online reports up to date.

3-1.12B(1) Training

Within 5 business days of the Notice to Proceed date, you and all your subcontractors must contact Elation Systems at (925) 924-0340 to arrange for a free 1-hour training session for appropriate staff.

3-1.12B(2) Information Technology

The minimum information technology requirements are internet connectivity and a modern web browser.

3-1.12B(3) Online Reporting

Elation Systems must be used to report:

1. Weekly certified payroll reports
2. Fringe benefits statements
3. Monthly progress payment status reports
4. Non-performance statements (to be kept current every week)

3-1.12C Non-Compliance Determination

If the Agency finds that you have not met the Contract and Labor Compliance Management System requirements, including submission of certified payroll documents, the Agency's Deputy Director (or designee) will meet with you for the purpose of determining whether or not you are out of compliance.

If the Deputy Director finds that you are out of compliance, you will be notified at least 5-days in advance of an administrative hearing before the Agency Director (or designee).

If the Director finds that there has been a violation, you will be notified of the sanctions to be imposed.

3-1.12D Non-Compliance Sanctions

Any or all of the following sanctions may be imposed if the Director has determined that the Contract and Labor Compliance Management System requirements have been violated:

1. Payment withholding—an additional 10 percent withholding of all further contract progress payments until the Director is satisfied that the condition of non-compliance has been corrected.
2. Contract suspension until the Director is satisfied that the condition of non-compliance has been corrected.
3. Contract termination and a collection of any appropriate damages from you.
4. Future contract ban—a determination may be sought from the Board of Supervisors to recognize you as non-responsible and ineligible to compete on future Agency contracts and other Alameda County agency contracts for a stated period of time or until the Director is satisfied that the condition of non-compliance has been corrected.

Replace section 3-1.18, "Contract Execution," with:

3-1.18 CONTRACT EXECUTION

The successful bidder must sign the Contract form.

Deliver to the Engineer:

1. Signed Contract form, including the attached form FHWA-1273
2. Contract bonds
3. Documents identified in section 3-1.07
4. Small Business (SB) Participation Report form

The Engineer must receive these documents before the 10th business day after the Bidder receives the contract.

The Bidder's security may be forfeited for failure to execute the contract within the time specified.

The following is a copy of the Contract form.

Project No. **XXXX**

Contract No. C-**XXXX**

CONTRACT

The County of Alameda, a political subdivision of the State of California, acting by and through its Board of Supervisors, hereinafter called COUNTY, and (NAME OF CONTRACTOR), hereinafter called CONTRACTOR, hereby agree as follows:

1. It has been determined by the Board of Supervisors of COUNTY that it is necessary to secure all labor, material, equipment, mechanical workmanship, transportation and services for accomplishment of the project described as follows:

(PROJECT TITLE)

2. The plans, specifications, and CONTRACTOR'S bid proposal for the total bid price of **\$XXXXXXXXXX** said figure for the purpose of comparing bids only, exact payment for the job to be based on the unit prices, as stated in CONTRACTOR'S bid proposal, submitted (**BID DATE**), for the aforesaid project, now on file in the office of the Clerk of the Board of Supervisors and the Construction Department, Public Works Agency, are hereby referred to as a more definite and distinct description of the work to be performed under this contract, and are hereby made a part of this contract the same as though fully set forth herein.

3. CONTRACTOR agrees and contracts with COUNTY to commence and complete the work of the aforesaid project in a skillful and substantial manner to the satisfaction of COUNTY in accordance with the plans and specifications for the project at the prices as set forth in CONTRACTOR'S bid proposal and within the time limit established by the contract specifications.

4. CONTRACTOR agrees that said CONTRACTOR and all pertinent subcontractors employed on the project will pay all employees involved in the work not less than the prevailing rate of per diem wages for the day, legal holiday, and overtime work as set forth within the appropriate General Prevailing Wage Determinations made by the Director of Industrial Relations, State of California, in accordance with Section 1770 of the Labor Code of the State of California. Said wage determinations are on file with the Director of Public Works, County of Alameda.

5. Sections 1725.5, 1775, 1776, and 1777.5 of the Labor Code apply to this contract. Section 1725.5 sets forth the responsibility of CONTRACTOR to be currently registered with the Department of Industrial Relations and qualified to perform public work. Section 1775 covers penalties to be assessed CONTRACTOR for failure to pay prevailing wage rates; Section 1776 sets forth the responsibility of CONTRACTOR to insure maintenance of accurate payroll records for both CONTRACTOR and any pertinent subcontractors; Section 1777.5 covers the employment of properly registered apprentices, and places the responsibility for compliance with this Section with CONTRACTOR for all apprenticeable occupations.

6. In accordance with Part 7, Chapter 1, Article 3 of the Labor Code, (a) eight hours labor constitutes a legal day's work; (b) work performed by employees of CONTRACTOR or pertinent subcontractors in excess of eight hours per day, and forty hours during any one week, shall be permitted upon compensation for all hours worked in excess of eight hours per day at a rate not less than one and one-half times the basic rate of pay; and (c) CONTRACTOR shall pay twenty-five dollars (\$25.00) each calendar day to COUNTY for each worker employed in the execution of the contract by CONTRACTOR or by any pertinent subcontractor where such worker or workers are required or permitted to work more than eight hours in any one calendar day and forty hours in any one calendar week in violation of said Article 3 of the Labor Code.

Project No. XXXX

Contract No. C-XXXX

7. In accordance with Section 1861 of the Labor Code, CONTRACTOR hereby furnishes the following certification: "I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

IN WITNESS WHEREOF, the parties hereto have caused this contract to be executed by their respective authorized officers as of the date set forth below.

Date: _____

(NAME OF CONTRACTOR)

COUNTY OF ALAMEDA

By: _____

By: _____

Address

President, Board of Supervisors, County of Alameda, State of California

(CONTRACTOR ADDRESS)

Phone: (XXX) XXX-XXXX

Approved as to Form

Fax: (XXX) XXX-XXXX

DONNA ZIEGLER, County Counsel

License #: XXXXXXXX

Classification: XX

BY: _____

Deputy

Taxpayer ID#: _____

I hereby certify under penalty of perjury that the President of the Board of Supervisors was duly authorized to execute this document on behalf of the County of Alameda by a majority vote of the Board on _____; and that a copy has been delivered to the President as provided by Government Code Section 25103.

Date: _____

ATTEST:

Clerk of the Board of Supervisors, County of Alameda, State of California

BY: _____

Deputy

Project No. XXXX

Contract No. C-XXXX

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, **(CONTRACTOR NAME)**, _____ as Principal, and

_____ ,
a corporation duly authorized to do business in the State of California, as Surety, are hereby held and firmly bound unto the County of Alameda in the sum of **(DOLLAR AMOUNT OF PROJECT IN WORDS) DOLLARS (\$XXXXXXX)** in lawful money of the United States of America, for the payment of which sum well and truly to be made to the said County of Alameda, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that whereas the Principal entered into a contract with the said County of Alameda, which contract is hereunto annexed and made a part hereof, for accomplishment of the project described as follows:

(PROJECT TITLE)

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform all the undertakings, covenants, terms, conditions, and agreements of the aforesaid contract, and if the Principal shall satisfy all claims and demands incurred under the said contract, and shall fully indemnify and save harmless the County of Alameda from all costs and damages which said County may suffer by reason of failure to do so, and shall reimburse and repay the County of Alameda all outlay and expense which the said County may incur in making good any default, then this obligation shall become null and void; otherwise, this obligation shall remain in full force and effect.

PROVIDED, FURTHER, that 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 work to be performed thereunder or the specifications accompanying the same shall in any wise affect this obligation on this bond, and said Surety does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in four counterparts, each one of which shall be deemed an original, this _____ day of _____, 2018.

SURETY **(CONTRACTOR NAME)**
PRINCIPAL

By: _____ By: _____

Surety Address:

Phone:

Project No. XXXX

Contract No. C-XXXX

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, **(CONTRACTOR NAME)**, _____ as Principal, and

_____ a corporation duly authorized to do business in the State of California, as Surety, are hereby held and firmly bound unto the County of Alameda in the sum of **(DOLLAR AMOUNT OF PROJECT IN WORDS) DOLLARS (\$XXXXXXX)** in lawful money of the United States of America, for the payment of which sum well and truly to be made to the said County of Alameda, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that whereas the Principal entered into a contract with the said County of Alameda, which contract is hereunto annexed and made a part hereof, for accomplishment of the project described as follows:

(PROJECT TITLE)

NOW, THEREFORE, if the Principal shall promptly make payment to all person, firms, subcontractors, corporation and/or others furnishing materials for or performing labor in the prosecution of the work provided for in the aforesaid contract, and any authorized extension or modification thereof, including all amounts due for materials, equipment, mechanical repairs, transportation, tools and services consumed or used in connection with the performance of such work, all amounts that may become due under the Unemployment Insurance Act of California or to the Franchise Tax Board , and for all labor performed in connection with such work whether by subcontractor or otherwise, and all other requirements provided in Civil Code Section 3248 or other requirements imposed by law, then this obligation shall become null and void; otherwise this obligation shall remain in full force and effect.

PROVIDED, FURTHER, that 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 work to be performed thereunder or the specifications accompanying the same shall in any wise affect its obligation on this bond, and said Surety does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in four counterparts, each one of which shall be deemed an original, this _____ day of _____, 2018.

SURETY

(CONTRACTOR NAME)
PRINCIPAL

BY: _____

BY: _____

Surety Address:

Phone:

Replace section 3-1.19, "Bidders' Securities," with:

3-1.19 BIDDERS' SECURITIES

The Agency keeps the securities of the 1st, 2nd, and 3rd low bidders until the contract has been executed.

The securities of the 1st, 2nd, and 3rd low bidders shall be returned in a reasonable period of time, but in no event shall that security be held by the Agency beyond 60 days from the time award is made.

The other bidders' securities, other than bidders' bonds, are returned upon determination of the 1st, 2nd, and 3rd low bidders, and their bidders' bonds are of no further effect.

Maintain records as described under 5-1.27, "Records."

4-1.05B Work-Character Changes

The Agency adjusts the unit price for an item if:

1. Ordered plan or specification change materially changes the character of a work item from that on which the bid item price was based
2. Unit cost of the changed item differs from the unit cost of that item under the original plans and specifications
3. No approved Change Order addresses the payment

4-1.05C Significant Changes in the Character of Work

Section 4-1.05C applies to a federal aid contract.

The Engineer reserves the right to make in writing at any time during the work, such changes in quantities and such alterations in the work as are necessary to satisfactorily complete the project. Such changes in quantities and alterations shall not invalidate the Contract nor release the surety, and you agree to perform the work as altered.

If the alterations or changes in quantities significantly change the character of the work under the contract, whether such alterations or changes are themselves significant changes to the character of the work affecting other work cause such other work to become significantly different in character, an adjustment, excluding anticipated profit, will be made to the Contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If a basis cannot be agreed upon, then an adjustment will be made either for or against you in such amount as the Engineer may determine to be fair and equitable.

If the alterations or changes in quantities do not significantly change the character of the work to be performed under the Contract, the altered work will be paid for as provided elsewhere in the Contract.

The term "significant change" shall be construed to apply only to the following circumstances:

1. When the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction; or
2. When a major item of work, as defined elsewhere in the Contract, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity. Any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of the original contract item quantity, or in the case of a decrease below 75 percent, to the actual amount of work performed.

4-1.05D Extra Work

New and unforeseen work is classified as extra work when the Engineer determines that the work is not covered by any of the various items for which there is a bid price or by combinations of those items. When the Engineer determines that portions of this work are covered by some of the various items for which there is a bid price or combinations of those items, the remaining portion of the work will be considered extra. Extra work also includes work specifically designated as extra work in the plans or specifications.

You must do the extra work upon receipt of an approved contract change order or other written order of the Engineer. Work performed under written order, but not an approved contract change order, will be paid by force account under section 9-1.04, "Force Account."

You are not entitled to payment for performing extra work without an approved contract change order or other written order.

Replace section 4-1.06, “Differing Site Conditions,” with:

4-1.06 DIFFERING SITE CONDITIONS

4-1.06A General

Reserved

4-1.06B California Pub Cont Code § 7104

You must promptly, and before the following conditions are disturbed, notify the Agency, in writing, of any:

1. Material that you believe may be material that is hazardous waste, as defined in section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law. Upon the discovery of unanticipated asbestos and hazardous substances, comply with section 14-11.02.
2. Subsurface or latent physical conditions at the site differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids.
3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinary encountered and generally recognized as inherent in work of the character provided for in the contract.

The Agency will promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in your cost of, or the time required for, performance of any part of the work shall issue a change order under the procedures described in the Contract.

In the event that a dispute arises between you and the Agency whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in your cost of, or time required for, performance of any part of the work, you shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. You shall retain any and all rights provided either by the Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

4-1.06C Title 23 Code of Federal Regulations § 635.109

Section 4-1.06C applies to a federal aid contract.

During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the Contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before the site is disturbed and before the affected work is performed.

Upon written notification, the Engineer will investigate the conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding anticipated profits, will be made and the Contract modified in writing accordingly. The Engineer will notify you of the determination whether or not an adjustment of the Contract is warranted.

No contract adjustment which results in a benefit to you will be allowed unless you have provided the required written notice.

No contract adjustment will be allowed under this clause for any effects caused on unchanged work.

Delete section 4-1.07D, “Value Analysis Workshop”

Replace the 5th paragraph in section 5-1.13A, “[Subcontracting] General,” with:

Except for a building-construction non-federal-aid contract, perform work equaling at least 50 percent of the value of the original total bid with your employees and with equipment you own or rent, with or without operators.

Add between paragraphs 9 and 10 in section 5-1.13A, “[Subcontracting] General,”

Do not terminate or substitute any subcontractor listed in the Bid Proposal without authorization from the Agency.

To substitute any subcontractors listed on Subcontractor Commitment forms or to add subcontractors not listed on Subcontractor Commitment forms, submit a request through the online reporting system Elation Systems.

Add between paragraphs 2 and 3 in section 5-1.13B(1), “[Subcontracting DBE] General”

Notify the Engineer of any changes to your anticipated DBE participation. Provide such notification before starting the affected work.

In accordance with 49 CFR 26.37(c), provide a running tally of payments actually made to DBE firms, including a means of comparing these payments to your commitments. Complete and submit Caltrans form Exhibit 9-F to Virtual Project Manager and to business.support.unit@dot.ca.gov after submitting an invoice for reimbursement that includes a payment to a DBE. Submit the completed form no later than the 10th of the following month.

Delete section 5-1.13C, “Disabled Veteran Business Enterprises”

Delete section 5-1.13D, “Non-Small Businesses”

Replace section 5-1.19, “Reserved,” with:

5-1.19 COUNTY DRUG POLICY

You, your employees, your subcontractors and their employees must comply with Alameda County’s policy of maintaining a drug free work place. Under no circumstances shall anyone unlawfully manufacture, distribute, possess or use controlled substances, as defined in 21 U.S. Code Section 812, including marijuana, heroin, cocaine, and amphetamines, at any Alameda County or District facility or work site. If you or any of your employees are convicted or plead nolo contendere to a criminal drug statute violation occurring at an Alameda County/District facility or work site, provide notice within 5-days. Violation of this provision constitutes a material breach of the Contract.

Replace section 5-1.20B, “[Coordination with Other Entities] Permits, Licenses, Agreements, and Certifications,” with:

5-1.20B Permits, Licenses, Agreements, and Certifications

5-1.20B(1) General

Comply with PLACs. The Agency makes PLAC changes under section 4-1.05. Maintain a copy of each PLAC at the job site.

5-1.20B(2) Before Award

To make a change to a PLAC made available to you before award, submit the proposed change. The Agency considers the proposed change and, at its discretion, sends the proposed change to the appropriate authority for consideration.

5-1.20B(3) After Award

Confirm with the Engineer which after-award PLACs are obtained by the Agency and which are obtained by the Contractor.

To make a change to an after-award PLAC obtained by the Agency, submit the proposed change. The Agency considers the proposed change and, at its discretion, sends the proposed change to the appropriate authority for consideration.

Obtain those PLACs to be issued to you and pay the fees and costs associated with obtaining and complying with them. Submit copies of Contractor-obtained after-award PLACs.

Thirty days prior to the expiration of any PLAC required for Contract work, evaluate the work remaining and provide notice if it will be necessary to extend a PLAC time period.

5-1.20B(4) Contractor–Property Owner Agreement

Before utilizing non-County/District property or procuring material from or disposing of material on non-County/District property:

1. Submit a written agreement from the property owner:
 - 1.1. For the use of the property
 - 1.2. Absolving the Agency from responsibility in connection with the property
2. Obtain authorization to start

Before Contract acceptance, submit a document signed by the owner of the material source or disposal site stating that the Contractor has complied with the Contractor-owner agreement.

5-1.20B(5) Agency—Property Owner Agreement (Permit to Enter and Do Work)

Where adjustments to the finished grade or improvements on private property are required to conform to the Project improvement at the public right-of-way limit, the Agency plans these improvements and seeks permission to enter and do work from the property owner.

In some cases, a fully executed permit to enter and do work may not have been obtained from the property owner by the time of Contract award. The status of these permits at the time of Project advertisement is provided as an Information Handout that accompanies the Special Provisions.

Permits available at the time of Contract award will be provided at the Pre-Construction meeting. Do not enter or perform work on private property where the Project plans show work on private property unless you have a permit to do so. Maintain a copy of the permit on site when performing work.

Comply with all permit conditions and work area boundaries. Do not perform any work beyond the permit limits unless the property owner and the Engineer give written approval.

5-1.20C Railroad Relations

If the Contract includes an agreement with a railroad company, the Agency makes the provisions of the agreement available in the Information Handout in the document titled "Railroad Relations and Insurance Requirements." Comply with the requirements in the document.

5-1.20D Occupied Improvements within the Right-of-Way

Reserved

5-1.20E Water Meter Charges

Reserved

5-1.20F Irrigation Water Service Charges

Reserved

5-1.20G Water Meter Removal Charges

Reserved

5-1.20H–5-1.20J Reserved

Replace section 5-1.23A, “[Submittals] General,” with:

5-1.23A General

Section 5-1.23 includes specifications for action and informational submittals.

Any submittal not specified as an informational submittal is an action submittal.

Submit action and informational submittals to the Engineer.

Each sheet of a submittal must include:

1. Contract number
2. County–Route–Post Mile
3. Structure name and number, if any

The Agency rejects a submittal if it has any error or omission.

If the last day for submitting a document falls on a Saturday, Sunday, 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.

Convert foreign language documents to English and US customary units.

Replace section 5-1.23B, “[Submittals] Action Submittals,” with:

5-1.23B Action Submittals

5-1.23B(1) General

Maintain a sequential list of action submittals except for samples, test samples, and material sources. With each individual submittal, submit a copy of the updated list.

Submit an action submittal before the start of the affected work to allow for review and corrections without work delays.

Except for test samples, obtain the Agency's authorization for action submittals before you perform work based on them.

Except for shop drawings and test samples, allow 15 days for review.

For a revised action submittal, allow the same number of days for review as for the original submittal.

The time allowed for the review of an action submittal starts when the Agency receives the submittal.

Do not change the scope of work on revised submittals.

The Agency's authorization of an action submittal does not void any Contract part.

5-1.23B(2) Shop Drawings

Submit shop drawings as specified and as otherwise required to control the work.

Each drawing and calculation sheet must be in black ink and sequentially numbered.

Each drawing sheet must:

1. Be 11 by 17 inches
2. Be on a minimum of 20 lb paper
3. Have text of a minimum nominal height of 5/32 inch

Each calculation sheet must:

1. Be 8-1/2 by 11 inches
2. Have text of a minimum 12-point font

Text and graphics must be legible for photocopying and reduction.

Calculations must demonstrate the design adequacy. Calculations specified as independently checked must be sealed and signed by an engineer who is registered as a civil engineer in the State and who did not seal and sign the drawings.

Allow 20 days for the review.

If multiple sets are submitted simultaneously or an additional set is submitted before the review of a previously submitted set is complete, designate the sequence that the sets are to be reviewed. Allow the review time specified plus 15 days for each additional set. A set consists of 40 or fewer sheets.

If drawings require corrections, the Agency:

1. Describes the deficiencies
2. Stamps the drawings with the date that the review stopped
3. Returns the drawings

Show the set revision number. Uniquely number each revised detail. Show the number in an inverted triangle near the revised portion of the detail. In a legend, describe and date the revision.

Upon review completion, the Agency returns 1 copy that shows the authorized date.

To make a change to an authorized drawing, submit it as specified for a new submittal. Note the changes.

A drawing authorized by the Agency does not relieve you from responsibility for deviation from the Contract, nor does it relieve responsibility for errors.

After the work shown on the drawings is complete, submit electronic copies of as-built drawings. Include an index of the sheet numbers and titles on the 1st sheet for each structure. Arrange the drawings in the drawing-number order shown in the index.

5-1.23B(3) Record Drawings

Prepare a complete set of record drawings that reflect all changes made during construction. Changes must be delineated in red and properly scaled.

Sign the record drawings as certification of their completeness and accuracy. Submit for approval.

5-1.23B(4)–5-1.23B(10) Reserved

Replace section 5-1.23C, [Submittals] Information Submittals,” with:

5-1.23C Informational Submittals

Informational submittals include:

1. Certificates of compliance

2. Manufacturer's instructions not associated with drawing submittals
3. Notifications
4. PLACs
5. Subcontracts
6. QC test data, QC test results, and QC evaluation reports
7. Video Record of pre-work conditions
8. Video Record of post-work condition on private property

5-1.23C(1) Video Record of Pre-Work Conditions

Before starting construction, and before the start of each phase of a staged project, you must video record the conditions of the project site and any adjacent area that might be affected by construction operations. Record the condition of curbs, gutters, sidewalks, driveways, roadway pavement, landscaping, and any private improvements immediately adjacent to the project site.

Submit the recorded video in a digital format before starting construction. If submitting files using an acceptable storage device (such as a USB drive), the device becomes the property of the Agency and will not be returned.

For each private property create a separate digital recording file and save the file with the property address and date of recording as the file name.

5-1.23C(2) Video Record of Post-Work Conditions on private property

In addition to recording and submitting pre-work conditions under section 5-1.23C(1), record and submit post-work conditions on private properties. Create a digital recording file for each private property and save it with the property address and date of recording as the file name.

Replace section 5-1.24A, “[Construction Surveys] General,” with:

5-1.24A(1) Staking by Agency

Section 5-1.24A(1) applies when the Bid Item List does not include a Construction Surveys item or when a contingent Construction Surveys item in the Bid Item List is rejected.

The Agency will set the following when required:

1. Slope and/or offset stakes.
2. Grade stakes on the smoothed and compacted subgrade at the center line and near the edges of the roadway.
3. Alignment and grade stakes for culverts and structures
4. Other grade stakes, determined by the Engineer, to be required for checking of the work.

Submit an ACPWA survey request form in advance of your need for Agency-furnished stakes. After your submittal, the Agency starts staking within 6 business days.

Preserve stakes, marks, and control points placed by the Agency. If any are destroyed, the Agency replaces them at the Agency's earliest convenience and deducts the cost.

5-1.24A(2) Staking by Contractor

Section 5-1.24A(2) applies when the Bid Item List includes a Construction Surveys item, but only if it is accepted by the Agency when the item is identified as contingent.

The plans show sufficient information for a qualified surveyor to lay out the job. All working stakes must be established by a licensed Land Surveyor or a registered Civil Engineer authorized to practice land surveying in compliance with Section 8725 of the Business and Professions Code of California.

Furnish legible notes 10 calendar days before starting work in the area staked. The notes must show the location of the working stakes in relation to the construction center line or reference line, and all calculations used to reach the results of information written on the working stake marker. The location of working stakes must comply with the current edition of the Caltrans Surveys Manual - Chapter 12, "Construction Surveys,"

Where work is shown adjacent to County/District right-of-way limits, provide right-of-way staking in accordance with the current edition of the Caltrans Surveys Manual – Chapter 10, "Right of Way Surveys." Demarcate at adjoining parcels.

Provide a qualified "Grade Setter" to check horizontal and vertical alignment of all improvements in progress so improvements will be constructed to conform to the lines, widths and grades as shown. The "Grade Setter" must be available to work with the County Inspector on checking or verifying all grade stakes, blue tops, form work, etc. when requested. The "Grade Setter" must provide all necessary equipment and tools to perform the work.

Regardless of any opportunity for the Agency to review the survey work, you assume absolute responsibility and liability for the accuracy and completeness of all aspects of the construction layout.

The Agency does not pay for any re-staking expenses unless an error is found in the plans. Restaking due to errors in the plans is paid for as change order work.

Preserve all survey points required for setting stakes to control the line and grade of work. If these controls are destroyed, the Agency replaces them at the Agency's earliest convenience and deducts the cost.

Add to beginning of section 5-1.27B, "Record Retention"

Under California Government Code § 8546.7, this contract is subject to the examination and audit by the California State Auditor at the request of the Agency or as part of any audit of the Agency, for a period of three years after final payment under the contract.

Replace section 5-1.27E, "Change Order Bills," with:

5-1.27E Change Order Bills

Maintain separate records for change order work costs.

Add to end of section 5-1.30, "Noncompliant and Unauthorized Work"

If in the judgment of the Engineer, it is undesirable or impracticable to replace any defective or non-conforming work, the compensation to be paid for defective or non-conforming work will be reduced by Contract Change Order by such amount as in the judgment of the Engineer will be equitable.

Replace section 5-1.32, "Areas for Use," with:

5-1.32 AREAS FOR USE

5-1.32A By Contractor

Occupy the County/District right-of-way only for purposes necessary to perform the work.

If no County/District-owned area is designated for the Contractor's use, you may arrange for temporary storage with the Agency.

Defend, indemnify, and hold the County or District, as appropriate, harmless to the same extent as under section 7-1.05.

The Agency does not allow temporary residences within the County/District right-of-way highway.

5-1.32B By Agency

The Agency reserves the right to use or occupy any part, or parts, of County/District right-of-way prior to Contract completion when the Engineer deems it safe for use or occupancy.

Exercising this right will in no way constitute acceptance of any part of work, nor will it affect the dates and times payments are due from the Agency to the Contractor, nor will it in any way prejudice the Agency's rights in the Contract or any bonds guaranteeing the same.

Replace section 5-1.36, "Property and Facility Protection," with:

5-1.36 PROPERTY AND FACILITY PRESERVATION

5-1.36A General

Preserve and protect:

1. Right-of-way improvements and facilities
2. Adjacent property
3. Waterways
4. ESAs
5. Lands administered by other agencies
6. Railroads and railroad equipment
7. Non-County facilities, including utilities
8. Survey monuments
9. Agency'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. Contact Underground Service Alert (USA – phone 811) at least 2 working days prior to planned excavation work. Failure to contact the notification center prohibits excavation.

Immediately report damage to the Engineer.

If you cause damage, you are responsible.

The Agency may make a temporary repair to restore service to a damaged facility.

Where County property is damaged, the Agency will deduct from any or all payments due, an amount sufficient to repair any and all such damage, or replace any such damaged property, if such replacement is deemed to be necessary by the Engineer.

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 utility covers/junction boxes.

Underground infrastructure described in the Contract may be in different locations from those described, and additional infrastructure may exist.

Contact Underground Service Alert (USA) to mark all known underground facilities in the area of proposed construction.

When potholing for water, coordinate the locations with the local water utility.

When potholing for sanitary sewer, coordinate the locations with the local sanitary district.

Notify the Engineer of the location and elevation of utilities in conflict with the proposed work. Utilities that are in conflict with proposed work may be rearranged by the company that owns the utility.

Coordinate with the utility owners if any facility is to be rearranged. If this rearrangement delays work, the Agency will allow additional working days equal to the delay, but it will not compensate for equipment idle time during the rearrangement.

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.

Notify the Engineer if the infrastructure described in the Contract cannot be found.

5-1.36C(2) Nonhighway Facility Protection

Protect utility poles from your excavations. If excavating within 3-feet of pole, notify pole owner and provide pole support or other protection method required by the pole owner.

5-1.36C(3) Nonhighway Facility Rearrangement

The Agency may rearrange a non-County/District facility during the Contract. Rearrangement of a non-County/District facility includes installation, relocation, alteration, or removal of the facility.

The Agency may authorize facility owners and their agents to enter the County/District right-of-way 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 Agency does not adjust time or payment for a rearrangement different from that described the Contract.

5-1.36D Survey Monuments

Protect survey monuments in full compliance with California Business and Professions Code, chapter 15, § 8771.

The County Surveyor provides a list of all currently known survey monuments within the limits of the work. The list includes location information to aid in monument recovery and is comprised of monuments in these categories:

Item	Monument Type	Description/Definition
I	Found (standard)	Readily found on the surface of the existing roadway with frame and cover. Protect existing monument in place.
II	Found (non-standard)	Found at or near the surface of the existing roadway and is most frequently a bolt or a railroad spike.
III	Not Found (standard)	An existing standard monument with frame and cover but not readily found on the existing roadway surface typically due to earlier overlay work. Further surveyor investigation is required to determine whether or not it still exists.
IV	Not Found (non-standard)	An existing non-standard monument not readily found on the existing roadway surface typically due to earlier overlay work. Further surveyor investigation is required to determine whether or not it still exists.

Engage the services of a Licensed Land Surveyor to reference all monuments from the list and file timely Pre-Construction and Post-Construction Corner Records on the form in Information Handout C with the County Surveyor. The County Surveyor furnishes examples of acceptable Corner Records.

These corner records are the factual basis for:

1. Confirming that an existing monument was not disturbed during construction
2. Providing the precise location for installing a new standard survey monument
3. Documenting that a monument did not exist at the time of construction. (Post-Construction Corner record not required.)

The Licensed Land Surveyor must submit the Corner Records to the County Surveyor according to this schedule:

1. For “Found” monuments (I & II above): submit Pre-Construction Corner Records a minimum of 15 days before starting construction.
2. For “Not Found” monuments (III & IV above): locate monuments and submit Pre-Construction Corner Records within 3 days after recovering and referencing monuments.

The Licensed Land Surveyor must diligently seek to find and recover all previously “Not Found” (III & IV above) monuments, using GPS navigation to points on the list, using metal detectors, and using direct measurements from found monuments.

Carefully expose the survey monument under the supervision of the Licensed Land Surveyor when s/he has determined the likely location for “Not Found” monuments. You must:

1. Ensure that the monument is not disturbed.
2. Immediately reference it as stated above.
3. Excavate a minimum of 12 inches below existing surface

Notify the Engineer 48 hours before starting work on locating the monuments.

Adjust all found and recovered standard survey monument frames and covers to grade (I & III above). Where necessary, install a new County standard frame and cover and deliver the existing frame and cover, cleaned, to the County Surveyor.

Install a new standard survey monument to replace all found and recovered non-standard monuments (II & IV above).

Submit Post-Construction Corner Records to the County Surveyor within 10 days of completing work affecting the final roadway surface.

The Agency imposes a fee of \$5,000 for each existing survey monument that is destroyed without a proper reference and Pre-Construction Corner Record filed.

Upon discovery of a survey monument not identified and located by the Agency, immediately:

1. Stop work near the monument
2. Notify the Engineer

Do not resume work near the monument until authorized.

A Pre-Construction Corner Record filed for a monument is paid for as Monument Preservation (Pre-Construction).

A Post-Construction Corner Record filed for a monument is paid for as Monument Preservation (Post-Construction).

Replace the first sentence in section 5-1.37B(1), “[Load Limits] General,” with:

To operate or move any oversized or overweight vehicle or special mobile equipment, obtain a special permit under Veh Code § 35780, except for areas within the project limits and subject to the Contractor providing protective measures and repairing related damage, construction equipment exceeding the size or weight limits in Veh Code Div 15 may move over:

Replace the first paragraph in section 5-1.39B, “Damage Caused by an Act of God,” with:

5-1.39B Damage Caused by an Act of God

Under Pub Cont Code § 7105, the Agency pays for repair or restoration to damaged work in excess of 5 percent of the total bid if the damage was proximately caused by an act of God and the work damaged was built in accordance with accepted and applicable building standards and the plans and specifications of the Agency.

Replace section 5-1.39C(2), “Plant Establishment Period of 3 Years or More,” with:

Section 5-1.39C(2) applies if a plant establishment period of 3 years or more is included as a bid item.

Replace the second paragraph in section 5-1.42, “Requests for Information,” with:

The Engineer responds to the RFI within 5 business days. Proceed with the work unless otherwise ordered. As an administrative remedy, you may protest the Engineer's response by:

1. Submitting an Initial Potential Claim Record form within 5 business days after receiving the Engineer's response
2. Complying with section 5-1.43

Replace section 5-1.43, "Potential Claims and Dispute Resolution," with:

5-1.43 POTENTIAL CLAIMS

5-1.43A General

Minimize and mitigate the impacts of work or events for which you will make a potential claim may arise, including compliance with the following required administrative procedures.

Submit a claim under section 9-1.17D(2).

For each potential claim, assign an identification number determined by chronological sequencing and the 1st date of the potential claim.

Use the identification number for each potential claim on the:

1. Initial Potential Claim Record form
2. Supplemental Potential Claim Record form
3. Full and Final Potential Claim Record form

5-1.43B Initial Potential Claim Record

Submit an Initial Potential Claim Record form within 5 business days of the Engineer's response to the RFI or within 5 business days from the date when a dispute arises due to an act or failure to act by the Engineer. The Initial Potential Claim Record form establishes the claim's nature and circumstances. The nature and circumstances must remain consistent.

The Engineer responds within 5 business days of receiving the form. Proceed with the work for which you will make a potential claim unless otherwise ordered.

Within 20 days of a request, provide access to the project records determined necessary by the Engineer to evaluate the potential claim.

5-1.43C Supplemental Potential Claim Record

Within 15 days of submitting the Initial Potential Claim Record form, submit a Supplemental Potential Claim Record form including:

1. Complete nature and circumstances causing the potential claim
2. Contract specifications supporting the basis of a claim
3. Estimated claim cost and an itemized breakdown of the individual costs stating how the estimate was determined
4. TIA

The Engineer evaluates the Supplemental Potential Claim Record form and responds within 20 days of receiving the submittal. To pursue a potential claim, comply with sections 5-1.43D and 5-1.43E.

If the estimated cost or effect on the scheduled completion date changes, update the Supplemental Potential Claim Record form information as soon as the change is recognized and submit this information.

5-1.43D Full and Final Potential Claim Record

Notify the Engineer within 10 days of the completion date of the potentially claimed work. The Engineer authorizes this completion date or notifies you of a revised date.

Within 30 days of the completion of the potentially claimed work, submit a Full and Final Potential Claim Record form including:

1. Detailed factual account of the events causing the potential claim, including:
 - 1.1. Pertinent dates
 - 1.2. Locations
 - 1.3. Work items affected by the potential claim
2. Contract documents supporting the potential claim and a statement of the reasons these parts support entitlement
3. Itemized cost breakdown if a payment adjustment is requested. Segregate costs into the following categories:
 - 3.1. Labor, including:
 - 3.1.1. Individuals
 - 3.1.2. Classifications
 - 3.1.3. Regular and overtime hours worked
 - 3.1.4. Dates worked
 - 3.2. Materials, including:
 - 3.2.1. Invoices
 - 3.2.2. Purchase orders
 - 3.2.3. Location of materials either stored or incorporated into the work
 - 3.2.4. Dates materials were transported to the job site or incorporated into the work
 - 3.3. Equipment, including:
 - 3.3.1. Detailed descriptions, including make, model, and serial number
 - 3.3.2. Hours of use
 - 3.3.3. Dates of use
 - 3.3.4. Equipment rates at the rental rate listed in Labor Surcharge and Equipment Rental Rates in effect when the affected work related to the claim was performed
4. Detailed account of the time impact if a time adjustment is requested:
 - 4.1. Dates for the requested time.
 - 4.2. Reasons for a time adjustment.
 - 4.3. Contract documentation supporting the requested time adjustment.
 - 4.4. TIA. The TIA must demonstrate entitlement to a time adjustment.
5. Identification and copies of your documents and copies of communications supporting the potential claim, including certified payrolls, bills, canceled checks, job cost reports, payment records, and rental agreements
6. Relevant information, references, and arguments that support the potential claim

If the total potential claim cost exceeds \$500,000, include an independent CPA cost audit report. Submit the audit report within 70 days of the completion of the potentially claimed work. The CPA's cost audit must be performed as an examination-level engagement under the attestation engagements in the *Government Auditing Standards* published by the Comptroller General of the United States. The attest documentation prepared by the CPA in connection with the audit must be submitted for review with the audit report. Within 20 days of the Engineer's request, make your financial records available for an audit by the State for verifying the actual cost described in your audit. The Department does not participate in costs for the report where no entitlement is determined. If entitlement is determined, the Department pays for 1/2 the cost of the report; the Contractor pays for the other 1/2. The cost is determined under section 9-1.05 except no markup is allowed.

The Agency does not consider a Full and Final Potential Claim Record form that does not have the same nature, circumstances, and basis of claim as those specified on the Initial Potential Claim Record form and Supplemental Potential Claim Record form.

