IMPERIAL COUNTY TRANSPORTATION COMMISSION

APPLICABLE STANDARDS

BOOK 3

Calexico East Port of Entry Bridge Widening

FOR DESIGN AND CONSTRUCTION ADJACENT TO STATE ROUTE 7 IN IMPERIAL COUNTY

Off System Facility Located in Imperial County
0.7 Mile South of Route 7 Near the US/Mexico Border

ICTC CONTRACT NO. 20-101
11-IMP-007-PM0.0
PROJECT ID: 1118000265

Federal Aid Project BUILD L-6471 (017)

RFP Issue Date: September 21, 2020
Proposal Due Date: November 20, 2020
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# 1A Index of Standards

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| IS/W | Industry Standard or available on public website – Design-Builder’s responsibility to acquire |

## Organization | Title | Availability (E / IS / W)
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AASHTO | A Guide for Accommodating Utilities within Highway Right-of-Way | IS
AASHTO | A Policy on Geometric Design of Highways and Streets - "The Green Book" | IS
AASHTO | LRFD Bridge Design Specifications (8th Edition) | IS
AASHTO | LRFD Guide Specifications for the Design of Pedestrian Bridges | IS / W
AASHTO | Roadside Design Guide | IS
AASHTO | Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals | IS
Caltrans | Bridge Construction Records and Procedures Manual, Volume I | W
Caltrans | Bridge Construction Records and Procedures Manual, Volume II | W
Caltrans | Bridge Deck Construction Manual | W
Caltrans | Bridge Design Aids | E
Caltrans | Bridge Design Details | E
Caltrans | Bridge Standard Detail Sheets (XS-Sheets) | W
Caltrans | CADD User’s Manual | W
Caltrans | California Amendments to the AASHTO LRFD Bridge Design Specifications – 8th Edition | W
Caltrans | California Manual on Uniform Traffic Control Devices (CA MUTCD) | W
Caltrans | California Sign Specifications | W
Caltrans | Construction Manual | W
Caltrans | Construction Manual Change Transmittals (MCTs) | W
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<td>Caltrans</td>
<td>Pavement Web site</td>
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<td>Caltrans</td>
<td>Pedestrian and Bicycle Facilities in California</td>
<td>E</td>
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<tr>
<td>Caltrans</td>
<td>Permanent Pedestrian Facilities ADA Compliance Handbook</td>
<td>W</td>
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<tr>
<td>Caltrans</td>
<td>Project Development Workflow Tasks Manual</td>
<td>W</td>
</tr>
<tr>
<td>Caltrans</td>
<td>Public Record Act (PRA) Request</td>
<td>W</td>
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<tr>
<td>Caltrans</td>
<td>Quality Control Manual for Hot Mix Asphalt for the Quality Control Assurance Process</td>
<td>W</td>
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<tr>
<td>Caltrans</td>
<td>Reference Sheets for Structural Design Aids Overhead and Roadside Signs</td>
<td>E</td>
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<tr>
<td>Caltrans</td>
<td>Roadside Management Toolbox</td>
<td>W</td>
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<tr>
<td>Caltrans</td>
<td>Shoulder Backing</td>
<td>W</td>
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<tr>
<td>Caltrans</td>
<td>Specifications for Changeable Message Sign System</td>
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<tr>
<td>Caltrans</td>
<td>Stormwater Management Enforcement Guidance Manual &amp; Appendices</td>
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<tr>
<td>Caltrans</td>
<td>Stormwater Pollution Prevention Bulletin</td>
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<td>Caltrans</td>
<td>Stormwater Pollution Prevention Training Courses + a video</td>
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<tr>
<td>Caltrans</td>
<td>Stormwater Quality Preparation Manual Attachments SWPPP</td>
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<td>Caltrans</td>
<td>Tack Coat Guidelines</td>
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<td>Caltrans</td>
<td>Tapers &amp; Shoulder Backing</td>
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<tr>
<td>Caltrans</td>
<td>Temporary Pedestrian Facilities Handbook</td>
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### Availability Legend

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- **IS/W** = Industry Standard or available on public website – Design-Builder’s responsibility to acquire

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<td>Caltrans</td>
<td>TransPLANT - Caltrans Highway Planting Database and Specification Tool</td>
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<td>Caltrans</td>
<td>Transportation and Construction Vibration Guidance Manual</td>
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<td>Caltrans</td>
<td>Transportation Permits Manual</td>
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<tr>
<td>Caltrans</td>
<td>Water Pollution Control Pamphlets</td>
<td>W</td>
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<td>Corrugated Steel Pipe Institute (CSPI)</td>
<td>Handbook of Steel Drainage &amp; Highway Construction Products</td>
<td>W</td>
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<tr>
<td>Electronics Industries Alliance (EIA)</td>
<td>Electronics Industries Alliance (EIA) Standards</td>
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<td>FHWA</td>
<td>23 CFR 752, Landscape and Roadside Development</td>
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<tr>
<td>FHWA</td>
<td>Accommodating Bicycle and Pedestrian Travel: A Recommended Approach</td>
<td>W</td>
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<tr>
<td>FHWA</td>
<td>An Analysis of Factors Contributing to “Walking Along Roadway” Crashes; Research Study and Guidelines for Sidewalks and Walkways</td>
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<tr>
<td>FHWA</td>
<td>Bikeway Selection Guide</td>
<td>W</td>
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<tr>
<td>FHWA</td>
<td>Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications FHWA-ED-88-053</td>
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<td>FHWA</td>
<td>Flexibility in Highway Design</td>
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<td>FHWA</td>
<td>Geotechnical Engineering, Policy, Guidance, Circulars Training and Publications</td>
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<tr>
<td>FHWA</td>
<td>Highway Traffic Noise Analysis and Abatement, Policy and Guidelines</td>
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<td>FHWA</td>
<td>How to Develop a Pedestrian and Bicycle Safety Action Plan</td>
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<tr>
<td>FHWA</td>
<td>Load and Resistance Factor Design (LRFD) for Highway Bridge Substructures FHWA-HI-98-032</td>
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<tr>
<td>FHWA</td>
<td>Manual on Uniform Traffic Control Devices (MUTCD)</td>
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<tr>
<td>FHWA</td>
<td>Roadway Construction Noise Model User's Guide</td>
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<tr>
<td>FHWA</td>
<td>Subsurface Utility Engineering</td>
<td>W</td>
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<td>Institute of Transportation Engineering (ITE)</td>
<td>Geometric Design Resources</td>
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<td>Institute of Transportation Engineering (ITE)</td>
<td>ITE Standards</td>
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<td>Institute of Transportation Engineering (ITE)</td>
<td>Traffic Engineering Resources</td>
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<td>International Code Council (ICC)</td>
<td>International Building Code</td>
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<tr>
<td>International Society of Arboriculture</td>
<td>Guide for Plant Appraisal</td>
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<td>ISO</td>
<td>ISO 9000</td>
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<td>National Fire Protection Agency (NFPA)</td>
<td>NFPA 70: National Electric Code</td>
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<td>National Transportation Communications for ITS (Intelligent Transportation Systems) Protocol (NTCIP)</td>
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<td>NEMA</td>
<td>National Electrical Manufacturers Association (NEMA) Standards</td>
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<tr>
<td>Statue</td>
<td>California State Statutes XXXX</td>
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<tr>
<td>The Society for Protective Coatings</td>
<td>QP2 Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint</td>
<td>IS</td>
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<tr>
<td>United States Department of Agriculture (USDA)</td>
<td>California State Noxious Weed List.</td>
<td>W</td>
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</table>
2 MODIFICATIONS TO CALTRANS MANUALS

The following notes apply to the Caltrans manuals used on the Project:

1. Caltrans manuals were created as an internal guidance document for use by various Caltrans personnel. As such, the manuals are written as guidance documents and not as mandatory requirements. For purposes of design-build projects, the Design-Builder shall assume that all provisions of the manuals, including the figures and tables, are mandatory and guidelines shall be assumed to be requirements. All words such as “should,” “may,” “must,” “might,” “could,” and “can” shall mean “shall” unless the context requires otherwise, as determined in the sole discretion of ICTC. The Design-Builder shall disregard qualifying words such as “usually,” “normally,” and “generally.” It shall be in ICTC’s sole discretion to determine when the context does not require a provision to be mandatory.

2. If the Caltrans manual expires during the course of the Project, the Design-Builder shall contact ICTC to determine if they should continue to use the manual or if it will be replaced.

3. All references to the Engineer shall mean the Design-Builder unless otherwise directed by ICTC.

4. Any references related to pay items or quantities, measurement for payment, method of measurement, basis of payment, extra Work, adjustment of unit prices, or similar phrases shall be disregarded by the Design-Builder, since the Contract Price is full compensation for the Work.

5. General information provisions in manuals that do not apply to design-build contracts have not been modified (e.g., descriptions of Caltrans divisions and their duties, descriptions of legal authority, or descriptions of internal Caltrans procedures); however, in some cases it may not be clear whether rights or responsibilities are applicable to the Design-Builder. If it is unclear whether specific provisions in a manual are applicable to the Design-Builder, the Design-Builder shall raise the issue with ICTC and ICTC shall make that determination in its sole discretion.

6. The Design-Builder shall disregard the paragraphs within the manuals relating to questions. All questions shall be taken to ICTC’s Contract Manager.

7. Individual manuals are available in electronic format. Manuals may be accessed through the Caltrans and other industry websites.

8. All references to Caltrans in manuals shall mean the Design-Builder, unless otherwise noted.

9. When a manual refers to an action being necessary or needed, the Design-Builder shall construe the action as required unless the context requires otherwise, as determined in the sole discretion of ICTC.

10. In addition, phrases relating to items such as activity(ies) that “will be” conducted, that are “most easily accomplished by”, that “are recommended”, that “is usually necessary”, that “should preferably be” done, that “might require”, that “is necessary” or “as necessary”, that “are” (or “is”) “required” or “done” shall be construed to be mandatory requirements unless the context requires otherwise, as determined in the sole discretion of ICTC. Phrases relating to problems with activity(ies) that should not be conducted, such as “is not normally used,” “is not good practice,” “should never be done,” “cannot be used,” or “should be avoided” shall be construed as prohibited. It shall be in ICTC’s sole discretion to determine when the context either requires or does not require a provision to be mandatory.

11. Where the notes refer to items that are indicated in the plans or special provisions or required in the plans or special provisions, the plans or special provisions shall mean the Design-Builder’s plans or special provisions.

12. Where the notes refer to the Engineer, they shall mean the Design-Builder unless otherwise specified below.
13. When a manual refers to other manuals, the version of those manuals applicable to the Project shall be the version current at the time of release of the final RFP unless modified by Addendum or Change Order.

14. References to approved products or materials shall mean Approved by ICTC.

15. References to payment, pay items, and quantities are hereby deleted.

16. Caltrans manuals were created as standard documents for use by Caltrans. For purposes of design-build projects, the Design-Builder shall assume that all of the provisions of the Standards are requirements.

17. All references to the Inspector, the Field Inspector, the Project Engineer, the Engineer, the Materials Engineer, the Survey Crew, the Project Supervisor, the Agency Certified Technician, the Certified Plant Technician, and the Representative of the Office of Materials shall mean the Design-Builder, unless noted otherwise.

18. All references to Caltrans facilities, including the Office of Materials Laboratory, Central Laboratory, Cement Laboratory, Concrete & Metals Laboratory, Aggregate Laboratory, Chemical Laboratory, Mix Design Laboratory, District Laboratory, and the Laboratory shall mean the Design-Builder’s similar laboratory facilities, unless noted otherwise.

19. All references to the Agency shall mean ICTC or Caltrans, as the context implies, unless noted otherwise.

20. The Design-Builder shall use forms as required to report the same information and in the same format as the Caltrans forms shown in the manuals.

21. References to ICTC or Caltrans practices and policies shall be construed to be mandatory requirements unless the context requires otherwise. It shall be in ICTC’s sole discretion to determine when the context does not require a provision to be mandatory.

22. All references to ICTC offices and personnel shall mean the Design-Builder’s similar offices and personnel.

23. The Design-Builder shall complete all laboratory testing at an AASHTO accredited laboratory.
MODIFICATIONS TO TECHNICAL MEMORANDA

NOT USED
4 DESIGN-BUILD MODIFICATIONS TO THE CALTRANS STANDARD SPECIFICATIONS 2018 EDITION

4.1 General

These Contract Provisions are a revised version of the Caltrans Standard Specifications 2018 Edition and contain requirements generally applicable to the Work to be performed by Design-Builder. The Design-Builder is advised that these Standard Specification revisions are provided for reference and information only. The Design-Builder shall verify the required standard specification updates at the date the RFP is issued and ensure the current versions are incorporated into the Work. In certain cases, provisions in the Standard Specifications have been superseded by other provisions of the Contract Documents. For ease of reference, this document uses the same section numbers as the Standard Specifications and identifies provisions of the Contract Documents that have replaced or modified the standard clauses. If there are conflicts between the “General” Modifications and the Specific Modifications below, the Specific Modifications have precedence over the General Modifications. If the Design-Builder believes that a modification is unclear, the Design-Builder shall have the obligation to raise the issue with ICTC. Regardless of whether the Design-Builder raises the issue, ICTC shall always have the right to notify the Design-Builder if the Design-Builder is interpreting the modification incorrectly. Any references to other standards, codes, or criteria, or to the latest version of other standards, codes, or criteria in the Project Requirements of the Contract Documents shall mean the latest version as of the RFP issue date. Those standard specifications that are left blank are not modified in this Modification document, but they may be modified by Special Provisions or other Contract Documents. All Sections are incorporated herein, except as otherwise provided in the Contract Documents, and with the following general and specific exceptions:

General Exceptions:

1. When these Specifications refer to “Measurement for Payment,” “Method of Measurement,” or “Payment Quantities,” such language shall be disregarded. It is not the intent of the Design-Build Contract that the various components of the Work will be measured for payment. Final payment will be at the Contract Price for the completed Project irrespective of the quantities of the various components incorporated in the Work.

2. The purpose of measurement of quantities is to identify Quality Control and Verification testing frequency requirements as contained in the Materials Control Schedule and in tracking production rates for monthly payments to the Design-Builder based on percentage complete. All specifications within the Caltrans Standard Specifications containing sections describing Method of Measurement and Basis of Payment shall have the sections describing Method of Measurement and Basis of Payment deleted. The Design-Builder hereby acknowledges and agrees that the single lump sum Contract Price constitutes full compensation for performance of all of the Work, subject only to those exceptions specified in the Contract Documents.

3. When these Specifications refer to “basis of payment,” “unit prices,” or “adjustments of unit prices,” such references and language shall be disregarded, except unit prices as identified in the Project Requirements, applicable to disincentives for Nonconforming Work or incentives for surface ride quality shall be either the specific dollar amount set forth in the standard specifications or a unit price proposed by the Design-Builder and Approved by ICTC.

4. When these Specifications refer to “extra work,” “compensation for,” “at ICTC’s expense,” “quantity adjustments,” “bid item,” “equivalent quantities,” or similar phrases, such references shall be disregarded. It is intended that the payment of the Contract Price will be full compensation for all Work performed pursuant to the Design-Build Contract unless specific provisions for additional payments

Design-Build Modifications to the Caltrans Standard Specifications 2018 Edition 4-1
are contained in the Contract Documents. An exception to this general exclusion will be the provisions of Sections 10 thru 99, as modified by the Special Provisions, relating to incentives for surface ride quality and disincentives for Nonconforming Work.

5. When these specifications refer to the term “Special Provision,” such term shall mean Contract Documents.

6. When these specifications refer to the term “incidental” such term shall mean that the costs shall be included in the Design-Builder’s Price Proposal.

7. When these specifications refer to “Caltrans,” “the Department,” or “the State,” such term shall mean ICTC, as appropriate to the context. Depending on context, some references remain as Caltrans, the Department, or the State.

8. When these specifications refer to “Caltrans manuals,” “Caltrans forms,” or “Caltrans documents,” the reference remains to these documents, rather than to any ICTC document, as appropriate to the context.
A. Section 1 through 9 - General Provisions – Specific Modifications

SECTION 1 GENERAL

1-1.01 GENERAL
This section is applicable to the Project. Including the following revision:

Add between the 1st and 2nd paragraphs of section 1-1.01:

10-19-18

Global revisions are changes to contract documents not specific to a section of the Standard Specifications. In each contract document at each occurrence, interpret the following terms as shown:

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<tr>
<th>Term</th>
<th>Interpretation</th>
<th>Conditions</th>
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</thead>
<tbody>
<tr>
<td>Fed-Std-595</td>
<td>AMS Std 595</td>
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1-1.02 STYLE VARIATIONS
This section is applicable to the Project.

1-1.03–1-1.04 RESERVED

1-1.05 REFERENCES
This section is deleted in its entirety. Provisions regarding “References” are set forth in Book 1, Section 1 “Contract Components; Interpretation of Contract Documents” of the Contract Documents.

1-1.06 ABBREVIATIONS
This section is applicable to the Project.

1-1.07 DEFINITIONS

1-1.07A General
Interpret terms as defined in the Contract Documents. References to “Bid Item List” shall mean Price Proposal.

1-1.07B Glossary
The definitions contained in this section are applicable to the Caltrans Standard Specifications only.

1-1.08 DISTRICTS
This section is not applicable to the Project.

1-1.09 FREEZE-THAW AREAS
This section is not applicable to the Project.

1-1.10 PAVEMENT CLIMATE REGIONS
This section is applicable to the Project.

1-1.11 WEB SITES, ADDRESSES, AND TELEPHONE NUMBERS
This section is applicable to the Project.
1-1.12 MISCELLANY

This section is applicable to the Project.

1-1.13–1-1.15 RESERVED
SECTION 2 BIDDING

This section is deleted in its entirety.
SECTION 3 CONTRACT AWARD AND EXECUTION

This section is deleted in its entirety.
SECTION 4 SCOPE OF WORK

4-1.01 GENERAL
This section is applicable to the Project.

4-1.02 INTENT
This section is applicable to the Project.

4-1.03 WORK DESCRIPTION
This section is deleted in its entirety. Provisions regarding “Work Description” are set forth in the Contract Documents.