The Engineer evaluates the information presented in the Full and Final Potential Claim Record form and responds within 30 days of its receipt unless the Full and Final Potential Claim Record form is submitted after Contract acceptance, in which case, a response may not be provided. The Engineer's receipt of the Full and Final Potential Claim Record form must be evidenced by postal return receipt or the Engineer's written receipt if delivered by hand.

Furnish steel and iron materials to be incorporated into the work with certificates of compliance and certified mill test reports. Mill test reports must indicate where the steel and iron were melted and manufactured.

Production includes:

1. Processing steel and iron materials, including smelting or other processes that alter the physical form or shape (such as rolling, extruding, machining, bending, grinding, and drilling) or chemical composition
2. Coating application, including epoxy coating, galvanizing, and painting, that protects or enhances the value of steel and iron materials.

All melting and manufacturing processes for these materials, including an application of a coating, must occur in the United States. Coating includes all processes that protect or enhance the value of the material to which the coating is applied.

Replace section 6-1.05, “Specific Brand or Trade Name and Substitution,” with:

6-1.05 SPECIFIC BRAND OR TRADE NAME AND SUBSTITUTION

A reference to a specific brand or trade name establishes a quality standard and is not intended to limit competition. You may use a product that is equal to or better than the specified brand or trade name if it is approved as equal or better.

Submit a substitution request within 35 days after award.

Include substantiating data with the substitution request that proves that substitution:

1. Causes no delay
2. Is of equal or better quality and suitability

Replace section 6-1.06, “Buy Clean California Act,” with:

6-1.06 BUY CLEAN CALIFORNIA ACT

Not Used

Replace section 6-2.01E, “Material Source Inspection and Testing,” with:

6-2.01E Material Source Inspection and Testing

Not Used

Replace section 6-2.01F, “Test Samples,” with:

6-2.01F Test Samples

6-2.01F(1) General

Submit, at no cost to the Agency, representative samples of all materials to be used in the work.

Submit material to be tested with a Sample Identification Card.

6-2.01F(2) Samples of Materials to be Used

All materials and workmanship entering the work must be equal to the samples submitted and approved.

If requested, obtain the Agency's authorization for the material before incorporating the material represented by the test sample into the work.

6-2.01F(3) Samples of Materials Incorporated in Work

Notify the Engineer 10 days before taking a sample.

Restore work immediately after sampling.

7-1.02F(2)(a) Compliance with Regulations

Comply with the regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this Contract.

7-1.02F(2)(b) Nondiscrimination

With regard to work performed during the Contract, you must not discriminate on the grounds of race, color, sex national origin, religion, age or disability in the selection and retention of sub-applicants, including procurements of materials and leases of equipment. You must not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the Contract covers a program set forth in the Appendix B of the Regulations.

7-1.02F(2)(c) Solicitations for Sub-agreements, Including Procurements of Materials and Equipment

In all solicitations either by competitive bidding or negotiation made by you for work to be performed under a sub-agreement, including procurements of materials or leases of equipment, each potential sub-applicant or supplier must be notified by you of your obligations under this Contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

7-1.02F(2)(d) Information and Reports

You must provide all information and reports required by the Regulations, or directives issued pursuant thereto, and must permit access to your books, records, accounts, other sources of information, and your facilities as may be determined by Caltrans or FHWA to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of you is in the exclusive possession of another who fails or refuses to furnish this information, you must so certify to Caltrans or the FHWA as appropriate, and must set forth what efforts you have made to obtain the information.

7-1.02F(2)(e) Sanctions for Noncompliance

In the event that you are in noncompliance with the nondiscrimination provisions of this Contract, Caltrans will impose such Contract sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:

1. Withholding of payments to you under the Contract within a reasonable period of time, not to exceed 90 days; and/or
2. Cancellation, termination or suspension of the Contract, in whole or in part.

7-1.02F(2)(f) Incorporation of Provisions

You must include the provisions of sections 7-1.02E(2)(a) through 7-1.02E(2)(f) in every sub-agreement, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

7-1.02F(3) Related Litigation

You must take such action with respect to any sub-agreement or procurement as Caltrans or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance, provided, however, that in the event you become involved in, or is threatened with, litigation with a sub-applicant or supplier as a result of such direction, you may request that Caltrans enter into such litigation to protect the interests of the State, and, in addition, you may request the United States to enter into such litigation to protect the interests of the United States.

7.1.02F (4) Clauses for Construction/Use/Access to Real Property Acquired Under the Activity, Facility or Program

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by the Agency pursuant to the provisions of Assurance 7(b):

- A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishings of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits or, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.
- B. With respect to (licenses, leases, permits, etc.) in the event of breach of any of the above of the above Non-discrimination covenants, the Agency will have the right to terminate the (license, permits, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*
- C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, the Agency will there upon revert to and vest in and become the absolute property of the Agency and its assigns.

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

7-1.02F (5) Pertinent Non-Discrimination Authorities

During the performance of this Contract, you, for yourself, your assignees, and successors in interest agrees to comply with the following non-discrimination statutes and authorities, including, but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C § 2000d et seq., 78 stat. 252), prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), prohibits discrimination on the basis of sex;
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 U.S.C. § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination of the basis of disability in the operation of public entities, public and private transportation systems, places of

public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations 49 C.F.R. parts 37 and 38;

- The Federal Aviation Administration’s Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Replace section 7-1.02I, “Government Code,” with:

7-1.02I Government Code

7-1.02I(1) General

Reserved

7-1.02I(2) Nondiscrimination

STANDARD CALIFORNIA NONDISCRIMINATION CONSTRUCTION CONTRACT SPECIFICATIONS (GOV. CODE SECTION 12990)

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.

Replace reserved section 7-1.02J with:

7-1.02J Non-Compliance with Equal Employment Opportunity

7-1.02J(1) General

Section 7-1.02J provides provisions for the determination of and the sanctions for non-compliance with the Equal Employment Opportunity Practices policy.

7-1.02J(2) Determination of Non-Compliance

If the Agency finds that the Contractor has violated the Equal Employment Opportunity Practices Provisions policy, the Director (or designee) shall hold a meeting with the Contractor for the purpose of determining whether the Contractor is out of compliance. If after the meeting the Contractor is found to be still out of compliance, the Contractor will be notified of a public hearing. The public hearing will be held before the Board of Supervisors with a minimum five calendar-day notice to the Contractor. If the Board of Supervisors finds that there has been a violation, the County will notify the Contractor in writing of the sanctions to be imposed.

In addition, the Agency shall deem a finding by the Fair Employment Practice Commission that there was willful violation of the California Fair Employment Act also to be a violation by the Contractor of the Equal Employment Opportunity Practices Provisions requirements of the contract, and such violation shall be subject to the sanctions provided herein.

7-1.02J(3) Sanctions

A finding at the public hearing that there has been violation of the Equal Employment Opportunity Practices Provisions requirements of the contract shall be cause for the Board of Supervisors to impose any or all of the following sanctions:

1. Withhold an additional ten percent (10%) of all further contract progress payments until the Contractor provides evidence satisfactory to the Board of Supervisors that the condition of non-compliance has been corrected.
2. Suspend the contract until such time as the Contractor provides evidence satisfactory to the Board of Supervisors that the condition of non-compliance has been corrected.
3. Terminate the contract and collect appropriate damages from the Contractor.
4. Declare that the Contractor is a non-responsible bidder, and is ineligible to make bids on future County contracts for a stated period of time or until the Contractor can demonstrate to the satisfaction of the Board of Supervisors that the violation has been corrected.

Replace section 7-1.02K(2), "Wages," with:

7-1.02K(2) Wages

The Agency obtains the general prevailing rate of wages applicable to the work to be done. The rate includes:

1. Basic hourly rate
2. Employer payments for health and welfare, pension, vacation, apprenticeship training fees, travel time, and subsistence pay as provided for in Labor Code § 1773.1
3. Similar purposes

If the Notice to Bidders specifies that this Contract is in receipt of Federal Aid then federal minimum wage rates also apply. The federal minimum wage rates for this Contract as determined by the United States Secretary of Labor are available at <https://sam.gov/wage-determinations>.

If the minimum wage rates as determined by the United States Secretary of Labor differs from the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for

similar classifications of labor, the Contractor and subcontractors must not pay less than the higher wage rate. The Department does not accept lower State wage rates not specifically included in the federal minimum wage determinations. This includes helper, or other classifications based on hours of experience, or any other classification not appearing in the federal wage determinations. Where federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor and subcontractors, the Contractor and subcontractors must not pay less than the federal minimum wage rate that most closely approximates the duties of the employees in question.

The general prevailing wage rates and any applicable changes to these wage rates are available:

1. At the ACPWA Office of Contract Compliance, 951 Turner Court, Room 100, Hayward
2. From the Department of Industrial Relations' website

Post the general prevailing wage rates at a prominent place at the job site (Labor Code § 1773.2).

The wage determinations refer to expiration dates. The determinations with a single asterisk after the expiration date, and in effect on the date of advertisement for bids, are good for the life of the Contract. The determinations with double asterisks after the expiration date indicate the wage rate to be paid for work performed after this date has been determined. If work is to extend past this date, pay the new rate and incorporate it into the Contract. Changes in general prevailing wage determinations apply to the Contract when the Director of Industrial Relations has issued them at least 10 days before advertisement. (Labor Code § 1773.6 and 8 CA Code of Regs 16204)

The Agency does not recognize any claim for additional payment because of a payment by the Contractor of any wage rate in excess of the prevailing wage rate specified in the Contract.

The Contractor and any subcontractor must forfeit to the Agency not more than \$200 per day or part of a day for each worker paid less than the prevailing wage rate and pay the worker the difference between the prevailing wage rate and the rate paid (Labor Code § 1775). The Labor Commissioner determines the amount of this penalty and bases the amount on:

1. Whether the failure to pay the correct prevailing wage rate was a good-faith mistake that the Contractor or subcontractor promptly and voluntarily corrected upon notice
2. Prior record of the Contractor or subcontractor in meeting its prevailing wage obligations
3. Contractor or subcontractor's willful failure to pay the correct rate of prevailing wages

If a worker employed by a subcontractor on a public works project is not paid the general prevailing per diem wages by the subcontractor, the Contractor is not liable for the penalties described in section 7-1.02K(2) unless the Contractor had knowledge of the failure to pay the correct general prevailing per diem wages or unless the Contractor fails to comply with the following requirements (Labor Code § 1775):

1. The contract executed between the Contractor and the subcontractor for the performance of work on the public works project must include a copy of the requirements in Labor Code §§ 1771, 1771.1, 1775, 1776, 1777.5, 1813, and 1815.
2. The Contractor must monitor the payment of the specified general prevailing rate of per diem wages by periodic review of the certified payroll records of the subcontractor.
3. Upon becoming aware of the subcontractor's failure to pay the specified prevailing rate of wages to the subcontractor's workers, the Contractor must diligently take corrective action to stop or rectify the failure, including withholding sufficient funds due the subcontractor for work performed on the public works project.
4. Before making final payment to the subcontractor for work performed on the public works project, the Contractor must obtain an affidavit signed under penalty of perjury from the subcontractor that the subcontractor has paid the specified general prevailing rate of per diem wages to its employees on the public works project and any amounts due under Labor Code § 1813.

Under Labor Code § 1775, the Agency must notify the contractor on a public works project within 15 days of receipt by the Agency of a complaint of the failure of a subcontractor on that public works project to pay workers the general prevailing rate of per diem wages.

Replace section 7-1.02K(3), “Certified Payroll Records,” with:

7-1.02K(3) Certified Payroll Records (Labor Code § 1776)

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations pursuant to Labor Code Section 1771.4. Certified payroll must be submitted to DIR.

Comply with section 3-1.10, “Contract and Labor Compliance Management.”

Keep accurate payroll records.

For additional information on electronic submission of certified payroll records, go to the Elations Systems website.

Make certified payroll records available for inspection at all reasonable hours at your main office on the following basis:

1. Upon the employee's request or upon request of the employee's authorized representative, make available for inspection a certified copy of the employee's payroll record.
2. Refer the public's requests for certified payroll records to the Agency. Upon the public's request, the Agency makes available for inspection or furnishes copies of your certified payroll records. Do not give the public access to the records at your main office.

Make all payroll records, including employee's complete social security number, available for inspection and copying or furnish a copy upon request of a representative of the:

1. Agency
2. Division of Labor Standards Enforcement of the Department of Industrial Relations
3. Division of Apprenticeship Standards of the Department of Industrial Relations

Furnish the Agency the location of the records. Include the street address, city, and county. Furnish the Agency a notification of a location and address change within 5 business days of the change.

Comply with a request for the records within 10 days after you receive a written request. If you do not comply within this period, the Agency withholds from progress payments a \$100 penalty for each day or part of a day for each worker until you comply. You are not assessed this penalty for a subcontractor's failure to comply with Labor Code § 1776.

Replace section 7-1.02K(4), “Apprentices,” with:

7-1.02K(4) Apprentices

The responsibility of compliance with Labor Code Section 1777.5 is with the prime contractor.

Comply with the apprentice to journeyman ratio requirements (Labor Code § 1777.5(g)).

Comply with the training contribution requirements (Labor Code § 1777.5(m)(1)).

For answers to questions, contact the Division of Apprenticeship Standards before starting work.

Add text after paragraph 3 in section 7-1.02K(6)(a), “[OSHA] General”

Make arrangements for and maintain in a sanitary manner all necessary sanitary conveniences at the job site for the workers, in accordance with Group 2, Article 9 of the General Industry Safety Orders.

Add text to the end of section 7-1.02K(6)(b), “[OSHA] Excavation Safety”

Conduct a safety conference prior to the initiation of any actual work or operations under a permit issued by the Division of Industrial Safety. Such a safety conference must include your representatives and that of the employer and employees as well as those of the Engineer. The safety conference must include a discussion of the Employer’s Safety Program and such means, methods, devices, processes, practices, conditions and operations intended to be used for facilitating safe employment.

Nothing in these requirements shall be deemed to allow the use of shoring, sloping or protective systems less effective than that required by the Construction Safety Orders.

Nothing in these requirements shall be construed to impose tort liability on the Agency or any of its employees.

Replace section 7-1.02L(1) “[Public Contract Code] General,” with:

7-1.02L(1) General

Under the Pub Cont Code, a debarred or ineligible subcontractor is prohibited from working on this project.

You will not be paid for work performed by a debarred or ineligible subcontractor; however, you are responsible for paying the wages of its workers that were allowed to work on the project.

Any Agency funds paid to you for work performed by a debarred or ineligible subcontractor must be returned to the Agency.

Replace the 2nd paragraph in section 7-1.03, “Public Convenience,” with:

Construction activities must limit inconvenience to the public and abutting property owners. Schedule and conduct work to avoid unnecessary inconvenience to the public and abutting property owners. Avoid undue delay in construction activities to reduce the public's exposure to construction.

Work cooperatively with administrators of local schools to schedule work in a manner that avoids conflict with school operations, especially access and testing.

Notify residents of unavoidable inconveniences. Use templates provided as Information Handouts.

Replace the 7th paragraph in section 7-1.04, “Public Safety,” with:

Provide flaggers whenever necessary to ensure that the public is given safe guidance through the work zone. Flagging must comply with section 12-1.

Replace the 11th paragraph in section 7-1.04, “Public Safety,” with:

Cover signs that direct traffic to a closed area. Cover, maintain, and remove the covers on construction area signs as part of temporary traffic control under section 12.

Replace the 21st paragraph in section 7-1.04, “Public Safety,” with:

If you appear to be neglectful or negligent in furnishing warning devices, an adequate traffic control system, adequate temporary pavement delineation, proper protective measures, or meeting the minimum standards specified in the current California MUTCD, the Engineer may direct your attention to the existence of a hazard. You must immediately implement corrective measures to mitigate the hazard. If the Engineer points out the inadequacy of warning devices and protective measures, that action on the part of the Engineer does not relieve you from your responsibility for public safety or abrogate your obligation to furnish and pay for these devices and measures.

If you fail to implement corrective measures within the time frame given by the Engineer or within 24 hours after having been so directed, whichever is less, the Agency will have the right to do the corrective work in the interest of maintaining public safety. You will then be responsible for maintaining corrective measures installed by the Agency forces. The costs associated with the Agency’s corrective work will be deducted from any monies due to you now or in the future. You will have no rights to claim for the monies deducted from the Contract for such cause and for the Agency’s taking over of the necessary work to maintain public safety.

Replace 7-1.05, “INDEMNIFICATION” with:

7-1.05 INDEMNIFICATION

7-1.05A General

To the fullest extent allowed by law (including, without limitation, California Civil Code Section 2782), you must defend, indemnify, and save harmless the entity which awards the Contract, be it the County of Alameda or the Alameda County Flood Control and Water Conservation District, including its Board of Supervisors, officers, employees, and agents (excluding agents who are design professionals), from any and all claims, demands, causes of action, damages, costs, expenses, actual attorneys' fees, losses or liabilities, in law or in equity (Section 7-1.05 Claims) arising out of or in connection with your performance of this Contract including those for:

1. Bodily injury including, but not limited to, bodily injury, sickness or disease, emotional injury or death to persons, including, but not limited to, the public, any employees or agents of you, the Agency, or any other contractor; and
2. Damage to property of anyone including loss of use thereof; caused or alleged to be caused in whole or in part by any negligent or otherwise legally actionable act or omission of you or anyone directly or indirectly employed by you or anyone for whose acts you may be liable.
3. Charges which may arise for all liability on account of any patent rights, copyrights, or trade names which may affect the articles or materials used in the construction of the work, or their application under the specifications.

Except as otherwise provided by law, these requirements apply regardless of the existence or degree of fault of the Agency. Your defense and indemnity obligation shall extend to Claims arising after the work is completed and accepted if the Claims are directly related to alleged acts or omissions by you that occurred during the course of the work. Any inspection of the work by the Agency is not a waiver of full compliance with these requirements.

Your obligation to defend and indemnify is not excused because of your inability to evaluate liability or because you evaluate liability and determine that you are not liable. You must respond within 30 days to the tender of any Claim for defense and indemnity by the Agency, unless this time has been extended by the Agency. If you fail to accept or reject a tender of defense and indemnity within 30 days, in addition to any other remedy authorized by law, the Agency may withhold such funds the Agency reasonably considers necessary for its defense and indemnity until disposition has been made of the Claim or until the Contractor accepts or rejects the tender of defense, whichever occurs first.

With respect to third-party claims against you, you waive all rights of any type to express or implied indemnity against the County or District, its officers, employees, or agents (excluding agents who are design professionals).

Nothing in the Contract is intended to establish a standard of care owed to any member of the public or to extend to the public the status of a third-party beneficiary for any of these indemnification specifications.

7-1.05B Responsibility to Other Entities

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

7-1.05C Other

You are responsible to the fullest extent allowed by law, to defend and indemnify the County/District for any and all injury, illness, disease, or death arising out of or caused by an organism, including but not limited to animals, microscopic bacteria, fungi, plants and the like, to which persons, including but not limited to the public, any employees or agents of yours, the Agency, or any other contractors that are exposed in connection with the work on the project.

Replace 7-1.06, "INSURANCE" with:

7-1.06 INSURANCE

7-1.06A General

Nothing in the Contract is intended to establish a standard of care owed to any member of the public or to extend to the public the status of a third-party beneficiary for any of these insurance specifications.

7-1.06B Casualty Insurance

Obtain and maintain insurance on all of your operations with companies acceptable to the County/District as follows:

1. Keep all insurance in full force and effect from the start of the work through Contract acceptance.
2. Maintain completed operations coverage with a carrier acceptable to the County/District through the expiration of the patent deficiency in construction statute of repose set forth in Civ Pro Code § 337.1.
3. All insurance must be with an insurance company with a rating from A.M. Best Financial Strength Rating of A- or better and a Financial Size Category of VII or better.

7-1.06C Workers' Compensation and Employer's Liability Insurance

Under Labor Code § 1860, secure the payment of worker's compensation under Labor Code § 3700.

Submit to the Agency the following certification before performing the work (Labor Code § 1861):

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 the work of this contract.

Contract signing constitutes your submittal of this certification.

Provide Employer's Liability Insurance in amounts not less than:

1. \$1,000,000 for each accident for bodily injury by accident
2. \$1,000,000 policy limit for bodily injury by disease
3. \$1,000,000 for each employee for bodily injury by disease

Coverage shall contain a waiver of subrogation in favor of the County/District, including its officers, directors, agents, and employees.

If there is an exposure of injury to your employees under the US Longshoremen's and Harbor Workers' Compensation Act, the Jones Act, or under laws, regulations, or statutes applicable to maritime employees, coverage must be included for such injuries or claims.

7-1.06D Liability Insurance

7-1.06D(1) General

Evidence General Liability and Umbrella or Excess Liability Insurance covering all operations by or on behalf of you providing insurance for bodily injury liability, property damage liability, and personal and advertising injury for the limits outlined in 7-1.06D(2). Coverage must extend to premises, operations and mobile equipment, personal and advertising injury, products and completed operations, and contractual liability. Every policy must contain a cross liability or severability of interests clause. Coverage shall not contain a cross-suits exclusion barring coverage for a suit brought by or between County/District and another Insured in the policy. Coverage shall also not contain an exclusion for explosion, collapse and underground hazards. Such policies must contain an annual reinstatement of limits during construction operations.

7-1.06D(2) Liability Limits/Additional Insureds

The limits of liability must be at least the values shown in the following table:

Liability Limits				
Total bid	For each occurrence ^a	Aggregate for products/completed operation	General aggregate ^b	Umbrella or excess liability ^c
≤ \$1,000,000	\$1,000,000	\$2,000,000	\$2,000,000	\$5,000,000
> \$1,000,000 ≤ \$10,000,000	\$1,000,000	\$2,000,000	\$2,000,000	\$10,000,000
> \$10,000,000 ≤ \$25,000,000	\$2,000,000	\$2,000,000	\$4,000,000	\$15,000,000
> \$25,000,000	\$2,000,000	\$2,000,000	\$4,000,000	\$25,000,000

^aCombined single limit for bodily injury and property damage.

^bThis limit must apply separately to your work under this Contract.

^cThe umbrella or excess policy must contain a clause stating that it takes effect (drops down) in the event the primary limits are impaired or exhausted. The umbrella or excess policies shall not contain exclusions barring follow-form coverage for required coverages in this specification.

Do not require a small business subcontractor to carry liability insurance that exceeds the limits shown in the preceding table. For a small business subcontractor, interpret *Total Bid* in the table as the dollar amount of subcontracted work.

As used in section 7-1.06D(2), a small business:

1. For a non-federal-aid contract is defined in 2 CA Code of Regs § 1896 and is incorporated by this reference
2. For a federal-aid contract is defined in 13 CFR 121.201 and is incorporated by this reference

The entity which awards the Contract, be it the County or District, including its officers, directors, agents (excluding agents who are design professionals), and employees, must be named as additional insureds under the General Liability and Umbrella Liability Policies with respect to liability arising out of or connected with work or operations performed by or on behalf of you under this Contract. Coverage for such additional insureds does not extend to liability:

1. 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 the scope of the work requires you to maintain existing roadway facilities and the claim arises from your failure to maintain;

2. 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
3. To the extent prohibited by Ins Code § 11580.04.

Additional insured coverage must be provided by a policy provision or by an endorsement providing coverage at least as broad as ISO Form CG 2010 1185 or if not available, through the addition of both CG 2010, CG 2026, CG 2033, and CG 2037 if a later version is used.

7-1.06D(3) Contractor's Insurance Policy is Primary

The policy must stipulate that the insurance afforded the additional insureds applies as primary insurance. Any other insurance or self-insurance maintained by the County/District is excess only and must not be called upon to contribute with this insurance.

7-1.06D(4) Contractor's Insurance – Waiver of Subrogation

The policy must stipulate that coverage contains a waiver of subrogation in favor of the State, including its officers, directors, agents (excluding agents who are design professionals), and employees.

7-1.06D(5) Contractor's Insurance – Separation of Insureds

The policy must stipulate that coverage shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

7-1.06E Automobile Liability Insurance

7-1.06E(1) General

Evidence automobile liability insurance, including coverage for all owned, hired, and non-owned automobiles. The primary limits of liability must be not less than \$1,000,000 combined single limit for each accident for bodily injury and property damage liability.

7-1.06E(2) Automobile Liability Insurance Scheduled on Excess Liability Policies

The umbrella or excess liability coverage required under section 7-1.06D(2) also applies to automobile liability. The required limits of liability can be achieved by any combination of primary and excess policies. Automobile liability coverage must be scheduled on excess liability policies in order to meet the required automobile liability limits.

7-1.06F Policy Forms, Endorsements, and Certificates

Provide your General Liability Insurance under Commercial General Liability policy form no. CG0001 as published by the Insurance Services Office (ISO) or under a policy form at least as broad as policy form no. CG0001.

7-1.06G Deductibles

Any deductible provision must not exceed \$5,000 per claim for projects valued up to \$500,000 and \$25,000 per claim for projects valued over \$500,000.

Regardless of the allowance of exclusions or deductions by the Agency, you are responsible for any deductible amount and must warrant that the coverage provided to the Agency complies with section 7-1.06.

7-1.06H Enforcement

The Agency may assure your compliance with your insurance obligations. Ten days before an insurance policy lapses, expires, or is canceled during the Contract period you must submit to the Agency evidence of renewal through a binder or specimen copies of such policies or complete replacement of the policy.

If you fail to maintain any required insurance coverage, the agency may maintain this coverage and withhold or charge the expense to you or terminate your control of the work.

Any failure to comply with the reporting provisions of your policy shall not affect coverage provided to the County/District, including its officers, directors, agents (excluding agents who are design professionals), and employees.

You are not relieved of your duties and responsibilities to indemnify, defend, and hold harmless the State, its officers, agents, and employees by the Agency's acceptance of insurance policies and certificates.

The minimum insurance coverage amounts do not relieve you for liability in excess of such coverage, nor do they preclude the County/District from taking other actions available to it, including the withholding of funds under this Contract.

Add text to the end of section 7-1.06I, "Self-Insurance"

The policy language shall allow or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or the County/District.

Replace section 7-1.07, "Legal Actions Against the Department" with:

7-1.07 LEGAL ACTIONS AGAINST THE COUNTY/DISTRICT

7-1.07A General

If legal action is brought against the County/District over compliance with a State or federal law, rule, or regulation applicable to the Project, and:

1. If the Agency in complying with a court order prohibits you from performing work, then the resulting delay is a suspension related to your performance, unless the Agency terminates the Contract.
2. If a court order other than an order to show cause or the final judgment in the action prohibits the Agency from requiring you to perform work, the Agency may delete the prohibited work or terminate the Contract.

7-1.07B Seal Coat Claims

Pay for claims for personal property damage caused by screening and bituminous binder. Seal coat claims are limited to:

1. 10 percent of the total bid
2. Damage occurring between the 1st day of screening spreading and 4 days after the last day of screening spreading for each seal coat location

Within 30 days of the last screening spreading, do the following:

1. Process and resolve all claims reported or submitted to you by the public as follows:
 - 1.1. Within 3 business days of receipt of a claim, submit to the Agency a copy of the claim, a written analysis of the claim, and a statement indicating whether or not you will pay the claim. If you reject a claim, provide the reasons for rejection in writing.
 - 1.2. If the claimant becomes dissatisfied with your handling of the claim, immediately refer the claimant to the local district claims office for assistance in resolving the claim.
2. Submit to the Agency evidence of your paid claims.

All claims presented to the Agency, are processed and resolved by the Agency as follows:

1. The claims are processed as formal government claims subject to all laws and policies and are resolved as the Agency determines including referring the claim to you for handling.
2. If the Agency approves settlement of a claim or is ordered to pay pursuant to a court order, the claim is paid from funds withheld from you.
3. Within 3 business days of the Agency's determination that you are responsible for resolving the claim, the Agency sends a copy of the claim to you for resolution or notifies you of the Agency's decision to resolve the claim.

The Agency withholds an amount not to exceed 5 percent of the total bid to resolve all claims. The amount is held no longer than 60 days following the last spreading of screenings so that the Agency has

ample time to resolve any pending claims. After 60 days, any remaining amount withheld is returned to you.

If no withheld funds remain or have been returned, the Agency may pay any claims and seek reimbursement from you through an offset or any other legal means. Any reimbursement or offset to be recovered from you, including all other paid claims, is limited to 10 percent of the total bid.

Section 7-1.07B does not limit your obligation to defend and indemnify the County/District.

Replace section 7-1.08, “Personal Liability,” with:

7-1.08 PERSONAL LIABILITY

Neither the Director, the Engineer nor any other officer or authorized employee of Agency or County/District, nor any officer or employee of the State, any county, city or district shall be personally responsible for any liability arising under or by virtue of the Contract.

Add to 4th paragraph in section 7-1.11D, “Training”

Include these training requirements in your subcontract.

Add section 7-1.11E

7-1.11E PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE EQUIPMENT AND SERVICES

In response to significant national security concerns, the agency shall check the prohibited vendor list before making any telecommunications and video surveillance purchase because recipients and subrecipients of federal funds are prohibited from obligating or expending loan or grant funds to:

- Procure or obtain;
- Extend or renew a contract to procure or obtain; or
- Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

The prohibited vendors (and their subsidiaries or affiliates) are:

- Huawei Technologies Company;
- ZTE Corporation;
- Hytera Communications Corporation;
- Hangzhou Hikvision Digital Technology Company;
- Dahua Technology Company; and
- Subsidiaries or affiliates of the above-mentioned companies.

In implementing the prohibition, the agency administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

A count of working days will commence with your start of authorized work and will continue until the Agency receives the entirety of your preconstruction corner records submittal. During this time, restrict your job site activities to the work authorized.

After the County Surveyor’s approval of your preconstruction records, an unrestricted notice to proceed with construction work will be issued.

Begin work within 10 days after the issuance of a *Notice to Proceed*. A count of working days will begin (or resume) upon your start of job site activities.

Submit a notice 72 hours before starting job site activities. If the project has more than 1 work location, submit a separate notice for each location.

Replace section 8-1.05, “TIME,” with:

8-1.05 TIME

Complete the work within the Contract time.

The number of allotted Working Days is specified in the Notice to Bidders.

Meet each specified interim work-completion date.

The Engineer issues a Weekly Statement of Working Days form by the end of the following week.

The Weekly Statement of Working Days form shows:

1. Working days and non–working days during the reporting week
2. Time adjustments
3. Calculations of work completion dates, including working days remaining
4. Controlling activities

If you disagree with a Weekly Statement of Working Days report, submit an RFI within 5 business days of receipt of the report.

Replace section 8-1.06, “Suspensions,” with:

8-1.06 SUSPENSIONS

8-1.06A General

The Engineer may suspend work wholly or in part due to conditions unsuitable for work progress. Provide for public safety and a smooth and unobstructed passageway through the work zone during the suspension as specified in sections 7-1.03 and 7-1.04. Providing the passageway is force account work. The Agency makes a time adjustment for the suspension due to a critical delay.

The Engineer may suspend work wholly or in part due to your failure to (1) fulfill the Engineer's orders, (2) fulfill a Contract part, or (3) perform weather-dependent work when conditions are favorable so that weather-related unsuitable conditions are avoided or do not occur. The Agency may provide for a smooth and unobstructed passageway through the work during the suspension and deduct the cost from payments. The Agency does not make a time adjustment for the suspension.

Upon the Engineer's order of suspension, suspend work immediately. Resume work when ordered.

8-1.06B Title 23 Code of Federal Regulations § 635.109

Section 8-1.06B applies to a federal aid contract

If the performance of all or any portion of work is suspended or delayed by the Engineer in writing for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and you believe that additional compensation and/or contract time is due as a result of such

suspension or delay, you must submit to the Engineer in writing a request for adjustment within 7 calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.

Upon receipt, the Engineer will evaluate your request. If the Engineer agrees that the cost and/or time required for the performance of the Contract has increased as a result of such suspension and the suspension was caused by conditions beyond your control of and not the fault of you, your suppliers, or your subcontractors at any approved tier, and not caused by weather, the Engineer will make an adjustment (excluding profit) and modify the Contract in writing accordingly. You will be notified of the Engineer's determination whether or not an adjustment of the Contract is warranted.

No contract adjustment will be allowed unless you have submitted the request for adjustment within the time prescribed.

No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided or excluded under any other term or condition of this Contract.

Replace section 8-1.07A, “[Delays] General,” with:

8-1.07A General

You will not be held responsible for delays in completion of the Contract caused by:

1. Strikes
2. Labor disturbances
3. Lack or failure of transportation
4. Acts of any governmental agency
5. Rearrangement of existing utility facilities by others
6. Rearrangement of existing facilities not shown
7. Other reasons acceptable to the Engineer such as events deemed by the Engineer to be outside of your control and not reasonably foreseeable when the work began.

When a delay occurs under any of the foregoing reasons, submit an RFI within 5 working days. If the Engineer determines such cause to exist, you may be granted an extension of time equal to or appropriate to the delay, or the Engineer may refer the matter to the Board of the Agency, which may, at its option, rescind the Contract and pay you the reasonable value of the work completed. If the latter, a new contract for the remainder of the work may be let.

No extension of time will be granted for a delay caused by a physical shortage of materials unless you submit proof of your efforts to obtain such materials from all known sources within reasonable reach of the work in a diligent and timely manner. Additionally, you must submit proof that any such shortage did cause a delay in the final completion of the entire work which could not be compensated for by a revision of the sequence of your operations.

Claims for damages for delays which do not result in a completion date exceeding the number of working days allocated in the Contract will not be considered.

Replace section 8-1.10, Liquidated Damages,” with:

8-1.10 LIQUIDATED DAMAGES FOR DELAY

8-1.10A General

The Agency specifies liquidated damages. Liquidated damages, if any, accrue starting on the 1st day after the expiration of the working days through the day of Contract acceptance except as specified in sections 8-1.10B and 8-1.10C.

The Agency withholds liquidated damages before the accrual date if the anticipated liquidated damages may exceed the value of the remaining work.

Liquidated damages for all work except plant establishment or permanent erosion control establishment are as shown in the following table:

Total bid		Liquidated damages per day
From over	To	
\$0	\$200,000	\$2,800
\$200,000	\$500,000	\$3,600
\$500,000	\$1,000,000	\$3,600
\$1,000,000	\$2,000,000	\$4,200
\$2,000,000	\$5,000,000	\$5,200
\$5,000,000	\$10,000,000	\$6,700
\$10,000,000	\$20,000,000	\$9,500
\$20,000,000	\$50,000,000	\$13,200

If all work except plant establishment or permanent erosion control establishment is complete and the total number of working days have expired, liquidated damages are \$950 per day.

8-1.10B Failure to Complete Work Parts within Specified Times

The Agency may deduct specified damages from payments for each day needed to complete a work part in excess of the time specified for completing the work part.

Damages for untimely completion of work parts may not be equal to the daily amount specified as liquidated damages for the project as a whole, but the Agency does not simultaneously assess damages for untimely completion of work parts and for the whole work.

Damages accrue starting the 1st day after a work part exceeds the specified time through the day the specified work part is complete.

8-1.10C Failure to Complete Work Parts by Specified Dates

The Agency may deduct specified damages from payments for each day needed to complete a work part in excess of the specified completion date for the work part.

Damages for untimely completion of a work part may not be equal to the daily amount specified as liquidated damages for the project as a whole, but the Agency does not simultaneously assess damages for untimely completion of a work part and the whole work.

Damages accrue starting the 1st day after an unmet completion date through the day the work part is complete.

Replace section 8-1.13, “Contractor’s Control Termination,” with:

8-1.13 CONTRACTOR'S CONTROL TERMINATION

The Agency may terminate your control of the work for failure to do any of the following:

1. Supply an adequate workforce
2. Supply material as described
3. Pay subcontractors
4. Prosecute the work as described in the Contract

The Agency may also terminate your control for failure to maintain insurance coverage.

For a federal-aid project, the Agency may terminate your control of the work for failure to include "Required Contract Provisions, Federal-Aid Construction Contracts" in subcontracts.

The Agency gives notice to you and your surety at least 5 business days before terminating control. The notice describes the failures and the time allowed to remedy the failures. If failures are not remedied within the time provided, the Agency takes control of the work.

The Agency may complete the work if the Agency terminates the Contractor's control, or you abandon the project. The Agency determines the unpaid balance.

At any time before final payment of all claims, the Agency may convert a Contractor's control termination to a Contract termination.

Replace reserved section 8-1.15 with:

8-1.15 VIRTUAL PROJECT MANAGER

8-1.15A General

Virtual Project Manager (VPM) is an Internet based electronic project management system used to create, share, and review construction management documentation online at www.virtualpm.com.

You must utilize VPM for the submission of all Project data and documents, unless otherwise described or directed.

Access permission to VPM is provided as part of the Project at no cost to you. VPM will be made available to you, your subcontractors, suppliers, consultants, the Engineer and the Engineer's representatives or agents. The joint use of the system is to facilitate electronic exchange of information, automation of key processes, electronic notification of project activity, and overall management of contract documentation.