4-1.04 USE OF MATERIALS FOUND ON THE JOB SITE
This section is deleted in its entirety. Provisions regarding “Use of Materials Found on Job Site” are set forth in Book 2, Section 18 “Earthwork” of the Contract Documents.

4-1.05 CHANGES AND EXTRA WORK
4-1.05A General
This section is deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

4-1.05B Work-Character Changes
This section is deleted in its entirety. Provisions regarding “Work-Character Changes” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

4-1.06 DIFFERING SITE CONDITIONS (23 CFR 635.109)
4-1.06A General
This section is not applicable to the Project.

4-1.06B Contractor's Notification
This section is deleted in its entirety. Provisions regarding “Contractor’s Notification” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

4-1.06C Engineer's Investigation and Decision
This section is deleted in its entirety. Provisions regarding “Engineer’s Investigation and Decision” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

4-1.07 VALUE ENGINEERING
4-1.07A General
This section is not applicable to the Project.

4-1.07B Value Engineering Change Proposal
This section is deleted in its entirety.

4-1.07C Value Analysis Workshop
This section is deleted in its entirety.
4-1.08–4-1.12 RESERVED

4-1.13 CLEANUP

This section is deleted in its entirety. Provisions regarding “Cleanup” are set forth in Book 1, Section 20 “Acceptance of Project” of the Contract Documents.
SECTION 5 CONTROL OF WORK

5-1.01 GENERAL
This section is applicable to the Project.

5-1.02 CONTRACT COMPONENTS
This section is hereby deleted in its entirety. Provisions regarding “Contract Components” are set forth in the Book 1, Section 1 “Contract Components; Interpretation of Contract Documents.”

5-1.03 ENGINEER'S AUTHORITY
This section is hereby deleted in its entirety. Provisions regarding “Engineer’s Authority” are set forth in Book 1, Section 5 “Control of Work” and Section 15 “Termination for Convenience” of the Contract Documents.

5-1.04–5-1.05 RESERVED

5-1.06 PROTESTS
This section is hereby deleted in its entirety. Provisions regarding “Protests” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

5-1.07–5-1.08 RESERVED

5-1.09 PARTNERING

5-1.09A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.09B Partnering Facilitator, Workshops, and Monthly Evaluation Surveys
This section is hereby deleted in its entirety. Provisions regarding “Partnering Facilitator, Workshops, and Monthly Evaluation Surveys” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.09C Training in Partnering Skills Development
This section is hereby deleted in its entirety. Provisions regarding “Training in Partnering Skills Development” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.09D Payment
This section is hereby deleted in its entirety. Provisions regarding “Payment” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.10–5-1.11 RESERVED

5-1.12 ASSIGNMENT
This section is hereby deleted in its entirety. Provisions regarding “Assignment” are set forth in Book 1, Section 23 “Miscellaneous Provisions” of the Contract Documents.
5-1.13 SUBCONTRACTING

5-1.13A General
This section is applicable to the Project.

5-1.13B Disadvantaged Business Enterprises
5-1.13B(1) General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 7 “Equal Employment opportunity; Subcontracts; Labor” of the Contract Documents.
5-1.13B(2) Disadvantaged Business Enterprises
This section is hereby deleted in its entirety. Provisions regarding “Disadvantaged Business Enterprises” are set forth in Book 1, Section 7 “Equal Employment opportunity; Subcontracts; Labor” of the Contract Documents.
5-1.13B(3) Use of Joint Checks
This section is applicable to the Project

5-1.13C Disabled Veteran Business Enterprises
This section is hereby deleted in its entirety.

5-1.13D Non–Small Businesses
This section is hereby deleted in its entirety.

5-1.13E–5-1.13I Reserved

5-1.14–5-1.15 RESERVED

5-1.16 REPRESENTATIVE
This section is hereby deleted in its entirety. Provisions regarding “Representative” are set forth in Book 1, Section 23 “Miscellaneous Provisions” of the Contract Documents.

5-1.17 CHARACTER OF WORKERS
This section is hereby deleted in its entirety. Provisions regarding “Character of Workers” are set forth in Book 1, Section 7 “Equal Employment opportunity; Subcontracts; Labor” of the Contract Documents.

5-1.18–5.19 RESERVED

5-1.20 COORDINATION WITH OTHER ENTITIES
5-1.20A General
This section is applicable to the Project.
5-1.20B Permits, Licenses, Agreements, and Certifications
5-1.20B(1) General
This section is applicable to the Project.
5-1.20B(2) Before Award
This section is applicable to the Project.
5-1.20B(3) After Award
This section is applicable to the Project.

5-1.20B(4) Contractor–Property Owner Agreement
This section is applicable to the Project.

5-1.20C Railroad Relations
This section is not applicable to the Project. This section is hereby deleted in its entirety.

5-1.20D Occupied Improvements within the Right-of-Way
This section is not applicable to the Project.

5-1.20E Water Meter Charges
This section is not applicable to the Project.

5-1.20F Irrigation Water Service Charges
This section is not applicable to the Project.

5-1.20G-5.20J Reserved

5-1.21–5-1.22 RESERVED

5-1.23 SUBMITTALS

5-1.23A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 2, Section 6, “Submittals and Review Process,” of the Contract Documents.

5-1.23B Action Submittals

5-1.23B(1) General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 2, Section 6, “Submittals and Review Process,” of the Contract Documents.

5-1.23B(2) Shop Drawings
This section is hereby deleted in its entirety. Provisions regarding “Shop Drawings” are set forth in Book 2, Section 6, “Submittals and Review Process” and Section 17, “Structures” of the Contract Documents.

5-1.23B(3)–5-1.23B(10) Reserved

5-1.23C Informational Submittals
This section is applicable to the Project.

5-1.24–5-1.25 RESERVED

5-1.26 CONSTRUCTION SURVEYS
This section is hereby deleted in its entirety. Provisions regarding “Construction Surveys” are set forth in Book 2, Section 10, “Land Surveying” of the Contract Documents.
5-1.27 RECORDS

5-1.27A General
This section is not applicable to the Project.

5-1.27B Record Retention
This section is hereby deleted in its entirety. Provisions regarding “Record Retention” are set forth in Book 1, Section 22 “Documents and Records” of the Contract Documents.

5-1.27C Record Inspection, Copying, and Auditing
This section is hereby deleted in its entirety. Provisions regarding “Record Inspection, Copying, and Auditing” are set forth in Book 1, Section 22 “Documents and Records” of the Contract Documents.

5-1.27D Cost Accounting Records
This section is hereby deleted in its entirety. Provisions regarding “Cost Accounting Records” are set forth in Book 1, Section 22 “Documents and Records” of the Contract Documents.

5-1.27E Change Order Bills
This section is hereby deleted in its entirety. Provisions regarding “Change Order Bills” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

5-1.28–5-1.29 RESERVED

5-1.30 NONCOMPLIANT AND UNAUTHORIZED WORK
This section is hereby deleted in its entirety. Provisions regarding “Noncompliant and Unauthorized Work” are set forth in Book 1, Section 5 “Control of Work” of the Contract Documents.

5-1.31 JOB SITE APPEARANCE
This section is applicable to the Project.

5-1.32 AREAS FOR USE
This section is applicable to the Project. References to Section 7-1.05 shall mean Book 1, Section 18 “Indemnification” of the Contract Documents.

5-1.33 EQUIPMENT
This section is applicable to the Project.

5-1.34–5-1.35 RESERVED

5-1.36 PROPERTY AND FACILITY PRESERVATION

5-1.36A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 10 “Risk of Loss” of the Contract Documents.

5-1.36B Railroad Property
This section is hereby deleted in its entirety. It is not applicable to the Project.
5-1.36C Nonhighway Facilities
5-1.36C(1) General
This section is applicable to the Project.

5-1.36C(2) Nonhighway Facilities Protection
This section is not applicable to the Project.

5-1.36C(3) Nonhighway Facilities Rearrangement
This section is applicable to the Project.

5-1.36D Survey Monuments
This section is applicable to the Project.

5-1.36E Landscape
This section is applicable to the Project.

5-1.37 MAINTENANCE AND PROTECTION
5-1.37A General
This section is applicable to the Project.

5-1.37B Load Limits
5-1.37B(1) General
This section is applicable to the Project.

5-1.37B(2) Increased Load Carrying Capacity
This section is applicable to the Project.

5-1.37B(3) Material Hauling Equipment Lane on Bridges
This section is applicable to the Project.

5-1.38 MAINTENANCE AND PROTECTION RELIEF
This section is hereby deleted in its entirety. Provisions regarding “Maintenance and Protection Relief” are set forth in Book 1, Section 10 “Risk of Loss” of the Contract Documents.

5-1.39 DAMAGE REPAIR AND RESTORATION
5-1.39A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 10 “Risk of Loss” of the Contract Documents.

5-1.39B Damage Caused by an Act of God
This section is hereby deleted in its entirety. Provisions regarding “Damage Caused by an Act of God” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

5-1.39C Landscape Damage
5-1.39C(1) General
This section is applicable to the Project.
5-1.39C(2) Plant Establishment Period of 3 Years or More
This section is applicable to the Project.

5-1.40–5-1.41 RESERVED

5-1.42 REQUESTS FOR INFORMATION
This section is applicable to the Project.

5-1.43 POTENTIAL CLAIMS AND DISPUTE RESOLUTION

5-1.43A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 13 “Changes in the Work” and Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43B Initial Potential Claim Record
This section is hereby deleted in its entirety. Provisions regarding “Initial Potential Claim Record” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

5-1.43C Supplemental Potential Claim Record
This section is hereby deleted in its entirety. Provisions regarding “Supplemental Potential Claim Record” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

5-1.43D Full and Final Potential Claim Record
This section is hereby deleted in its entirety. Provisions regarding “Full and Final Potential Claim Record” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

5-1.43E Alternative Dispute Resolution

5-1.43E(1) General

5-1.43E(1)(a) General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(1)(b) Definitions
This section is hereby deleted in its entirety. Provisions regarding “Definitions” are set forth in Book 1, Exhibit A “Abbreviations and Definitions” of the Contract Documents.

5-1.43E(1)(c) Establishment of Procedures
This section is hereby deleted in its entirety. Provisions regarding “Establishment of Procedures” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(1)(d) Progress Meetings
This section is hereby deleted in its entirety. Provisions regarding “Progress Meetings” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(1)(e) Dispute Meetings
This section is hereby deleted in its entirety. Provisions regarding “Dispute Meetings” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.
5-1.43E(1)(f) Informal Dispute Meetings
This section is hereby deleted in its entirety. Provisions regarding “Informal Dispute Meetings” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(1)(g) Recommendations
This section is hereby deleted in its entirety. Provisions regarding “Recommendations” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(1)(h) Completion of Alternative Dispute Resolution
This section is hereby deleted in its entirety. Provisions regarding “Completion of Alternative Dispute Resolution” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(1)(i) Payment
This section is hereby deleted in its entirety. Provisions regarding “Payment” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(2) Dispute Resolution Advisor
5-1.43E(2)(a) General
This section is not applicable and hereby deleted in its entirety.

5-1.43E(2)(b) DRA Selection
This section is not applicable and hereby deleted in its entirety.

5-1.43E(2)(c) DRA Replacement
This section is not applicable and hereby deleted in its entirety.

5-1.43E(2)(d) DRA Traditional Dispute Meeting
This section is not applicable and hereby deleted in its entirety.

5-1.43E(3) Dispute Resolution Board
5-1.43E(3)(a) General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(3)(b) DRB Member Selection
This section is hereby deleted in its entirety. Provisions regarding “DRB Member Selection” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(3)(c) DRB Member Replacement
This section is hereby deleted in its entirety. Provisions regarding “DRB Member Replacement” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.

5-1.43E(3)(d) DRB Traditional Dispute Meeting
This section is hereby deleted in its entirety. Provisions regarding “DRB Traditional Dispute Meeting” are set forth in Book 1, Section 19 “Partnering, Dispute Resolution” of the Contract Documents.
5-1.43F Reserved

5-1.44–5-1.45 RESERVED

5-1.46 FINAL INSPECTION AND CONTRACT ACCEPTANCE

This section is hereby deleted in its entirety. Provisions regarding “Final Inspection and Contract Acceptance” are set forth in Book 1, Section 20 “Acceptance of Project” of the Contract Documents.

5-1.47 GUARANTEE

This section is hereby deleted in its entirety. Provisions regarding “Guarantee” are set forth in Book 1, Section 21, “Warranties” of the Contract Documents.

5-1.48–5-1.50 RESERVED
SECTION 6 CONTROL OF MATERIALS

6-1 GENERAL

6-1.01 GENERAL
This section is applicable to the Project.

6-1.02 ICTC-FURNISHED MATERIALS
This section is not applicable to the Project and is hereby deleted in its entirety.

6-1.03 LOCAL MATERIALS
This section is applicable to the Project. Including the following revision:

Replace section 6-1.03 with:

6-1.03 LOCAL MATERIALS
Local material must be rock, sand, gravel, earth, or mineral material other than local borrow, or selected material obtained or produced from a source in the Work vicinity, specifically for use on the Project. Local borrow must not be a material from an established commercial source.

Upon your request, ICTC may test material for quality characteristics from an untested local source at your sole cost. If satisfactory material from that source is used in the work, ICTC deducts the test costs from the Contract amount.

6-1.04 BUY AMERICA

6-1.04A General
This section is not applicable to the Project.

6-1.04B Crumb Rubber (Pub Res Code § 42703(d))
This section is applicable to the Project.

6-1.04C Steel and Iron Materials
This section is applicable to the Project.

6-1.05 SPECIFIC BRAND OR TRADE NAME AND SUBSTITUTION
This section is applicable to the Project.

6-1.06 BUY CLEAN CALIFORNIA ACT

6-1.06A General
The following materials or products are subject to the Buy Clean California Act (Pub Cont Code § 3500 et seq.):

<table>
<thead>
<tr>
<th>Material or product</th>
<th>Material specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon steel rebar</td>
<td>Section 52-1.02B, &quot;Bar Reinforcement&quot;</td>
</tr>
<tr>
<td>Structural steel</td>
<td>Section 55-1.02D(1), &quot;General,&quot; – Structural Steel table or Section 99, &quot;Building Construction&quot;</td>
</tr>
<tr>
<td>Flat glass</td>
<td>Section 99, &quot;Building Construction&quot;</td>
</tr>
</tbody>
</table>
Material or product | Material specifications
---|---
Mineral wool board insulation | Section 99, "Building Construction"

For product category rules and North America program operators for applicable materials or products, go to the METS website.

For projects with bid opening dates after November 30, 2018, through November 30, 2019, Caltrans collects existing environmental product declarations for materials or products subject to the Buy Clean California Act.

6-1.06B Definitions

**environmental product declaration:** Independently verified document created and verified in accordance with International Organization for Standardization (ISO) 14025 for Type III environmental declarations that identifies the global warming potential emissions of the facility-specific material or product through a product stage life cycle assessment.

**product category rule:** Program operator established rule based on the science of life cycle assessment that governs the development of the environmental product declaration for the material or product.

**product stage:** Boundary of the environmental product declaration that includes (1) raw material supply, (2) transportation processes, and (3) processing operations, including operations such as melting, mixing, fabrication, finishing, curing, cooling, trimming, packaging and loading for transport delivery. Commonly referred to as a "cradle-to-gate" life cycle assessment.

**program operator:** Independent agency that supervises and confirms the full environmental product declaration development process in accordance with ISO 14025.

**raw material supply:** Upstream processes which can include allocations, extraction, refinement, reclamation, handling and processing of the constituents used in producing the material or product.

**transportation processes:** Includes transportation of raw, reclaimed or recycled material constituents from the supplier to the gate of the manufacturer, producer or fabricator. Includes transport of related waste products.

6-1.06C Submittals

At least 15 days before submitting environmental product declarations, you must register on the Caltrans Data Interchange for Materials Engineering. Follow the registration process at:

https://dime.dot.ca.gov/

Submit available environmental product declarations for applicable materials or products as informational submittals to the Caltrans Data Interchange for Materials Engineering and provide PDF copies to the Engineer.

6-2 QUALITY ASSURANCE

6-2.01 GENERAL

6-2.01A General

This section is applicable to the Project.
6-2.01B Authorized Facility Audit Lists
This section is applicable to the Project.

6-2.01C Authorized Material Lists
This section is applicable to the Project.

6-2.01D Authorized Material Source Lists
This section is applicable to the Project.

6-2.01E Material Source Inspection and Testing
This section is applicable to the Project.

6-2.01F Test Samples
This section is applicable to the Project.

6-2.01G–6-2.01K Reserved

6-2.02 QUALITY CONTROL
6-2.02A General
This section is applicable to the Project.

6-2.02B Quality Control Program
This section is hereby deleted in its entirety. Provisions regarding “Quality Control Program” are set forth in Book 2, Section 5, “Quality Program” in the Contract Documents.

6-2.02C Quality Control Manager
This section is not applicable to the Project and is deleted in its entirety. Provisions regarding “Quality Control Manager” are set forth in Book 2, Section 5, “Quality Program” in the Contract Documents.

6-2.02D Quality Control Plans
This section is hereby deleted in its entirety. applicable to the Project. Provisions regarding “Quality Control Manager” are set forth in Book 2, Section 5, “Quality Program” in the Contract Documents.

6-2.03 DEPARTMENT ACCEPTANCE
6-2.03A General
This section is applicable to the Project.

6-2.03B Job Site Inspection and Testing
This section is applicable to the Project.

6-2.03C Certificates of Compliance
This section is applicable to the Project.
SECTION 7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

7-1.01 GENERAL
This Section is applicable to the Project.

7-1.02 LAWS

7-1.02A General
This section is applicable to the Project.

7-1.02B U.S. Fair Labor Standards Act
This section is applicable to the Project.

7-1.02C Emissions Reduction
This section is applicable to the Project.

7-1.02D–7-1.02H Reserved

7-1.02I Government Code

7-1.02I(1) General
This section is not applicable to the Project.

7-1.02I(2) Nondiscrimination
This section is applicable to the Project.

7-1.02J Reserved

7-1.02K Labor Code

7-1.02K(1) General
This section is applicable to the Project.

7-1.02K(2) Wages
This section is applicable to the Project.