8-1.15B IT Requirements

You and your subcontractors must possess the necessary equipment, software, and Internet access to connect with and properly utilize VPM. A document scanner and/or a digital camera may be required.

8-1.15C Access

The Engineer will establish your access to VPM by enabling access and assigning user profiles to your personnel, including subcontractors and suppliers, that you request.

Provide a list of key VPM personnel for the Engineer's acceptance. The list must include:

1. First name
2. Last name
3. Address
4. Title
5. Office phone number
6. Cell phone number
7. Email address

All authorized personnel will have an individual user profile. No joint-use or shared user profiles will be allowed.

Each user profile will be assigned to a user group having specific permission settings and privileges based on the user's need with VPM.

8-1.15D Responsibilities

You are responsible for the:

1. Provision and accessibility of adequate resources to connect with VPM
2. Training of personnel to understand and utilize VPM
3. Entry of information exchanged and transferred between you and your subcontractors/ suppliers on VPM
4. Accuracy and completeness of the information provided through VPM

8-1.15E Electronic Submissions

Submit the following items electronically using VPM:

1. Change order requests
2. Transmittals: Schedules, etcetera
3. Submittals: Submittals requiring approval
4. Requests for Information (RFIs)
5. Payment requests

Replace section 9-1.16C, “Materials On Hand,” with:

9-1.16C Materials On Hand

9-1.16C(1) General

A material on hand but not incorporated into the work may be eligible for a progress payment if:

1. Compliant with other Contract parts
2. Material cost exceeds \$50,000
3. Purchased
4. Invoice is submitted
5. Stored within Alameda County and you submit evidence that the stored material is subject to the Agency’s control
6. Protected from weather and contamination
7. Water pollution control measures are established and maintained
8. Requested on the Agency-furnished form

9-1.16C(2) Conditions

If the Agency elects to pay for stored materials, you may be paid 75-percent of the actual value of such materials and equipment if:

1. Each request for payment includes a complete inventory of all materials and equipment for which payment is or has been requested. The inventory must provide the description, specification paragraph number reference, quantity and value of each item of the material and equipment that is added, deducted (i.e. incorporated in the work) and carried from the previous request for payment. Payment will not be made for completed work that contains material or equipment included in the inventory.
2. Each request for payment includes a copy of the invoice indicating that full payment has been made to the supplier or manufacturer of each item of material and equipment that is added to the inventory.
3. The materials and equipment are placed and secured at a location under the Agency’s control.
4. The materials and equipment have been fabricated or altered specifically for the use on the work as determined by the Engineer. Except for materials and equipment stored on the site, payment will not be made on materials and equipment not so fabricated or altered to preclude possible use on other work. Such materials and equipment approved for payment must be stored in a bonded warehouse and proof of such storage must be attached to the request for payment.
5. The total payment will not exceed the total amount of retention

Replace section 9-1.16E(4), “[Withholds] Stop Notice Withholds,” with:

9-1.16E(4) Stop Notice Withholds

The Agency withholds payments to cover claims filed under Civ Code § 9000 et seq. The Agency withholds 125 percent of the value of the stop notice amount from the next progress payment due.

Replace section 9-1.16F, “Retentions,” with:

9-1.16F Retentions

The Agency retains 5 percent from progress payments due to the Contractor for work performed.

You may substitute securities for retentions held by the Agency pursuant to Pub Cont Code § 22030.

Replace reserved section 9-1.16G with:

9-1.16G Prompt Payment of Funds Withheld to Subcontractors

The Agency retains funds under section 9-16F. You and your subcontractor must return all monies withheld in retention from a subcontractor within 7 days after receiving payment for work satisfactorily completed and accepted including incremental acceptance of portions of the contract work by the Agency, unless as agreed to in writing by you and your subcontractor, pursuant to section 7108.5 of the Business and Professions Code. Any violation of the provision will subject you or your subcontractor to penalties, sanctions and other remedies specified in the Code. These requirements do not limit or impair any contractual, administrative, or judicial remedies otherwise available to you or your subcontractor in the event of a dispute involving late payment or nonpayment by you, deficient subcontract performance, or noncompliance by a subcontractor.

Replace section 9-1.16D, “Final Payment and Claims,” with:

9-1.17D Final Payment and Claims

9-1.17D(1) General

If you accept the proposed final estimate or do not submit a claim within 30 days of receiving the estimate, the Engineer provides you the final estimate and the Agency pays the amount due within 30 days. This final estimate and payment is conclusive except as specified in sections 5-1.27, 5-1.47, and 9-1.21.

If you submit a claim within 30 days of receiving the Engineer's proposed final estimate, the Engineer provides you a semifinal estimate and the Agency pays the amount due within 30 days. The semifinal estimate is conclusive as to the amount of work completed and the amount payable except as affected by any claims or as specified in sections 5-1.27, 5-1.47, and 9-1.21.

9-1.17D(2) Claims

9-1.17D(2)(a) General

Claims are handled in accordance with Pub Cont Code §§ 9201 – 9204 and § 9204 is deemed incorporated by reference herein, as though fully set forth, provided, however, that these specifications prescribe additional change order, claim and dispute resolution procedures and required administrative procedures.

“Claim” means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

1. A time extension, including, without limitation, for relief from damages or penalties for delay assessed by the Agency.
2. Payment by the Agency of money or damages arising from work done by you, or on your behalf pursuant to the Contract and payment for which is not otherwise expressly provided or to which you are not otherwise entitled.
3. Payment of an amount that is disputed by the Agency.

For any claim arising prior to the issuance of the proposed final estimate, include the identification number that corresponds to the Full and Final Potential Claim Record form and the final amount of additional payment requested. Provide documentation to support the claim, including the potential claim record documents required under section 5-1.43 and the supporting documentation for overhead claims required herein. You must include a statement of the reasons the Contract documentation supports the claim. You are responsible for furnishing, within a reasonable time, such further information and details as may be required by the Engineer to determine the facts or contentions involved in the claims.

For a claim for quantities, withholds, deductions, or change order bills submit:

1. Final amount of the additional payment requested

2. Enough detail to enable the Engineer to determine the basis and amounts of the additional payment requested

9-1.17D(2)(b) Overhead Claims

Include with an overhead claim:

1. Final amount of additional payment requested
2. Independent CPA audit report

The Agency deducts an amount for field and home office overhead paid on added work from any claim for overhead. The value of the added work equals the value of the work completed minus the total bid. The home office overhead deduction equals 5 percent of the added work. The field office overhead deduction equals 5-1/2 percent of the added work.

If you intend to pursue a claim for reimbursement for field or home office overhead beyond that provided expressly by the Contract:

1. Notify the Engineer within 30 days of receiving the proposed final estimate of your intent to seek reimbursement for specific overhead costs beyond that provided by the Contract
2. Specifically identify each claim and each date associated with each claim for which you seek reimbursement for specific overhead costs beyond that provided by the Contract
3. Timely submit all other claims
4. Within 30 days of receiving the proposed final estimate, submit an audit report prepared by an independent CPA, including
 - 4.1. Calculations with supporting documentation of actual home office and project field overhead costs
 - 4.2. Calculations specifying the actual daily rates for both field and home office overhead, not including a profit markup, for the entire duration of the project expressed as a rate per working day
 - 4.3. Start and end dates of the actual project performance period, number of working days, overhead cost pools, and all allocation bases used to calculate your actual field and home office overhead daily rates
5. Field overhead costs from which the daily rate is calculated must be:
 - 5.1. Allowable under 48 CFR 31
 - 5.2. Supported by reliable records
 - 5.3. Related solely to the project
 - 5.4. Incurred during the actual project performance period
 - 5.5. Comprised of only time-related field overhead costs
 - 5.6. Not a direct cost
6. Home-office overhead costs from which the daily rate is calculated must be:
 - 6.1. Allowable under 48 CFR 31
 - 6.2. Supported by reliable records
 - 6.3. Incurred during the actual project performance period
 - 6.4. Comprised of only fixed home-office overhead costs
 - 6.5. Not a direct cost

The actual rate of time-related overhead is subject to authorization by the Engineer.

The CPA's audit must be performed as an examination-level engagement under the attestation engagements in the Government Auditing Standards published by the Comptroller General of the United States. The CPA's audit report must express an opinion of whether or not your calculations of your actual field and home office overhead daily rates comply with section 9-1.17D(2)(b). The attest documentation prepared by the CPA in connection with the audit must be submitted for review with the audit report.

The Agency provides markups for all work paid by force account. Overhead for field and home office costs are included in the markups. Overhead claims in excess of Contract markups are not allowed under the Contract. If you seek reimbursement for costs not allowed under the Contract, the Agency does not pay your cost of performing the independent CPA examination specified in section 9-1.17D(2)(b), including preparation of the audit report.

9-1.17D(2)(c) Declaration

Submit a declaration that includes the following language with any claim:

I declare under penalty of perjury, according to the laws of the State of California, that the foregoing claims, with specific reference to the California False Claims Act (Govt Code § 12650 et seq.) and to the extent the project contains federal funding, the US False Claims Act (31 USC § 3729 et seq.), are true and correct, and that this declaration was signed on _____(date)_____, 20__ at _____, California.

9-1.17D(2)(d) Waiver

Not Used

9-1.17D(3) Final Determination of Claims

9-1.17D(3)(a) Review of Claim

Upon receipt of claim the Agency will conduct a reasonable review and will provide you a written statement identifying what portion of the claim is disputed and what portion is undisputed. This will be done within 45 days, unless a longer period is mutually agreed upon. If the Agency needs approval from its governing body to provide a written statement, and the governing body does not meet within 45 days following receipt or within a mutually-agreed extension, then the Agency shall have up to three days following the next duly publicly noticed meeting of the governing body to provide a written statement.

Any payment due on an undisputed portion of the claim will be processed and made within 60 days after the Agency issues its written statement.

If the Agency does not respond within the time period prescribed, the claim is to be deemed rejected in its entirety. This shall not constitute an adverse finding with regard to the merits of the claim or your responsibility or qualifications.

9-1.17D(3)(b) Meet and Confer Conference

If you dispute the Agency’s written response to your claim, or if the Agency fails to respond within the time prescribed, you may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a written demand sent by registered mail or certified mail, return receipt requested, the Agency will schedule a meet and confer conference within 30 days for settlement of the dispute.

Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion thereof remains in dispute, the Agency will provide you a written statement identifying the portion that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim will be processed and made within 60 days after the Agency issues its written statement.

9-1.17D(3)(c) Mediation

Following the written statement issued after the meet and confer conference if you continue to dispute any portion of the claim, you must identify that dispute in writing, and that dispute will be submitted to nonbinding mediation, where you and the Agency share the associated costs equally. You and the Agency must mutually agree to a mediator within 10 business days after you identify the disputed portion of the claim. If agreement upon a mediator cannot be reached, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with

the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be settled under section 9-1.22.

For the purpose of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation.

9-1.17D(3)(d) Subcontractor Claim

If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against the County/District because privity of contract does not exist, you may present a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that you present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the Agency must furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, you must notify the subcontractor in writing as to whether you presented the claim to the Agency and, if not, provide the subcontractor with a statement of the reasons for not having done so.

9-1.17D(3)(e) Third Party Claim Notification

You will be notified in a timely manner of any third-party claim related to the contract.

Replace section 9-1.22, “Arbitration,” with:

9-1.22 ARBITRATION

Pursuant to Pub Cont Code §§ 22201 and 9204(d)(2)(E), claims that remain disputed following mediation shall be resolved by arbitration unless the Engineer and Contractor agree in writing, after the claim has arisen, to waive arbitration and to have the claim litigated in a court of competent jurisdiction. Arbitration shall be pursuant to Pub Cont Code § 10240-10240.13, inclusive, and implementing regulations, provided, however, that the limitations period under § 10240.1 shall be tolled to allow for the meet and confer conference and mediation as provided herein and in Pub Cont Code § 9204. You must file your arbitration complaint not later than 90 days after the conclusion of the mediation. The arbitration decision shall be decided under and in accordance with the law of California, supported by substantial evidence and, in writing, shall contain the basis for the decision, findings of fact, and conclusions of law.

Start arbitration by filing a complaint with the Office of Administrative Hearings in Sacramento (1 CA Code Regs § 1350) through the Public Works Contract Arbitration Program.

Replace section 10-1.03, "Time Constraints," with:

10-1.03 TIME CONSTRAINTS

In addition to any specific time constraints described in the *Special Provisions*, consider constraints associated with complying with sections:

- 7-1.03, Public Convenience
- 10-1.02, Work sequencing
- 12-4.01A(5), Timeframe for Work the Interferes with Traffic

Replace section 10-1.04, "Training and Meetings," with:

10-1.04 TRAINING AND MEETINGS

At any time during the progress of the work, the Engineer can require you to attend a meeting regarding any aspect of the Project. You must comply with any notice of such a conference. Training may be held at times and locations you and the Engineer agree to.

* * *

**Replace the first paragraph of section 12-4.02C(1),
“[Traffic Control Systems; Construction] General,” with:**

Work that interferes with traffic must not begin before 8:30 a.m. or continue after 5:00 p.m. Further restrict hours as necessary to comply with section 7-1.03, Public Convenience.”

Replace section 12-4.02C(3)(d), “City Street Closure Requirements,” with:

12-4.02C(3)(d) City/County Street Closure Requirements

No two adjacent streets can be closed simultaneously.

A minimum of one paved traffic lane must be open for use by public traffic. Do not reduce an open traffic lane width to less than 12-feet wide (supersedes the 10-feet specified under section 12-4.02C(1), unless otherwise authorized by the Engineer under an approved traffic control plan). At least two paved traffic lanes must be open to public traffic when construction operations are not actively in progress.

Replace section 12-4.04A(1), “[Temporary Pedestrian Access Routes; General] Summary,” with:

12-4.04A(1) Summary

Section 12-4.04 includes specifications for providing, maintaining, and removing temporary pedestrian access routes.

Pedestrian travel must be maintained at all times along both sides of the roadway under construction.

In all cases, pedestrian walkways shall be separated from vehicular travel by a clear area of at least 6 feet, or in locations where the 6 feet of horizontal separation of pedestrian traffic is not feasible, by a raised curb, a raised wooden walkway with standard railings, or by a temporary barrier system. This condition may be modified or waived by the Engineer upon written request.

Access to pedestrian push buttons must be provided at all times.

Replace section 12-6.04, “[Temporary Pavement Delineation] Payment,” with:

12-6.04 Payment

No separate payment is made for furnishing, placing, maintaining and removing temporary pavement delineation, regardless of the number of times it has to be performed for the duration of the project.

* * *

Replace the 1st paragraph of section 13-1.01D(2), “Regulatory Requirements,” with:

Comply with the NPDES General Permit for “Storm Water Discharges Associated with Construction and Land Disturbance Activities” ([Order No. 2022-0057-DWQ](#)), also known as the Construction General Permit (CGP).

Add section 13-1.01E**13-1.01E Enforcement for Non-Compliance**

Section 13-1.01E provides for the Agency to enforce this section and take corrective action for your non-compliance with the requirements of section 13, including all laws, regulations, rules, policies, plans and the WPCP or SWPPP that are incorporated by reference. The Agency’s exercise of these enforcement provisions in no way limits your contractual obligations, potential liability or obligation to defend and indemnify the County/District from enforcement or penalties imposed by local, State or Federal Government agencies, including the County/District, acting in their capacities as regulatory agencies.

In addition to other remedies otherwise available to the Agency, and depending on the severity and timing of the violation, and your responsiveness, the Agency may elect to do one or more of the following at any time:

1. Issue a Stop Notice for the Project. The Stop Notice will be enforced until you bring the site to compliance with WPCP or SWPPP requirements. Each working day within the Stop Notice period will count as a construction work day towards the construction contract duration. All construction delay resulting from a Stop Notice issued under this provision will be delay from which liquidated damages may be assessed.
2. Abate the portion of the construction site or Project that is in violation. The Agency may at any time following non-compliance, with a notice of first-time non-compliance, use Agency forces and/or a hired contractor to implement the abatement. The intent of the abatement is to mitigate the violation expeditiously before the Agency is fined and/or penalized by local, State and/or Federal regulatory agencies for your non-compliance. The extent of abatement will be the minimum treatment measures necessary to bring the site into compliance. The actual costs of abatement, including but not limited to administrative and incidental costs and expenses, will be documented and deducted from the monthly progress payment due, withheld from retention or otherwise back charged to you. The treatment measures implemented will then become your property and responsibility. You will be responsible for adjusting the treatment as necessary in accordance with your operation. You cannot lay claim for time, money, or otherwise against the Agency for inconvenience, obstruction to your operation, or delay as a result of the treatment installation.

Furthermore, you must defend and indemnify the County/District for any and all fines, claims, actions, assessments, penalties or administrative actions imposed by local, State and /or Federal agencies, including the Agency/County/District acting in its capacity as a regulatory body, as a result of your inability or failure to comply with the minimum storm water pollution prevention requirements of these Specifications, including, but not limited to the WPCP or SWPPP and any instruction from the Engineer or any regulatory entity.

Replace section 13-3.01D(2), “Regulatory Requirements,” with:**13-3.01D(2) Regulatory Requirements**

Discharges of stormwater from the project must comply with NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities ([Order No. 2022-0057-DWQ](#)), also known as the Construction General Permit (CGP).

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.

Replace the 1st paragraph of section 13-4.03F, “Sweeping,” with:

Sweep by hand or a mechanical wet sweeper with vacuum. Do not use mechanical kick brooms.

Replace the 3rd paragraph of section 13-4.03G, “Dewatering,” with:

If dewatering and discharging activities are not specified for a work item and you perform dewatering activities:

1. Conduct dewatering activities under Caltrans’ *Field Guide for Construction Site Dewatering*.
2. Ensure any dewatering discharge does not cause erosion, scour, or sedimentary deposits that could impact natural bedding materials or otherwise violate Basin Plan water quality objectives or effluent limitations.
3. Discharge the water within the project limits avoiding the creation of runoff. Dispose of the water offsite with the Agency’s approval if it cannot be discharged within project limits due to site constraints or contamination.
4. Do not discharge stormwater or nonstormwater that has an odor, discoloration other than sediment, an oily sheen, or foam on the surface. Immediately notify the Engineer upon discovering any such condition.

Delete the 2nd paragraph of section 13-5.04, “Payment”

Delete the 7th paragraph of section 13-6.03, “Temporary Drainage Inlet Protection”

Delete the 4th paragraph of section 13-6.04, “Payment”

Replace the 1st paragraph of section 13-7.02C, “Construction,” with:

Use a mechanical wet street sweeper with vacuum.

Delete the 1st paragraph of section 13-7.03D, “Payment”

Replace the 1st paragraph of section 13-8.01D(2), “Regulatory Requirements,” with:

The design, installation, operation, and monitoring of the temporary ATS and monitoring of the treated effluent must comply with Attachment F of NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities ([Order No. 2022-0057-DWQ](#)), also known as the Construction General Permit (CGP).

14-1.04C Recycled Content Standards

It is the policy of Alameda County to purchase products containing the highest practicable amount of recycled content, preferably postconsumer material, as long as product performance is not jeopardized and products are available within a reasonable period of time.

14-1.04D Certification Form Requirement

Submit Agency recycled content certification form when the a contract submittal contains products with recycled content. The certification form must state the minimum percentage of postconsumer material and secondary (recovered) material by total product weight, or fiber weight for paper.

Metal products are excluded from recycled content certification.

14-1.04E Recycled Paper Policy

You are encouraged, whenever practicable, to use recycled paper for the production of all printed and photocopied documents related to the fulfillment of the Contract and to identify the use of such on document cover pages.

Add after the 1st paragraph of 14-2.03A, “[Archaeological Resources] General,”:

With regard to the discovery of any bones which are or may be human remains, if for any reason the Engineer cannot be notified within four hours, notify the Alameda County Coroner of the discovery.

Add after the 1st paragraph of 14-6.01, “[Biological Resources] General,”:

Comply with all rules and regulations of the Department of Food and Agriculture, the Department of Health, the Department of Industrial Relations and all other agencies that govern the use of pesticides.

Add to list of 14-6.02, “[Biological Resources] Definitions,”:

pesticide: Any substance or mixture of substances intended for preventing, repelling, mitigating, or destroying weeds, insects, diseases, rodents, or nematodes and any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant. This includes but is not limited to herbicides, insecticides, fungicides, rodenticides, germicides, nematocides, bactericides, inhibitors, fumigants, defoliants, desiccants, soil sterilants, and repellents.

Add after the 1st paragraph of 14-9.02, “Air Pollution Control,”:

All containers of paint, thinner or solvent must be labeled to indicate that the contents are in compliance.

Add after the 6th paragraph of 14-10.01, “[Solid Waste Disposal and Recycling] General,”:

Information regarding recyclable materials and available facilities can be obtained by calling the Alameda County recycling hotline at (877) 786-7927 or from the Alameda County Waste Management Authority website: www.stopwaste.org.

The following construction debris may be generated on the Project:

1. Asphalt: Asphalt concrete may include pavement reinforcing fabric
2. Concrete: Portland cement concrete
3. Earth Debris: dirt or clean fill defined as natural clean material indigenous to surrounding area
4. Tile/Masonry: bricks, cinder blocks, tiles, etc.
5. Plant and Tree Trimmings: plants, shrubs, bushes, tree trimmings, such as branches, twigs, etc.
6. Plastic: Poly-Vinyl Chloride (PVC) pipes, plastic fences, etc.

7. Plate Glass: non-container glass such as windows or scraps of glass
8. Rock/Gravel: clean rock/gravel
9. Scrap Metal: metal posts, corrugated metal pipes, inlet grates, chain link fences, etc.
10. Tire and Rubber Scrap: tires, rubber moldings, etc.
11. Trees: large de-limbed trees, whole logs only
12. Wood: includes both treated and untreated wood

Add section 14-10.01A, “Construction and Demolition Debris Ordinance,”:

14-10.01A CONSTRUCTION AND DEMOLITION DEBRIS ORDINANCE

Comply with the diversion requirements of the Alameda County Construction and Demolition Debris Management Ordinance. See Information Handouts for forms and additional information.

The Notice to Proceed will not be issued unless the Management Plan (CND Form 1A and 1B) is submitted and approved.

Submit all weight tickets documenting materials recycled or landfilled.

Add section 14-10.01B, “Liquidated Damages for Non-Compliance with C&D Debris Ordinance,”:

14-10.01B LIQUIDATED DAMAGES FOR NON-COMPLIANCE WITH C&D DEBRIS ORDINANCE

Non-compliance will result in the following liquidated damages:

1. If you have not met the ordinance requirements, damages will be assessed as 1 percent of the contract amount. This amount will be subtracted from the contract retention at final payment.
2. If, within a 5-year period following a determination by the Agency that you have not met the ordinance requirements, the Agency determines that there has been another violation of ordinance requirements by you or a successor, in a separate contract, that you or a successor must forfeit 1 percent of the contract amount from the contract retention. In addition, you or a successor will be declared by the Board of Supervisors to be a non-responsible bidder and will be ineligible to bid on future County/District contracts for a period of 2 years following the Board’s determination.

Replace section 14-10.02, “Solid Waste Disposal and Recycling Report” with:

14-10.02 SOLID WASTE DISPOSAL AND RECYCLING REPORT

Submit a Recycling Summary Report (Information Handout CND Form 1A and 1B). The Project will not be accepted until it is submitted and approved.

Add after the 1st paragraph of 14-11.02, “Discovery of Unanticipated Asbestos and Hazardous Substances,”:

In accordance with Section 25914.2 of the Health and Safety Code, all such removal of asbestos or Class I hazardous substances including any exploratory work to identify and determine the extent of such asbestos or Class I hazardous substance will be performed under separate contract or force account.

Replace section 14-11.07C,

“Transport and Disposal of Department-Generated Hazardous Waste,” with:

14-11.07C Transport and Disposal of Agency Generated Hazardous Waste

Dispose of hazardous waste at a California disposal site operating under a DTSC permit.

The Engineer provides the Department's EPA Identification Number for hazardous waste disposal.

The Engineer signs the hazardous waste manifests. Notify the Engineer 5 business days before the manifests are to be signed.

Unless there is a spill, the Agency does not consider you the generator of hazardous waste and you are not obligated for further cleanup, removal, or remedial action for Agency-generated hazardous waste handled and disposed of under:

1. Section 14-11
2. State and federal laws and regulations governing hazardous waste
3. County and municipal ordinances and regulations governing hazardous waste

Within 5 business days of transporting Department-generated hazardous waste, submit documentation of proper disposal from the receiving landfill.

Replace section 14-11.08, "Regulated Material Containing Aerially Deposited Lead," with:
14-11.08 REGULATED MATERIAL CONTAINING AERIALLY DEPOSITED LEAD

14-11.08A General

Section 14-11.08 applies if the Bid Item List includes an item identifying the need to manage hazardous waste concentrations of ADL. Section 14-11.08 includes specifications for hazardous waste management while excavating, stockpiling, transporting, placing, and disposing of material containing hazardous waste concentrations of ADL.

If the Bid Item List includes "Roadway Excavation Material Disposal (ADL Hazardous Waste)," the material identified as California Hazardous Waste must be disposed of at a California Class I disposal facility.

Excavate, reuse, and dispose of material containing ADL under the rules and regulations of the following agencies:

1. US Department of Transportation
2. US EPA
3. California Environmental Protection Agency
4. CDPH
5. DTSC
6. Cal/OSHA
7. California Department of Resources Recycling and Recovery
8. California Air Resources Board

14-11.08B Definitions

Type Y-1 material: California hazardous waste that may be reused under a variance from the DTSC if the contaminated soil is placed at least 5 feet above the maximum historic elevation of the water table and covered with at least 1 foot of nonhazardous soil. This material contains ADL in average concentrations of 1.5 mg/L or less extractable lead and 1,411 mg/kg or less total lead. The average concentrations are calculated using the 90 percent upper confidence limit. The extractable lead concentrations are determined by a modified waste extraction test using deionized water as the extractant.

Type Y-2 material: California hazardous waste that may be reused under a variance from the DTSC if the contaminated soil is placed at least 5 feet above the maximum historic elevation of the water table and protected from infiltration by pavement that will be maintained by the Agency. This material contains ADL in average concentrations between 1.5 and 150 mg/L extractable lead and between 1,411 mg/kg and 3,397 mg/kg total lead. The average concentrations are calculated using the 90 percent upper confidence limit. The extractable lead concentrations are determined by a modified waste extraction test using deionized water as the extractant.

Type Z-2 material: Agency-generated California hazardous waste that must be disposed of at a California Class I disposal facility. Type Z-2 material is either:

1. Surplus material that contains ADL in average concentrations greater than or equal to 1,000 mg/kg total lead or 5.0 mg/L soluble lead. The average concentrations are calculated using the 95 percent upper confidence limit. The soluble lead is tested using the California Waste Extraction Test.
2. Material that contains ADL in average concentrations greater than 3,397 mg/kg total lead or 150 mg/L extractable lead. The average concentrations are calculated using the 90 percent upper confidence limit. The extractable lead concentrations are determined by a modified waste extraction test using deionized water as the extractant.

Type Z-3 material: Agency-generated federal hazardous waste that must be disposed of at a California Class I disposal site. This material contains ADL in average concentrations greater than 5.0 mg/L soluble lead using a 95 percent upper confidence limit as tested under the toxicity characteristic leaching procedure.

14-11.08C Site Conditions

Concentration data and sample location maps for ADL are included in the *Information Handout*.

14-11.08D Submittals

14-11.08D(1) General

Reserved

14-11.08D(2) Excavation and Transportation Plan

Within 15 days of Contract approval, submit 3 copies of an excavation and transportation plan for material containing hazardous waste concentrations of ADL.

If the plan requires revisions, the Agency provides comments. Submit a revised plan within 7 days of receiving comments. The Engineer may allow construction to proceed while minor revisions or amendments are being completed.

The excavation and transportation plan must comply with:

1. DTSC regulations
2. Variance regarding the use of material containing ADL
3. Cal/OSHA regulations
4. Requirements for the design and development of a sampling plan, statistical analysis, and reporting of test results under US EPA, SW 846, "Test Methods for Evaluating Solid Waste," Volume II: Field Manual Physical/Chemical, Chapter 9, section 9.1

14-11.08D(3) Burial Location Report

Reserved

14-11.08D(4) Bill of Lading

Submit copies of the bills of lading as an informational submittal upon placement of Type Y-1 or Y-2 material in its final location.

14-11.08E Dust Control

Prevent visible dust migration during excavation, transportation, placement, and handling of material containing hazardous waste concentrations of ADL under section 14-11.04.

14-11.08F Air Monitoring

Reserved

14-11.08G Material Management

Reserved

14-11.08H Surveying Type Y-1 or Y-2 Material Burial Locations

Survey the bottom and top perimeters of each location where you bury Type Y-1 or Type Y-2 material.

The survey must be performed by or under the direction of one of the following:

1. Land surveyor licensed under the Bus & Prof Code Ch 15, starting with § 8700
2. Civil engineer licensed before January 1, 1982 under the Bus & Prof Code Ch 7, starting with § 6700

Survey 10 points to identify each burial location horizontally and vertically within the specified accuracies and to create closed polygons of the bottom and top perimeters of the burial location. If needed to adequately define the polygon, survey additional points. Establish the position of the bottom and top perimeters before placing subsequent layers of material that obstruct the location.

Report each burial location in California state plane coordinates in US survey feet within the appropriate zone of the California Coordinate System of 1983 (CCS83) and in latitude and longitude. Reference horizontal positions to CCS83 (epoch 2007.00 or later National Geodetic Survey [NGS] or California Spatial Reference Center [CSRC] published epoch) to an accuracy of 3 feet horizontally. Identify the survey points to an accuracy of 1 foot vertically. Reference the top and bottom elevations of the burial locations to North American Vertical Datum of 1988 (NAVD88). Report the accuracy of spatial data in US survey feet under Federal Geographic Data Committee (FGDC)-STD-007.1-1998.

The Agency does not pay for:

1. Stockpiling of material containing ADL unless the stockpiling is ordered
2. Sampling and analysis unless it is ordered

14-11.08I Material Transportation

Before traveling on public roads, remove loose and extraneous material from surfaces outside the cargo areas of the transport vehicles. Place tarpaulins or other cover over the cargo as described in the authorized excavation and transportation plan. You are responsible for costs due to spillage of material containing ADL during transport. Transportation routes for Type Y-1 or Type Y-2 material must only include the highway.

14-11.08J Disposal

Transport and dispose of material containing hazardous waste levels of lead under federal and state laws and regulations and County and municipal ordinances and regulations. Laws and regulations that govern this work include:

1. Health & Safety Code § 25100 et seq
2. 22 CA Code of Regs § 66250 et seq
3. 8 CA Code of Regs

The Agency does not pay for additional sampling and analysis required by the receiving landfill.

Replace 14-11.09,

“Minimal Disturbance of Regulated Material Containing Aerially Deposited Lead,” with:

14-11.09 MINIMAL DISTURBANCE OF REGULATED MATERIAL CONTAINING AERIALLY DEPOSITED LEAD**14-11.09A General**

Section 14-11.09 applies if minimal disturbance of material containing hazardous waste concentrations of ADL is specified in the special provisions under “Special Notices”. Section 14-11.09 includes specifications for handling and managing material containing hazardous waste concentrations of ADL when there is a minimal disturbance.

Compliance with 22 CA Code of Regs is not required where there is minimal disturbance of hazardous waste concentrations of ADL.

Hazardous waste concentrations of ADL are typically found within the top 2 feet of material in unpaved areas of the right-of-way. Management of this material exposes workers to health hazards that must be addressed in your lead compliance plan.

14-11.09B Material Management

Handling of material containing ADL must result in no visible dust migration. Use dust control measures. A means of controlling dust must be available at all times when handling material in work areas containing ADL at hazardous waste concentrations.

Separate material from vegetation. The resulting soil must remain on the job site.

Surplus material from the areas containing hazardous waste concentrations of ADL must remain in the area of disturbance. Do not dispose of surplus material outside the right-of-way.

Replace 14-11.13G(1), “[Debris Transport and Disposal] General,” with:

14-11.13G(1) General

For bidding purposes, assume the debris is nonhazardous waste, unless otherwise described. Assume the debris is not regulated under the Federal Resource Conservation and Recovery Act, 42 USC § 6901 et seq. Disposal of hazardous waste debris identified by test results to be regulated under the Resource Conservation and Recovery Act is change order work.

Be aware that existing asphalt pavement may contain pavement reinforcing fabric.

Replace 14-14, “Treated Wood Waste,” with:

14-11.14 TREATED WOOD WASTE

14-11.14A General

Section 14-11.14 applies if treated wood waste is shown on the Bid Item List.

Section 14-11.14 includes specifications for handling, storing, transporting, and disposing of treated wood waste. Manage treated wood waste under 22 CA Code of Regs Div 4.5 Ch 34.

14-11.14B Submittals

Within 5 business days of disposing of treated wood waste, submit as an informational submittal a copy of each completed shipping record and weight receipt.

14-11.14C Training

Provide training to personnel who handle or may come in contact with treated wood waste. Training must include:

1. Requirements of 8 CA Code of Regs
2. Procedures for identifying and segregating treated wood waste
3. Safe handling practices
4. Requirements of 22 CA Code of Regs Div 4.5 Ch 34
5. Proper disposal methods

Maintain training records for 3 years.

14-11.14D Storage of Treated Wood Waste

Store treated wood waste at the jobsite until transport to the CA permitted disposal site.

Until disposal, store treated wood waste using the following methods:

1. Raise the waste on blocks above a foreseeable run-on elevation and protect it from precipitation for no more than 90 days.
2. Place the waste on a containment surface or pad protected from run-on and precipitation for no more than 180 days.
3. Place the waste in water-resistant containers designed for shipping or solid waste collection for no more than 1 year.
4. Place the waste in a storage building as defined in 22 CA Code of Regs Div 4.5 Ch 34 § 67386.6(a)(2)(C).

Prevent unauthorized access to treated wood waste using a secure enclosure such as a locked chain-link-fenced area or a lockable shipping container located within the job site.

Resize and segregate treated wood waste at a location where debris including sawdust and chips can be contained. Collect and manage the debris as treated wood waste.

Identify treated wood waste and accumulation areas using water-resistant labels that comply with 22 CA Code of Regs, Div 4.5 Ch 34 § 67386.5. Labels must include:

1. The words Alameda County Public Works Agency
2. The words Specification No. and the specification number
3. Agency office address
4. Engineer's name, address, and telephone number
5. Contractor's contact name, address, and telephone number
6. Date placed in storage

14-11.14E Transport and Disposal of Treated Wood Waste

Transport treated wood waste directly to the CA permitted disposal site after leaving the jobsite. Do not mix treated wood waste from the job site with waste from any other generator.

Dispose of treated wood waste within:

1. 90 days of generation if stored on blocks
2. 180 days of generation if stored on a containment surface or pad
3. 1 year of generation if stored in a water-resistant container or within 90 days after the container is full, whichever is shorter
4. 1 year of generation if stored in a storage building as defined in 22 CA Code of Regs, Div 4.5, Ch 34, § 67386.6(a)(2)(C)

Before transporting treated wood waste, obtain agreement from the receiving facility that it will accept the waste. Protect shipments of the waste from loss and exposure to precipitation. For projects generating 10,000 lb or more of treated wood waste, request a generator's EPA Identification Number from the Engineer at least 5 business days before the 1st shipment. Each shipment must be accompanied by a shipping record such as a bill of lading or invoice that includes:

1. The words Alameda County Public Works Agency
2. The words Specification No. and the specification number
3. Agency office address
4. Engineer's name, address, and telephone number
5. Contractor's name, contact person, and telephone number
6. Receiving facility's name and address
7. Description of the waste (e.g., treated wood waste with preservative type if known or unknown/mixture)
8. Project location
9. Estimated weight or volume of the shipment
10. Date of transport
11. Date of receipt by the treated wood waste facility
12. Weight of shipment measured by the receiving facility

13. Generator's US EPA Identification Number for projects generating 10,000 lb or more of treated wood waste

The shipping record must be 8-1/2 by 11 inches and a 4-part carbon or carbonless form to provide copies for the Engineer, transporter, and treated wood waste facility.

Dispose of treated wood waste at an approved California disposal site operating under a RWQCB permit that includes acceptance of treated wood waste.

17-2.03B(2)(d) Nesting Bird Survey

When tree trimming work is scheduled between February 15 and September 1, the Agency will first conduct a nesting bird survey. Notify the Engineer at least 7 days before planned tree trimming work so that the survey can be conducted. Do not begin tree trimming work until receiving written approval.

17-2.03B(2)(e) Notification

Provide written notification, approved by the Engineer, a minimum of 72 hours in advance of any cutting operations to property owners, residents, businesses, and public entities potentially affected. Include planned parking restrictions as part of the notification.

17-2.03B(2)(f) Submittals

Submit a copy of the supervising arborist's ISA certification prior to performing trimming work.

Submit a pruning plan at least 14 days before performing work. The plan must include the contact information of the person who will supervise the work and a list of all trees or vegetation to be trimmed with corresponding addresses or locations.

Submit a copy of required resident notifications for approval at least 2 days prior to the scheduled distribution.

Submit an affidavit documenting the time and date that required resident notifications were distributed.

Submit an affidavit documenting the time and date of any parking restriction postings.

17-2.03B(2)(g) Execution

Cut tree branches that extend over the roadway and hang within 14.5 feet of finished grade. Cut other branches to give each tree a balanced appearance. Balance the crown by thinning, reducing end weights, shortening long heavy limbs, removing deadwood, weak limbs, and sucker growth. Cut off branches close to the trunk under section 20-3.01C(2).

6. Receipts from the soil supplier for all specified soil mixes.
7. Soil analyses and testing by an independent laboratory for soil fertility and an evaluation of percolation. Analyses must include an evaluation of soluble salts, pH, texture, and organic matter content. Analysis must state recommended amendments and procedures required to create planting soil. Analysis must describe any other top soil qualities which may be detrimental to plant growth and health. Test:
 - a. Existing soil, prior to application of amendment, if proposed to be used as planting soil. Two samples may be taken at the location directed by the Engineer.
 - b. Imported soil if used as planting soil or compost amendment.
8. List of all proposed landscape materials indicated by description, manufacturer, and model number. Include catalog cuts and manufacturer's current printed instructions of all material items.
9. List of all trees, indicated by botanical name, common name, height, spread, caliper, container size, nursery, and location, contact person at nursery, and any specific remarks (ie. unable to locate, photo submitted, etc.).
10. Color photographs of each tree type. Include a person or ruler in each photograph for scale purposes. Digital photographs are acceptable. Approval of photographs does not indicate acceptance of plant material on site.
11. Planting schedule, indicating anticipated dates and locations for each type of planting.

No later than 30 days after Contract award, submit two sets of the following physical samples in resealable, labeled plastic bags (as applicable):

1. One tree tie and/or tree guy of each type to be used.
2. One pound bag of decomposed granite of the color specified
3. One copy of manufacturer's descriptive literature for stabilizer.
4. One half cubic foot of imported planting soil.

At least 15 days before applying any pesticide, submit a copy of the pest control adviser's recommendation.

At the end of each week, submit a Report of Chemical Spray Operations form as an informational submittal documenting the application of all pesticides.

Before mixing a pesticide, submit a copy of the registered label for the pesticide as an informational submittal. If you are unable to copy the label, allow the Engineer to read the label on the container.

Replace section 20-1.01D(1), "[Quality Assurance] General," with:

20-1.01D(1) General

Landscape related work must be performed under the supervision of a licensed landscape contractor with a valid C-27 license.

Maintain an experienced, full time landscape superintendent on site during the time that landscaping operations are in progress. The superintendent must be authorized to represent you. The superintendent must not be changed except as authorized by the Engineer.

Obtain a recommendation for the use of all pesticides under the Food & Agri Code from a pest control adviser who is licensed as an agricultural pest control adviser in the State. The recommendation must include the pesticides to be used, rates of application, methods of application, and application areas.

The pesticide applicator must have an active and valid qualified applicator license or certificate from the Department of Pesticide Regulation.

Only an independent test agency that conforms to ASTM E699 and has the experience and capability to satisfactorily conduct the required testing may be authorized to do so.

Replace section 20-1.03A, “General,” with:

20-1.03A General

Coordinate all drainage work with other trades. Maintain established site drainage during all phases of landscape construction.

Grading and soil preparation work must only be performed during the period when beneficial and optimum results may be obtained. If the moisture content of the soil should reach such a level that working it would destroy soil structure or cause compaction, spreading and grading operations must be suspended, until in the opinion of the Engineer, the moisture content is at acceptable levels and the desired results are likely to be obtained.

Take precautions to prevent irrigation water from:

1. Wetting vehicles, pedestrians, and pavement
2. Eroding soil
3. Causing excess runoff

If water use calculations are provided as supplemental project information, water plants under the Model Water Efficient Landscape Ordinance, 23 CA Code of Regs § 490 et seq., and local water agency provisions.

Water plants at night unless otherwise authorized.

Dispose of removed, pruned, and damaged vegetative material.

You may reduce removed vegetative material to chips with a maximum thickness of 1/2 inch and spread it within the job site at locations determined by the Engineer. Do not substitute chipped material for wood mulch or place it in areas to receive wood mulch.

Replace section 20-1.03C, “Roadside Clearing,” with:

20-1.03C Roadside Clearing

20-1.03C(1) General

Roadside clearing includes:

1. Removing existing plants described to be removed
2. Controlling weeds and pests

Control rodents by using rodenticides or traps.

20-1.03C(2) Remove Existing Plants

Removal of existing plants includes removing their stumps and roots 2 inches or larger in diameter to a minimum depth of 12 inches below finished grade. Backfill holes resulting from stump removal to the finished grade with material obtained from adjacent areas.

If a plant is to be planted within an existing groundcover area, remove the existing groundcover from within an area 6 feet in diameter centered at each plant location.

The site to be landscaped must be free of weeds, native grasses, Bermuda grass, and Kikuyu grass prior to any planting or soil amendment placement.

20-1.03C(3) Weed Control

Control weeds by the use of pesticides, hand-pulling, or mowing. Use pesticides only when authorized.

If pesticides are used to control weeds, apply pesticides before the weeds reach the seed stage of growth or exceed 4 inches in length, whichever occurs first. Do not use pesticides at cutting plant locations.

Where cuttings are to be planted, control weeds by hand-pulling within an area 2 feet in diameter centered at each plant location.

If weeds are to be controlled by hand-pulling, hand-pull weeds before they reach the seed stage of growth or exceed 4 inches in length, whichever occurs first.

Where liner, plug, or seedling plants are to be planted 10 feet or more apart, control weeds by the use of pesticides or hand-pulling within an area 2 feet in diameter centered at each plant location. Where liner, plug, or seedling plants are to be planted less than 10 feet apart, control weeds by the use of pesticides within the entire area.

Control weeds by mowing outside of mulched areas, plant basins, groundcover areas, and within areas to be seeded. Mowing must extend to the edges of pavement, dikes, curbs, sidewalks, walls, and fences.

If mowing is to be performed within areas to be seeded, perform mowing as needed until the start of the seeding activity.

Perform mowing before the weeds reach the seed stage of growth or exceed 6 inches in length, whichever occurs first. Mow weeds to a height of 3 inches.

20-1.03C(4) Disposal of Removed Groundcover, Weeds, and Mowed Material

Dispose of hand-pulled weeds the same day they are pulled. Dispose of removed groundcover within 3 days.

Dispose of mowed material from the initial mowing. Disposal of material from subsequent mowing is not required.

Replace section 20-1.03D, "Cultivation," with:

20-1.03D Cultivation

Cultivation must be by mechanical methods and performed until the soil is in a loose condition to a minimum depth of 6 inches. Soil clods must not be larger than 2 inches in maximum dimension after cultivation.

The areas to be cultivated must extend 12 inches beyond the outer limit of each planting area requiring cultivation.

After initial cultivation, place soil amendment and fertilizer at specified rates.

Recultivate to thoroughly mix native soil and amendments.

Do not drive on cultivated areas after cultivation.

Planting areas that have been cultivated and become compacted must be recultivated.

Rocks and debris encountered during soil preparation in planting areas must be brought to the ground surface.

Remove rocks and debris as ordered. This work is change order work when it is agreed that removal requires special effort and extra expense.

Replace section 20-2.01A(1), “[Irrigation, General] Summary,” with:

20-2.01A(1) Summary

Section 20-2.01 includes general specifications for installing irrigation systems.

The irrigation systems shown are diagrammatic.

Where an irrigation system is not shown, provide for regular watering of all new plants under 20-2.14, Temporary Irrigation Systems.

Irrigate new plants to provide adequate water to maintain an attractive, green, healthy and moderate growth rate during the growing season. Provide sufficient water to match plant need and avoid over irrigation.

Replace section 20-2.01A(3), “[Irrigation, General] Submittals,” with:

20-2.01A(3)(a) General

Submit shop drawings for the electrical components of the irrigation system except electric service (irrigation) 30 days before installation. The drawings must:

1. Include schematic wiring diagrams showing wire sizes and routes between electrical components
2. Show conduit sizes
3. Bear the written approval of the controller manufacturer or the manufacturer's authorized agent
4. Be accompanied by:
 - 4.1. Colored wire and splice samples
 - 4.2. Manufacturer's descriptive and technical literature

Where new plants are shown, but irrigations systems are not, submit a plan and schedule for a temporary irrigation system, under section 20-2.14, at least one month prior to plant installation. Include:

1. Planned method of irrigation application
2. Materials and installation techniques to be used for irrigation application
3. Product samples of any items to be permanently located within the site
4. Proposed schedule of irrigation application for plant establishment period

Do not start work until Engineer has reviewed and authorized the submittals.

Replace section 20-2.01A(4)(c), “Sprinkler Coverage Check,” with:

20-2.01A(4)(c) Irrigation Coverage Check

After installation of bubblers and driplines, check and adjust the entire irrigation system for proper orientation and uniform coverage.

Replace section 20-2.01B(6), “Unions,” with:

20-2.01B(6) Unions

Unions must be SCH 80 PVC capable of withstanding the maximum required working pressure.

Replace section 20-2.01B(7), “Valve Boxes and Covers,” with:

20-2.01B(7) Valve Boxes and Covers

Valve boxes must be precast concrete.

Covers must be:

1. Concrete, steel, or cast iron in paver or hardscape areas and HDPE in planting areas.
2. Marked *WATER* in cast-in letters not less than 1 inch high unless shown
3. 1 piece, except 2 pieces are required if the weight of the valve box cover exceeds 35 lb

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 20-2.09, “Sprinkler Assemblies,” with:

20-2.09 SPRINKLER ASSEMBLIES

20-2.09A General

Section 20-2.09 includes specifications for installing sprinkler assemblies.

20-2.09B Materials

20-2.09B(1) General

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

Not Used

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

Not Used

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.

20-2.09D Payment

Not Used

Replace section 20-2.10, “Valves,” with:

20-2.10 VALVES

20-2.10A General

Section 20-2.10 includes specifications for installing valves.

20-2.10B Materials

20-2.10B(1) General

Reserved

20-2.10B(2) Ball Valves

Each ball valve must be a 2-piece brass or bronze body with a minimum nonshock working pressure of 400 psi. The seats and O-ring seals must be PTFE.

20-2.10B(3) Check Valves

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

20-2.10B(4) Drip Valve Assemblies

Each drip valve assembly must include:

1. Remote control valve
2. Wye filter with:
 - 2.1. Filter housing that:
 - 2.1.1. Can withstand a working pressure of 150 psi
 - 2.1.2. Is manufactured of reinforced polypropylene plastic
 - 2.2. Reusable stainless steel filter cartridge with a 200 mesh size filtration
3. Schedule 80 PVC pipes and fittings
4. Pressure regulator

20-2.10B(5) Garden Valve Assemblies

Reserved

20-2.10B(6) Gate Valves

Each gate valve must be:

1. Flanged or threaded type
2. Iron or bronze body
3. Bronze trimmed with one of the following:
 - 3.1. Female thread rising stem
 - 3.2. Non-rising stem
4. Able to withstand a working pressure of 150 psi

Gate valves smaller than 3 inches must have a cross handle.

20-2.10B(7) Pressure Regulating Valves

Each pressure regulating valve must be:

1. Flanged or threaded type
2. Brass, bronze, cast iron, or plastic body
3. Spring diaphragm type
4. Pilot controlled

Pressure regulating valve must have no internal filter screens.

20-2.10B(8) Pressure Relief Valves

Reserved

20-2.10B(9) Quick Coupling Valves

Each quick coupling valve must be 3/4-inch double slotted with a self-closing cap, 3/4-inch brass key and 3/4-inch brass hose swivel. Except for the cap, quick coupling valve must be brass or bronze construction.

20-2.10B(10) Remote Control Valves**20-2.10B(10)(a) General**

Each remote control valve must:

1. Be normally closed type.
2. Be glass-filled nylon, brass, or bronze.
3. Be completely serviceable from the top without removing the valve body from the system.
4. Be equipped with a device that regulates and adjusts the flow of water and be provided with a manual shut-off. The manual shut-off for valves larger than 3/4 inch must be operated by a cross handle.
5. Have solenoids compatible with the irrigation controller.
6. Have a manual bleed device.
7. Be capable of withstanding a pressure of 200 psi.
8. Have replaceable compression discs or diaphragms.
9. Have threaded fittings for inlets and outlets.
10. Have DC latching solenoids if used with solar or battery controllers. Solenoids must operate on 3.5 V.
11. Be bottom, angled, or straight inlet configuration.

20-2.10B(10)(b) Remote Control Valves with Flow Sensor

Reserved

20-2.10B(10)(c) Remote Control Valves with Pressure Regulator

Reserved

20-2.10B(11) Automatic Flush Valve

Reserved

20-2.10B(12) Air of Vacuum Relief Valve

Reserved

20-2.10C Construction**20-2.10C(1) General**

All valves must be installed in a valve box with a cover except pressure regulating valves installed on backflow preventers

20-2.10C(2) Control Valves

Install control valves:

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, walls, or both

If a control valve cannot be installed within these limits, the location will be determined by the Engineer.

20-2.10C(3) Check Valves

Install check valves as necessary to prevent low-head drainage.

20-2.10C(5) Gate Valves

Furnish 3 long shank keys before Contract acceptance.

20-2.10C(6) Pressure Regulating Valves

Install pressure regulating valves with threaded connections and a union on the inlet side of the valves.

20-2.10C(7) Quick Coupling Valves

Furnish 3 loose quick coupling brass keys and brass hose swivels before Contract acceptance.

20-2.10D Payment

Not Used

Replace section 20-2.14, "Temporary Irrigation Systems," with:

20-2.14 TEMPORARY IRRIGATION SYSTEMS

Acceptable methods of temporary irrigation includes water truck and hose, individual plant gel packs, and other authorized systems and methods.

Replace section 20-3.01A(1), "[Planting, General] Summary," with:

20-3.01A(1) Summary

Section 20-3.01 includes general specifications for performing planting work.

Immediately upon award of Contract, locate and purchase or hold for purchase all plant material as required. Trees may be purchased and contract grown to ensure pruning practices are met.

Quantities of plant materials listed are for your convenience only and are not guaranteed. Verify count and furnish a sufficient number of plant material as needed to fulfill the intent and to complete the Work as shown. Plan plant symbol quantities take precedence over quantities indicated in the Plant List and Plan callouts.

Replace section 20-3.01B, "Materials," with:

20-3.01B Materials

20-3.01B(1) General

Verify with the Engineer as to whether any plant material stock has been nursery contract grown for use within Work of this Contract.

Notify the Engineer at least 10 days before the plants are shipped to the job site.

Review the condition of the plant material with the Engineer at the nursery maintaining the plant material, and at the time of delivery to the Project site.

Do not prune trees and shrubs prior to delivery.

At the discretion of the Engineer, trees and other plant material may be reviewed, photographed, and tagged by the Engineer at the nursery or other place of growth prior to delivery to the Project site. Verify with the Engineer if tagging operations are required.

Tagging of plant material at the nursery or place of growth does not cancel the right of the Engineer to reject plant material at the Project site if damaged or other unacceptable conditions are found that were not detected at the nursery, place of growth, or in photographs.

Spray plant materials in full leaf immediately before transporting with anti-desiccant. Adhere to the anti-desiccant manufacturer’s application instructions.

Provide protective covering during delivery. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape.

Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.

20-3.01B(2) Plants

20-3.01B(2)(a) General

Plants must be true to the type or name shown. Plants must be individually tagged or tagged in groups identifying the plants by species or variety. Tagging is not required for cuttings.

Plants must be healthy, well-formed, having normal, well-developed branch systems, and vigorous fibrous root systems, which are neither root- nor pot-bound, and are free of kinked, gnarled, or girdling roots. Container stock must have grown in the containers in which they are delivered for at least six months, but not over two years.

Plants must be free from insect pests, eggs and larvae, and disease, and grown in nurseries inspected by the Department of Food and Agriculture.

Plants must not have fresh bark abrasions, excessive abrasions, windburn, saltburn, or other objectionable disfigurements or conditions ~~be root-bound.~~

The plants must be the size and type shown in the following table:

Plant group designation	Description	Container size (cu in)
A	No. 1 container	152–251
B	No. 5 container	785–1242
C	Balled and burlapped	--
E	Bulb	--
F	In flats	--
H	Cutting	--
I	Pot	--

J	36-inch box	9356-11,434
K	24-inch box	5775-6861
M	Liner ^a	--
Q	Acorn	--
P	Plugs ^{a,b}	--
S	Seedling ^c	--
U	No. 15 container	2768-3696
Z	Palm Tree	--

^aDo not use containers made of biodegradable material.

^bGrown in individual container cells.

^cBare root.

Measure trees according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes.

Take caliper measurements six inches above ground for trees up to four inch diameter size, and twelve inches above ground for larger sizes.

Before installing trees, measure the main body for height and spread; do not measure branches or roots tip-to-tip.

Trucks used for transporting plants must be equipped with covers to protect plants from windburn and sunburn.

Pruning of trees as grown at the nursery must meet the requirements outlined by the International Society of Arboriculture’s “Tree Pruning Standards.”

Handle and pack plants using authorized methods appropriate for the species or variety.

20-3.01B(2)(b) Cuttings

Not Used

20-3.01B(2)(c) Sod

Not Used

20-3.01B(3) Soil Amendments

20-3.01B(3)(a) General

Soil amendment must comply with the provisions in the Food & Agri Code and as specified in the special provisions.

Planting soil must consist of a mixture of sand and aged compost material, proportioned as follows:

1. 50-60% sand
2. 30-40% organic compost material
3. 10% sandy loam

Planting soil must conform to the following quality requirements:

1. pH in the range of 6.5 to 7.8
2. salinity of less than 6.0 mmhos/cm
3. sustainable infiltration rate of at least 5.0 inches per hour

20-3.01B(3)(b) Submittals

Before delivery of compost/planting soil, the supplier must submit a copy of lab analysis performed by a laboratory that is enrolled in the US Composting Council's Compost Analysis Proficiency (CAP) program and using approved Test Methods for the Evaluation of Composting and Compost (TMECC). The lab report must verify that:

1. compost material includes one or more of: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues
2. nutrient content includes N-P-K, Ca, Na, Mg, S, and B.

Submit results from an independent accredited soil testing laboratory on a representative sample of proposed planting soil for a test conducted no earlier than 6 months prior to the submittal date.

Submit for review and approval, 1/2 cubic foot mixed, representative planting soil sample for independent testing.

20-3.01B(3)(c) Sand

Sand for use in planting soil must comply with section 90-1.02C(3) and the gradation requirements in the following table:

<u>Sieve size</u>	<u>Percent passing</u>
<u>3/8 inch</u>	<u>100</u>
<u>No. 4</u>	<u>90-100</u>
<u>No. 8</u>	<u>70-100</u>
<u>No. 16</u>	<u>40-95</u>
<u>No. 30</u>	<u>15-70</u>
<u>No. 50</u>	<u>5-55</u>
<u>No. 100</u>	<u>5-15</u>
<u>No. 200</u>	<u>2-5</u>

20-3.01B(3)(d) Compost

Compost material for use in planting soil must be a well decomposed, stable, weed free organic matter derived from waste materials including yard debris, wood wastes or other organic materials not including manure or biosolids meeting the standards developed by the US Composting Council (USCC). The product shall be certified through the USCC Seal of Testing Assurance (STA) Program.

Compost material must conform to the following quality requirements:

<u>Parameter</u>	<u>Values</u>
<u>Carbon/Nitrogen Ratio</u>	<u>15:1 min 25:1 max</u>
<u>Stability (one of the following):</u> <u>Oxygen</u> <u>Spec. Oxygen</u> <u>Respiration Test</u> <u>Dewar Test</u> <u>Solvita Maturity Index</u>	<u>20C max</u> <u>5 min</u>
<u>Toxicity (one of the following):</u> <u>NH4</u> <u>Ammonium</u> <u>Seed Gemination</u> <u>Plant Trials</u> <u>Solvita Maturity Index</u>	<u>500 ppm max</u> <u>80% min</u> <u>80% min</u> <u>5 min</u>
<u>Nutrient Content:</u> <u>Total Nitrogen</u> <u>Boron (total)</u> <u>Boron (soluble)</u>	<u>0.9% min</u> <u>80 ppm max</u> <u>2.5 ppm max</u>

Compost material must meet the following gradation requirements:

<u>Sieve size</u>	<u>Percent passing (by weight)</u>
<u>1 inch</u>	<u>99 - 100</u>
<u>½ inch</u>	<u>90 - 100</u>
<u>¼ inch</u>	<u>40 - 90</u>
<u>No. 200</u>	<u>2 - 10</u>

Compost material must meet these additional requirements:

<u>Parameter</u>	<u>Values</u>
<u>Bulk Density (lb/cy), dry</u>	<u>500 min 1100 max</u>
<u>Moisture Content</u>	<u>30% min 55% max</u>
<u>Pathogens:</u> <u>Salmonella</u> <u>Coliform Bacteria</u>	<u>3 MPN / 4 grams TS max</u> <u>10,000 MPN/gram max</u>

Compost must not exhibit a sour or putrid smell, contain recognizable grass or leaves, or be hot (>120 degrees F) upon delivery. Rewetting is prohibited.

20-3.01B(4) Fertilizers

20-3.01B(4)(a) General

Deliver fertilizer in labeled containers showing weight, chemical analysis, and manufacturer's name.

Fertilizer must comply with the provisions of the Food & Agri Code.

20-3.01B(4)(b) Slow-release Fertilizers

Slow-release fertilizer must be a pelleted or granular form with a nutrient release over a 3 to 4 month period and be within the chemical analysis ranges shown in the following table:

Ingredient	Range
Nitrogen (N) (percent)	16–21
Phosphoric acid (P) (percent)	6–8
Water soluble potash (K) (percent)	4–10

20-3.01B(4)(c) Packet Fertilizers

Packet fertilizer must be a biodegradable packet with a nutrient release over a 12-month period. Each packet must have a weight of 10 ± 1 grams and must comply with the chemical analysis requirements shown in the following table:

Ingredient	Requirement
Nitrogen (N) (percent)	20
Phosphoric acid (P) (percent)	10
Water soluble potash (K) (percent)	5

20-3.01B(4)(d) Organic Fertilizers

Organic fertilizer must be pelleted or granular with a cumulative nitrogen release rate at 86 degrees F of no more than 70 percent for the first 70 days and 100 percent at 350 days. Organic fertilizer must be within the chemical analysis ranges shown in the following table:

Ingredient	Range
Nitrogen (N) (percent)	5–7
Phosphoric acid (P) (percent)	1–5
Water soluble potash (K) (percent)	1–10

20-3.01B(5) Root Stimulants

Root stimulant must be in labeled containers showing weight and manufacturer’s name.

20-3.01B(6) Plaster Sand

Backfill material for the palm tree planting holes must be 100 percent commercial-quality washed plaster sand.

20-3.01B(7) Root Barrier

20-3.01B(7)(a) Acceptable manufacturers:

Products specified as standard of quality are manufactured by DeepRoot Green Infrastructure, LLC. (DeepRoot), 530 Washington Street, San Francisco, CA 94111; 800.458.7668; fax 800.277.7668; www.deeproot.com

Products meeting standards listed within this specification may be acceptable for use subject to approval of product list and samples.

20-3.01B(7)(b) Manufactured Units

24” Depth, UB 24-2

Material: black, recyclable, injection molded panel manufactured with 75% reprocessed polypropylene with added ultraviolet inhibitors.

Dimensions: 0.080” (2.03 mm) wall thickness in modules 24” (609 mm) long and 24” (609 mm) deep.

20-3.01B(7)(c) Additional specifications:

3/8" (9.53mm) wide integral molded 0.060" (1.52mm) thickness double top edge with stiffening ribs; bottom edge attached to vertical root deflecting ribs.

Integral molded vertical root directing ribs; 0.060" (1.52mm) thickness by 1/2" (12.7mm) deep spaced at 6" (152mm) O.C.

Integral molded horizontal anti-lift ground lock tabs; 0.075" (1.90mm) thickness by 2" (50.8mm) long by 1/2" (12.7mm) wide; minimum twelve per panel.

Integral zipper joining system for panel connections.

20-3.01B(7)(d) Installation

Verify other work in other sections is complete in order to minimize site impacts by installation of tree root barrier.

Any damage to site work due to installation of tree root barrier shall be repaired at the expense of the Contractor.

For installation along linear applications of hardscapes:

Assemble the appropriate number of root barrier panels using Zipper Joining System.

Trench immediately adjacent to hardscape to the appropriate depth for installation of specified root barrier so that top of barrier is 1/2"-1" (12.7mm to 25.4mm) above finished soil grade.

Place root barrier in trench, vertical ribs facing toward planting area and tree roots.

Where possible, use hardscape as a guide for root barrier alignment.

Backfill adjacent planting soil against the root barrier to promote clean fit to hardscape. Fill to finish grade per project specifications.

20-3.01B(8) Root Protectors

Not Used

20-3.01B(9) Foliage Protectors

Not Used

20-3.01B(10) Wood Plant Stakes

~~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 3/4 inches in diameter and long enough to keep the tree in an upright position.

Plant stakes must have a tapered driving point and chamfered top.

20-3.01B(11) Plant Ties

~~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.

Tree ties must be as shown or spring loaded "Villa Tree Ties" by Villa Root Barrier, recycled bicycle inner tube or authorized equal.

20-3.01B(12) Deep Watering Tubes

Each deep watering tube must be 4 inch diameter by two feet long, schedule 40 perforated PVC pipe (with approximately 1/4-inch holes a maximum of 6 inches on center on four sides) filled with 3/4-inch uniform, round drain rock, capped with a solid plastic cap, color brown and wrapped with filter fabric. Filter fabric must be Mirafi 140N by Mirafi Geotechnical Products, TRS R040 by TNS Advanced Technologies, Typar 330001 by Dupont Geotextiles, or approved equal.

Replace section 20-3.01C, "Construction," with:

20-3.01C Construction**20-3.01C(1) General**

~~Apply a root stimulant under the manufacturer's instructions to the plants shown specified in the special provisions.~~

Apply mycorrhizae inoculant under the manufacturer's instructions within 1.5 years of manufacturing date at the locations, rates, sequence, and number of applications shown.

Before transporting the plants to the planting area, thoroughly wet the root ball.

20-3.01C(2) Pruning

Do not prune, trim, thin, shape, or top plant material prior to delivery. This may only be done at the project site in the presence and under the direction of the Engineer. Any plant material that has been pruned prior to delivery without authorization may be rejected.

Prune plants under ANSI A 300 part 1, *Pruning* published by the Tree Care Industry Association.

Prune trees to retain required height and spread.

Do not cut tree leaders; remove only injured or dead branches from flowering trees unless otherwise authorized.

Do not use tree seal compounds to cover pruning cuts.

20-3.01C(3) Watering

Water plants as needed to keep the plants in a healthy growing condition.

20-3.01C(4) Replacement Plants

Plants that show signs of failure to grow at any time or which are so injured or damaged as to render them unsuitable for the purpose intended, must be removed, replaced, and replanted. Replace unsuitable plants within 2 weeks after the Engineer marks or indicates that the plants must be replaced.

Replacement planting must comply with the original planting specifications, sizes and spacing described for the plants being replaced.

Replacement planting for transplanted trees must comply with the work plan and be planted in the same planting hole.

Replacement ground cover plants must be the same species specified for the ground cover being replaced. Other replacement plants must be the same species as the plants being replaced.

Place orders for replacement plants with the vendor at a time such that the replacement plants are not in a root-bound condition.

The Agency does not pay for replacement plants or the planting of replacement plants.

20-3.01C(5) Maintain Plants

Maintain plants from the time of planting until Contract acceptance or through the plant establishment period if there is a plant establishment period bid item.

Replace section 20-3.02C(3), "Planting Plants," with:

20-3.02C(3) Planting Plants**20-3.02C(3)(a) General**

Deliver trees after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set planting materials in shade, protect from weather and mechanical damage, and keep roots moist. Anchor plants to prevent damage from winds.

Handle plant material grown in containers only by their containers.

Do not:

1. Handle plant materials by their trunks or stems.
2. Drop any plant materials.
3. Bind or handle plants with wire or rope.
4. Do not plant plants in soil that is too wet, too dry, not properly amended as described, or in an unsatisfactory condition for planting.
5. Do not distribute more plants than can be planted and watered on that day.
6. Remove container grown stock from containers before time of planting.

Water plants immediately after planting. Apply water until the backfill soil around and below the roots or ball of earth around the roots of each plant is thoroughly saturated. If watering with a hose, use a nozzle, water disbursement device, or pressure reducing device. Do not allow the full force of the water from the open end of the hose to fall within the basin around any plant. ~~Groundcover plants in areas with an irrigation system must be watered by sprinklers.~~ Several consecutive watering cycles may be necessary to thoroughly saturate the soil.

If deep watering tubes are shown, install them vertically and aligned with the curb and sidewalk.

~~If root barriers are shown, install them between trees and concrete sidewalk or curb. Install panels flush with finished grade and join with locking strips or integral male-female sliding locks. Install barriers with root deflectors facing inward. Do not install by wrapping around tree root ball.~~

~~If a tree grate is shown, install the root barrier panels 0.5 inch above finish grade.~~

~~Adjust planting locations such that each tree or shrub is at least 8 feet away from any sprinkler.~~

~~Where a tree, shrub, or vine is to be planted within a groundcover area or cutting planting area, plant it before planting groundcover or cuttings.~~

Where shrubs and groundcovers are shown to be planted in groups, the outer rows directly adjacent to the nearest roadway or highway fence must be parallel to the nearest roadway or highway fence. Stagger shrubs and groundcovers in adjacent rows. Adjust the alignment of the plants within the outer rows.

The Engineer determines the size and location of sample areas used to calculate average plant density.

~~Core holes in concrete masonry block wall where needed for vine planting.~~

~~Where a vine is to be planted against a wall or fence, plant it as close as possible to the wall or fence. If a vine planted adjacent to a wall is to be staked, stake and tie the vine at the time of planting. A vine planted adjacent to a fence must be tied to the fence immediately after planting.~~

Protect each tree trunk from injury. Do not:

1. Drag a tree
2. Use chains to move a tree
3. Lay tree on the ground

Pad trunk and branches whenever using hoisting cables or straps.

The Engineer can reject any mishandled plant material. You must replace all rejected plant material with approved plant material at no additional cost to the Agency.

20-3.02C(3)(b) Trees, Shrubs, and Vines

After preparing holes, thoroughly mix soil amendment and granular fertilizer at the rate shown with native soil to be used as backfill material. Remove containers from plants in a way that the ball of earth surrounding the roots is not broken. Trim damaged, broken, or encircling roots. Cut root ball vertically in several places to encourage new feeder root development along perimeter of root ball. Do not cut plant containers before delivery of the plants to the planting area. Plant and water plants immediately after removal from their containers.

Set container-grown stock plumb and in the center of the pit or trench with the top of ball raised above adjacent finish grades as shown. Place stock on setting layer of compacted planting soil.

Place packet fertilizer in the backfill within 6 to 8 inches of the ground surface and approximately 1 inch from the root ball. If more than 1 packet is required per plant, distribute the packets evenly around the root ball.

~~Apply any root stimulant under the manufacturer's instructions.~~

Ensure roots are not restricted or distorted.

Distribute backfill uniformly throughout the entire depth of the plant hole without clods or lumps. After the planting holes have been backfilled, jet water into the backfill with a pipe or tube inserted into the bottom of the hole until the backfill material is saturated for the full depth. If the backfill material settles below this level, add additional backfill to the required level. If a plant settles deeper than shown, replant it at the required level.

Remove nursery stakes after planting.

Install 2 plant stakes for each plant to be staked immediately after planting. Ensure the root ball is not damaged. Comply with section 20-4.03E.

Spread the vine shoots and tie them with a plant tie to each stake above the crossing point.

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.

Construct a watering basin around each plant.

~~Install foliage protectors within 2 days after planting.~~

~~Install the foliage protector as follows:~~

- ~~1. ——— Cut the bottom of the wire cylinder to match the slope of the ground. Do not leave sharp points of wire after cutting. Sharp points must be bent over or blunted.~~
- ~~2. ——— Install 2 support stakes for foliage protectors vertically and embed in the soil on opposite sides of the plant crosswise to the direction of the prevailing wind.~~
- ~~3. ——— Weave the support stakes through the wire cylinder mesh at 6-inch maximum centers or fasten the wire cylinder to the support stakes at a maximum 6 inches on center.~~

~~4. Ensure that the wire cylinder is snug against the support stakes but loose enough to be raised for pesticide application or to perform weeding within the plant basin.~~

~~5. Install jute mesh cover over the foliage protector and secure with twine.~~

20-3.02C(3)(c) Groundcover Plants

Not Used

20-3.02C(3)(d) Cuttings, Liners, Plugs, and Seedling Plants

Not Used

20-3.02C(3)(e) Sod

Not Used

20-3.02C Payment

The payment quantity for soil amendment and structural soil is the volume measured in the vehicle at the point of delivery.

The payment quantity for slow-release fertilizer, organic fertilizer, or iron sulfate (lb) is the weight determined from the marked weight or sack count.

The payment quantity for plants is measured by ~~either the product of the average plant density and the total planted area, or by a count of the living plants in place.~~

~~The payment quantity for root barrier is the length installed measured to the nearest 0.1 feet.~~

Replace section 20-4 “Plant Establishment Work,” with:

20-4 PLANT ESTABLISHMENT WORK

20-4.01 GENERAL

20-4.01A Summary

Section 20-4 includes specifications for performing plant establishment work.

Plant establishment consists of caring for the plants, including:

1. Controlling plant growth
2. Fertilizing
3. Controlling weeds and pests
4. Replacing damaged or diseased plants
5. Watering
6. Operating irrigation system
7. Repairing new irrigation system
8. Repairing erosion
9. Repairing vandalism

20-4.01B Definitions

Not Used

20-4.01C Submittals

20-4.01C(1) General

Submit seasonal watering schedules for use during the plant establishment period within 10 days after the start of the plant establishment period. ~~Remote irrigation control system watering schedule must use the remote irrigation control system software program.~~

Submit updated watering schedules within 5 business days after any changes have been made to the authorized schedules.

Submit a revised watering schedule for each irrigation controller at least 30 days before completion of the plant establishment period.

Record all maintenance activities and observations in a monthly maintenance log book and submit on a quarterly basis. Record activities pertaining to the subsections of section 20-4.03 and present the information in the same order.

20-4.01C(2) Notification

The Engineer notifies you when the plant establishment period starts ~~and furnishes statements regarding the number of working days credited to the plant establishment period after the notification.~~

Notify the Engineer at least 5 business days before applying each application of fertilizer.

20-4.01C(3) Plant Establishment Period Maintenance Bond

At least 30 days before the anticipated acceptance date of the project, submit a separate maintenance bond for the plant establishment period.

The bond must:

1. Be a surety bond executed by a corporation licensed to transact business in California
2. Be issued at your expense
3. Be maintained throughout the plant establishment period
4. Be secured in the amount of 100 percent of the total contract price bid for all landscape items listed in the *Special Provisions*
5. Guarantee the faithful maintenance of the items listed in the *Special Provisions*
6. Insure the County/District during the entire duration of the plant establishment period

The maintenance bond is specific for those landscape items listed and is separate from the entire project.

20-4.01D Quality Assurance

Provide training by a qualified person on the use and adjustment of the installed irrigation controllers no more than 30 days before completion of the plant establishment period.

Meet with the Engineer on a quarterly basis during the plant establishment period to review the work. Make monthly maintenance log book available for review.

Periodic unscheduled inspections may be made by the Engineer to ensure that proper maintenance is being conducted. You will be given three calendar days to complete any corrective action. The plant establishment period may be extended if planted areas are not properly maintained or other corrective work is not completed as ordered.

Perform a final inspection of the plant establishment work in the presence of the Engineer 20 to 30 days before the scheduled end of the plant establishment period.

20-4.02 MATERIALS

20-4.02A General

Not Used

20-4.02B Fertilizers

Fertilizer must comply with section 20-3.01B(4).

20-4.02C Tree Stakes

See Section 20-4.03E for installation direction.

Acceptable product and manufacturer or comparable:

Product: R2 Stake System, 9' Length Stake Pole

Manufacturer: J.R. Partners; 47410 Via Florence, La Quinta, CA 92253; (209) 634-7791; sales@jrpartnersco.com; www.treestake.com

20-4.03 CONSTRUCTION

20-4.03A General

Planting must minimally be reviewed and maintained on weekly basis. Examine conditions of each plant, planting basin, staking, water tubes, weed growth and mulch. Record observations and actions taken in maintenance log.

Fill in any soil subsidence that may occur; replant trees and shrubs that may have settled.

Dispose of surplus earth accumulated in roadside clearing and planting areas.