7-1.02K(3) Certified Payroll Records (Labor Code § 1776)
This section is applicable to the Project.

7-1.02K(4) Apprentices
This section is applicable to the Project.

7-1.02K(5) Working Hours
This section is applicable to the Project.

7-1.02K(6) Occupational Safety and Health Standards

7-1.02K(6)(a) General
This section is applicable to the Project. Including the following revision:
Replace the 1st sentence in the 5th paragraph of section 7-1.02K(6)(a) with:

Submit copies of your Injury and Illness Prevention Program, Code of Safe Practices, and permits required by Cal/OSHA as informational submittals.

7-1.02K(6)(b) Excavation Safety
This section is applicable to the Project.

7-1.02K(6)(c) Tunnel Safety
This section is applicable to the Project.

7-1.02K(6)(d) Confined Space Safety
This section is applicable to the Project.

7-1.02K(6)(e) Scaffolding
This section is not applicable to the Project.

7-1.02K(6)(f)–7-1.02K(6)(i) Reserved

7-1.02K(6)(j) Lead Safety

7-1.02K(6)(jj)(i) General
This section is not applicable to the Project.

7-1.02K(6)(jj)(ii) Lead Compliance Plan
This section is applicable to the Project.

7-1.02K(6)(jj)(iii) Earth Material Containing Lead
This section is not applicable to the Project.

7-1.02K(6)(jj)(iv–viii) Reserved

7-1.02K(6)(k)–7-1.02K(6)(t) Reserved

7-1.02L Public Contract Code

7-1.02L(1) General
This section is not applicable to the Project.

7-1.02L(2) Antitrust Claims
This section is applicable to the Project.

7-1.02M Public Resources Code

7-1.02M(1) General
This section is not applicable to the Project.

7-1.02M(2) Fire Protection
This section is not applicable to the Project.

7-1.02M(3) Surface Mining and Reclamation Act
This section is applicable to the Project.
7-1.02M(4)–7-1.02M(7) Reserved

7-1.02N Reserved

7-1.02O Vehicle Code
This section is applicable to the Project.

7-1.02P–7-1.02Z Reserved

7-1.03 PUBLIC CONVENIENCE
Provisions regarding “Public Convenience” are applicable to the Project except for the reference to section 12-1.04 “Payment”. The Contract Price will be full compensation for all Work performed pursuant to the Design-Build Contract.

7-1.04 PUBLIC SAFETY
Provisions regarding “Public Safety” are applicable to the Project except for the reference of section 12-1.04 “Payment”. The Contract Price will be full compensation for all Work performed pursuant to the Design-Build.

7-1.05 INDEMNIFICATION
7-1.05A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 18 “Indemnification” of the Contract Documents.

7-1.05B Responsibility to Other Entities
This section is hereby deleted in its entirety. Provisions regarding “Responsibility to Other Entities” are set forth in Book 1, Section 18 “Indemnification” of the Contract Documents.

7-1.05C Other
This section is applicable to the Project.

7-1.06 INSURANCE
7-1.06A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

7-1.06B Casualty Insurance
This section is hereby deleted in its entirety. Provisions regarding “Casualty Insurance” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

7-1.06C Workers' Compensation and Employer's Liability Insurance
This section is hereby deleted in its entirety. Provisions regarding “Worker’s Compensation and Employer’s Liability Insurance” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

7-1.06D Liability Insurance
7-1.06D(1) General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.
7-1.06D(2) Liability Limits/Additional Insureds

This section is hereby deleted in its entirety. Provisions regarding “Liability Limits/Additional Insureds” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

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

This section is hereby deleted in its entirety. Provisions regarding “Contractor’s Insurance Policy is Primary” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

7-1.06E Automobile Liability Insurance

This section is hereby deleted in its entirety. Provisions regarding “Automobile Liability Insurance” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

7-1.06F Policy Forms, Endorsements, and Certificates

This section is hereby deleted in its entirety. Provisions regarding “Policy Forms, Endorsements, and Certificates” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

7-1.06G Deductibles

This section is hereby deleted in its entirety. Provisions regarding “Deductibles” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

7-1.06H Enforcement

This section is hereby deleted in its entirety. Provisions regarding “Enforcement” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

7-1.06I Self-Insurance

This section is hereby deleted in its entirety. Provisions regarding “Self-Insurance” are set forth in Book 1, Section 9 “Insurance” of the Contract Documents.

7-1.07 LEGAL ACTIONS AGAINST THE DEPARTMENT

7-1.07A General

This section is applicable to the Project.

7-1.07B Seal Coat Claims

This section is hereby deleted in its entirety.

7-1.08 PERSONAL LIABILITY

This section is hereby deleted in its entirety. Provisions regarding “Personal Liability” are set forth in Book 1, Section 23 “Miscellaneous Provisions” of the Contract Documents.

7-1.09–7-1.10 RESERVED

7-1.11 FEDERAL LAWS FOR FEDERAL-AID CONTRACTS

7-1.11A General

This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, “Exhibit D – Federal Laws for Federal-Aid Contracts” of the Contract Documents.
7-1.11B FHWA-1273
This section is hereby deleted in its entirety. Provisions regarding “FHWA-1273” are set forth in Book 1, “Exhibit D – Federal Laws for Federal-Aid Contracts” of the Contract Documents.

7-1.11C Female and Minority Goals
This section is hereby deleted in its entirety. Provisions regarding “Female and Minority Goals” are set forth in Book 1, “Exhibit D – Federal Laws for Federal-Aid Contracts” of the Contract Documents.

7-1.11D Training
This section is applicable to the Project.
SECTION 8 PROSECUTION AND PROGRESS

8-1.01 GENERAL
This section is applicable to the Project.

8-1.02 SCHEDULE

8-1.02A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.02B Level 1 Critical Path Method Schedule
8-1.02B(1) General
This section is hereby deleted in its entirety.

8-1.02B(2) Schedule Format
This section is hereby deleted in its entirety.

8-1.02B(3) Updated Schedule
This section is hereby deleted in its entirety.

8-1.02C Level 2 Critical Path Method Schedule
8-1.02C(1) General
This section is hereby deleted in its entirety.

8-1.02C(2) Schedule Format
This section is hereby deleted in its entirety.

8-1.02C(3) Computer Software
8-1.02C(3)(a) General
This section is hereby deleted in its entirety.

8-1.02C(3)(b) Reserved

8-1.02C(4) Data and Network Diagrams
This section is hereby deleted in its entirety.

8-1.02C(5) Baseline Schedule
This section is hereby deleted in its entirety.

8-1.02C(6) Updated Schedule
This section is hereby deleted in its entirety.

8-1.02C(7) Final Updated Schedule
This section is hereby deleted in its entirety.
8-1.02D  Level 3 Critical Path Method Schedule

8-1.02D(1)  General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.02D(2)  Schedule Format
This section is hereby deleted in its entirety. Provisions regarding “Schedule Format” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.02D(3)  Computer Software
This section is hereby deleted in its entirety. Provisions regarding “Computer Software” are set forth in Book 2, Section 4 “Project Schedule Management” of the Contract Documents.

8-1.02D(4)  Data, Network Diagrams, and Reports
This section is hereby deleted in its entirety. Provisions regarding “Data, Network Diagrams, and Reports” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.02D(5)  Preconstruction Scheduling Conference
This section is hereby deleted in its entirety. Provisions regarding “Preconstruction Scheduling Conference” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.02D(6)  Baseline Schedule
This section is hereby deleted in its entirety. Provisions regarding “Baseline Schedule” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.02D(7)  Updated Schedule
This section is hereby deleted in its entirety. Provisions regarding “Updated Schedule” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.02D(8)  Time Impact Analysis

8-1.02D(8)(a)  General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.02D(8)(b)  Department-Owned Float
This section is hereby deleted in its entirety. Provisions regarding “ICTC-Owned Float” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.02D(8)(c)  Ordered Changes
This section is hereby deleted in its entirety. Provisions regarding “Ordered Changes” are set forth in Book 2, Section 4,2 “Project Schedule Management” of the Contract Documents.

8-1.02D(9)  Final Updated Schedule
This section is hereby deleted in its entirety. Provisions regarding “Final Updated Schedule” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.
8-1.02D(10) Payment

This section is hereby deleted in its entirety. Provisions regarding “Payment” are set forth in Book 1, Section 11 “Payment” of the Contract Documents.

8-1.02E–8-1.02F Reserved

8-1.03 PRECONSTRUCTION CONFERENCE

This section is deleted in its entirety. Provisions regarding “Preconstruction Conference” are set forth in Book 2, Section 4, “Project Schedule Management” of the Contract Documents.

8-1.04 START OF JOB SITE ACTIVITIES

8-1.04A General

This section is not applicable to the Project.

8-1.04B Standard Start

This section is hereby deleted in its entirety. Provisions regarding “Standard Start” are set forth in Book 1, Section 4 “Time within which Project shall be Completed; Scheduling” of the Contract Documents.

8-1.04C Delayed Start

This section is not applicable to the Project.

8-1.04D Early Return-Early Start

This section is not applicable to the Project.

8-1.04E Next-Day Start

This section is not applicable to the Project.

8-1.04F Flexible Start

This section is not applicable to the Project.