~~Remove the tops of foliage protectors if plants become restricted.~~

~~Remove foliage protectors, including support stakes, within 30 days before the completion of the plant establishment period.~~

Keep plant basin walls well formed.

Clean new wye strainers and existing wye strainers that are a part of the new irrigation system annually until the completion of the plant establishment period. The last cleaning must be done within 15 days before the completion of the plant establishment period.

Remove, clean, and reinstall new filters and existing filters that are a part of the new irrigation system annually until the completion of the plant establishment period. The last cleaning must be done within 15 days before the completion of the plant establishment period.

20-4.03B Plant Growth Control

~~Trim and mow turf areas as specified for sod in section 20-3.02C(3)(e). Dispose of trimmed and mowed material.~~

~~If irregular or uneven areas appear within turf areas, restore to a smooth and even appearance. Reseed turf seed areas.~~

Prune plants planted as part of the Contract as authorized.

Remove plant growth that ~~extends within 2 feet of~~ covers sidewalks, curbs, dikes, shoulders, walls or fences.

~~Remove new and existing ground cover from within the plant basins, including basin walls, turf areas, and planting areas within edging.~~

~~Vines adjacent to walls and fences must be kept staked and tied. Train vines on fences and walls or through cored holes in walls.~~

No gas powered edgers or leaf blowers will be operated before 9:00 AM or after 4:00 PM, and within half an hour after school dismissal on a school day.

20-4.03C Fertilizing

Apply fertilizer to the plants as described and water into the soil after each application.

Apply fertilizer with a mechanical spreader, whenever possible.

20-4.03D Weed and Debris Control

Keep all planting areas free from weeds, paper, glass, debris and trash during the entire duration of the Project. Clear the planting area a minimum of once a week.

Control weeds under section 20-1.03C(3). Weeds within planter strips and planting areas must be controlled by hand pulling.

At the end of the maintenance work day, inspect and clean sidewalks and other areas within the Project limits of soil, debris or materials originating from the landscaped area or resulting from plant establishment maintenance activities.

20-4.03E Plant Staking

See section 20-4.02C for tree stake product information.

Install staking per manufacturer’s specification. Stake all trees as shown. Place stakes ~~opposite each other~~ parallel with the street. Orient tree with nursery stake on the same side as the new stake. Remove the nursery stake and drive newly placed stakes into the native soil prior to backfilling hole. Secure tree ties at the lowest point that prevents them from flopping over.

Replace plant stakes that are inadequate to support plants with larger stakes.

Remove plant stakes when the Engineer determines they are no longer needed.

20-4.03F Replacement Plants

Replacement plants must comply with section 20-3.01C(4).

Replacement of plants up to and including the 125th plant establishment working day must be with a plant of the same size as originally specified. Plants of a larger container size than those originally specified for replacement plants may be used during the first 125 working days of the plant establishment period.

Plants replaced after the 125th plant establishment working day must be the size shown in the following table:

Plant size (Original)	Plant size (Replacement)
Pot/liner/plug/seedling	No. 1 container
No. 1 container	No. 5 container
No. 5 container	No. 15 container

Other replacement plants must be the same size as originally specified.

Replacement ground cover plants must have the spacing shown in the following table:

Original spacing (inches)	On center spacing of replacement ground cover plants (inches)		
	Number of completed plant establishment working days		
	1-125	126-190	191-End of plant establishment period
9	9	6	6
12	12	9	6
18	18	12	9
24	24	18	12
36	36	24	18

20-4.03G Watering

Examine the soil moisture around each plant to ensure adequate moisture. Record all watering applications and include an approximation of amounts applied and any modifications.

All plants must be irrigated to provide adequate water to maintain an attractive, green, healthy and moderate growth rate during its growing season. Comply with the water budget approach to irrigation scheduling to match plant need with water application and avoid over irrigation. Watering of plant materials should encourage deep rooting by watering in a manner that the soil profile is wetted to a continuous depth of at least three inches when tested with a soil probe.

Operate any ~~the~~ electric automatic irrigation systems, including external weather and other system data inputs required to operate the system in automatic mode, unless otherwise authorized. Water plants utilizing the remote irrigation control system software program unless authorized.

20-4.03H Mulching

Maintain a minimum of 3 inches of mulch at all times over soil surface that is not covered by vegetation. Keep mulch 6 inches away from tree trunks and 4 inches away from shrub stems.

20-4.03I Integrated Pest Management

Monitor all plant materials for insects, pests, disease on a weekly basis and establish acceptable levels of Integrated Pest Management with the Engineer. Utilize the least toxic method of effective control. All use of chemicals must be by qualified, licensed personnel following State regulations and manufacturer's instructions and safety recommendations.

20-4.04 PAYMENT

Not Used

Replace section 20-10.02A(1) "[Existing Irrigation Facilities, General] Summary," with:

20-10.02A(1) Summary

Section 20-10.02 includes specifications for performing work on existing irrigation facilities.

Work performed on existing irrigation facilities must comply with section 20-2, "Irrigation."

Work performed on existing irrigation facilities located on private property shall be limited to adjustments to accommodate a change in grade when conforming to a new finished grade at the right-of-way limit.

Irrigation facilities that extend from private property into the public right-of-way and conflict with Project improvements are to be removed from the public right-of-way following proper notice to the property owner, as described under section 15, "Existing Facilities."

Replace section 20-10.02D "Payment," with:

20-10.02D Payment

If not lump sum, the payment quantity for adjust/modify/reset irrigation system components is the cumulative longitudinal length of excavation required to adjust/modify/reset the irrigation components to an appropriate location and grade, measured to the nearest foot, regardless of component material or size.

Allow the Engineer 10 business days from a complete JMF submittal for document review of the aggregate qualities, mix design, and JMF. The Engineer notifies you if the proposed JMF submittal is accepted.

If your JMF fails verification testing, submit an adjusted JMF based on your testing. The adjusted JMF must include the results of the failed verification testing.

You may submit an adjusted aggregate gradation TV before verification testing. Aggregate gradation TV must be within the TV limits specified.

39-2.01A(3)(b)(ii) Job Mix Formula Renewal

Not Used

39-2.01A(3)(b)(iii) Job Mix Formula Modification

Not Used

39-2.01A(3)(c) Quality Control Plan

At least 5 business days prior to the pre-paving meeting, submit a QC plan for HMA.

The QC plan must describe the organization and procedures for:

1. Controlling HMA quality characteristics
2. Taking samples, including sampling locations
3. Establishing, implementing, and maintaining QC
4. Determining when corrective actions are needed
5. Implementing corrective actions
6. Using methods and materials for backfilling core locations

The QC plan must address the elements affecting HMA quality, including:

1. Aggregates
2. Asphalt binder
3. Additives
4. Production
5. Paving

Allow 10 business days for review of the QC plan.

If you change QC procedures, personnel, or sample testing locations, submit a QC plan supplement before implementing the proposed change. Allow 3 business days for review of the QC plan supplement.

39-2.01A(3)(d) Test Results

If requested by the Engineer, submit all QC test results, except AASHTOT324 (Modified), within 3 business days of production.

If coarse and fine durability index tests are required, submit test results within 2 business days of testing.

39-2.01A(3)(e) Reserved

39-2.01A(3)(f) Liquid Antistrip Treatment

If liquid antistrip treatment is used, submit the following with your proposed JMF submittal:

1. One 1 pt sample
2. Infrared analysis, including copy of absorption spectra
3. Certified copy of test results
4. Certificate of compliance for each liquid antistrip shipment. On each certificate of compliance, include:
 - 4.1. Your signature and printed name
 - 4.2. Shipment number
 - 4.3. Material type

- 4.4. Material specific gravity
- 4.5. Refinery
- 4.6. Consignee
- 4.7. Destination
- 4.8. Quantity
- 4.9. Contact or purchase order number
- 4.10. Shipment date
5. Proposed proportions for the liquid antistriper

39-2.01A(3)(g) Lime Treatment

Not Used

39-2.01A(3)(h) Warm Mix Asphalt Technology

If a WMA technology is used, submit the following with your proposed JMF submittal:

1. SDS for the WMA technology
2. For water injection foam technology:
 - 2.1. Name of technology
 - 2.2. Proposed foaming water content
 - 2.3. Proposed HMA production temperature range
 - 2.4. Certification from binder supplier stating no antifoaming agent is used
3. For additive technology:
 - 3.1. Name of technology
 - 3.2. Percent admixture by weight of binder and percent admixture by total weight of HMA as recommended by the manufacturer
 - 3.3. Methodology for inclusion of admixture in laboratory-produced HMA
 - 3.4. Proposed HMA production temperature range

Collect and hold data for the duration of the Contract and submit the electronic media daily. The snapshot of production data must include the following:

1. Production date
2. Production location
3. Time of day the data is captured
4. HMA mix type being produced and target binder rate
5. HMA additive type, brand, and target rate
6. Temperature of the binder and HMA mixture
7. For a continuous mixing plant, the rate of flow of the dry aggregate calculated from the wet aggregate flow rate as determined by the conveyor scale
8. For a continuous mixing plant, the rate of flow of the asphalt meter
9. For a continuous mixing plant, the rate of flow of HMA additive meter
10. For batch plant mixing, actual batch weights of all ingredients
11. Dry aggregate to binder ratio calculated from metered ingredient output
12. Dry aggregate to HMA additive ratio calculated from metered output

At the end of each day's production shift, submit electronic and printed media from the HMA plant process controller. Present data on electronic media in comma-separated values or tab-separated values format. The captured data for the ingredients represented by the production snapshot must have allowances for sufficient fields to satisfy the amount of data required by these specifications and include data titles at least once per report.

39-2.01A(3)(i) Samples

At the request of the Engineer, the Contractor shall provide samples for Production Start-up evaluation. Submit 2 parts to the Engineer and use 2 parts for your testing.

39-2.01A(3)(j) Tack Coat

Prior to applying tack coat, submit calculations for the minimum spray rate required to achieve the minimum residual rate.

39-2.01A(3)(k) Reserved**39-2.01A(3)(l) Data Cores**

Not Used

39-2.01A(3)(m)–39-2.01A(3)(o) Reserved**39-2.01A(4) Quality Assurance****39-2.01A(4)(a) General**

Not Used

39-2.01A(4)(b) Job Mix Formula Verification

Not Used

39-2.01A(4)(c) Job Mix Formula Authorization

You may start HMA production if:

1. Engineer's review of the JMF shows compliance with the specifications
2. Your QC plan has been reviewed and approved

39-2.01A(4)(d) Job Mix Formula Renewal

Not Used

39-2.01A(4)(e) Job Mix Formula Modification

Not Used

39-2.01A(4)(f) Certifications**39-2.01A(4)(f)(i) General**

Laboratories testing aggregate and HMA qualities used to prepare the mix design and JMF must be qualified under AASHTO re:source program and the Caltrans Independent Assurance Program or be approved by the Engineer.

39-2.01A(4)(f)(ii) Hot Mix Asphalt Plants

Before production, the HMA plant must have a current qualification under the Caltrans Material Plant Quality Program or be approved by the Engineer.

39-2.01A(4)(f)(iii)–39-2.01A(4)(f)(v) Reserved**39-2.01A(4)(g) Reserved****39-2.01A(4)(h) Quality Control****39-2.01A(4)(h)(i) General**

QC test results must comply with the specifications for Agency acceptance.

Condition each at-the-plant sample of HMA mixture in compliance with sections 7.1.2, 7.1.3, and 7.1.4 of AASHTO R 30. Condition each at-the-plant sample of HMA mixture when composite aggregate absorption factor is greater than 2.0 percent as indicated by the JMF in compliance with sections 7.1.2, 7.1.3, and 7.1.4 of AASHTO R 30.

Prepare a minimum of 2 briquettes for air void content and voids in mineral aggregate determination. Report the average of a minimum of 2 tests.

Except for smoothness, if 2 consecutive QC test results or any 3 QC test results for 1 day's production do not comply with the materials specifications:

1. Stop HMA production
2. Notify the Engineer
3. Take corrective action
4. Demonstrate compliance with the specifications before resuming production and placement

For QC tests performed under AASHTO T 27, results are considered 1 QC test regardless of number of sieves out of compliance.

Do not resume production and placement until the Engineer authorizes your corrective action proposal.

39-2.01A(4)(h)(ii) Reserved

39-2.01A(4)(h)(iii) Aggregates

39-2.01A(4)(h)(iii)(A) General

Reserved

39-2.01A(4)(h)(iii)(B) Aggregate Lime Treatments

Not Used

39-2.01A(4)(h)(iv) Liquid Antistrip Treatment

For continuous mixing or batch-plant mixing, sample asphalt binder before adding liquid antistrip.

39-2.01A(4)(h)(v) Production Start-up Evaluation

You and the Engineer evaluate HMA production and placement at production start-up.

Within the first 750 tons produced on the 1st day of HMA production, in the Engineer's presence, and from the same production run, take samples of:

1. Aggregates
2. Asphalt binder
3. RAP
4. HMA

Sample aggregates from the combined cold-feed belt or hot bin. Take RAP samples from the RAP system.

For aggregates, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 2 parts to the Engineer and keep 2 parts. You and the Engineer must retain 1 part in the event of dispute resolution.

You and the Engineer must test the sample and report test results within 5 business days of sampling if required.

39-2.01A(4)(h)(vi) Hot Mix Asphalt Density

During HMA placement determine HMA density using a nuclear density gage under California Test 375.

Test at random locations you select and include the test results in your QC production test reports. Lots for density testing must not exceed 275 tons.

39-2.01A(4)(h)(vii) Tapered Notched Wedge

Not Used

39-2.01A(4)(h)(viii) Density Cores

Not Used

39-2.01A(4)(h)(ix) Reserved**39-2.01A(4)(i) Agency Acceptance****39-2.01A(4)(i)(i) General**

The Engineer takes HMA samples for all other tests from any of the following locations:

1. Plant
2. Truck
3. Windrow
4. Mat behind the paver

You must assist in collecting Engineer acceptance samples. Sample in the presence of the Engineer. Split the Engineer acceptance samples into at least 4 parts. Engineer retains 3 parts and you keep 1 part.

To obtain workability of the HMA sample for splitting, the Engineer reheats each sample of HMA mixture not more than 2 cycles. Each reheat cycle is performed by placing the loose mixture in a mechanical forced-draft oven for 2 hours or less after the sample reaches 140 degrees F.

The Engineer conditions each at-the-plant sample of HMA mixture in compliance with sections 7.1.2, 7.1.3, and 7.1.4 of AASHTO R 30.

No single aggregate or HMA test result may represent more than 275 tons or one day's production, whichever is less.

Except for smoothness, if 2 consecutive Agency acceptance test results or any 3 Agency acceptance test results for 1 day's production do not comply with the specifications:

1. Stop HMA production
2. Take corrective action
3. Demonstrate compliance with the specifications before resuming production and placement

For Agency acceptance tests performed under AASHTO T 27, results are considered 1 Agency acceptance test regardless of the number of sieves out of compliance.

The Engineer accepts HMA based on:

1. JMF compliance, applicable material tolerances
2. density (if required)
3. smoothness and visual inspection

39-2.01A(4)(i)(ii) In-Place Density

Except for HMA pavement placed using method compaction, nuclear density gages will be used to determine the acceptability of HMA density.

Each lift of HMA is tested independently

Where OGFC is required, take the density cores before placing OGFC.

If the relative compaction does not comply with the specifications, the Engineer may accept the HMA and take a payment deduction as shown in the following table:

Reduced Payment Factors for Relative Compaction

Relative Compaction (%)	Reduced payment factor	Relative Compaction (%)	Reduced payment factor
95.0	0.0000	97.0	0.0000
94.9	0.0125	97.1	0.0125
94.8	0.0250	97.2	0.0250
94.7	0.0375	97.3	0.0375
94.6	0.0500	97.4	0.0500
94.5	0.0625	97.5	0.0625
94.4	0.0750	97.6	0.0750
94.3	0.0875	97.7	0.0875
94.2	0.1000	97.8	0.1000
94.1	0.1125	97.9	0.1125
94.0	0.1250	98.0	0.1250
93.9	0.1375	98.1	0.1375
93.8	0.1500	98.2	0.1500
93.7	0.1625	98.3	0.1625
93.6	0.1750	98.4	0.1750
93.5	0.1875	98.5	0.1875
93.4	0.2000	98.6	0.2000
93.3	0.2125	98.7	0.2125
93.2	0.2250	98.8	0.2250
93.1	0.2375	98.9	0.2375
93.0	0.2500	99.0	0.2500
<93.0	Remove and replace	>99.0	Remove and replace

39-2.01A(4)(i)(iii) Pavement Smoothness

39-2.01A(4)(i)(iii)(A) General

The method for determining acceptable pavement smoothness is by using a straightedge alone.

39-2.01A(4)(i)(iii)(B) Straightedge

The HMA pavement top layer must not vary from the lower edge of a 12-foot long straightedge:

1. More than 0.01 foot when the straight edge is laid parallel with the centerline
2. More than 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. More than 0.02 foot when the straightedge is laid within 24 feet of a pavement conform

39-2.01A(4)(i)(iii)(C) Profilograph

Not Used

39-2.01A(4)(i)(iv) Dispute Resolution

You and the Engineer must work together to avoid potential conflicts and to resolve disputes regarding test result discrepancies. You and the Engineer may only dispute each other's test results if one party's test results pass and the other party's test results fail.

If there is a dispute, submit your test results and copies of paperwork including worksheets used to determine the disputed test results within 3 business days of receiving the Engineer's test results. An independent third party performs referee testing. Before the third party participates in a dispute resolution, it must be qualified under AASHTO re:source program, and the Caltrans Independent Assurance Program. The independent third party must have no prior direct involvement with this Contract. The independent third party is chosen by mutual agreement.

If the Engineer's portion of the split acceptance samples are not available, the independent third party uses any available material representing the disputed HMA for evaluation.

For a dispute involving density, the independent third party performs referee testing based on cores.

If the independent third party determines the Agency's test results are valid, the Engineer deducts the independent third party's testing costs from payments. If the independent third party determines your test results are valid, the Agency pays the independent third party's testing costs.

39-2.01B Materials

39-2.01B(1) General

Reserved

39-2.01B(2) Mix Design

39-2.01B(2)(a) General

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.

The Contractor must show documentation on aggregate quality.

39-2.01B(2)(b) Hot Mix Asphalt Treatments

If HMA treatment is required or being used by the Contractor, determine the plasticity index of the aggregate blend under California Test 204.

Do not use an aggregate blend with a plasticity index greater than 10.

39-2.01B(2)(c) Warm Mix Asphalt Technology

For HMA with WMA additive technology, produce HMA mix samples for your mix design using your methodology for inclusion of WMA admixture in laboratory-produced HMA. Cure the samples in a forced-air draft oven at 275 degrees F for 4 hours ± 10 minutes.

For WMA water injection foam technology, the use of foamed asphalt for mix design is not required.

39-2.01B(3) Asphalt Binder

Asphalt binder must comply with section 92.

For a leveling course, the grade of asphalt binder for the HMA must be PG 64-10.

39-2.01B(4) Aggregates

39-2.01B(4)(a) General

Aggregates must be clean and free from deleterious substances.

The aggregates for a leveling course must comply with the gradation specifications for Type A HMA in section 39-2.02B.

39-2.01B(4)(b) Aggregate Gradations

Aggregate gradation must be determined before the addition of asphalt binder and must include supplemental fine aggregates. Test for aggregate gradation under AASHTO T 27. Do not wash the

coarse aggregate. Wash the fine aggregate only. Use a mechanical sieve shaker. Aggregate shaking time must not exceed 10 minutes for each coarse and fine aggregate portion.

Choose a TV within the TV limits shown in the tables titled "Aggregate Gradations."

Gradations are based on nominal maximum aggregate size.

39-2.01B(4)(c) Aggregate Lime Treatments

Not Used

39-2.01B(5) Liquid Antistrip Treatment

Liquid antistrip must be from 0.25 to 1.0 percent by weight of asphalt binder. Do not use liquid antistrip as a substitute for asphalt binder.

Liquid antistrip total amine value must be 325 minimum when tested under ASTM D2074.

Use only 1 liquid antistrip type or brand at a time. Do not mix liquid antistrip types or brands.

Store and mix liquid antistrip under the manufacturer's instructions.

39-2.01B(6)–39-2.01B(7) Reserved

39-2.01B(8) Hot Mix Asphalt Production

39-2.01B(8)(a) General

Do not start HMA production before verification and authorization of JMF.

The HMA plant must have a current qualification under the Caltrans Material Plant Quality Program or be approved by the Engineer.

Proportion aggregate by hot or cold-feed control.

Asphalt binder temperature must be from 275 to 375 degrees F when mixed with aggregate.

Mix HMA ingredients into a homogeneous mixture of coated aggregates.

HMA must be produced at the temperatures shown in the following table:

HMA Production Temperatures	
HMA compaction	Temperature (°F)
HMA	
Density based Method	≤ 325 305–325
HMA with WMA technology	
Density based Method	240–325 260–325

If you stop production for longer than 30 days, a production start-up evaluation is required.

39-2.01B(8)(b) Liquid Antistrip

Not Used

39-2.01B(8)(c) Warm Mix Asphalt Technology

Proportion all ingredients by weight. The HMA plant process controller must be the sole source of ingredient proportioning control and be fully interfaced with all scales and meters used in the production process. The addition of the HMA additive must be controlled by the plant process controller.

Liquid ingredient additive, including a normally dry ingredient made liquid, must be proportioned with a mass flow meter at continuous mixing plants. Use a mass flow meter or a container scale to proportion liquid additives at batch mixing plants.

Continuous mixing plants using HMA additives must comply with the following:

1. HMA plant process controller and ingredient measuring systems must be capable of varying all ingredient-feed rates proportionate with the dry aggregate delivery at all production rates and rate changes.
2. Liquid HMA additive must enter the production stream with the binder. Dry HMA additive must enter the production stream at or before the mixing area.
3. If dry HMA additives are used at continuous mixing HMA plants, bag-house dust systems must return all captured material to the mix. This requirement is waived for lime-treated aggregates.
4. HMA additive must be proportioned to within ± 0.3 percent of the target additive rate.

Batch mixing plants using HMA additives must comply with the following:

1. Metered HMA additive must be placed in an intermediate holding vessel before being added to the stream of asphalt binder as it enters the pugmill.
2. If a container scale is used, weigh additive before combining with asphalt binder. Keep the container scale separate from other ingredient proportioning. The container scale capacity must be no more than twice the volume of the maximum additive batch size. The container scale's graduations must be smaller than the proportioning tolerance or 0.001 times the container scale capacity.
3. Dry HMA additive proportioning devices must be separate from metering devices for the aggregates and asphalt binder. Proportion dry HMA additive directly into the pugmill, or place in an intermediate holding vessel to be added to the pugmill at the appropriate time in the batch cycle. Dry ingredients for batch production must be proportioned with a hopper scale.
4. Zero tolerance for the HMA additive batch scale is ± 0.5 percent of the target additive weight. The indicated HMA additive batch scale weight may vary from the preselected weight setting by up to ± 1.0 percent of the target additive weight.

39-2.01B(9) Geosynthetic Pavement Interlayer

Geosynthetic pavement interlayer must comply with the specifications for pavement fabric, paving mat, paving grid, paving geo-composite grid, or geo-composite strip membrane as shown.

The asphalt binder for geosynthetic pavement interlayer must be PG 64-10, PG 64-16, or PG 70-10.

39-2.01B(10) Tack Coat

Tack coat must comply with the specifications for asphaltic emulsion or asphalt binder. Choose the type and grade of emulsion or binder.

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.

39-2.01B(12) AC Driveway Conforms

Reserved

39-2.01B(13) Speed Humps, Road Humps, and Speed Tables

For speed humps, road humps, and speed tables use steam refined HMA-LV, Grade PG-10. Use 1/2-inch maximum size aggregate, medium grading.

The amount of asphalt binder to be mixed with the aggregate must be between four and six percent by weight of the dry aggregate. The exact amount of asphalt binder to be mixed with the aggregate will be determined by the Engineer.

39-2.01C Construction

39-2.01C(1) General

Do not place HMA on wet pavement or frozen surface.

You may deposit HMA in a windrow and load it in the paver if:

1. Paver is equipped with a hopper that automatically feeds the screed
2. Loading equipment can pick up the windrowed material and deposit it in the paver hopper without damaging base material
3. Activities for depositing, pickup, loading, and paving are continuous
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

HMA placed in a windrow on the roadway surface must not extend more than 250 feet in front of the loading equipment or material transfer vehicle.

You may place HMA in 1 or more layers on areas less than 5 feet wide and outside the traveled way, including shoulders. You may use mechanical equipment other than a paver for these areas. The equipment must produce uniform smoothness and texture.

HMA handled, spread, or windrowed must not stain the finished surface of any improvement, including pavement.

Do not use petroleum products such as kerosene or diesel fuel to release HMA from trucks, spreaders, or compactors.

HMA must be free of:

1. Segregation
2. Coarse or fine aggregate pockets

3. Hardened lumps
4. Marks
5. Tearing
6. Irregular texture

Complete finish rolling activities before the pavement surface temperature is:

1. Below 150 degrees F for HMA with unmodified binder
2. Below 140 degrees F for HMA with modified binder

39-2.01C(2) Spreading and Compacting

39-2.01C(2)(a) General

Place HMA only when the atmospheric temperature is above 50 degrees F.

Spread and Compact HMA in the number of layers of the thicknesses indicated in the following table.

Total Thickness Shown on Plans ^a	No. of Layers	Top Layer Thickness (foot)		Next Lower Layer Thickness (foot)		All Other Lower Layer Thickness (foot)	
		Min.	Max.	Min.	Max.	Min.	Max.
0.20-foot or less	1	-	-	-	-	-	-
0.25-foot	2 ^b	0.12	0.13	0.12	0.13	-	-
0.30- 0.40 foot	2	0.15	0.20	0.15	0.25	-	-
0.45-foot or more	c	0.15	0.20	0.15	0.25	0.15	0.40

^a When pavement reinforcing fabric is shown or to be placed between layers of HMA, the thickness of HMA above the pavement reinforcing fabric shall be considered to be the "Total Thickness Shown on Plans" for the purpose of spreading and compacting the HMA above the pavement reinforcing fabric.

^b At your option, you may place one layer 0.25-foot thick

^c Place at least two layers if total thickness is 0.45-foot. Place at least three layers if total thickness is more than 0.45-foot and less than 0.90-foot. Place at least 4 layers if total thickness is 0.90-foot or more.

Do not place a layer over a layer which exceeds 0.25 foot in compacted thickness until the temperature of the layer which exceeds 0.25 foot in compacted thickness is less than 160 degrees F at mid depth.

Paving equipment for spreading must be:

1. Self-propelled
2. Mechanical
3. Equipped with a screed or strike-off assembly that can distribute HMA the full width of a traffic lane
4. Equipped with a full-width compacting device

The screed must be heated and produce a uniform HMA surface texture without tearing, shoving, or gouging.

The paver must not leave marks such as ridges and indentations unless you can eliminate them by rolling.

Rollers must be equipped with a system that prevents HMA from sticking to the wheels. You may use a parting agent that does not damage the HMA or impede the bonding of layers.

In areas inaccessible to spreading and compacting equipment:

1. Spread the HMA by any means to obtain the specified lines, grades, and cross sections
2. Use a pneumatic tamper, plate compactor, or equivalent to achieve thorough compaction

39-2.01C(2)(b) Material Transfer Vehicle

If a material transfer vehicle is specified, the material transfer vehicle must have sufficient capacity to prevent stopping the paver and must be capable of:

1. Either receiving HMA directly from trucks or using a windrow pickup head to load it from a windrow deposited on the roadway surface
2. Remixing the HMA with augers before transferring into the paver's receiving hopper or feed system
3. Transferring HMA directly into the paver's receiving hopper or feed system

39-2.01C(2)(c) Method Compaction Equipment

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.

Each roller must have a separate operator. Rollers must be self-propelled and reversible. Any deviation from the above requirements must be approved in writing by the Engineer.

39-2.01C(2)(d)–39-2.01C(2)(f) Reserved

39-2.01C(3) Surface Preparation

39-2.01C(3)(a) General

Before placing HMA, remove loose paving particles, dirt, and other extraneous material by any means including flushing and sweeping.

39-2.01C(3)(b) Subgrade

Prepare subgrade to receive HMA under the sections for the material involved. Subgrade must be free of loose and extraneous material.

39-2.01C(3)(c) Reserved

39-2.01C(3)(d) Prepaving Inertial Profiler

Section 39-2.01C(3)(d) applies to existing asphalt concrete surfaces receiving an HMA overlay if a bid item for prepaving inertial profiler is shown on the Bid Item List.

Before starting paving activities, perform prepaving inertial profiler measurements. Prepaving inertial profiler work includes taking profiles of the existing pavement and analyzing the data with ProVAL to determine existing pavement International Roughness Index, Mean Roughness Index, and areas of localized roughness.

If the Contract includes cold planing, take prepaving inertial profiler measurements before cold planing.

If the Contract includes replace asphalt concrete surfacing, take prepaving inertial profiler measurements after replacing the asphalt concrete surfacing.

39-2.01C(3)(e) Prepaving Grinding

Section 39-2.01C(3)(e) applies to existing asphalt concrete surfaces:

1. That will not be cold planned or milled
2. That will receive an HMA overlay less than or equal to 0.25 foot exclusive of OGFC
3. If a bid item for prepaving grinding day is shown on the Bid Item List

After performing prepaving inertial profiling, correct areas of localized roughness greater than 180 in/mi.

Notify the Engineer of those areas of localized roughness that cannot be corrected by prepaving grinding according to the ProVAL smoothness assurance analysis grinding report. The Engineer responds to your notification within 5 business days.

For those areas of localized roughness that cannot be corrected by grinding, the Engineer may order you to either (1) not correct the areas of localized roughness or (2) correct areas of localized roughness by a different method and take profiles of the corrected areas with an inertial profiler. Corrective work performed by a different method, taking profiles of the corrected areas, the associated traffic control is change order work.

If ordered not to correct areas of localized roughness, the smoothness specifications do not apply to the final pavement surface placed in those areas.

After correcting areas of localized roughness, take profiles of the corrected area and submit profile data as specified in section 36-3.01C(3).

Dispose of grinding residue.

Pave within 7 days of correcting areas.

The final pavement surface must comply with section 39-2.01A(4)(i)(iii).

If the Engineer determines more time is required for prepaving grinding than the Contract allows for and if prepaving grinding is a controlling activity, the Engineer makes a time adjustment.

39-2.01C(3)(f) Tack Coat

Apply a tack coat:

1. To existing pavement including planed surfaces
2. Between HMA layers
3. To vertical surfaces of:
 - 3.1. Curbs
 - 3.2. Gutters
 - 3.3. Construction joints

Equipment for the application of tack coat must comply with section 37-1.03B.

Before placing HMA, apply a tack coat in 1 application at the minimum residual rate shown in the following table for the condition of the underlying surface:

Tack Coat Application Rates for HMA

HMA over:	Minimum residual rates (gal/sq yd)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h asphaltic emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 asphaltic emulsion	Asphalt binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h asphaltic emulsion
New HMA (between layers)	0.02	0.03	0.02
Concrete pavement and existing asphalt concrete surfacing	0.03	0.04	0.03
Planed pavement	0.05	0.06	0.04

If a stress absorbing membrane interlayer as specified in section 37-2.05 is applied, the tack coat application rates for new HMA apply.

Notify the Engineer if you dilute asphaltic emulsion with water. The weight ratio of added water to asphaltic emulsion must not exceed 1 to 1.

Measure added water either by weight or volume under section 9-1.02 or use water meters from water districts, cities, or counties. If you measure water by volume, apply a conversion factor to determine the correct weight.

With each dilution, submit:

1. Weight ratio of water to bituminous material in the original asphaltic emulsion
2. Weight of asphaltic emulsion before diluting
3. Weight of added water
4. Final dilution weight ratio of water to asphaltic emulsion

Apply a tack coat to vertical surfaces with a residual rate that will thoroughly coat the vertical face without running off.

If authorized, you may:

1. Change tack coat rates
2. Omit tack coat between layers of new HMA during the same work shift if:
 - 2.1. No dust, dirt, or extraneous material is present
 - 2.2. Surface is at least 140 degrees F

Immediately in advance of placing HMA, apply additional tack coat to damaged areas or where loose or extraneous material is removed.

Close areas receiving tack coat to traffic. Do not allow the tracking of tack coat onto pavement surfaces beyond the job site.

If you use an asphalt binder for tack coat, the asphalt binder temperature must be from 285 to 350 degrees F when applied.

39-2.01C(3)(g) Geosynthetic Pavement Interlayer

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.

39-2.01C(4) Longitudinal Joints

39-2.01C(4)(a) General

Longitudinal joints in the top layer must match lane lines. Alternate the longitudinal joint offsets in the lower layers at least 0.5 foot from each side of the lane line. Other longitudinal joint placement patterns are allowed if authorized.

A vertical longitudinal joint of more than 0.15 foot is not allowed at any time between adjacent lanes open to traffic.

For an HMA thickness of 0.15 foot or less, the distance between the ends of the adjacent surfaced lanes at the end of each day's work must not be greater than can be completed in the following day of normal paving.

For an HMA thickness greater than 0.15 foot, you must place HMA on adjacent traveled way lanes or shoulder such that at the end of each work shift the distance between the ends of HMA layers on adjacent lanes is from 5 to 10 feet. Place additional HMA along the transverse edge at each lane's end and along the exposed longitudinal edges between adjacent lanes. Hand rake and compact the additional HMA to form temporary conforms. You may place kraft paper or other authorized release agent under the conform tapers to facilitate the taper removal when paving activities resume.

If placing HMA against the edge of existing pavement, saw cut or grind the pavement straight and vertical along the joint and remove extraneous material.

39-2.01C(4)(b) Tapered Notched Wedge

For divided highways with an HMA lift thickness greater than 0.15 foot, you may construct a 1-foot wide tapered notched wedge joint as a longitudinal joint between adjacent lanes open to traffic. A vertical notch of 0.75 inch maximum must be placed at the top and bottom of the tapered wedge.

The tapered notched wedge must keep its shape while exposed to traffic. Pave the adjacent lane within 1 day.

Construct the tapered portion of the tapered notched wedge with an authorized strike-off device. The strike-off device must provide a uniform slope and must not restrict the main screed of the paver.

You may use a device attached to the screed to construct longitudinal joints that will form a tapered notched wedge in a single pass. The tapered notched wedge must be compacted to a minimum of 91 percent compaction.

39-2.01C(5) Pavement Edge Treatments

Construct edge treatment on the HMA pavement as shown.

Where a tapered edge is required, use the same type of HMA used for the adjacent lane or shoulder.

The edge of roadway where the tapered edge is to be placed must have a solid base, free of debris such as loose material, grass, weeds, or mud. Grade the areas to receive the tapered edge as required.

The tapered edge must be placed monolithic with the adjacent lane or shoulder and must be shaped and compacted with a device attached to the paver.

The device must be capable of shaping and compacting HMA to the required cross section as shown. Compaction must be accomplished by constraining the HMA to reduce the cross-sectional area by 10 to 15 percent. The device must produce a uniform surface texture without tearing, shoving, or gouging and must not leave marks such as ridges and indentations. The device must be capable of transitioning to cross roads, driveways, and obstructions.

For the tapered edge, the angle of the slope must not deviate by more than ± 5 degrees from the angle shown. Measure the angle from the plane of the adjacent finished pavement surface.

If paving is done in multiple lifts, the tapered edge must be placed with each lift.

Short sections of hand work are allowed to construct tapered edge transitions.

39-2.01C(6) Widening Existing Pavement

If widening existing pavement, construct new pavement structure to match the elevation of the existing pavement's edge before placing HMA over the existing pavement.

39-2.01C(7) Shoulders, Medians, and Other Road Connections

Until the adjoining through lane's top layer has been paved, do not pave the top layer of:

1. Shoulders
2. Tapers
3. Transitions
4. Road connections
5. Driveways
6. Curve widenings
7. Chain control lanes
8. Turnouts
9. Turn pockets

If the number of lanes changes, pave each through lane's top layer before paving a tapering lane's top layer. Simultaneous to paving a through lane's top layer, you may pave an adjoining area's top layer, including shoulders. Do not operate spreading equipment on any area's top layer until completing final compaction.

If shoulders or median borders are shown, pave shoulders and median borders adjacent to the lane before opening a lane to traffic.

If shoulder conform tapers are shown, place conform tapers concurrently with the adjacent lane's paving.

If a driveway or a road connection is shown, place additional HMA along the pavement's edge to conform to road connections and driveways. Hand rake, if necessary, and compact the additional HMA to form a smooth conform taper.

39-2.01C(8) Leveling

Section 39-2.01C(8) applies if a bid item for hot mix asphalt (leveling) is shown on the Bid Item List.

Fill and level irregularities and ruts with HMA before spreading HMA over the base, existing surfaces, or bridge decks. You may use mechanical equipment other than a paver for these areas. The equipment must produce uniform smoothness and texture. HMA used to change an existing surface's cross slope or

profile is not paid for as hot mix asphalt (leveling). Compact using the method process, unless otherwise shown.

39-2.01C(9) Miscellaneous Areas and Dikes

Prepare the area to receive HMA for miscellaneous areas and dikes, including excavation and backfill as needed.

Spread the HMA in miscellaneous areas in 1 layer and compact to the specified lines and grades.

In median areas adjacent to slotted median drains, each layer of HMA must not exceed 0.20 foot maximum compacted thickness.

The finished surface must be:

1. Textured uniformly
2. Compacted firmly
3. Without depressions, humps, and irregularities

39-2.01C(10)–39-2.01C(11)

Reserved

39-2.01C(12) AC Driveway Conforms

Reserved

39-2.01C(13) Speed Humps, Road Humps, and Speed Tables

Construct speed humps and road humps to the height and inclinations shown on Sheets D1 and D2 for the crown of the hump and the midpoint between the crown of the hump and base of the hump.

Construct speed tables to the height and inclinations shown on D3, D4, and D5 for the crown of the speed table and the midpoint between the crown of the speed table and the base of speed table.

Construct humps and tables across the width of the street from lip of gutter to lip of gutter, edge of pavement to edge of pavement, or asphaltic curb to asphaltic curb.

The shape of humps and tables will be verified in the field using a precut template. Constructed humps and tables that are not within a 1/4 inch tolerance to the height and shape shown will be rejected.

Remove rejected speed humps, road humps, and speed tables.

Apply a tack coat of asphaltic emulsion, mixed with equal parts or water, to a clean and dry roadway surface prior to installing speed humps, road humps, or speed tables. Apply the tack coat at a rate of 0.02 gallon to 0.10 gallon per square yard of surface cover or as directed.

Full depth HMA base courses can be placed with a blade. Do not allow the tracks or wheels of spreading equipment on the top layer of HMA until compaction has been completed.

HMA must be raked by qualified persons to a smooth transition from existing roadway to the HMA mat. HMA placed adjacent to any gutter designed to carry water must be 1/4-maximum above gutter lip and be raked (feathered) to a smooth transition to asphalt mat.

Spread admixtures at a minimum temperature of 270 degrees F, unless otherwise directed by the Engineer. The first coverage of initial compaction must be performed when the temperature of the mixture is not less than 250 degrees F. The final compaction must be completed before the temperature of the mixture drops below 200 degrees F.

Compact HMA with steel-tired rollers.

Perform rolling to avoid cracking, shaving, or displacement. The completed surface must be thoroughly compacted smooth and free from ruts, depressions, and irregularities. Any ridges, indentations, or marks left in the surface must be eliminated by further rolling or other means as determined by the Engineer.

Upon completing the installation of acceptable speed humps, road humps, or speed tables, install temporary pavement markings to indicate their presence.

39-2.01C(14) Reserved**39-2.01C(15) Compaction****39-2.01C(15)(a) General**

Rolling must leave the completed surface compacted and smooth without tearing, cracking, or shoving.

If a vibratory roller is used as a finish roller, turn the vibrator off.

Do not open new HMA pavement to traffic until its mid depth temperature is below 160 degrees F.

If the surface to be paved is both in sunlight and shade, pavement surface temperatures are taken in the shade.

39-2.01C(15)(b) Method Compaction

Use method compaction for any of the following conditions:

1. HMA pavement thickness shown is less than 0.12 foot
2. Replace asphalt concrete surfacing
3. Leveling courses
4. Areas the Engineer determines conventional compaction and compaction measurement methods are impeded

HMA compaction coverage is the number of passes needed to cover the paving width. A pass is 1 roller's movement parallel to the paving in either direction. Overlapping passes are part of the coverage being made and are not a subsequent coverage. Do not start a coverage until completing the prior coverage.

Method compaction must consist of performing:

1. Breakdown compaction of each layer with 3 coverages using a vibratory roller. The speed of the vibratory roller in miles per hour must not exceed the vibrations per minute divided by 1,000. If the HMA layer thickness is less than 0.08 foot, turn the vibrator off.
2. Intermediate compaction of each layer of HMA with 3 coverages using a pneumatic-tired roller at a speed not to exceed 5 mph.
3. Finish compaction of HMA with 1 coverage using a steel-tired roller.

Start rolling at the lower edge and progress toward the highest part.

The Engineer may order fewer coverages if the layer thickness of HMA is less than 0.12 foot.

The compacted lift thickness must not exceed 0.25 foot.

Any deviation from the above requirements must be approved in writing by the Engineer.

39-2.01C(15)(c)–39-2.01C(15)(e) Reserved**39-2.01C(16) Smoothness Corrections**

If the pavement surface does not comply with section 39-2.01A(4)(i)(iii), grind the pavement to within specified tolerances, remove and replace the pavement, or place an overlay of HMA. Do not start corrective work until your method is authorized.

Do not use equipment with carbide cutting teeth to grind the pavement unless authorized.

Smoothness corrections must leave at least 75 percent of the specified HMA thickness. If ordered, core the pavement at the locations selected by the Engineer. Coring, including traffic control, is change order work. Remove and replace deficient pavement areas where the overlay thickness is less than 75 percent of the thickness specified.

Corrected HMA pavement areas must be uniform rectangles, half the lane width, with edges:

1. Parallel to and along the nearest HMA pavement edge or lane line
2. Perpendicular to the pavement centerline

Measure the corrected HMA pavement surface as specified in 39-2.01A(4)(i)(iii) Pavement Smoothness and correct the pavement to within specified tolerances.

If a must-grind area or straight edged pavement cannot be corrected to within specified tolerances, remove and replace the pavement. Retest the corrected area with the straightedge.

On ground areas not to be overlaid with OGFC, apply a fog seal under section 37-4.02.

39-2.01C(17) Data Cores

Not Used

39-2.01D Payment

The payment quantity for geosynthetic pavement interlayer is the area measured from the actual pavement covered.

The Agency does not adjust the unit price for an increase or decrease in the tack coat quantity.

The payment quantity for HMA of the type shown on the Bid Item List is measured based on the combined mixture weight. If recorded batch weights are printed automatically, the bid item for HMA is measured by using the printed batch weights, provided:

1. Total aggregate and supplemental fine aggregate weight per batch is printed. If supplemental fine aggregate is weighed cumulatively with the aggregate, the total aggregate batch weight must include the supplemental fine aggregate weight.
2. Total virgin asphalt binder weight per batch is printed.
3. Each truckload's zero tolerance weight is printed before weighing the first batch and after weighing the last batch.
4. Time, date, mix number, load number and truck identification is correlated with a load slip.
5. Copy of the recorded batch weights is certified by a licensed weigh master and submitted.

The payment quantity for place hot mix asphalt dike of the type shown on the Bid Item List is the length measured from end to end.

The payment quantity for place hot mix asphalt (miscellaneous areas) is the area measured for the in-place compacted area.

The payment quantity for speed humps, road humps, and speed tables is the length measured along the centerline to the nearest 0.1-foot.

The Engineer does not adjust the unit price for an increase or decrease in the prepaving grinding day quantity.

39-2.02 TYPE A HOT MIX ASPHALT

39-2.02A General

39-2.02A(1) Summary

Section 39-2.02 includes specifications for producing and placing Type A hot mix asphalt.

You may produce Type A HMA using an authorized WMA technology.

39-2.02A(2) Definitions

Reserved

39-2.02A(3) Submittals

39-2.02A(3)(a) General

Reserved

39-2.02A(3)(b) Job Mix Formula

Not Used

39-2.02A(3)(c) Reclaimed Asphalt Pavement

Submit QC test results for RAP gradation with the combined aggregate gradation within 2 business days of taking RAP samples during Type A HMA production.

39-2.02A(3)(d)–39-2.02A(3)(f) Reserved

39-2.02A(4) Quality Assurance

39-2.02A(4)(a) General

Reserved

39-2.02A(4)(b) Quality Control

39-2.02A(4)(b)(i) General

Reserved

39-2.02A(4)(b)(ii) Aggregates

Test the quality characteristics of aggregates under the test methods and frequencies shown in the following table:

Aggregate Testing Frequencies

Quality characteristic	Test method	Minimum testing frequency
Gradation ^a	AASHTO T 27	1 per 750 tons and any remaining part
Sand equivalent ^{b, c}	AASHTO T 176	
Moisture content ^d	AASHTO T 255	
Crushed particles	AASHTO T 335	1 per 10,000 tons or 2 per project whichever is greater
Los Angeles Rattler	AASHTO T 96	
Flat and elongated particles	ASTM D4791	
Fine aggregate angularity	AASHTO T 304 Method A	

^aIf RAP is used, test the combined aggregate gradation under California Test 384.

^bReported value must be the average of 3 tests from a single sample.

^cUse of a sand reading indicator is required as shown in AASHTO T 176, Figure 1. Sections 4.7, "Manual Shaker," 7.1.2, "Alternate Method No. 2," and 8.4.3, "Hand Method," do not apply. Prepare the stock solution as specified in section 4.8.1, "Stock solution with formaldehyde," except omit the addition of formaldehyde.

^dTest at continuous mixing plants only. If RAP is used, test the RAP moisture content at continuous mixing plant and batch mixing plant.

For lime treated aggregate, test aggregate before treatment and test for gradation and moisture content during HMA production.

39-2.02A(4)(b)(iii) Reclaimed Asphalt Pavement

Sample and test processed RAP at a minimum frequency of 1 sample per 1,000 tons with a minimum of 6 samples per fractionated stockpile. If the fractionated stockpile has not been augmented, the 3 RAP samples taken and tested for mix design can be part of this minimum sample requirement. If a processed RAP stockpile is augmented, sample and test processed RAP quality characteristics at a minimum frequency of 1 sample per 500 tons of augmented RAP.

When tested under AASHTO T 308, the uncorrected binder content of the combined RAP sample must be within ± 2.00 percent of the average uncorrected asphalt binder content reported on page 4 of your Contractor Hot Mix Asphalt Design Data form. If a new processed RAP stockpile is required, the average uncorrected binder content of the new processed RAP stockpile tested under AASHTO T 308 must be within ± 2.00 percent of the average uncorrected binder content reported on page 4 of your Contractor Hot Mix Asphalt Design Data form. You must use the same ignition oven used to determine the uncorrected asphalt binder content reported on page 4 of your Contractor Hot Mix Asphalt Design Data form.

The combined RAP sample when tested under AASHTO T 209 must be within ± 0.06 of the average maximum specific gravity initially reported.

During Type A HMA production, sample RAP twice daily and perform QC testing for:

1. Aggregate gradation at least once a day under California Test 384
2. Moisture content at least once a day

39-2.02A(4)(b)(iv)–39-2.02A(4)(b)(viii)

Reserved

39-2.02A(4)(b)(ix) Type A Hot Mix Asphalt Production

Test the quality characteristics of Type A HMA under the test methods and frequencies shown in the following table:

Type A HMA Production Testing Frequencies

Quality characteristic	Test method	Minimum testing frequency
Asphalt binder content	AASHTO T 308, Method A	1 per 750 tons and any remaining part
HMA moisture content	AASHTO T 329	1 per 2,500 tons but not less than 1 per paving day
Air voids content	AASHTO T 269	1 per 4,000 tons or 2 every 5 paving days, whichever is greater
Voids in mineral aggregate	MS-2 Asphalt Mixture Volumetrics	1 per 10,000 tons or 2 per project whichever is greater
Dust proportion	MS-2 Asphalt Mixture Volumetrics	
Density of core	California Test 375	2 per paving day
Nuclear gauge density	California Test 375	3 per 250 tons or 3 per paving day, whichever is greater

39-2.02A(4)(c)–39-2.02A(4)(d) Reserved

39-2.02A(4)(e) Agency Acceptance

The Agency accepts Type A HMA based on compliance with:

1. Aggregate quality requirements shown in the following table:

Aggregate Quality

Quality characteristic	Test method	Requirement
Aggregate gradation ^a	AASHTO T 27	JMF ± Tolerance
Percent of crushed particles	AASHTO T 335	95
Coarse aggregate (min, %)		
One-fractured face		
Two-fractured faces		
Fine aggregate (min, %)	AASHTO T 335	90
(Passing No. 4 sieve and retained on No. 8 sieve.)		
One-fractured face		
Los Angeles Rattler (max, %)	AASHTO T 96	12
Loss at 100 Rev.		
Loss at 500 Rev.		
Sand equivalent (min.) ^{b, c}	AASHTO T 176	47
Flat and elongated particles (max, % by weight at 5:1)	ASTM D4791	10
Fine aggregate angularity (min, %) ^d	AASHTO T 304, Method A	45

^aThe Engineer determines combined aggregate gradations containing RAP under California Test 384. The Engineer uses the correlation factor from Contractor Hot Mix Asphalt Design Data form and mathematically combines the virgin and corrected RAP aggregate gradations at the correct proportions to obtain the combined gradation.

^bReported value must be the average of 3 tests from a single sample.

^cUse of a sand reading indicator is required as shown in AASHTO T 176, Figure 1. Sections 4.7, "Manual Shaker," 7.1.2, "Alternate Method No. 2," and 8.4.3, "Hand Method," do not apply. Prepare the stock solution as specified in section 4.8.1, "Stock solution with formaldehyde," except omit the addition of formaldehyde.

^dThe Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

2. If RAP is used, RAP quality requirements shown in the following table:

Reclaimed Asphalt Pavement Quality

Quality characteristic	Test method	Requirement
Uncorrected binder content (% within the average value reported ^a)	AASHTO T 308	±2.00
Specific gravity (within the average value reported ^b)	AASHTO T 209	±0.06

^aAverage uncorrected binder content of three ignition oven tests performed at JMF verification. Engineer must use the same ignition oven used to determine the average uncorrected binder content at JMF verification

^bAverage maximum specific gravity reported on page 4 of Contractor Hot Mix Asphalt Design Data form.

3. In place Type A HMA quality requirements shown in the following table:

Type A HMA Acceptance In Place

Quality characteristic	Test method	Requirement
Asphalt binder content (%)	AASHTO T 308 Method A	JMF -0.30, +0.50
HMA moisture content (max, %)	AASHTO T 329	1.00
Air voids content at N _{design} (%) ^{a, b}	AASHTO T 269	4.0 ± 1.5 (5.0 ± 1.5 for 1-inch aggregate)
Voids in mineral aggregate on laboratory-produced HMA (min, %) ^d Gradation: No. 4 3/8-inch 1/2-inch 3/4-inch 1-inch with NMAS = 1-inch with NMAS = 3/4-inch	MS-2 Asphalt Mixture Volumetrics	16.5–19.5 15.5–18.5 14.5–17.5 13.5–16.5 13.5–16.5 14.5–17.5
Voids in mineral aggregate on plant-produced HMA (min, %) ^a Gradation: No. 4 3/8-inch 1/2-inch 3/4-inch 1-inch with NMAS = 1-inch with NMAS = 3/4-inch	MS-2 Asphalt Mixture Volumetrics ^c	15.5–18.5 14.5–17.5 13.5–16.5 12.5–15.5 12.5–15.5 13.5–16.5
Dust proportion	MS-2 Asphalt Mixture Volumetrics	0.6–1.3 ^g
Relative Compaction ^{e, f}	California Test 375	95.0–97.0

^aPrepare 3 briquettes. Report the average of 3 tests.

^bThe Engineer determines the bulk specific gravity of each lab-compacted briquette under AASHTO T 275, Method A, and theoretical maximum specific gravity under AASHTO T 209, Method A.

^cDetermine bulk specific gravity under AASHTO T 275, Method A.

^dThe Engineer determines the laboratory-prepared Type A HMA value for only mix design verification.

^eThe Engineer determines Relative Compaction under California Test 375

^fThe Engineer determines density under California Test 308.

^gFor lime-treated aggregates, the dust proportion requirement is 0.6–1.5.

39-2.02B Materials

39-2.02B(1) General

Reserved

39-2.02B(2) Type A Hot Mix Asphalt Mix Design

The mix design for Type A HMA must comply with the requirements shown in the following table:

Type A HMA Mix Design Requirements

Quality characteristic	Test method	Requirement
Air voids content (%)	AASHTO T 269 ^a	N _{initial} > 8.0 N _{design} = 4.0 (N _{design} = 5.0 for 1-inch aggregate) N _{max} > 2.0
Voids in mineral aggregate (min, %) ^b Gradation: No. 4 3/8-inch 1/2-inch 3/4-inch 1-inch with NMAS = 1-inch with NMAS = 3/4-inch	MS-2 Asphalt Mixture Volumetrics	
Dust proportion	MS-2 Asphalt Mixture Volumetrics	0.6–1.3

^aCalculate the air voids content of each specimen using AASHTO T 275, Method A, to determine bulk specific gravity. Use AASHTO T 209, Method A, to determine theoretical maximum specific gravity. Use a digital manometer and pycnometer when performing AASHTO T 209.

^bMeasure bulk specific gravity using AASHTO T 275, Method A.

For Type A HMA mixtures using RAP, the maximum allowed binder replacement is 25.0 percent in the upper 0.2 foot exclusive of OGFC and 40.0 percent below. The binder replacement is calculated as a percentage of the approved JMF target asphalt binder content.

For RAP substitution of 15 percent or less, the grade of the virgin binder must be the specified grade of asphalt binder for Type A HMA.

39-2.02B(3) Asphalt Binder

Reserved

39-2.02B(4) Aggregates

39-2.02B(4)(a) General

Before the addition of asphalt binder and lime treatment, the aggregates must comply with the requirements shown in the following table:

Aggregate Quality

Quality characteristic	Test method	Requirement
Percent of crushed particles:		
Coarse aggregate (min, %)		
One-fractured face		95
Two-fractured faces		90
Fine aggregate (min, %)	AASHTO T 335	
(Passing No. 4 sieve and retained on No. 8 sieve.)		
One-fractured face		70
Los Angeles Rattler (max, %)		
Loss at 100 Rev.	AASHTO T 96	12
Loss at 500 Rev.		40
Sand equivalent (min) ^a	AASHTO T 176	47
Flat and elongated particles (max, % by weight at 5:1)	ASTM D4791	10
Fine aggregate angularity (min, %) ^b	AASHTO T 304, Method A	45

^aThe reported value must be the average of 3 tests from a single sample. Use of a sand reading indicator is required as shown in AASHTO T 176, Figure 1. Sections 4.7, "Manual Shaker," 7.1.2, "Alternate Method No. 2," and 8.4.3, "Hand Method," do not apply. Prepare the stock solution as specified in section 4.8.1, "Stock solution with formaldehyde," except omit the addition of formaldehyde.

^bThe Engineer waives this specification if the Type A HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate, except if your JMF fails verification. Manufactured sand is fine aggregate produced by crushing rock or gravel.

39-2.02B(4)(b) Aggregate Gradations

The aggregate gradations for Type A HMA must comply with the requirements shown in the following table:

Aggregate Gradation Requirements

Type A HMA pavement thickness shown	Gradation
0.10 foot	3/8 inch
Greater than 0.10 to less than 0.20 foot	1/2 inch
0.20 to less than 0.25 foot	3/4 inch
0.25 foot or greater	3/4 inch or 1 inch

Aggregate gradation must be within the TV limits for the specified sieve size shown in the following tables:

**Aggregate Gradations for Type A HMA
(Percentage Passing)**

1 inch

Sieve size	Target value limit	Allowable tolerance
1"	100	--
3/4"	88–93	TV ± 5
1/2"	72–85	TV ± 6
3/8"	55–70	TV ± 6
No. 4	35–52	TV ± 7
No. 8	22–40	TV ± 5
No. 30	8–24	TV ± 4
No. 50	5–18	TV ± 4
No. 200	3.0–7.0	TV ± 2.0

3/4 inch

Sieve size	Target value limit	Allowable tolerance
1"	100	--
3/4"	90–98	TV ± 5
1/2"	70–90	TV ± 6
No. 4	42–58	TV ± 5
No. 8	29–43	TV ± 5
No. 30	10–23	TV ± 4
No. 200	2.0–7.0	TV ± 2.0

1/2 inch

Sieve size	Target value limit	Allowable tolerance
3/4"	100	--
1/2"	95–98	TV ± 5
3/8"	72–95	TV ± 5
No. 4	52–69	TV ± 5
No. 8	35–55	TV ± 5
No. 30	15–30	TV ± 4
No. 200	2.0–8.0	TV ± 2.0

3/8 inch

Sieve size	Target value limit	Allowable tolerance
1/2"	100	--
3/8"	95–98	TV ± 5
No. 4	55–75	TV ± 5
No. 8	30–50	TV ± 5
No. 30	15–35	TV ± 5
No. 200	2.0–9.0	TV ± 2.0

No. 4

Sieve size	Target value limit	Allowable tolerance
3/8"	100	--
No. 4	95–98	TV ± 5
No. 8	70–80	TV ± 6
No. 30	34–45	TV ± 5
No. 200	2.0–12.0	TV ± 4.0

39-2.02B(5) Reclaimed Asphalt Pavement

You may substitute RAP for part of the virgin aggregate in a quantity not to exceed 15 percent of the aggregate blend.

Provide enough space at your plant for complying with all RAP handling requirements. Provide a clean, graded base, well drained area for stockpiles.

If RAP is from multiple sources, blend the RAP thoroughly and completely before fractionating.

Isolate the processed RAP stockpiles from other materials. Store processed RAP in conical or longitudinal stockpiles. Processed RAP must not be agglomerated or be allowed to congeal in large stockpiles.

39-2.02B(6)–39-2.02B(10) Reserved

39-2.02B(11) Type A Hot Mix Asphalt Production

If RAP is used, the asphalt plant must automatically adjust the virgin asphalt binder to account for RAP percentage and RAP binder.

RAP must be within ± 3 of RAP percentage shown in your Contractor Job Mix Formula Proposal form without exceeding 15 percent.

39-2.02C Construction

Where the pavement thickness shown is 0.30 foot or greater, you may place Type A HMA in multiple lifts not less than 0.15 foot each. If placing Type A HMA in multiple lifts:

1. Table in Section 39-2.02B(4)(b) does not apply
2. Aggregate gradation must comply with the requirements shown in the following table:

Aggregate Gradation Requirements

Type A HMA lift thickness	Gradation
0.15 to less than 0.20 foot	1/2 inch
0.20 foot to less than 0.25 foot	3/4 inch
0.25 foot or greater	3/4 inch or 1 inch

3. Apply a tack coat before placing a subsequent lift
4. The Engineer evaluates each HMA lift individually for compliance

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.

Spread Type A HMA at the ambient air and surface temperatures shown in the following table:

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

For Type A HMA and Type A HMA produced with WMA water injection 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 250 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 150 degrees F
2. Modified, complete:
 - 2.1. 1st coverage of breakdown compaction before the surface temperature drops below 240 degrees F
 - 2.2. Breakdown and intermediate compaction before the surface temperature drops below 180 degrees F
 - 2.3. Finish compaction before the surface temperature drops below 140 degrees F

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.

You may cool Type A HMA with water when rolling activities are complete if authorized.

39-2.02D Payment

Not Used

39-2.03 RUBBERIZED HOT MIX ASPHALT–GAP GRADED

39-2.03A General

39-2.03A(1) Summary

Section 39-2.03 includes specifications for producing and placing rubberized hot mix asphalt–gap graded.

You may produce RHMA-G using a WMA technology.

39-2.03A(2) Definitions

Reserved

39-2.03A(3) Submittals**39-2.03A(3)(a) General**

At least 5 business days before use, submit the permit issued by the local air district for asphalt rubber binder blending 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.

At least 10 days before RHMA-G production, submit the name of an authorized laboratory to perform QC testing for asphalt rubber binder. The authorized laboratory must comply with the Caltrans Independent Assurance Program.

39-2.03A(3)(b) Job Mix Formula

With your proposed JMF, include the SDS for:

1. Base asphalt binder
2. CRM and asphalt modifier
3. Blended asphalt rubber binder components

39-2.03A(3)(c) Asphalt Rubber Binder

Submit a proposal for asphalt rubber binder design and profile. In the design, include the asphalt binder, asphalt modifier, and CRM and their proportions.

If you change asphalt rubber binder supplier or any component material used in asphalt rubber binder or its percentage, submit a new JMF.

For the asphalt rubber binder used, submit:

1. Log of production daily.
2. Certificate of compliance with test results for CRM and asphalt modifier with each truckload delivered to the HMA plant. The certificate of compliance for asphalt modifier must represent no more than 5,000 lb.
3. Certified weight slips for the CRM and asphalt modifier furnished.
4. QC test results on viscosity within 2 business days after sampling.
5. QC test results on cone penetration, resilience, and softening point within 3 business days after sampling.

Submit a certificate of compliance for the CRM and asphalt modifier. With the certificate of compliance, submit test results for CRM and asphalt modifier with each truckload delivered to the HMA plant.

39-2.03A(4) Quality Assurance**39-2.03A(4)(a) General**

Reserved

39-2.03A(4)(b) Job Mix Formula Verification

If you request, the Engineer verifies RHMA-G quality requirements within 7 days of receiving all verification samples and after the JMF document submittal has been accepted.

39-2.03A(4)(c) Quality Control**39-2.03A(4)(c)(i) General**

Reserved

39-2.03A(4)(c)(ii) Asphalt Rubber Binder

39-2.03A(4)(c)(ii)(A) General

The asphalt rubber binder blending plant must be authorized under the Department's Material Plant Quality Program.

Take asphalt rubber binder samples from the feed line connecting the asphalt rubber binder tank to the HMA plant.

39-2.03A(4)(c)(ii)(B) Asphalt Modifier

Test asphalt modifier under the test methods and frequencies shown in the following table:

Asphalt Modifier for Asphalt Rubber Binder

Quality characteristic	Test method	Frequency
Viscosity	ASTM D445	1 per shipment
Flash point	ASTM D92	
Molecular analysis: Asphaltenes Aromatics	ASTM D2007	1 per shipment

39-2.03A(4)(c)(ii)(C) Crumb Rubber Modifier

Sample and test scrap tire crumb rubber and high natural crumb rubber separately. Test CRM under the test methods and frequencies shown in the following table:

Crumb Rubber Modifier for Asphalt Rubber Binder

Quality characteristic	Test method	Frequency
Scrap tire crumb rubber gradation	California Test 385	1 per 10,000 lb
High natural 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 crumb rubber	ASTM D297	1 per 3,400 lb

39-2.03A(4)(c)(ii)(D) Asphalt Rubber Binder

Test asphalt rubber binder under the test methods and frequencies shown in the following table:

Quality characteristic	Test method	Frequency
Cone penetration	ASTM D217	1 per lot ^a
Resilience	ASTM D5329	
Softening point	ASTM D36/D36M	
Viscosity	ASTM D7741/D7741M	15 minutes before use per lot ^a

^aThe lot is defined in the Department's *MPQP*.

Retain the sample from each lot. Test 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.

39-2.03A(4)(c)(iii) Aggregates

Test the quality characteristics of aggregates under the test methods and frequencies shown in the following table:

Aggregate Testing Frequencies

Quality characteristic	Test method	Minimum testing frequency
Gradation	AASHTO T 27	1 per 750 tons and any remaining part
Sand equivalent ^{a, b}	AASHTO T 176	
Moisture content ^c	AASHTO T 255	
Crushed particles	AASHTO T 335	1 per 10,000 tons or 2 per project, whichever is greater
Los Angeles Rattler	AASHTO T 96	
Flat and elongated particles	ASTM D4791	
Fine aggregate angularity	AASHTO T 304, Method A	

^aReported value must be the average of 3 tests from a single sample.

^bUse of a sand reading indicator is required as shown in AASHTO T 176, Figure 1. Sections 4.7, "Manual Shaker," 7.1.2, "Alternate Method No. 2," and 8.4.3, "Hand Method," do not apply. Prepare the stock solution as specified in section 4.8.1, "Stock solution with formaldehyde," except omit the addition of formaldehyde.

^cTest at continuous mixing plants only.

For lime treated aggregate, test aggregate before treatment and test for gradation and moisture content during RHMA-G production.

39-2.03A(4)(c)(iv)–39-2.03A(4)(c)(viii) Reserved

39-2.03A(4)(c)(ix) Rubberized Hot Mix Asphalt–Gap Graded Production

Test the quality characteristics of RHMA-G under the test methods and frequencies shown in the following table:

RHMA-G Production Testing Frequencies

Quality characteristic	Test method	Minimum testing frequency
Asphalt binder content	AASHTO T 308, Method A	1 per 750 tons and any remaining part
HMA moisture content	AASHTO T 329	1 per 2,500 tons but not less than 1 per paving day
Air voids content	AASHTO T 269	1 per 4,000 tons or 2 every 5 paving days, whichever is greater
Voids in mineral aggregate	MS-2 Asphalt Mixture Volumetrics	1 per 10,000 tons or 2 per project whichever is greater
Dust proportion	MS-2 Asphalt Mixture Volumetrics	
Density of core	California Test 375	2 per paving day
Nuclear gauge density	California Test 375	3 per 250 tons or 3 per paving day, whichever is greater

39-2.03A(4)(d) Reserved

39-2.03A(4)(e) Agency Acceptance

39-2.03A(4)(e)(i) General

The Agency accepts RHMA-G based on compliance with:

1. Aggregate quality requirements shown in the following table:

Aggregate Quality

Quality characteristic	Test method	Requirement
Aggregate gradation	AASHTO T 27	JMF ± Tolerance
Percent of crushed particles	AASHTO T 335	--
Coarse aggregate (min, %)		
One-fractured face		
Two-fractured faces		
Fine aggregate (min, %) (Passing No. 4 sieve and retained on No. 8 sieve.)	AASHTO T 335	90
One-fractured face		
Los Angeles Rattler (max, %)	AASHTO T 96	40
Loss at 100 Rev.		
Loss at 500 Rev.		
Sand equivalent (min) ^{a, b}	AASHTO T 176	47
Flat and elongated particles (max, % by weight at 5:1)	ASTM D4791	Report only
Fine aggregate angularity (min, %) ^c	AASHTO T 304, Method A	45

^aReported value must be the average of 3 tests from a single sample.

^bUse of a sand reading Indicator is required as shown in AASHTO T 176, Figure 1. Sections 4.7, "Manual Shaker," 7.1.2, "Alternate Method No. 2," and 8.4.3, "Hand Method," do not apply. Prepare the stock solution as specified in section 4.8.1, "Stock solution with formaldehyde," except omit the addition of formaldehyde.

^cThe Engineer waives this specification if RHMA-G contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

2. In-place RHMA-G quality requirements shown in the following table:

RHMA-G Acceptance In Place

Quality characteristic	Test method	Requirement
Asphalt binder content (%)	AASHTO T 308 Method A	JMF -0.40, +0.50
HMA moisture content (max, %)	AASHTO T 329	1.00
Air voids content @ N _{design} (%) ^{a, b}	AASHTO T 269	4.0 ± 1.5
Voids in mineral aggregate on laboratory-produced HMA ^d (min, %) Gradation: 1/2-inch and 3/4-inch	MS-2 Asphalt Mixture Volumetrics ^c	18.0–23.0
Voids in mineral aggregate on plant-produced HMA (min, %) ^a Gradation: 1/2-inch and 3/4-inch	MS-2 Asphalt Mixture Volumetrics ^c	18.0–23.0
Dust proportion ^a	MS-2 Asphalt Mixture Volumetrics	Report only
Relative Compaction ^{e, f}	California Test 375	91.0–97.0

^aPrepare 3 briquettes. Report the average of 3 tests.

^bThe Engineer determines the bulk specific gravity of each lab-compacted briquette under AASHTO T 275, Method A, and theoretical maximum specific gravity under AASHTO T 209, Method A.

^cDetermine bulk specific gravity under AASHTO T 275, Method A.

^dThe Engineer determines the laboratory-prepared RHMA-G value for only mix design verification.

^eThe Engineer determines Relative Compaction under California Test 375

^fThe Engineer determines maximum density

39-2.03A(4)(e)(ii) Asphalt Rubber Binder

39-2.03A(4)(e)(ii)(A) General

The Agency does not use asphalt rubber binder design profile for production acceptance.

39-2.03A(4)(e)(ii)(B) Asphalt Modifier

The Agency accepts asphalt modifier based on compliance with the requirements shown in the following table:

Quality characteristic	Test method	Requirement
Viscosity at 100 °C (m ² /s x 10 ⁻⁶)	ASTM D445	X ± 3 ^a
Flash point (min, °C)	ASTM D92	207
Molecular analysis: Asphaltenes (max, % by mass)	ASTM D2007	0.1
Aromatics (min, % by mass)		55

^aThe symbol X is the asphalt modifier viscosity.

39-2.03A(4)(e)(ii)(C) Crumb Rubber Modifier

CRM used must be on the Authorized Materials List for Crumb Rubber Modifier.

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.

The Agency accepts CRM, scrap tire crumb rubber, and high natural crumb rubber based on compliance with the requirements shown in the following table:

Quality characteristic	Test method	Requirement
Scrap tire crumb rubber gradation (% passing No. 8 sieve)	California Test 385	100
High natural crumb rubber gradation (% passing No. 10 sieve)	California Test 385	100
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 crumb rubber (%)	ASTM D297	40.0–48.0

Scrap tire crumb rubber and high natural crumb rubber are sampled and tested separately.

39-2.03A(4)(e)(ii)(D) Asphalt Rubber Binder

For Agency acceptance testing, take samples of asphalt rubber binder in the Engineer's presence every 5 lots or once a day, whichever is greater. Each sample must be in a 6 qt can with open top and friction lid.

The Agency accepts asphalt rubber binder based on compliance with the requirements shown in the following table:

Quality characteristic	Test method	Requirement
Cone penetration at 25 °C (0.10 mm)	ASTM D217	25–70
Resilience at 25 °C (min, % rebound)	ASTM D5329	18
Softening point (°C)	ASTM D36/D36M	52–74
Viscosity at 190 °C (centipoises) ^a	ASTM D7741/D7741M	1,500–4,000

^aPrepare sample for viscosity test under California Test 388.

39-2.03A(4)(e)(iii)–39-2.03A(4)(e)(v) Reserved

39-2.03B Materials

39-2.03B(1) General

Reserved

39-2.03B(2) Rubberized Hot Mix Asphalt–Gap Graded Mix Design

For RHMA-G, the mix design must comply with the requirements shown in the following table:

RHMA-G Mix Design Requirements

Quality characteristic	Test method	Requirement
Air voids content (%)	AASHTO T 269 ^a	N _{design} = 4.0
Gyrations compaction (no. of gyrations)	AASHTO T 312	N _{design} = 50–150 ^b
Voids in mineral aggregate (min, %)	SP-2 Asphalt Mixture Volumetrics ^c	18.0–23.0
Dust proportion	SP-2 Asphalt Mixture Volumetrics	Report only

^aCalculate the air voids content of each specimen using AASHTO T 275, Method A, to determine bulk specific gravity and AASHTO T 209, Method A, to determine theoretical maximum specific gravity. Under AASHTO T 209, use a digital manometer and pycnometer when performing AASHTO T 209.

^bSuperpave gyratory compactor ram pressure may be increased to a maximum of 825kPa, and specimens may be held at a constant height for a maximum of 90 minutes.

^cMeasure bulk specific gravity using AASHTO T 275, Method A.

Determine the quantity of asphalt rubber binder to be mixed with the aggregate for RHMA-G as follows:

1. Base the calculations on the average of 3 briquettes produced at each asphalt rubber binder content.
2. Plot asphalt rubber binder content versus average air voids content for each set of 3 specimens and connect adjacent points with a best-fit curve.
3. Calculate voids in mineral aggregate for each specimen, average each set, and plot the average versus asphalt rubber binder content.
4. Calculate the dust proportion and plot versus asphalt rubber binder content.
5. From the curve plotted, select the theoretical asphalt rubber binder content at 4 percent air voids.
6. At the selected asphalt rubber binder content, calculate dust proportion.
7. Record the asphalt rubber binder content as the OBC.

The OBC must not fall below 7.5 percent by total weight of the mix.

The mixing temperature of the aggregate must be from 300 to 325 degrees F. The mixing temperature of the asphalt rubber binder must be from 375 to 425 degrees F. The compaction temperature of the combined mixture must be from 290 to 320 degrees F.

39-2.09 HOT MIX ASPHALT LOW VOLUME (HMA-LV)

39-2.09A General

39-2.09A(1) Summary

Section 39-2.09 includes specifications issued by the California Asphalt Pavement Association (CalAPA) for producing and placing HMA-LV. You may produce HMA-LV using an authorized WMA technology.

39-2.09A(2) Definitions

Reserved

39-2.09A(3) Submittals

39-2.09A(3)(a) General

Reserved

39-2.09A(3)(b) Job Mix Formula

The JMF must be based on the Superpave HMA mix design determined as described in *MS-2 Asphalt Mix Design Methods* by the Asphalt Institute as modified herein.

Use Superpave parameters and JMF requirements as stipulated in the Special Provisions.

39-2.09A(3)(c) Reclaimed Asphalt Pavement

You may substitute RAP for part of the virgin aggregate in a quantity not to exceed 15 percent of the aggregate blend.

If requested by the Engineer, submit QC test results for RAP gradation with the combined aggregate gradation within 2 business days of taking RAP samples during HMA production.