8-1.04G Potential Budget Impasse Start

This section is not applicable to the Project.

8-1.04H–8-1.04J Reserved

8-1.05 TIME

This section is hereby deleted in its entirety. Provisions regarding “Time” are set forth in Book 1, Section 4 “Time within which Project shall be Completed; Scheduling” of the Contract Documents.

8-1.06 SUSPENSIONS

This section is hereby deleted in its entirety. Provisions regarding “Suspensions” are set forth in Book 1, Section 14 “Suspension of Work” of the Contract Documents.

8-1.07 DELAYS

8-1.07A General

This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.
8-1.07B Time Adjustments
This section is hereby deleted in its entirety. Provisions regarding “Time Adjustments” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

8-1.07C Payment Adjustments
This section is hereby deleted in its entirety. Provisions regarding “Payment Adjustments” are set forth in Book 1, Section 11 “Payment” of the Contract Documents.

8-1.08–8-1.09 RESERVED

8-1.10 LIQUIDATED DAMAGES

8-1.10A General
This section is hereby deleted in its entirety. Provisions regarding “Liquidated Damages” are set forth in Book 1, Section 17 “Damages” of the Contract Documents.

8-1.10B Failure to Complete Work Parts within Specified Times
This section is hereby deleted in its entirety. Provisions regarding “Liquidated Damages” are set forth in Book 1, Section 17 “Damages” of the Contract Documents.

8-1.10C Failure to Complete Work Parts by Specified Dates
This section is hereby deleted in its entirety. Provisions regarding “Liquidated Damages” are set forth in Book 1, Section 17 “Damages” of the Contract Documents.

8-1.10D Reserved

8-1.11–8-1.12 RESERVED

8-1.13 CONTRACTOR’S CONTROL TERMINATION
This section is hereby deleted in its entirety. Provisions regarding “Contractor’s Control Termination” are set forth in Book 1, Section 15 “Termination for Convenience” of the Contract Documents.

8-1.14 CONTRACT TERMINATION

8-1.14A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 15 “Termination for Convenience” and Section 16 “Default” of the Contract Documents.

8-1.14B Relief from Responsibility for Work
This section is hereby deleted in its entirety. Provisions regarding “Relief from Responsibility for Work” are set forth in Book 1, Section 15 “Termination for Convenience” and Section 16 “Default” of the Contract Documents.

8-1.14C Responsibility for Materials
This section is hereby deleted in its entirety. Provisions regarding “Responsibility for Materials” are set forth in Book 1, Section 15 “Termination for Convenience” and Section 16 “Default” of the Contract Documents.
8-1.14D Contract Acceptance after Termination

This section is hereby deleted in its entirety. Provisions regarding “Contract Acceptance after Termination” are set forth in Book 1, Section 15 “Termination for Convenience” and Section 16 “Default” of the Contract Documents.

8-1.14E Payment Adjustment for Termination

This section is hereby deleted in its entirety. Provisions regarding “Payment Adjustment for Termination” are set forth in Book 1, Section 15 “Termination for Convenience” and Section 16 “Default” of the Contract Documents.

8-1.15–8-1.16 RESERVED
**SECTION 9 PAYMENT**

**9-1.01 GENERAL**
This section is applicable to the Project.

**9-1.02 MEASUREMENT**

**9-1.02A General**
This section is hereby deleted in its entirety.

**9-1.02B Weighing Equipment and Procedures**

**9-1.02B(1) General**
This section is applicable to the Project.

**9-1.02B(2) Equipment**
This section is applicable to the Project.

**9-1.02B(3) Procedures**
This section is applicable to the Project.

**9-1.02C Final Pay Item Quantities**
This section is hereby deleted in its entirety.

**9-1.02D Quantities of Aggregate and Other Roadway Materials**
This section is applicable to the Project.

**9-1.03 PAYMENT SCOPE**
This section is hereby deleted in its entirety. Provisions regarding “Payment Scope” are set forth in Book 1, Section 11 “Payment” of the Contract Documents.

**9-1.04 FORCE ACCOUNT**

**9-1.04A General**
This section is applicable to the Project.

**9-1.04B Labor**
This section is applicable to the Project.

**9-1.04C Materials**
This section is applicable to the Project.

**9-1.04D Equipment Rental**

**9-1.04D(1) General**
This section is applicable to the Project.

**9-1.04D(2) Equipment On the Job Site**
This section is applicable to the Project.
9-1.04D(3) Equipment Not On the Job Site and Not Required for Original-Contract Work
This section is applicable to the Project.

9-1.04D(4) Equipment Not On the Job Site and Required for Original-Contract Work
This section is applicable to the Project.

9-1.04D(5) Non-Owner-Operated Dump Truck Rental
This section is applicable to the Project.

9-1.05 EXTRA WORK PERFORMED BY SPECIALISTS
This section is hereby deleted in its entirety. Provisions regarding “Extra Work Performed by Specialists” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

9-1.06 CHANGED QUANTITY PAYMENT ADJUSTMENTS

9-1.06A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

9-1.06B Increases of More Than 25 Percent
This section is hereby deleted in its entirety. Provisions regarding “Increases of More Than 25 Percent” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

9-1.06C Decreases of More Than 25 Percent
This section is hereby deleted in its entirety. Provisions regarding “Decreases of More Than 25 Percent” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

9-1.06D Eliminated Items
This section is hereby deleted in its entirety. Provisions regarding “Eliminated Items” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

9-1.07 PAYMENT ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS

9-1.07A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.

9-1.07B Asphalt Quantities

9-1.07B(1) General
This section is not applicable to the Project.

9-1.07B(2) Hot Mix Asphalt
This section is hereby deleted in its entirety. Provisions regarding “Hot Mix Asphalt” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.
9-1.07B(3) Rubberized Hot Mix Asphalt

This section is hereby deleted in its entirety. Provisions regarding “Rubberized Hot Mix Asphalt” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.

9-1.07B(4) Hot Mix Asphalt with Modified Asphalt Binder

This section is hereby deleted in its entirety. Provisions regarding “Hot Mix Asphalt with Modified Asphalt Binder” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.

9-1.07B(5) Hot Mix Asphalt Containing Reclaimed Asphalt Pavement

This section is hereby deleted in its entirety. Provisions regarding “Hot Mix Asphalt Containing Reclaimed Asphalt Pavement” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.

9-1.07B(6) Tack Coat

This section is hereby deleted in its entirety. Provisions regarding “Tack Coat” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.

9-1.07B(7) Asphaltic Emulsion

This section is hereby deleted in its entirety. Provisions regarding “Asphaltic Emulsion” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.

9-1.07B(8) Slurry Seal

This section is hereby deleted in its entirety. Provisions regarding “Slurry Seal” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.

9-1.07B(9) Modified Asphalt Binder

This section is hereby deleted in its entirety. Provisions regarding “Modified Asphalt Binder” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.

9-1.07B(10) Other Materials

This section is hereby deleted in its entirety. Provisions regarding “Other Materials” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.

9-1.07C Payment Adjustments

This section is hereby deleted in its entirety. Provisions regarding “Payment Adjustments” are set forth in Book 1, Section 11 “Payment” and “Exhibit H- Asphalt Quantity Calculations for Asphalt Index Fluctuation” of the Contract Documents.
9-1.08–9-1.10 RESERVED

9-1.11 TIME-RELATED OVERHEAD

9-1.11A General
This section is applicable to the Project.

9-1.11B Payment Quantity
This section is applicable to the Project.

9-1.11C Payment Inclusions
This section is applicable to the Project

9-1.11D Payment Schedule
This section is hereby deleted in its entirety. Provisions regarding “Payment Schedule” are set forth in Book 2, Section 2 “Project Management and Administration” of the Contract Documents.

9-1.11E Payment Adjustments
This section is applicable to the Project.

The overhead adjustment specified in section 9-1.17C does not apply.

9-1.12–9-1.14 RESERVED

9-1.15 WORK-CHARACTER CHANGES
This section is hereby deleted in its entirety. Provisions regarding “Work-Character Changes” are set forth in Book 1, Section 13 “Changes in the Work” of the Contract Documents.

9-1.16 PROGRESS PAYMENTS

9-1.16A General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2, “Project Management and Administration” of the Contract Documents.

9-1.16B Schedule of Values
This section is hereby deleted in its entirety. Provisions regarding “Schedule of Values” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2, “Project Management and Administration” of the Contract Documents.

9-1.16C Materials On Hand
This section is hereby deleted in its entirety. Provisions regarding “Materials On Hand” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2, “Project Management and Administration” of the Contract Documents.

9-1.16D Mobilization

9-1.16D(1) General
This section is deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 11.4 “Mobilization” of the Contract Documents.
9-1.16D(2) Mobilization for Projects Except for Those Over Water Requiring Marine Access
This section is not applicable to the Project.

9-1.16D(3) Mobilization for Projects Over Water Requiring Marine Access
This section is not applicable to the Project.

9-1.16E Withholds
9-1.16E(1) General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 11.5 “Deductions and Withholds” of the Contract Documents.

9-1.16E(2) Progress Withholds
This section is hereby deleted in its entirety. Provisions regarding “Progress Withholds” are set forth in Book 1, Section 11.5 “Deductions and Withholds” of the Contract Documents.