39-2.09A(4) Quality Assurance

39-2.09A(4)(a) General

Reserved

39-2.09A(4)(b) Quality Control

39-2.09A(4)(b)(i) General

Reserved

39-2.09A(4)(b)(ii) Aggregates

Test the quality characteristics of aggregates under the test methods and frequencies shown in the following table:

Aggregate Testing Frequencies

Quality characteristic	Test method	Minimum testing frequency
Gradation ^a	AASHTO T 27	1 per 750 tons
Sand equivalent ^{b, c}	AASHTO T 176	
Moisture content ^d	AASHTO T 255	
Crushed particles	AASHTO T 335	Production Startup and 1 per 10,000 tons
Los Angeles Rattler	AASHTO T 96	
Flat and elongated particles	ASTM D4791	
Fine aggregate angularity ^e	AASHTO T 304 Method A	

^aIf RAP is used, test the combined aggregate gradation under California Test 384.

^bReported value must be the average of 3 tests from a single sample.

^cUse of a sand reading indicator is required as shown in AASHTO T 176, Figure 1. Sections 4.7, "Manual Shaker," 7.1.2, "Alternate Method No. 2," and 8.4.3, "Hand Method," do not apply. Prepare the stock solution as specified in section 4.8.1, "Stock solution with formaldehyde," except omit the addition of formaldehyde.

^dTest at continuous mixing plants only. If RAP is used, test the RAP moisture content at continuous mixing plant and batch mixing plant.

^e Waived if 10% or less non-manufactured sand.

For lime treated aggregate, test aggregate before treatment and test for gradation and moisture content during HMA production.

39-2.09A(4)(b)(iii) Reclaimed Asphalt Pavement

During RAP production sample RAP at a minimum frequency of 1 sample per 1,000 tons with a minimum of 6 samples per stockpile and test for the following:

1. Binder content under AASHTO T 308 and T 164
2. Aggregate gradation under California Test 384

During HMA production, sample RAP daily and perform QC testing for:

1. Aggregate gradation using correlation factors from California Test 384 submitted with the job mix formula.
2. Moisture content under AASHTO T 255 for continuous mix plants only.

39-2.09A(4)(b)(iv)–39-2.09A(4)(b)(viii) Reserved

39-2.09A(4)(b)(ix) Type A Hot Mix Asphalt Production

Test the quality characteristics of HMA under the test methods and frequencies shown in the following table:

Minimum Contractor Quality Control HMA Testing

Quality characteristic	Test method	Minimum testing frequency	
		Level I	Level II
Asphalt binder content	AASHTO T 308 Method A	Production Start-up and 1 per 1,500 tons	
HMA moisture content	AASHTO T 329	1 per paving day	
Air void content	AASHTO T 269	Production Start-up and 1 per 4,000 tons	Production Start-up
Theoretical Maximum Specific Gravity	AASHTO T 209 Method A	1 per paving day	
Voids in the Mineral Aggregate	SP-2	Production Start-up and 1 for every 10,000 tons thereafter	NA
Hamburg Wheel Tracking	AASHTO T 324 (Modified)	Production Start-up and 1 for every 10,000 tons thereafter	NA

Note: For all Production Start-up sampling, reference 39-2.01A(4)(h)(v).

39-2.09A(4)(c)–39-2.09A(4)(d) Reserved

39-2.09A(4)(e) Engineer Acceptance

The Engineer accepts HMA-LV based on compliance with:

1. Aggregate quality requirements shown in the following table:

Aggregate Quality Requirements

Quality characteristic	Test method	Requirement	
		Level I	Level II
Aggregate gradation ^a	AASHTO T 27	JMF ± Tolerance	
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	50 50 20	25 20
Los Angeles Rattler (max, %) Loss at 100 Rev. Loss at 500 Rev.	AASHTO T 96	45	50
Sand equivalent (min.) ^{b, c}	AASHTO T 176	45	42
Flat and elongated particles (max, % by weight at 5:1)	ASTM D4791	NA	NA
Nonmanufactured sand, (max, %)		10	20 ^d

^aThe Engineer determines combined aggregate gradations containing RAP under California Test 384.

^bReported value must be the average of 3 tests from a single sample.

^cUse of a sand reading indicator is required as shown in AASHTO T 176, Figure 1. Sections 4.7, "Manual Shaker," 7.1.2, "Alternate Method No. 2," and 8.4.3, "Hand Method," do not apply. Prepare the stock solution as specified in section 4.8.1, "Stock solution with formaldehyde," except omit the addition of formaldehyde

^dSee note a HMA Mix Design Requirements Table in 39-2.09B(2)

2. In place HMA quality requirements shown in the following table:

Type A HMA Acceptance In Place

Quality characteristic	Test method	Level I	Level II
Asphalt binder content (%)	AASHTOT 308 Method A	JMF ± 0.50	JMF ± 0.50
HMA moisture content (max, %)	AASHTO T 329	1	1
Air voids content at N _{design} (%) ^{a, b}	AASHTO T 269	4.0 ± 1.5	3.5 ± 2.0
Voids in mineral aggregate on plant-produced HMA (min, %) ^a Gradation: No. 4 3/8-inch 1/2-inch 3/4-inch	SP-2 Asphalt Mixture Volumetrics ^c	15.0–18.0 14.0–17.0 13.0–16.0 12.0–15.0	NA
Dust proportion	SP-2 Asphalt Mixture Volumetrics	0.5–1.4	NA
Relative Compaction ^{e, f}	California Test 375	95.0 – 97.0	Method Compaction

^aPrepare 3 briquettes. Report the average of 3 tests.

^bThe Engineer determines the bulk specific gravity of each lab-compacted briquette under AASHTO T 275, Method A, and theoretical maximum specific gravity under AASHTO T 209, Method A.

^cDetermine bulk specific gravity under AASHTO T 275, Method A.

^eThe Engineer determines Relative Compaction under California Test 375

^fThe Engineer determines maximum density under California Test 308

39-2.09B Materials

39-2.09B(1) General

Reserved

39-2.09B(2) Hot Mix Asphalt Mix Design

The mix design for HMA must comply with the requirements shown in the following tables:

HMA Mix Design Requirements

Quality characteristic	Test method	Level I	Level II
Air voids content (%)	AASHTO T 269 ^a	N _{design} = 4.0	N _{design} = 3.5
Voids in mineral aggregate (min, %) ^b Gradation: No. 4 3/8-inch 1/2-inch 3/4-inch	SP-2 Asphalt Mixture Volumetrics	16.0–19.0 15.0–18.0 14.0–17.0 13.0–16.0	15.5–18.5 14.5–17.5 13.5–16.5 12.5–15.5
Dust proportion	SP-2 Asphalt Mixture Volumetrics	0.5–1.4	NA

^a Calculate the air voids content of each specimen using AASHTO T 275, Method A, to determine bulk specific gravity. Use AASHTO T 209, Method A to determine theoretical maximum specific gravity. Use a pycnometer and digital manometer when performing AASHTO T 209.

^b Measure bulk specific gravity using AASHTO T 275, Method A.

For HMA-LV mixtures using RAP, the maximum allowed binder replacement is 25.0 percent in the upper 0.2 foot exclusive of OGFC and 40.0 percent below. The binder replacement is calculated as a percentage of the approved JMF target asphalt binder content.

For HMA-LV with a binder replacement percent less than or equal to 20 percent of your specified OBC, you may request that the performance graded asphalt binder grade with upper and lower temperature classifications be reduced by 6 degrees C from the specified grade.

For HMA-LV with a binder replacement greater than 20 percent of your specified OBC and less than or equal to 40 percent of OBC, you must use a performance graded asphalt binder grade with upper and lower temperature classifications reduced by 6 degrees C from the specified grade.

39-2.09B(3) Asphalt Binder

The grade of asphalt binder for HMA-LV must be PG 64-10.

39-2.09B(4) Aggregates

39-2.09B(4)(a) General

Before the addition of asphalt binder and lime treatment, the aggregates must comply with the requirements shown in the following table:

Aggregate Quality			
Quality characteristic	Test method	Requirement	
		Level I	Level II
Aggregate gradation ^a	AASHTO T 27	JMF ± Tolerance	
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	50 50 20	25 20
Los Angeles Rattler (max, %) Loss at 100 Rev. Loss at 500 Rev.	AASHTO T 96	45	50
Sand equivalent (min.) ^{b, c}	AASHTO T 176	45	42
Flat and elongated particles (max, % by weight at 5:1)	ASTM D4791	NA	NA
Nonmanufactured sand, (max, %)		10	20 ^d

^aThe Engineer determines combined aggregate gradations containing RAP under California Test 384.

^bReported value must be the average of 3 tests from a single sample.

^cUse of a sand reading indicator is required as shown in AASHTO T 176, Figure 1 Sections 4.7, "Manual Shaker," 7.1.2, "Alternate Method No. 2," and 8.4.3, "Hand Method," do not apply. Prepare the stock solution as specified in section 4.8.1, "Stock solution with formaldehyde," except omit the addition of formaldehyde

^d See Mix Design Table in 39-2.09B

39-2.09B(4)(b) Aggregate Size and Gradations

Unless otherwise indicated in contract documents the ratio of HMA-LV lift thickness to nominal maximum aggregate size must be a minimum of 3:1. If the aggregate gradations for HMA-LV is not specified, aggregate gradations must comply with the requirements shown in the following table:

Aggregate Gradation Requirements

HMA pavement thickness shown	Gradation
0.10 foot	3/8 inch
Greater than 0.10 to less than 0.20 foot	1/2 inch
0.20 to less than 0.25 foot	1/2.20 to less
0.25 foot or greater	3/4 inch

Aggregate gradation must be within the TV limits for the specified sieve size shown in the following tables: Aggregate Gradations for Type A HMA (Percentage Passing)

3/4 inch

Sieve size	Target value limit	Allowable tolerance
1"	100	--
3/4"	90–98	TV±5
1/2"	70–90	TV±6
No.4	42–58	TV±5
No.8	29–43	TV±5
No.30	10–23	TV±4
No.200	2.0–7.0	TV±2.0

1/2 inch

Sieve size	Target value limit	Allowable tolerance
3/4"	100	--
1/2"	95–98	TV±5
3/8"	72–95	TV±5
No.4	52–69	TV±5
No.8	35–55	TV±5
No.30	15–30	TV±4
No.200	2.0–8.0	TV±2.0

3/8 inch

Sieve size	Target value limit	Allowable tolerance
1/2"	100	--
3/8"	95–98	TV±5
No.4	55–75	TV±5
No.8	30–50	TV±5
No.30	15–35	TV±5
No.200	2.0–9.0	TV±2.0

No. 4

Sieve size	Target value limit	Allowable tolerance
3/8"	100	--
No.4	95–98	TV±5
No.8	70–80	TV±6
No.30	34–45	TV±5
No.200	2.0–12.0	TV±4.0

39-2.09B(5) Reclaimed Asphalt Pavement

You may substitute RAP for part of the virgin aggregate in a quantity not to exceed 15 percent of the aggregate blend.

Provide enough space at your plant for complying with all RAP handling requirements. Provide a clean, graded base, well drained area for stockpiles.

If RAP is from multiple sources, blend the RAP thoroughly.

Isolate the RAP stockpiles from other materials. Store RAP in conical or longitudinal stockpiles. RAP must not be agglomerated or be allowed to congeal in large stockpiles.

39-2.09B(6)–39-2.09B(10) Reserved

39-2.09B(11) Type A Hot Mix Asphalt Production

If RAP is used, the asphalt plant must automatically adjust the virgin asphalt binder to account for RAP percentage and RAP binder.

During production, you may adjust hot-or cold-feed proportion controls for virgin aggregate and RAP. RAP must be within ±3 of RAP percentage described in your Contractor Job Mix Formula Proposal form.

39-2.09C Construction

Where the pavement thickness shown is greater than 0.30 foot, you may place HMA-LV in multiple lifts not less than 0.15 foot each. If placing HMA-LV in multiple lifts:

1. Aggregate gradation must comply with the requirements shown in the following table:

Aggregate Gradation Requirements

HMA-LV lift thickness	Gradation
0.15 to less than 0.20 foot	1/2 inch
0.20 foot to less than 0.25 foot	3/4 inch
0.25 foot or greater	3/4 inch

2. Apply a tack coat before placing a subsequent lift
3. The Engineer evaluates each HMA lift individually for compliance

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.

Spread Type A HMA at the ambient air and surface temperatures shown in the following table:

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

For method compaction, the maximum lift thickness must be 0.25 foot.

For HMA-LV and HMA-LV produced with water-injection technology placed under method compaction, if the asphalt binder is:

1. Unmodified, complete:
 - a. 1st coverage of breakdown compaction before the surface temperature drops below 250 degrees F
 - b. Breakdown and intermediate compaction before the surface temperature drops below 190 degrees F

- c. Finish compaction before the surface temperature drops below 150 degrees F.
- 2. Modified, complete:
 - a. 1st coverage of breakdown compaction before the surface temperature drops below 240 degrees F
 - b. Breakdown and intermediate compaction before the surface temperature drops below 180 degrees F
 - c. Finish compaction before the surface temperature drops below 140 degrees F.

For HMA produced with WMA additive technology placed under method compaction, if the asphalt binder is:

- 1. Unmodified, complete:
 - a. 1st coverage of breakdown compaction before the surface temperature drops below 240 degrees F
 - b. Breakdown and intermediate compaction before the surface temperature drops below 190 degrees F
 - c. Finish compaction before the surface temperature drops below 140 degrees F.
 - d. You may continue static rolling below 140 degrees F to remove roller marks.
- 2. Modified, complete:
 - a. 1st coverage of breakdown compaction before the surface temperature drops below 230 degrees F
 - b. Breakdown and intermediate compaction before the surface temperature drops below 170 degrees F
 - c. Finish compaction before the surface temperature drops below 130 degrees F.
 - d. You may continue static rolling below 130 degrees F to remove roller marks.

You may cool HMA with water when rolling activities are complete if authorized.

39-2.09D Payment

Not Used

Replace section 39-3.01D, “Payment,” with:

39-3.01D Payment

Payment for removal of pavement fabric is included as part of the bid items involved.

Replace section 39-3.02, “Replace Asphalt Concrete Surfacing,” with:

39-3.02 REPLACE ASPHALT CONCRETE SURFACING

39-3.02A General

Section 39-3.02 includes specifications for replacing asphalt concrete surfacing.

39-3.02B Materials

HMA to be used for replacing asphalt concrete surfacing must comply with HMA-LV as specified in section 39-2.09.

The grade of asphalt binder must be PG 64-10.

Tack coat must comply with section 39-2.01B(10).

39-3.02C Construction

Where replace asphalt concrete surfacing is shown, remove the full depth of the existing asphalt concrete surfacing and replace with HMA. The Engineer determines the exact limits of asphalt concrete surfacing to be replaced.

The Engineer demarcates the corners of rectangular areas of asphalt concrete surfacing to be replaced. Offset rectangles may overlap, but the minimum size of rectangles will be 4 x 4 ft. For convenience, you may replace pavement beyond the identified limits at your expense.

Surfacing to be replaced at locations of base failure must be replaced during the same day as surfacing removal.

Replace asphalt concrete in a lane before the lane is specified to be opened to traffic.

Exercise extreme caution in the vicinity of traffic detectors and conduits. Any detector you damage must be replaced within 72 hours by an approved electrical contractor at your expense. The location of traffic detectors will be marked on the pavement if you submit a request at least 3 days in advance.

Before removing asphalt concrete, outline the replacement area and cut neat lines with a saw or grind to full depth of the existing asphalt concrete. Do not damage asphalt concrete and base remaining in place.

If you excavate the base beyond the specified plane, replace it with HMA.

Do not use a material transfer vehicle for replacing asphalt concrete surfacing.

Before placing HMA, apply a tack coat as specified in section 39-2.01C(3)(f).

Place HMA using method compaction as specified in section 39-2.01C(2)(c).

39-3.02D Payment

The payment quantity for replace asphalt concrete surfacing is the volume determined from the dimensions shown. If not shown, the payment quantity depends on the bid item quantity and is:

1. The volume determined from the measured depth of surfacing and base replaced with HMA within the Engineer's demarcated limits
2. The area of the demarcated limits
3. The weight of HMA placed within the demarcated limits

If the Bid Item List includes roadway excavation (unsuitable material), it does not apply where base material is replaced with HMA.

Replace section 73-2.04 with:**73-2.04 Payment**

The quantity of curb and gutter and island curb to be paid for will be determined by measuring the length along the face of curb to the nearest 0.1 foot.

Replace section 73-3.02 with:**73-3.02 MATERIALS**

Cushion material must conform to section 26-1.02D.

Add to the start of section 73-3.03

Install block-outs as necessary to accommodate the installation of posts and poles.

Replace the 1st paragraph of section 73-3.03

Construct expansion joints at:

1. All returns and opposite expansion joints in the adjacent curb or offset curb
2. 60-foot intervals and at each side of a driveway where there is no adjacent curb

Add to the end of the 2nd paragraph of section 73-3.03

The length to width ratio of the rectangle must not exceed 1.33. Use a scoring tool that will leave the edges rounded.

Replace section 73-3.04 with:**73-3.04 Payment**

The quantity of sidewalk to be paid for will be determined by measuring the length of the center line and the width at right angles to the center line to compute the area in square feet to the nearest 0.1 of a square foot.

Payment includes the cost of providing concrete block-outs and no reduction of sidewalk area is made because of concrete block-outs.

The quantity of cushion material is not measured.

The payment quantity for minor concrete (curb ramp) includes detectable warning surface unless the Bid Item List includes a separate bid item for detectable warning surface.

77-3 RELOCATION OF GAS AND WATER SERVICES**77-3.01 GENERAL**

Do not disturb gas and water lines that do not physically conflict with the Contract work. Work around these facilities.

Remove segments of gas and water pipes that have been abandoned and are in conflict with your work. Coordinate with PG&E and EBMUD to confirm abandonment before cutting pipe.

77-3.01A Main Line Facilities

Notify the appropriate utility company if an existing gas or water pipe main line is in unavoidable physical conflict with or endangered by the proposed work. Unavoidably conflicting or endangered main pipes will be relocated or adjusted by the utility company at no expense to you.

Utilities not abandoned must be protected in place. You are responsible for any damage.

77-3.01B Facilities between the meter and the improvement served

Adjust, reset, or relocate existing water service lines between the meter and the improvement served (customer side of the meter) if they physically conflict with the improvements proposed under the Contract.

Relocate fire department stand pipes as shown on the plans and as directed by the Engineer. Comply with the requirements of the local fire department and local water department. Prepare plans and pay fees for a permit from the local fire department and the local Building Inspection Department prior to relocating the stand pipes.

Relocate water back flow valves as shown on the plans and as directed by the Engineer. Comply with local water department requirements. Prepare plans and pay for fees for a permit from the local Building Inspection Department prior to relocating the back flow valves.

77-3.02 MATERIALS

When resetting water service between the meter and the improvement served (customer side of the meter), use new materials of the same size, kind and quality as those of the original facility unless otherwise approved by the Engineer.

77-3.03 CONSTRUCTION

Not Used

77-3.04 PAYMENT

Not Used

77-4 SANITARY SEWER SYSTEMS**77-4.01 GENERAL**

Do not disturb sanitary sewers (including laterals and house connections) that do not physically conflict with the Contract work. Work around these improvements and exercise caution to prevent damage.

Unless otherwise permitted by the sanitary district, provide access to all sanitary sewer manholes and cleanouts at all time,

Comply with section 19-3.02, "Structure Excavation and Backfill" and section 71, "Existing Drainage Facilities."

77-4.02 MATERIALS

Comply with the material specifications of the sanitary district and the California plumbing code as adopted by Alameda County.

At no additional expense to the Agency, furnish cast iron pipe or special fittings where required by the sanitary district or plumbing code.

77-4.03 CONSTRUCTION

Adjust or relocate sanitary sewers (including laterals and house connections) that physically conflict with the proposed location of improvements to be placed under this Contract.

Comply with the construction specifications of the sanitary district.

Upon written approval of the Engineer and the sanitary district, you may remove and replace sewers for your convenience and at your expense.

When removing sewers, you must provide a discharge point for the sewage. Discharge of sewage into the excavation is prohibited.

Repair all sewer damage caused by your operations at your expense.

77-4.04 PAYMENT

Not Used

77-5 BUS STOP SHELTERS

A vendor to AC Transit will furnish, install, refurbish, and relocate all bus shelters for the Project.

Coordinate all bus stop work with AC Transit and its vendor soon after receiving Notice to Proceed.

Do not perform work at an existing bus stop that would interrupt use of the stop before AC Transit can adjust its operations to accommodate your work as coordinated.

Coordinate work sequencing (bus bulb, shelter foundation, and/or electrical connection if shown), demolition work, and the precise foundation location of any relocated or new shelter.

Contact David Berman, Senior Transportation Planner at AC Transit (510-891-4744 dberman@actransit.org) to arrange for coordination.

78-2.04 PAYMENT

Not Used

Replace section 78-4.03, “(Painting Concrete) Materials,” with:

78-4.03B Materials

Coatings for concrete must comply with the specifications for acrylic emulsion paint for exterior masonry in section 91-4.02B.

Colors must be as shown. Colors for curb markings must comply with the specifications for paint in section 84-2.02G.

Replace section 82-3.02C with:**82-3.02C Wood Posts**

Not Used

Replace section 82-3.02D with:**82-3.02D Laminated Wood Box Posts**

Not Used

Replace section 82-3.03A with:**82-3.03A General**

The line between the center of the top of a post and the center of the post at ground level must not deviate from a plumb line by more than 0.02 foot in 10 feet.

Unless surplus excavated material is hazardous, uniformly spread it along the adjacent roadway where designated by the Engineer.

Fasten square steel tube posts to square steel anchor sleeves with square steel tube post drive rivets.

Replace section 82-3.03B with:**82-3.03B Sign Panel Installation**

Not Used

Replace section 82-3.04 with:**82-3.04 Payment**

The payment quantity for roadside signs installed by the mast arm hanger method on traffic signal mast arms is the quantity of the sign panels on these elements.

Payment for furnishing sign panels is included in the payment for roadside signs. Each roadside sign installation is 1 measurement unit, regardless of the supporting structure type, the number of posts or sign panels involved, or the thickness or reflectivity level of the sign panels.

Replace section 82-9.03A with:**82-9.03A General**

Remove roadside signs only when replacement signs are installed or when the existing signs are no longer required for traffic. Reset or relocate each roadside sign the same day it is removed.

Reset or relocate roadside signs in conformance with ACPWA Standard Detail SD-700.

Salvage undamaged conforming posts and sign panels that are shown to be removed and not relocated. Single sheet aluminum signs to be salvaged must be banded on a pallet with a total weight of not more than 500 lb/pallet.

Reset or relocate roadside signs using existing posts, unless the existing post is non-conforming. In which case, install a conforming post.

Replace section 82-9.04 with:

82-9.04 Payment

Payment for remove/salvage roadside sign includes removing identified panels, frames and posts that are no longer needed.

Payment for reset or relocate roadside signs includes furnishing and installing new conforming posts where necessary and removing posts that are nonconforming or no longer needed.

One measurement unit for remove/salvage, reset or relocate roadside signs is the support (one post or two) and all of the sign panels on that support.

One measurement unit for remove/salvage roadside sign mounted on mast arm is each sign panel.

Replace section 86-1.01D(3), “Department Acceptance,” with:

86-1.01D(3) Agency Acceptance

Deliver material and equipment for testing to the Alameda County Traffic Signal Shop located at 951 Turner Court in Hayward.

Allow 30 days for testing. The Agency notifies you when testing is complete.

If the Agency accepts the material or equipment, you must pick it up from the test site and deliver it to the job site.

If the Agency 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 Agency 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 the Traffic Signal Shop

Replace the 9th paragraph of section 86-1.02B(1) with:

Sealing plug for empty conduit must have a #10 solid wire.

Replace the 12th paragraph of section 86-1.02B(1) with:

Tracer wire must be a minimum No. 10 solid copper conductor with orange insulation Type TW, THW, RHW, or USE. For direct burial, the tracer wire insulation must be Type UF.

Replace section 86-1.02C(1), “(Pull Boxes) General,” with:

86-1.02C(1) General

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 ALAMEDA COUNTY 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. *STREET LIGHTING* for a lighting system
6. *SIGN ILLUMINATION* for a sign illumination system
7. *TRAFFIC SIGNAL* 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. *FIBER OPTIC* for fiber optic cable system

A metal pull box cover must include a fitting for a bonding conductor.

The hardware must be stainless steel containing 18 percent chromium and 8 percent nickel.

Replace the 1st paragraph of section 86-1.02C(2)(b), “Nontraffic Pull Boxes,” with:

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.

Replace section 86-1.02D(3), “Warning Tape,” with:

86-1.02D(3) Warning Tape

Warning tape must be orange color polyolefin film, minimum elongation of 500 percent before breakage, water and corrosion resistant, and comply with requirements shown in the following table:

Warning Tape Requirements

Quality characteristic	Requirement
Thickness (min, mil)	4
Width (in)	4
Tensile strength of material (min, psi)	2800
Message spacing intervals (ft)	3

The warning tape must have a printed message that reads: *CAUTION: ALAMEDA COUNTY FACILITIES BELOW.*

The printed text height and color must be 1 inch, black color text over bright orange background.

Replace section 86-1.02F(1), “(Conductors and Cables) General,” with:

86-1.02F(1) General

Conductors and cables must be clearly and permanently marked the entire length of their outer surface with:

1. Manufacturer's name or trademark
2. Insulation-type letter designation
3. Conductor size
4. Voltage
5. Number of conductors for a cable

The minimum insulation thickness must be 40 mils for #14 to #10 and 54 mils for #10 to #2, and color code requirements must comply with NEC.

86-1.02F(2) Conductors

86-1.02F(2)(a) General

A conductor must be UL listed or NRTL certified and rated for 600 V(ac).

Conductors must be identified as shown in the following table:

Conductor Identification

Circuit	Signal phase or function	Identification			Copper size
		Insulation color		Band symbols	
		Base	Stripe ^a		
Signals (vehicle) ^{a,b}	2, 6	Red, yellow, brown	Black	2, 6	14
	4, 8	Red, yellow, brown	Orange	4, 8	14
	1, 5	Red, yellow, brown	None	1, 5	14
	3, 7	Red, yellow, brown	Purple	3, 7	14
Pedestrian signals	2p, 6p	Red, brown	Black	2p, 6p	14
	4p, 8p	Red, brown	Orange	4p, 8p	14
	1p, 5p	Red, brown	None	1p, 5p	14
	3p, 7p	Red, brown	Purple	3p, 7p	14
Push button assembly or accessible pedestrian signal	2p, 6p	Blue	Black	P-2, P-6	14
	4p, 8p	Blue	Orange	P-4, P-8	14
	1p, 5p	Blue	None	P-1, P-5	14
	3p, 7p	Blue	Purple	P-3, P-7	14
Traffic signal controller cabinet	Ungrounded circuit conductor	Black	None	CON-1	6
	Grounded circuit conductor	White	None	CON-2	6

Notes:

^aOn overlaps, the insulation is striped for the 1st phase in the designation, e.g., phase (2+3) conductor is striped as for phase 2.

^bBand for overlap and special phases as required

Table continued on next page...

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Conductor Identification continued

Circuit	Signal phase or function	Identification			Copper size
		Insulation color		Band symbols	
		Base	Stripe ^a		
Highway lighting pull box to luminaire	Ungrounded - line 1	Black	None	No band required	10
	Ungrounded - line 2	Red	None	No band required	10
	Grounded	White	None	No band required	10
Multiple highway lighting	Ungrounded - line 1	Black	None	ML1	10
	Ungrounded - line 2	Red	None	ML2	10
	Ungrounded - line 3	White	None	ML3	10
Lighting control	Ungrounded - Photoelectric unit	Black	None	C1	14
	Switching leg from Photoelectric unit or SM transformer	Red	None	C2	14
Service	Ungrounded - line 1 (signals)	Black	None	No band required	6
	Ungrounded - line 2 (lighting)	Red	None	No band required	8
Sign lighting	Ungrounded - line 1	Black	None	SL-1	10
	Ungrounded - line 2	Red	None	SL-2	10
Flashing beacons	Ungrounded between flasher and beacons	Red or yellow	None	FB-Location. ^c	14
Grounded circuit conductor	Push button assembly or accessible pedestrian signal	White	Black	No band required	14
	Signals and multiple lighting	White	None	No band required	8
	Flashing beacons and sign lighting	White	None	No band required	12
	Lighting control	White	None	C-3	14
	Service	White	None	No band required	6
Railroad preemption		Black	None	R	14
Spares		Black	None	No band required	14

Notes:

^aOn overlaps, the insulation is striped for the 1st phase in the designation, e.g., phase (2+3) conductor is striped as for phase 2.

^cFlashing beacons having separate service do not require banding.

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.

Replace section 86-1.02F(2)(c)(i), “(Copper Conductors) General,” with:

86-1.02F(2)(c)(i) General

Copper wire must comply with ASTM B3 and B8.

No. 8 and larger conductors must be stranded.

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.

Replace section 86-1.02F(2)(c)(ii) with:

86-1.02F(2)(c)(ii) Bonding Jumpers and Equipment Grounding Conductors

A bonding jumper must be solid copper wire no. 8 conductor or larger.

An equipment grounding conductor must be insulated.

Replace section 86-1.02F(2)(c)(iii), “Inductive Loop Conductors,” with:

86-1.02F(2)(c)(iii) Inductive Loop Conductors

An 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.

Replace section 86-1.02F(3)(b), “Aluminum Cables,” with:

86-1.02F(3)(b) Aluminum Cables

Not Used

Delete “Type C” row from table under section 87-1.02F(3)(d)(iii)

Replace section 86-1.02F(3)(d)(v), “Signal Interconnect Cables,” with:

86-1.02F(3)(d)(v) Signal Interconnect Cables

If the signal interconnect system is shown as a fiber optic system, then signal interconnect cables must be fiber optic cables that comply with section 87-19, “Fiber Optic Cable Systems.”

If the signal interconnect system is shown as a copper wire system, then the signal interconnect cable must be a 12-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.

Replace section 86-1.02G, “Equipment Identification Characters,” with:

86-1.02G, “Equipment Identification Characters

Equipment identification characters must be 3-inch, series D lettering.

The characters must be self-adhesive reflective labels or paint, except on wood poles, they must be attached to an aluminum strip and nailed or screwed to pole.

The self-adhesive reflective labels must:

1. Be from 3 to 5 mils thick
2. Have all black capital characters on a white background
3. Extend beyond the character by a minimum of 1/4 inch

Replace the 3rd and 4th paragraphs of section 86-1.02N, “Fused Splice Connectors,” with:

Fuses must:

1. FNM-10 time delay supplementary fuse
2. 10-amp unless otherwise shown

Fuse ratings for luminaires are shown in the following table:

Fuse Current Rating Requirements

Circuit voltage	Fuse voltage rating	Soffit and roadway luminaires
120 V(ac)	250 V(ac)	10 A
240 V(ac)	250 V(ac)	10 A
480 V(ac)	500-600 V(ac)	5 A

Replace section 86-1.02O, “Grounding Electrodes,” with:

86-1.02O Grounding Electrodes

Grounding electrode must be a one piece, copper clad steel rod not less than 5/8 inch in diameter and not less than 10-feet in length.

Replace section 86-1.02Q(2), “Controller Cabinets,” with:

86-1.02Q(2) Controller Cabinets

A controller assembly consists of a wired controller cabinet, a Trafficware Model 980ATC controller unit or approved equal, and all auxillary equipment required to operate the system. The controller cabinet, including controller unit, malfunction management unit, terminals and facilities, auxillary devices and bus interface must be NEMA TS2-2016 compliant.

86-1.02Q(2)(b) Cabinet Characteristics

86-1.02Q(2)(b)(i) General

Cabinet must be NEMA TS2 Type 1 compliant.

Interior labeling must be engraved or silk screened directly on all panels. All terminals and plugs must have silk screened identification on both front and back.

Install LED lighting on the cabinet ceiling near the door opening and under the bottom shelf to illuminate the load bay.

86-1.02Q(2)(b)(ii) Material

Cabinet must be aluminum.

86-1.02Q(2)(b)(iii) Dimensions

Cabinet dimensions must adhere to NEMA cabinet size R.

86-1.02Q(2)(b)(iv) Top Surface

Reserved

86-1.02Q(2)(b)(v) Doors

Reserved

86-1.02Q(2)(b)(vi) Shelves

The cabinet must have three metal shelves.

The controller shelf must have sufficient space to accommodate equipment measuring 14-inches in height.

The two other shelves must be positioned to have sufficient space for a video detect controller, APS controller, detector racks, and similar components.

Under the bottom shelf, mount a metal roll out document drawer having a hinged top cover and handle. The drawer must be of sufficient size and strength to hold a complete set of wiring drawings and equipment manuals. In addition, when extended and the cover closed, the drawer must serve as a working surface capable of supporting documents and a laptop computer.

Mount shelves and load bay a minimum of 16 inches from the floor.

The load bay must:

1. Incorporate a swing down design to facilitate ease of maintenance and repair
2. Have service loops with sufficient slack to allow for the load bay to swing down without any of the harnesses being unsecured

86-1.02Q(2)(b)(vii) Finish and Surface Preparation

The interior finish must be powder coat white. The exterior finish color must be Federal standard FS 17178 aluminum/silver.

The exterior must have an anti-graffiti coating. The coating must be clear and must not alter the painted color of the cabinet. Use TCI Anti-graffiti Clear #9810-0231 or approved equal. Apply and cure in accordance with the manufacturer's instruction.

86-1.02Q(2)(b)(viii) Mounting

Mount cabinet atop a foundation shown for Type R cabinets and secure using internal anchor bolts.

86-1.02Q(2)(b)(ix) Ventilation

A vent must exist in the lower portion of the cabinet door.

Mount a metal frame filter with a spring loaded clasp across the vent's interior side.

The cabinet must have a thermostatically controlled ventilation fan.

86-1.02Q(2)(c) Controller Unit

Controller shall be Naztec Model 980 ATC Traffic Controller with Ethernet and USB ports or approved equal.

86-1.02Q(2)(d) Malfunction Management Unit

Provide one Trafficware MMU516L-E or equivalent TS 2, 16-channel, malfunction management unit with menu driven LCD display or approved equal.

86-1.02Q(2)(e) Terminals and Facilities**86-1.02Q(2)(e)(i) Wiring**

Wire the cabinet to provide both a 55-pin "A" connector and a 10-pin "A" connector so as to be able to accommodate multiple controller unit types (NEMA TS2-Type 1, NEMA TS2-Type 2, or 2070N).

Wire the load bay:

1. For full traffic-actuated 8-phase operation; it must accommodate a minimum of 16 load switch positions, including:
 - 1.1 Eight positions for the vehicle phase (positions 1 to 8)
 - 1.2 Four positions for the overlap phase (positions 9 to 12)
 - 1.3 Four positions for the pedestrian phase (positions 13-16)
2. To support a 16-channel malfunction management unit
3. To flash all red
4. Without use of printed circuit board
5. Without the use of solid state contractors

Wire the cabinet to support the installation of an emergency vehicle preemption (EVP) system and a transit signal priority (TSP) system. The wiring must support at least four optical-based EVP channels and GPS-based EVP and TSP channels. EVP wiring must allow for the selection of any of the TS 2 six preemption channels.

Mount a 120 VAC power strip with surge suppression to the cabinet wall on the left side at the mid-shelf level. The power strip must have a minimum of six outlets and must be hard-wired to the cabinet's electrical service.

Mount a GFI receptacle on the technician test panel.

86-1.02Q(2)(e)(ii) Detector Rack

Provide at least one NEMA TS 2 compliant detector rack so that 16 two-channel positions (32-channels total) are available.

86-1.02Q(2)(e)(iii) Power Supply

Provide a NEMA TS 2 compliant power supply capable of supporting detector rack requirements.

86-1.02Q(2)(e)(iv) SIC Termination Panel

Reserved

86-1.02Q(2)(e)(v) Fiber Termination Panel

Provide a wall-mount style fiber optic cable termination panel.

The panel must:

1. Be made of steel construction
2. Have dimensions no greater than 10-in high x 9-in wide x 4-in deep
3. Be designed to store and protect 12 single-mode optical fiber connections
4. Consist of one or more panels with back-to-back connectors to provide an interconnection point between a 12-strand branch fiber optic cable and fiber optic end equipment inside the cabinet
5. Accept two six-position connector panels

6. Securely mounted to the right interior sidewall of the cabinet at the mid-shelf level (same level as where the controller would sit)
7. Be mounted in a manner that the fibers and connections are accessible, protected and do not interfere with access to other cabinet equipment
8. Be mounted in a manner where any doors on the panel can fully open without interfering with other equipment
9. Be mounted on the sidewall of the cabinet using the existing C-channels along the cabinet wall

Do not drill holes or otherwise modify the cabinet sidewall to mount the termination panel.