9-1.16E(3) Performance Failure Withholds
This section is hereby deleted in its entirety. Provisions regarding “Performance Failure Withholds” are set forth in Book 1, Section 11.5 “Deductions and Withholds” of the Contract Documents.

9-1.16E(4) Stop Notice Withholds
This section is hereby deleted in its entirety. Provisions regarding “Stop Notice Withholds” are set forth in Book 1, Section 11.5 “Deductions and Withholds” of the Contract Documents.

9-1.16E(5) Penalty Withholds
This section is hereby deleted in its entirety. Provisions regarding “Penalty Withholds” are set forth in Book 1, Section 11.5 “Deductions and Withholds” of the Contract Documents.

9-1.16E(6)–9-1.16E(10) Reserved

9-1.16F Retentions
This section is hereby deleted in its entirety. Provisions regarding “Retentions” are set forth in Book 1, Section 11.5 “Deductions and Withholds” of the Contract Documents.

9-1.16G–9-1.16M Reserved

9-1.17 PAYMENT AFTER CONTRACT ACCEPTANCE
9-1.17A General
This section is not applicable to the Project.

9-1.17B Payment Before Final Estimate
This section is hereby deleted in its entirety. Provisions regarding “Payments Before Final Estimate” are set forth in Book 1, Section 11 “Payment” of the Contract Documents.

9-1.17C Proposed Final Estimate
This section is hereby deleted in its entirety. Provisions regarding “Proposed Final Estimate” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2 “Project Management and Administration” of the Contract Documents.
9-1.17D Final Payment and Claims

9-1.17D(1) General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2, “Project Management and Administration” of the Contract Documents.

9-1.17D(2) Claim Statement

9-1.17D(2)(a) General
This section is hereby deleted in its entirety. Provisions regarding “General” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2, “Project Management and Administration” of the Contract Documents.

9-1.17D(2)(b) Overhead Claims
This section is hereby deleted in its entirety. Provisions regarding “Overhead Claims” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2, “Project Management and Administration” of the Contract Documents.

9-1.17D(2)(c) Declaration
This section is hereby deleted in its entirety. Provisions regarding “Declaration” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2, “Project Management and Administration” of the Contract Documents.

9-1.17D(2)(d) Waiver
This section is hereby deleted in its entirety. Provisions regarding “Waiver” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2 “Project Management and Administration” of the Contract Documents.

9-1.17D(3) Final Determination Claim
This section is hereby deleted in its entirety. Provisions regarding “Final Determination Claim” are set forth in Book 1, Section 11 “Payment” and Book 2, Section 2, “Project Management and Administration” of the Contract Documents.

9-1.18–9-1.20 RESERVED

9-1.21 CLERICAL ERRORS
This section is hereby deleted in its entirety. Provisions regarding “Clerical Errors” are set forth in Book 1, Section 11 “Payment” of the Contract Documents.

9-1.22 ARBITRATION
This section is hereby deleted in its entirety. Provisions regarding “Arbitration” are set forth in Book 1, Section 9 “Partnering, Dispute Resolution, Formal Legal Action(s)” of the Contract Documents.
B. Sections 10 through 99

General Modifications

1. On technical issues “The Engineer” shall mean the Design-Builder.
2. On Administrative issues “The Engineer” shall mean ICTC.

If the Design-Builder believes that a definition of “The Engineer” is unclear, the Design-Builder shall have the obligation to raise the issue with ICTC. Regardless of whether the Design-Builder raises the issue, ICTC shall always have the right to notify the Design-Builder if the Design-Builder is interpreting the definition of “The Engineer” incorrectly.

Specific Modifications

For any specific modifications on Section 10 through 99, please refer to the following Exhibit 4-A, “Revised Standard Specifications – Section 10 to Section 99”.
4A REVISED STANDARD SPECIFICATIONS – SECTION 10 TO SECTION 99

ORGANIZATION

Revised standard specifications are under headings that correspond with the main-section headings of the Caltrans Standard Specifications. A main-section heading is a heading shown in the table of contents of the Caltrans Standard Specifications. A date under a main-section heading is the date of the latest revision to the section.

Each revision to the Caltrans Standard Specifications begins with a revision clause that describes or introduces a revision to the Caltrans Standard Specifications. For a revision clause that describes a revision, the date on the right above the clause is the publication date of the revision. For a revision clause that introduces a revision, the date on the right above a revised term, phrase, clause, paragraph, or section is the publication date of the revised term, phrase, clause, paragraph, or section. For a multiple-paragraph or multiple-section revision, the date on the right above a paragraph or section is the publication date of the paragraphs or sections that follow.

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

The Design-Builder shall review all revisions to the Caltrans Standard Specifications at the time the RFP is issued to ensure all current revisions and updates are incorporated into the Project Work.
DIVISION II  GENERAL CONSTRUCTION

10  GENERAL

04-19-19

Replace the 1st sentence in the 4th paragraph of section 10-6 with:

The sources and discharge of recycled water must comply with the water-recycling criteria of the CDPH, SWRCB Order No. WQ 2016-0068-DDW, and the requirements of the appropriate RWQCB.

11  WELDING

04-19-19

Replace the table in the 3rd paragraph of section 11-1.01 with:

<table>
<thead>
<tr>
<th>AWS code</th>
<th>Year of adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1.1</td>
<td>2015</td>
</tr>
<tr>
<td>D1.3</td>
<td>2018</td>
</tr>
<tr>
<td>D1.4</td>
<td>2018</td>
</tr>
<tr>
<td>D1.5</td>
<td>2015</td>
</tr>
<tr>
<td>D1.6</td>
<td>2017</td>
</tr>
<tr>
<td>D1.8</td>
<td>2016</td>
</tr>
</tbody>
</table>

Replace the introductory clause in the 1st paragraph of section 11-1.03 with:

Replace clause 6.1.3 of AWS D1.1, the 1st paragraph of clause 9.1.2 of AWS D1.4, and clause 6.1.2 of AWS D1.5 with:

Replace the introductory clause of the 2nd paragraph of section 11-1.04 with:

Replace clause 6.14.6.1 of AWS D1.1, clause 9.8.1 of AWS D1.4, and clause 6.1.3.4 of AWS D1.5 with:

Add before the 1st paragraph of section 11-1.05:

Replace the first sentence of clause 5.21.1.1 of AWS D1.1 with the following:

5.21.1.1. The separation between surfaces of plug and slot welds, and of joints landing on a backing, shall not exceed 1/16 in [2 mm].
Replace clause 3.3.1.1 of AWS D1.5 with the following:

3.3.1.1. The separation between surfaces of plug and slot welds, and of joints landing on a backing, shall not exceed two (2) mm [1/16 in].

Replace item 2 in the list in the 2nd paragraph of section 11-1.05 with:

2. Be mechanically and radiographically tested. Mechanical and radiographic testing and acceptance criteria must comply with the applicable AWS codes. The type of mechanical testing must be authorized.

Replace the 1st paragraph of 11-1.06 with:

Replace item 3 of clause 6.26.3.2 of AWS D1.5 with:

3. If indications that exhibit these planar characteristics are present at scanning sensitivity, or other evidence exists to suggest the presence of transverse cracks, a more detailed evaluation of the discontinuity by other means must be performed (e.g., alternate UT techniques, RT, grinding, or gouging for visual inspection or MT of the excavated areas.)

Replace the scanning angle in clause 6.24.2.2 of AWS D1.5 with:

Up to 45 degrees

Replace the 2nd paragraph of section 11-1.06 with:

Clause 6.6.5 of AWS D1.1, clause 9.6.5 of AWS D1.4, and clause 6.6.5 of AWS D1.5 do not apply.

Replace the introductory clause of the 1st paragraph of section 11-2.04 with:

Clauses 6.1.4.1 and 6.1.4.3 of AWS D1.1, the 2nd paragraph of clause 9.1.2 of AWS D1.4, clauses 6.1.3.1 through 6.1.3.3 of AWS D1.5, and clause 7.2.3 of AWS D1.8 are replaced with:

Replace item 2 in the list in the 2nd paragraph of section 11-2.04 with:

2. Structural steel for building construction Work is performed at a permanent fabrication or manufacturing plant that is certified under the AISC Quality Certification Program, Category BU, Standard for Steel Building Structures.

11-2.06 WELDING PROCEDURES QUALIFICATION

Welding procedures qualification for Work welded under AWS D1.5 must comply with clause 5.12 or 5.12.4 of AWS D1.5 and the following:

1. Macroetch tests are required for all WPS qualification tests, and acceptance must comply with clause 5.19.3 of AWS D1.5.

2. If a nonstandard weld joint is to be made using a combination of WPSs, you may conduct a test under figure 5.3, combining the qualified or prequalified WPSs to be used in production, if the essential variables, including weld bead placement, of each process are limited to those established in table 5.4 of AWS D1.5.
3. Before preparing mechanical test specimens, inspect the PQR welds by visual and radiographic tests. The backing bar must be three (3) inches in width and must remain in place during NDT. Results of the visual and radiographic tests must comply with clause 6.26.2 of AWS D1.5 excluding clause 6.26.2.2. All other requirements for clause 5.17 are applicable.