86-1.02Q(2)(e)(vi) Push Button Test Switches

Provide momentary push button test switches to place test calls to:

1. Each of the four pedestrian phases
2. The four emergency vehicle preemption channels
3. 64 detection channels

Toggle switches placed on any panels located on the cabinet door or within the cabinet must be protected against accidental contact and switching. In particular, the toggle switches for auto/flash, controller on/off, and auto stop time/manual stop time must be protected using a toggle switch cover.

86-1.02Q(2)(f) Auxiliary Devices

86-1.02Q(2)(f)(i) Solid State Load Switches

Provide 12, solid-state, NEMA TS 2 compliant load switches with indicator lights that show the output side of the relay for the red, yellow, and green indications.

86-1.02Q(2)(f)(ii) Solid State Flashers

Provide one 6-pin solid state flasher.

86-1.02Q(2)(f)(iii) Flash Transfer Relays

Provide six NEMA TS 2 compliant, mechanical contact, flash transfer relay units.

86-1.02Q(2)(f)(iv) Inductive Loop Detector Units

Not Used

86-1.02Q(2)(f)(v) Emergency Vehicle Preemption (EVP) & Transit Signal Priority (TSP) Systems

Setup rack positions for the insertion of at least two multimode phase selector card modules (Opticom multimode phase selector).

The rack positions may be either a separate rack located next to the detector rack or incorporated as individual positions within the detector rack.

86-1.02Q(2)(f)(vi) Street Lighting Panel

Install a street lighting panel for 240 VAC street lighting with a separate 120 VAC contactor for IISNS mounted in the lower left side. Include a test switch for both street light and IISNS testing.

86-1.02Q(2)(f)(vii) Police Panel

Install a NEMA compliant police panel.

86-1.02Q(2)(f)(viii) Technician Test Panel

Install a NEMA compliant technician test panel.

86-1.02Q(2)(g) Bus Interface Unit (BIU)

Provide five, solid-state, rack mountable, NEMA TS 2 compliant bus interface units (two for detectors, two for the load bay, and one as a spare).

86-1.02Q(2)(h) Schematic Drawings and Manuals

Incorporate all cabinet wiring into no more than two schematic drawings. The drawings must identify the intersection and phasing. Provide three printed drawings with each cabinet.

For each cabinet, provide operational/repair manuals for all components and plug-ins.

86-1.02Q(2)(i) Equipment Testing

Testing of fully-wired cabinets, including controller units and auxiliary equipment will be performed by the Agency at the corporation yard located at 951 Turner Ct, Hayward, CA 94545.

Deliver to the corporation yard all equipment to be tested. Call 510-670-5537 in advance to arrange for its receipt.

If delivered equipment fails to meet specifications, you will be notified to retrieve the equipment for repair or replacement. Retrieve equipment within five days of being notified. If you do not retrieve the equipment within five days, it may be shipped to you and the cost will be deducted.

Upon notification that the equipment meets specifications, retrieve the equipment and deliver it to the job site.

Replace section 86-1.02Q(4), "Battery Backup System Cabinets," with:

86-1.02Q(4) Battery Backup System Cabinets

The cabinet for a battery backup system must be an SE48-2216 cabinet with slide out battery shelves, FXM1100 UPS module, universal automatic transfer switch, 4-195XTV batteries, Alphaguard, and complete wiring or approved equal.

Replace the 1st paragraph of section 86-1.02R(2), "Signal Mounting Assemblies," with:

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, or bronze
3. Mast arm and post-top slip fitters and terminal compartments made of cast bronze

Replace section 87-1.02R(3), "Backplates," with:

87-1.02R(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 aluminum alloy 3003-H14.

Backplates for traffic signals at intersections must be manufactured with a 2-inch retroreflective strip on the face around the perimeter. The strip must be Type XI fluorescent yellow retroreflective sheeting on the Authorized Material List for signing and delineation materials.

Replace the section 86-1.02R(4)(b)(i), "(Signal Sections) General," with:

86-1.02R(4)(b)(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
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.

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

Replace section 86-1.02R(4)(b)(iii), "Signal Housings," with:

86-1.02R(4)(b)(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 galvanized steel. 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
Galvanized steel	Inside 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.

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.

Replace section 86-1.02R(4)(d), "Visors and Directional Louvers," with:

86-1.02R(4)(d) Visors and Directional Louvers

The visor must be a 2/3 circle unless otherwise shown.

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.

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

Replace section 86-1.02S(3)(d), "Front Screen," with:

Pedestrian signal face must have a polycarbonate front screen that:

1. Has a nominal thickness of 1/32 inch
2. Is a 1-1/2-inch-deep eggcrate or Z-crate type
3. Is mounted in a frame constructed of aluminum alloy or polycarbonate with a minimum thickness of 0.040 inch
4. Is held in place with stainless steel screws

The screen and frame of a pedestrian signal face must be made of plastic that is a flat black color.

Replace section 86-1.02T, "Accessible Pedestrian Signals," with:

86-1.02T Accessible Pedestrian Signals

Accessible pedestrian signal (APS) must be on the Authorized Material List for Accessible Pedestrian Signals and must function with the controller assembly.

An APS must be Polara iNS 2-wire with iDetect Touchless Actuation or approved equal that must comply with the *California MUTCD*, chapter 4E, and must:

1. Have an audible speech message that plays when the push button is actuated. The accessible pedestrian signal must have at least 5 audible message options.
2. Have a push button locator tone that clicks or beeps.
3. Allow the pushbutton to activate the pedestrian phase during any failure of the APS features.
4. Have a controllable and programmable volume level and messaging.
5. Be weatherproof and shockproof.
6. Weigh 7 lb maximum.
7. Measure 16 by 6 by 5 inches, maximum.
8. Have a switch for a push button.

9. Have a vibrotactile device on the push button or on the arrow.
10. Have an internal weatherproof speaker.
11. Have a microphone that senses the ambient sound level.
12. Include touch-free technology.

Theft-proof bolts used for mounting the enclosure to the standard must be stainless steel with a content of 17 percent chromium and 8 percent nickel. The enclosure must be shaped to fit the pole's curvature.

The color of a metallic enclosure must match color no. 33538 of AMS-STD-595 (orange yellow, yellow international, traffic yellow).

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 enclosure or its mounting hardware.

The signal interface cable between the APS and the pedestrian signal head must be rated for outdoor use and have:

1. Four no. 18 stranded tinned copper conductors with a minimum insulation thickness of 15 mils 2. Cable jacket with a minimum thickness of 20 mils and rated for a minimum:
 - 2.1. 300 V(ac)
 - 2.2. 176 degrees F
3. Nominal outside diameter less than 350 mils
4. Conductor color code of black, white, red, and green

Touch-free technology must:

1. Activate a pedestrian phase when a pedestrian hand motion is detected during a set time interval
 2. Have user adjustable detection area and time interval parameters
- Detect the pedestrian hand motion up to a 6-inch range from the face of the sensor within a minimum ± 45-degree cone zone from the center of the sensor

Replace section 86-1.02U, "Push Button Assemblies," with:

86-1.02U Push Button Assemblies

The housing for a push button assembly must be made of die-cast aluminum, permanent mold-cast aluminum.

The housing must have a uniform black color that matches color no. 17038, 27038, or 37038 of AMS-STD-595 or as otherwise directed. Seek approval from the Engineer before ordering.

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

Replace section 86-1.02V, "Video Detection Cameras," with:

86-1.02V Video Detection Cameras

86-1.02V(1) General

Video detection cameras must be Iteris Vantage Next, Econolite Autoscope Vision or approved equal.

This specification sets forth the minimum requirements for a video detection system that detects vehicles, bicycles, and motorcycles on a roadway by processing video images and that provides vehicle presence, traffic flow data, event alarms, and full-motion video for real-time traffic control and management systems.

86-1.02V(2) System hardware

The video detection system shall be comprised of two major hardware components: a video sensor and a communications interface panel. An optional wired input/output card shall be available for certain cabinet types.

86-1.02V(2)(a) Video Sensor

The video detection system shall include a video sensor that integrates a high-definition (HD) camera with an embedded processor for analyzing the video and performing detection.

86-1.02V(2)(a)(i) Camera and Processor

The camera shall be a color CMOS imaging array.

The camera shall have HD resolution of at least 720p (1280x720 pixels).

The camera shall include a minimum 10X optical zoom.

It shall be possible to zoom the lens as required to satisfy cross-the-intersection detection objectives, including stop line and advance detection.

It shall be possible to zoom the lens remotely from the TMC for temporary traffic surveillance operations or to inspect the cleanliness of the faceplate.

The camera shall have direct, real-time iris and shutter speed control by the integrated processor.

The processor shall support H.264 video compression for streaming output.

86-1.02V(2)(a)(ii) Video Sensor Enclosure Assembly

The camera and processor shall be housed in a sealed IP-67 enclosure.

The faceplate of the enclosure shall be glass and shall have hydrophilic coating on the exterior surface to reduce debris accumulation and maintenance.

The faceplate shall have a thermostatically-controlled indium tin oxide (ITO) heater applied directly on the interior surface to keep the faceplate clear of condensation, snow, ice and frost.

An adjustable aluminum visor shall shield the faceplate from the sun and extraneous light sources.

An integral aiming sight shall assist in aiming the camera for the detection objectives.

A removable rear cap and cable strain relief shall seal the power connection.

The rear cap shall be tethered to the enclosure to avoid dropping the cap during installation.

The rear cap shall be fastened to the body of the video sensor with a single, captive bolt.

The rear cap and enclosure shall include Gore breathers to equalize internal and external pressure.

The sensor shall be self-supporting on manufacturer's mounting brackets for easier fastening during installation.

It shall be possible to rotate the field-of-view 360° without changing the angle of the visor.

86-1.02V(2)(a)(iii) Power and Communications

Power and communications for the video sensor shall be carried over a single three-conductor cable.

Termination of the three-conductor cable shall be inside the rear cap of the enclosure on a three-position, removable Phoenix terminal block. Each conductor shall be attached to the Phoenix plug via a screw connection.

The video sensor shall operate normally over an input voltage range of 89 to 265 VAC at 50 or 60 Hz.

Power consumption shall be no more than 16 watts typical.

No supplemental surge suppression shall be required outside the cabinet.

All communications to the video sensor shall be broadband-over-power via the same three-conductor cable that powers the unit. Coaxial cable shall not be required.

86-1.02V(2)(b) Communications Interface Panel

The video detection system shall include an interface panel in the traffic cabinet that manages communications between the video sensors, the traffic management center, a maintenance technician, and the traffic cabinet itself.

86-1.02V(2)(b)(i) Video Sensor Connection

The communications interface panel shall provide connection points for four video sensors.

Each sensor connection shall be a 3-pole terminal block, which supplies power and broadband-over-power communications to the sensor.

The broadband-over-power communications shall provide a throughput of 70 to 90 Mbps.

The broadband-over-power connection shall support at least 1,000 feet of cabling to the video sensor.

Each video sensor connection shall include a power switch.

There shall be an LED for each video sensor to indicate the state of the power to the sensor and an LED for each video sensor to indicate the status of communications.

Each video sensor connection shall contain a resettable fuse.

Each video sensor connection shall provide high-energy transient protection.

86-1.02V(2)(b)(ii) Traffic Management Center (TMC) Communications

An Ethernet port shall be provided to connect to a remote Traffic Management Center (TMC).

The TMC connection shall support 10/100/1000 Mbps Ethernet communication.

The communications interface panel shall proxy all network requests that arrive on the TMC connection to avoid unwanted network traffic from reaching the broadband-over-power network between the communications interface panel and the video sensors.

All communications to the video detection system through the TMC connection shall be to a single IP address.

86-1.02V(2)(b)(iii) Local User Communications

A wired Ethernet port shall be provided to connect the technician at the cabinet to the video detection system for setup and maintenance purposes.

The maintenance port shall support 10/100/1000 Mbps Ethernet communication.

All communications to the video detection system through the maintenance port shall be to a single IP address.

The maintenance port shall support DHCP to automatically assign an IP address to the user's computer, if desired.

An 802.11g Wi-Fi access point shall allow wireless connection to the video detection system at the cabinet for setup and maintenance purposes.

All communications to the video detection system through the Wi-Fi access point shall be to a single IP Address.

The Wi-Fi access point shall support DHCP to automatically assign an IP Address to the user's computer.

The Wi-Fi access point shall include a dipole, omnidirectional antenna.

A momentary pushbutton shall allow the user to turn the Wi-Fi access point on or off.

The Wi-Fi access point shall turn itself off automatically after a period of inactivity from connected devices.

An LED shall indicate when the Wi-Fi access point is enabled.

The Wi-Fi access point shall operate simultaneously with the wired maintenance port and with the TMC connection.

86-1.02V(2)(b)(iv) Traffic Controller connection

The communications interface panel shall provide one connection to communicate to the traffic controller through the cabinet.

The traffic controller connection shall support a TS2 Type 1 compatible SDLC interface.

The traffic controller connector shall be a 15-pin female metal shell D sub-miniature type connector to support a standard NEMA TS2 or TEES SDLC cable.

The traffic controller connection shall support a protocol interface to SDLC-capable traffic controllers (NEMA or TEES).

The traffic controller connection shall support the NEMA TS2 SDLC protocol to include up to 64 detector outputs and 32 inputs.

The traffic controller connection shall be able to connect to a wired input/output card, which supports wired I/O in cabinets without a SDLC-capable controller.

The wired I/O data communications link shall support at least 24 outputs and 16 inputs.

It shall be possible to connect and use both SDLC communications and communication to the wired input/output card simultaneously.

86-1.02V(2)(b)(v) USB Ports

The communications interface panel shall include two USB 2.0 ports.

If a communications interface panel fails to start and run due to a software or operating system failure, it shall be possible to reinstall all system and application software from a USB memory stick without necessitating removal of the communications interface panel from the cabinet.

86-1.02V(2)(b)(vi) Power

The communications interface panel shall accept input voltage in the range of 89-265 VAC, 50/60 Hz power from the transient-protected side of the cabinet.

The communications interface panel shall be protected by two slow blow fuses. Spares shall be attached to the panel.

86-1.02V(2)(c) Wire Input/Output Card

The video detection system shall support an optional wired input/output card that communicates with the communications interface panel for real-time detection states and other I/O to the traffic controller. The card may reside in a standard detector rack or shelf-mount enclosure with power module.

The optional wired input/output card shall comply with the form factor and electrical characteristics to plug directly into a NEMA type C or D detector rack or Caltrans TEES Input File.

The card shall occupy two slots of the detector rack.

The card shall provide four detector outputs on its rear-edge connector.

A front connector shall provide communication to the communications interface panel.

A front connector shall allow 16 inputs and 24 contact-closure detector outputs for wiring into the cabinet.

A front panel LED for each of the 16 inputs and 24 outputs shall indicate the state of the input or output.

The wired input/output card shall support optional expansion cards in other slots. Each expansion card shall support 4 outputs to the back edge of the card.

The wired input/output card shall support optional harnesses for connection to Input Files or C1, C4, C11, and C12 ports to support Type 170 or Type 2070 controllers.

86-1.02V(3) System Software

The video detection system shall include management software for configuration, monitoring and data collection purposes.

86-1.02V(3)(a) Management Software

Management software shall be a Windows-based application.

The software shall be compatible with Windows 7 and Windows 10 operating systems.

The software shall communicate with the video detection system via Ethernet.

The management software shall automatically determine all video sensors and communications interface panels available on the local network and populate a list of all devices.

The management software shall provide the user a means to name individual video sensors and communications interface panels.

The management software shall provide a means for the user to zoom the camera optics while viewing a live video stream.

The management software shall provide a means for the user to calibrate distances in the field of view.

The management software shall provide the user a means to create 4-sided detection zones in the field of view using either a still snapshot or live video.

The management software will overlay an outline of each detection zone over the background image.

It shall be possible for the user to place detection zones anywhere in the field of view for stop line detection and/or advance detection.

It shall be possible for the user to set the desired color of both the on and off states of the detection zone overlay.

It shall be possible for the user to alter the size and shape of any previously created zone.

It shall be possible for the user to overlap zones, either partially or fully.

It shall be possible for the user to name each zone uniquely.

It shall be possible for the user to assign each zone to detect vehicles, to detect bicycles, or to detect both, and to specify different outputs for each type.

It shall be possible for the user to assign the same output to multiple zones such that the output will be on if any of the zones are detecting a vehicle or bicycle.

It shall be possible for the user to assign a single zone to more than one output such that if a vehicle or bicycle is detected, all the assigned outputs shall be turned on.

The management software shall be capable of creating at least 99 detection zones per video sensor.

It shall be possible for the management software to retrieve all configuration parameters from video sensors or communications interface panels.

It shall be possible for the user to save all the settings for a video sensor or a communications interface panel to a laptop file.

The management software shall provide a means to read or import all the settings from a previously saved configuration file for a video sensor or a communications interface panel.

The management software shall be able to download a new version of the application software into a communications interface panel and its attached video sensors.

The management software shall provide a screen to monitor operation of a video sensor.

The monitoring screen shall include a live video stream from the video sensor with at least HD 1280x720 pixel resolution.

The monitoring screen shall show indications of detection in real time by changing the color of the detection zone.

It shall be possible for the user to configure different indications for vehicle detections vs. bicycle detections when both are configured for the same zone.

The monitoring screen shall include the following optional, configurable objects. It shall be possible for the user to size and position them anywhere on the screen and to change the color and size of text.

An indication of when an output is on or off, along with a user-configurable name for that indicator.

The current time in the video sensor.

A user-configurable title or name.

The version number of the video sensor software.

It shall be possible for the user to turn the overlay graphics on or off with a single setting.

The management software shall provide a screen to monitor operation of the intersection with a quad-view video stream from the communications interface panel.

The quad-view video stream shall have a resolution of at least HD 1280x720 pixels, where each of the sensor videos comprising the quad-view shall be at least 640x360 pixels.

It shall be possible for the user to configure the order that the sensor videos appear in the quad-view.

The real-time quad-view video stream shall be capable of displaying the overlay graphics for all four sensors simultaneously.

While monitoring the video of a single video sensor or of the quad-view, it shall be possible for the user to request a "snapshot" or single-frame image to save to a named file on a laptop.

While monitoring the video of a single video sensor or of the quad-view, it shall be possible for the user to record a period of the video to save to a named file on a laptop.

86-1.02V(4) System Functionality

The video detection system shall provide the following features and functionality.

86-1.02V(4)(a) Detection Performance

The video detection system shall detect the presence of vehicles in defined zones and turn on the assigned output when the vehicle is present in the zone.

Stop Line Detection

For detection zones placed at the stop line, the probability of not detecting the presence of a vehicle shall be 1% or less under all operating conditions when the video sensor is installed and configured properly.

For detection zones placed at the stop line, the probability of falsely detecting a vehicle that is not present shall be 3% or less under all operating conditions when the video sensor is installed and configured properly.

Advance Detection

It shall be possible to place advance detector zones such that the farthest point of the zone is up to 600 feet from the video sensor. Advance detector zone placement shall include 2-3 car lengths of field-of-view beyond the farthest point of the zone.

To ensure statistical significance for the above detection performance specifications, the data shall be collected over 24-hour time intervals (so as to avoid a single lighting condition) and will contain a minimum of one hundred (100) vehicles per lane. The calculations of detection performance will not include turning movements where vehicles do not pass through the detectors, vehicle lane-change anomalies, or where they stop short or stop beyond the combined detection zones.

86-1.02V(4)(b) Failsafe Mode

The video detection system shall provide a failsafe mode for each video sensor. If the failsafe mode is enabled, all programmed presence detection outputs for the video sensor shall be turned on, thus placing constant calls to the controller. When failsafe mode is disabled, all outputs revert to normal on/off operations.

The video sensor shall continuously monitor the overall contrast in the video. If the overall contrast falls below a preset level (such as caused by dirty faceplate, severe glare, extreme fog, or temporary ice/snow on the faceplate), the sensor shall enable the failsafe mode. When sufficient contrast is restored in the video, the sensor will disable the failsafe mode.

The communications interface panel shall continuously monitor the connectivity status of the attached video sensors. If any video sensor goes offline due to either electrical failure or internal software failure, the communications interface panel shall enable the failsafe mode for that video sensor. If the video sensor comes back online, failsafe mode shall be disabled.

86-1.02V(4)(c) Data Collection

The video detection system shall automatically collect and store traffic flow data in non-volatile memory for later retrieval and analysis. No additional hardware or software shall be necessary. The data shall include:

1. Vehicle counts.
2. Vehicle average speeds.

The management software shall be able to retrieve collected data for a specified period of time or for all currently stored data and save into a standard CSV file.

86-1.02V(4)(d) Operations Log

The communications interface panel and each video sensor shall maintain a time-stamped operations log of routine and special events in non-volatile memory for later retrieval and analysis.

86-1.02V(4)(e) Time Synchronization

The video detection system and management software shall provide three methods to synchronize the time of day clocks in the communication interface panel and the video sensors, as follows:

Manual time synchronization operation by the user, which sets the time to the current time on the laptop where the management software is running.

A configuration setting to allow the communications interface panel to automatically obtain time from the NEMA TS2 protocol on the SDLC channel and broadcast it to the video sensors.

A configuration setting to allow the communications interface panel to automatically obtain time from up to five Network Time Protocol (NTP) sources and broadcast it to the video sensors.

86-1.02V(4)(f) Video Streaming

In addition to the ability to view video streams in the management software, it shall be possible to view video from individual sensors or to view the quad-view from the communications interface panel using a third-party video player application on a tablet, smartphone or laptop computer.

86-1.02V(5) Installation and Setup

The video detection system hardware shall be designed for flexible, fast and easy installation and setup.

It shall be possible to mount the video sensor on an intersection pole, mast arm, or luminaire arm.

No special tools or extra equipment, other than a laptop for configuration, will be required.

Once all hardware is installed, connected and functional, it shall be possible to configure the video detection system for a typical 4-approach, 8-phase intersection in 15 minutes or less.

At each location, Contractor shall furnish and install a Mini Program kit consisting of a monitor and mouse with the ability to program the detection without the need for a separate laptop.

86-1.02V(5) Warranty, Service, and Support

The video detection system shall be provided with the following warranty, service and support options.

86-1.02V(5)(a) Warranty

The manufacturer shall warrant the video detection system for a minimum of three (3) years. An option for up to six (6) years of warranty shall be available.

86-1.02V(5)(b) Service

Ongoing software support by the manufacturer will include software updates of the video sensor, communications interface panel, and management software. These updates will be provided free of charge during the warranty period. The manufacturer will maintain a program for technical support and software updates following expiration of the warranty period. This program will be available to the contracting agency in the form of a separate agreement for continuing support.

86-1.02V(5)(c) Support

A quick-start guide, installation guide, application notes, and other materials shall be available from the manufacturer to assist in product installation and setup for various applications. In addition, training online or in person shall be available.

Training shall be available to personnel of the contracting agency in application design, operation, setup, and maintenance of the video detection system.

Manufacturer shall provide a tech support website and an 800 number for technical support.

Replace section 86-1.02W, “Loop Detector Sealants,” with:

86-1.02W Loop Detector Sealants

86-1.02W(1) General

Sealant for filling loop detector slots must be one of the following:

1. Epoxy sealant for inductive loops
2. Hot-melt rubberized asphalt

86-1.02W(2) Asphaltic Emulsion Sealant

Not Used

86-1.02W(3) Elastomeric Sealant

Not Used

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, 25 °C, 150 g, 5 s (max, 1/10 mm)	ASTM D5329	35
Flow, 60 °C, 5 hr (max, mm)		5
Resilience, 25 °C (min, %)		25
Softening point (min, °C)	ASTM D36	82
Ductility, 25 °C, 5 cm/min (min, cm)	ASTM D113	30
Flash point, Cleveland Open Cup (min, °C)	ASTM D92	288
Viscosity, no. 27 spindle, 20 rpm, 190 °C (Pa•s)	ASTM D4402	2.5–3.5

Replace section 86-1.02Y, “Transformers,” with:

86-1.02Y Transformers

Not Used

Replace section 86-1.02Z, “Batteries,” with:

86-1.02Z Batteries

Battery must be Alpha XTV195 or approved equal.

Replace section 87-1.03B(3)(b)(ii), "HDPE Conduit Installation," with:

87-1.03B(3)(b)(ii) High Density Polyethylene Conduit Installation

For sweeps, maintain a conduit bend radius of a minimum 10 times the outside diameter of the conduit.

Conduits must not protrude more than 2 inches inside the pull box and vaults, and must enter at an angle less than 20 degrees from either the vertical or horizontal axis.

Demonstrate a minimum of 2 test fusions to the Engineer prior to performing fusion operations on HDPE conduit to be installed. Join HDPE conduit using electro fusion couplings under the manufacturer's instructions. Do not expose conduit to direct flame. The electro fusion must be performed by a person certified by the conduit manufacturer.

Slurry concrete must be pigmented to match color no. 21105 of AMS-STD-595.

Blow out all conduits with compressed air until all foreign material is removed, before installing innerducts.

Install innerducts as one continuous unit between vaults. Innerducts may be interrupted inside pull boxes located between vaults and cabinets.

Lubricate innerducts per manufacturer's instructions during installation.

Install a trace wire in conduits and innerducts to remain empty. Seal the ends of conduit after cables or trace wire are installed.

Replace section 87-1.03B(3)(c), "Horizontal Directional Drilling Method," with:

87-1.03B(3)(c) Horizontal Directional Drilling Method

Install a conduit to a minimum depth of 3 feet and a maximum depth of 6 feet. If you must install a conduit less than 3 feet in depth or greater than 6 feet in depth, the installation must be authorized.

The diameter of the bore hole must be no larger than 1.5 times the outside diameter of the conduit. Water-based mineral slurry or wetting solution may be used to lubricate the boring tool and stabilize the soil surrounding the boring path.

Dispose of residue per section 13-4.03D.

The horizontal directional drilling equipment must have directional control of the boring tool and have an electronic boring tool location detection system. During operation, the equipment must be able to determine the location of the tool both horizontally and vertically.

Use a mandrel to prove the conduit is free and clear of dirt, rocks, and other debris after installation.

Replace section 87-1.03C(2)(a), "(Roadway Pull Boxes) General," with:

87-1.03C(2)(a) General

Install pull boxes within State, County, or city right of way. Place pull boxes either 2-inches from the back of curb or 2-inches from the rear of walkways. Do not place in the center of walkways, nor within or in front of any existing or proposed driveway or curb ramp unless directed. Pull boxes that are directed to be placed in a driveway must conform to Caltrans Standard Drawing ES-8.

Pull boxes placed outside of an existing concrete area, in dirt, or within a planter strip or island, must be set with a concrete cap that extends 6-inches on all outside surfaces areas with a minimum thickness of 4-inches.

Signal interconnect pull boxes must be #6E (extended depth).

Install pull boxes no more than 100 feet apart, except for signal interconnect pull boxes which can be spaced as much as 200-ft 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.

Reconstruct the sump of a pull box if disturbed by your activities. If the sump was grouted, remove and replace the grout.

Replace section 87-1.03C(2)(b), “Nontraffic Pull Boxes,” with:

87-1.03C(2)(b) Nontraffic Pull Boxes

For buried pull boxes, install the electronic marker.

When a pull box is in a structure, modify the base as required.

Place mortar between a nontraffic pull box and a pull box extension.

Where a nontraffic pull box is in the vicinity of a curb in an unpaved area, place the box adjacent to the back of the curb if practical.

If you replace the cover on a nontraffic pull box, anchor it to the box. Perform the electronic marker test

Replace section 87-1.03D, “Battery Backup System Cabinets,” with:

87-1.03D Battery Backup System Cabinets

Install the battery backup system cabinet to the left of the cabinet. Unless directed otherwise, mount using eight 5/8” stainless steel bolts, washers and nuts spaced evenly to distribute the load.

Construct access opening between controller cabinet and battery backup cabinet using:

1. 2-inch nylon-insulated, steel chase nipple
2. 2-inch steel sealing locknut
3. 2-inch nylon-insulated, steel bushing

Replace section 87-1.03E(3), "Concrete Pads, Foundations, and Pedestals," with:

87-1.03E(3) Concrete Pads, Foundations, and Pedestals

Construct concrete pads, foundations, and pedestals under section 56-3.

Construct a pad in front of a Type III service equipment enclosure. The pad must be 24 inches in length, 4 inches in thickness, and must match the width of the foundation.

In unpaved areas, place the top of the foundation 6 inches above the surrounding grade.

The pad must be 2 inches above the surrounding grade in unpaved areas.

In and adjacent to the sidewalk and other paved areas, place the top of the foundation 4 inches above the surrounding grade.

The concrete pad must be level with the finished grade in paved areas.

Replace the 8th paragraph of section 87-1.03F(1) with:

Identify conductors and cables by direct labeling, tags, or bands fastened in such a way that they will not move. Use engraved or embossed mechanical methods for labeling (ink markers are not acceptable).

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

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

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

Install a Type 1 inductive loop conductor.

Replace section 87-1.03M, "Photoelectric Controls," with:

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.

Replace section 87-1.03N, "Fused Splice Connectors," with:

87-1.03N Fused Splice Connectors

Install a fuse splice connector with a fuse in each ungrounded conductor for luminaires, except for overhead sign luminaires. The connector must be located in the pull box adjacent to the luminaires.

If the pull box for the roadway luminaire is tamper resistant, install a fuse splice connector with 10 A fuse in the pull box and an additional fuse splice connector with a 5 A fuse in the handhole.

Crimp the connector terminals onto the ungrounded conductors using a tool under the manufacturer's instructions. Insulate the terminals and make them watertight.

Replace section 87-1.03U, “Push Button Assemblies,” with:

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.

Cut Type 2 post 2 inches above the R10 series sign.

Add to section 87-1.03V(1), “(Detectors) General,”:

For video detectors, install to manufacturer’s specifications. The supplier’s representative must be present during setup and activation.

Replace section 87-19.02B, “(Fiber Optic) Vaults,” with:

87-19.02B Vaults

A vault must:

1. Comply with section 86-1.02C and AASHTO HS 20-44, and load tested under AASHTO M 306.
2. Be a minimum:
 - 2.1. Type N48 (extended): 48 inches wide by 24 inches high by 30 inches long nominal inside dimensions for box type.
 - 2.2. 4 feet high by 4 feet outside diameter for round type.
3. Have a minimum access of:
 - 3.1. 30 inches diameter for round type.
 - 3.2. 3 feet wide by 3 feet long for box type.
4. Be precast either modular or monolithic.
5. Have cable racks installed on the interior sides. A rack must:
 - 5.1. Be fabricated from ASTM A36 steel plate.
 - 5.2. Support a minimum of 100 pounds per rack arm.
 - 5.3. Support a minimum of 4 splice enclosures and a minimum of 4 cables with a minimum slack of 50 feet each.
 - 5.4. Be hot-dip galvanized after manufacturing.
 - 5.5. Be bonded and grounded.
6. Have a minimum:
 - 6.1. Two 4-inch diameter knockouts on each side for box type.
 - 6.2. Two 4-inch diameter knockouts placed every 90 degrees for round type.
7. Have a minimum 2-inch-diameter drain hole at the center of base.

Entry points for knockouts must not cause the cable to exceed its maximum bend radius.

The access cover must:

1. Be a two-piece torsion-assisted sections or a minimum 30-inch-diameter cast iron.
2. Have inset lifting pull slots.
3. Have markings *ALAMEDA COUNTY* and *FIBER OPTIC*.

Replace section 87-19.02E, "Fiber Distribution Units," with:

87-19.02E Fiber Distribution Units

The distribution unit shall be TCS Choice 1 LGX Wall Mount Panel, or approved equal.

Add section 87-19.02J:

87-19.02J Managed Fiber Optic Network Switch

The hardened industrial grade managed network switch shall be Cisco IE-3000-8TC, EtherWAN EX73900E Series Hardened Managed 10 to 16-Port Gigabit Ethernet Switch, or approved equal, and it shall include a 12 x 10/100/1000BASE-T(X) 4 x 100/1000BASE SFP.

The Edge Switch shall be environmentally hardened and intended for industrial applications and shall meet or exceed the NEMA TS2 2003 environmental requirements.

The switch shall meet, at a minimum, the following requirements:

1. A minimum of two (2) 100BASE-FX ports (transmit and receive) capable of transmitting
2. Ethernet data at 100 Mb/s over singlemode fiber, full duplex (SFP ports)
3. A minimum of six (6) autosensing 100BASE-TX / 10BASE-T RJ45 ports capable of transmitting Ethernet data at 10 or 100 Mb/s, full duplex.
4. Switch shall be capable of operating using an input voltage of 120VAC at 60Hz with a maximum power consumption of 20 watts, or shall come equipped with power supplies capable of doing so.
5. Switch ports shall comply with the following standards:
 - a. IEEE 802.3 10BASE-T
 - b. IEEE 802.3u 100BASE-TX/100BASE-FX
 - c. IEEE 802.3ab 1000BASE-T
 - d. IEEE 802.3ad link aggregation control
 - e. IEEE 802.3z 1000BASE-SX/1000BASE-LX
 - f. IEEE 802.3x full duplex and flow control
 - g. IEEE 802.1D STP
 - h. IEEE 802.1p QoS
 - i. IEEE 802.1Q Tag VLANs
 - j. IEEE 802.1s MSTP
 - k. IEEE 802.1w RSTP
 - l. IEEE 802.1x PNAC
 - m. IEEE 802.1ab LLDP
6. Forward/Filtering Rate
 - a. 14,800pps for 10Mbps
 - b. 148,810pps for 100Mbps
 - c. 1,488,100pps for 1000Mbps
7. Processing Type
 - a. Store-and-forward
 - b. Auto-negotiation
 - c. Half-duplex back-pressure and full-duplex flow control
 - d. Auto MDI/MDIX
8. System Memory: 2Gb DDR3 SDRAM
9. Flash Storage: 1Gb
10. Power Input: 12-48VDC Redundant (Terminal block)
11. Power Consumption: 20W Max
12. Protection: Reverse Polarity Protection
13. Physical: Casing Material = Aluminum
14. IP Rating: IP40
15. Dimensions: 72 x 140 x 170mm (W x D x H) / 2.8" x 5.5" x 6.7"
16. Weight: 1.4kg (3.08lbs)

- 17. Installation Type: DIN-rail mounting
- 18. Operating Temp.: -40 to 75°C (-40 to 167°F)
- 19. Storage Temp.: -45 to 85°C (-49 to 185°F)
- 20. Relative Humidity: 5% to 95% (non-condensing)
- 21. Regulatory ISO: Manufactured in ISO-9001 facility
- 22. EMI
 - FCC Part 15B Class A
 - VCCI Class A
 - EN 61000-6-4
 - EN 61000-3-2
 - EN 61000-3-3
- 23. EMS
 - EN 61000-4-2 (ESD)
 - EN 61000-4-3 (Radiated RFI)
 - EN 61000-4-4 (Burst)
 - EN 61000-4-5 (Surge)
 - EN 61000-4-6 (Induced RFI)
 - EN 61000-4-8 (Magnetic field)
- 24. Safety: UL 61010
- 25. Traffic: NEMA TS2
- 26. Rail: EN 50121-4
- 27. Power Substation: IEC 61850-3/IEEE 1613
- 28. Vibration: IEC 60068-2-6
- 29. Shock: IEC 60068-2-27
- 30. Free Fall: FED STD 101C Method 5007.1
- 31. Warranty Length: Limited Lifetime

Add section 87-19.02K:

87-19.02K IP Power Management Unit

Surge Suppressors shall meet the following requirements:

- 1. 120 VAC
- 2. 60 Hz
- 3. All metal housing
- 4. Isolated filter banks
- 5. 2350 joule/97,000 amps rating
- 6. 6 outlets
- 7. 6 foot cord

IP Power Management Units shall be manufactured by Synaccess NP-08, Lantronix SLP 8 series, Belkin series, or approved equal.

Surge Suppressors are to be installed in cabinets at locations where a network fiber or DSL switch are being installed as noted on the Plans.

Add section 87-19.03H:

87-19.03H Repair of Damaged Fiber

You are allowed to splice a total of 30 percent of fibers to repair damage to existing fiber that you caused during mid-span access splicing without penalty. The Engineer will assess a fine of \$300.00 for each additional and unplanned splice. A single fiber may not have more than 3 unplanned splices within any

6KM segment of fiber optic cable. If a fiber requires more than 3 unplanned splices, the entire length of F/O cable shall be replaced at your expense. Test all fibers of repaired cable.

**Replace section 87-21.03A, “(Existing Electrical Systems - Construction) General,” with:
87-21.03A General**

You may abandon unused underground conduit after pulling out all conductors and removing conduit terminations from the pull boxes.

Remove foundation under section 56-3.01C(2)(a).

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

Unless otherwise directed, salvage County standards, pedestals, poles, and posts that are shown to be salvaged. Deliver salvaged County material to the storage yard located 28251 Industrial Blvd in Hayward. Coordinate delivery of salvaged material in advance with the Agency’s Traffic Signal Supervisor, phone: 510-670-5537.

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.

Match the color of the existing housing, when replacing an existing accessible pedestrian signal or push button assembly.

Remove electrical equipment, designated as a hazardous waste.