When electric resistance welding is used for Work welded under AWS D1.1, the welding procedure must be qualified under Clause 4 of AWS D1.1. Welding procedures must be qualified for the thickness and the pole diameter tested. Test samples for tapered poles must be obtained from three locations, each end and the middle of the tapered pole, to qualify for the diameter range tested.

Replace the 3rd paragraph of section 11-3.02 with:

04-19-19

The AISC Certification category for pole structures is Bridge and Highway Metal Component (CPT) or Standard for Steel Building Structures (BU).

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12 TEMPORARY TRAFFIC CONTROL

04-19-19

Replace section 12-3.21B with:

04-19-19

Temporary traffic screen panels must be one of the following:
1. CDX grade or better plywood
2. Weather-resistant strand board
3. Plastic

Plastic temporary traffic screen panels must be on the Authorized Material List for temporary traffic screen.

Wale boards for use with plywood or strand board must be Douglas fir, rough sawn, construction grade or better.

Pipe screen supports must be schedule 40, galvanized steel pipe.

Nuts, bolts, and washers must be cadmium plated.

Screws must be black or cadmium-plated flat head, cross-slotted, with full-thread length.

Replace section 12-3.33 with:

04-19-19

12-3.33 TEMPORARY SIGNAL SYSTEMS

12-3.33A General

Section 12-3.33 includes specifications for installing, maintaining, and removing temporary signal systems, including installing lighting and flashing beacons for traffic control.

Temporary signal systems must comply with section 87-20.

12-3.33B Materials

Not Used
**12-3.33C Construction**

If the temporary signal system is out of operation, provide flaggers to control the traffic until the traffic signals are in operation.

**12-3.33D Payment**

Not Used

Replace section 12-4.01C with:

Replace the 3rd paragraph of section 12-4.02C(2)(a) with:

Within 5 business days after completion of the training, Caltrans provides LCS accounts and user IDs to your assigned, trained representatives.

Replace the list in the 1st paragraph of section 12-4.02C(7)(d) with:

1. Installation, removal, or replacement of an overhead power line or other utility cable across the highway
2. Installation or removal of traffic control devices in areas without a standard-width shoulder
3. Transportation of large equipment across the highway
4. Access to median areas for workers or equipment

**13 WATER POLLUTION CONTROL**

Delete item 2.6.3 in the list of section 13-1.01D(4)(c).

Replace the 1st paragraph of section 13-2.01C with:

Within seven (7) days after Contract approval, submit one printed copy and an electronic copy on a USB flash drive of your WPCP unless different quantities are ordered at the preconstruction conference. You may assign a QSP other than the WPC manager to develop the WPCP.

Replace the 4th paragraph of section 13-2.01C with:

After the Engineer authorizes the WPCP, submit one printed copy and an electronic copy on a USB flash drive of the authorized WPCP.

Delete the row for Annual Certification in the table in section 13-3.01C(1).

Replace the 1st paragraph of section 13-3.01C(2)(a) with:

Within 15 days of Contract approval, submit one printed copy and an electronic copy on a USB flash drive of your SWPPP unless different quantities are ordered at the preconstruction conference. You may assign a QSD other than the WPC manager to develop the SWPPP.
Replace item 4 in the list in the 2nd paragraph of section 13-3.01C(2)(a) with:

4. Include a schedule showing when:

  4.1. Work activities that could cause the discharge of pollutants into stormwater will be performed
  4.2. WPC practices, including soil stabilization and sediment control, that will be used in the Work for whichever has the longest duration in the first:

    4.2.1. Sixty (60) days
    4.2.2. Construction phase

Replace the 4th paragraph of section 13-3.01C(2)(a) with:

Submit an electronic copy on a USB flash drive and four (4) printed copies of the authorized SWPPP unless fewer quantities are authorized at the preconstruction conference.

Replace the introductory clause in the 7th paragraph of section 13-3.01C(2)(a) with:

Submit a revised SWPPP annually before February 3 and any time:

Delete section 13-3.01C(5).

Add between the 3rd and 4th paragraphs of section 14-10.01:

If ordered, remove solid waste from illegal dumping on the Project site. This Work is change order Work. Illegal dumping is:

  1. Third party nonhazardous residential or commercial waste
  2. Greater than one (1.0) cubic yard per event

Add to the beginning of section 14-11.14D:

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

Add to the beginning of section 14-11.14E:

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.

DIVISION III EARTHWORK AND LANDSCAPE

19 EARTHWORK

10-19-18
Replace the 1st paragraph of section 19-3.03E(1) with:
10-19-18
Place structure backfill in uniform layers. Bring backfill up uniformly on all sides of structures or drainage facilities. Backfill layer thickness must not exceed 0.67 foot before compacting. If you perform compaction by ponding and jetting, the thickness of the backfill layer must not exceed four (4) feet.

Replace the 1st sentence in the 3rd paragraph of section 19-3.03E(1) with:
10-19-18
Do not place structure backfill until footings or other parts of structures or drainage facilities are authorized.

 Replace the 2nd paragraph of section 20-2.01A(4)(d) with:
10-19-18
In the presence of the Engineer, perform a functional test for each system that demonstrates:
1. Components of the system are functioning and integrated with one another.
2. Controller programming is complete including external weather and other system data inputs that are required to operate the system in automatic mode.
3. Watering schedule is appropriate for the plants, current weather, season, and Site conditions.
4. System has complete sprinkler coverage of the site.

Perform the test for each system:
1. Before planting the plants
2. After irrigation system repair work
3. Annually during plant establishment work
4. Not more than 30 days prior to contract acceptance
5. When ordered

Delete section 20-2.01A(4)(e).

Replace the 1st paragraph of section 20-2.01B(5) with:
10-19-18
Pull boxes must comply with section 86-1.02C and be no. 5 or larger. Pull boxes for low voltage conductors must not have side openings.

Replace the 2nd paragraph of section 20-2.01B(5) with:
04-19-19
Pull box covers used for control and neutral conductors for irrigation equipment operated by the irrigation controller must be marked SPRINKLER CONTROL.

Add to section 20-2.01B:

20-2.01B(9) Woven Wire Cloth and Gravel

Woven wire cloth must be galvanized and manufactured with a minimum diameter of 19-gauge wire and have square openings from 1/4 to 1/2 inches.
Gravel must be 3/4-inch gravel or crushed rock. Gravel or crushed rock must be clean, washed, dry, and free from clay or organic material.

**Replace the 1st paragraph of section 20-2.01C(2) with:**

Perform trenching and backfilling under section 87-1.03E(2).

**Replace the introductory clause to the list in the 1st paragraph of section 20-2.01C(3) with:**

Install pull boxes under section 87-1.03C at the following locations:

**Add to section 20-2.01C(4):**

Install valve boxes on woven wire cloth and gravel or crushed rock.

**Replace the 1st paragraph of section 20-2.04A(4) with:**

Perform field tests on control and neutral conductors. Field tests must comply with the specifications in section 87-1.01D(2)(a).

**Replace the 1st and 2nd paragraphs of section 20-2.04B with:**

Control and neutral conductors must comply with the provisions for conductors and cables in section 86-1.02F.

Electrical conduit and fittings must comply with section 86-1.02(B).

**Replace the 1st paragraph of section 20-2.04C(4) with:**

Splice conductors with a UL-listed connector manufactured for copper wire, direct burial irrigation systems. Connector must be prefilled with a moisture sealing compound that encapsulates and protects the splice in a waterproof housing. Connector must be sized for the number and gauge of the conductors at the splice.

**Replace the introductory clause of the 1st paragraph of section 20-2.06B(3) with:**

The irrigation controller enclosure cabinet must comply with section 86-1.02Q and must:

**Add to the beginning of section 20-2.06C:**

Install the irrigation controller enclosure cabinet under 87-1.03Q(1).

**Replace the 3rd paragraph of section 20-2.09B(1) with:**

Threaded nipples for swing joints and risers must be schedule 80, PVC 1120 or PVC 1220 pipe, and comply with ASTM D1785.
Replace the table in the 3rd paragraph of section 20-3.01B(2)(a) with:

<table>
<thead>
<tr>
<th>Plant group designation</th>
<th>Description</th>
<th>Container size (cu in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No. 1 container</td>
<td>152–251</td>
</tr>
<tr>
<td>B</td>
<td>No. 5 container</td>
<td>785–1242</td>
</tr>
<tr>
<td>C</td>
<td>Ball and burlapped</td>
<td>--</td>
</tr>
<tr>
<td>E</td>
<td>Bulb</td>
<td>--</td>
</tr>
<tr>
<td>F</td>
<td>In flats</td>
<td>--</td>
</tr>
<tr>
<td>H</td>
<td>Cutting</td>
<td>--</td>
</tr>
<tr>
<td>I</td>
<td>Pot</td>
<td>--</td>
</tr>
<tr>
<td>K</td>
<td>24-inch box</td>
<td>5775–6861</td>
</tr>
<tr>
<td>M</td>
<td>Liner(^a)</td>
<td>--</td>
</tr>
<tr>
<td>O</td>
<td>Acorn</td>
<td>--</td>
</tr>
<tr>
<td>P</td>
<td>Plugs(^a, b)</td>
<td>--</td>
</tr>
<tr>
<td>S</td>
<td>Seedling(^c)</td>
<td>--</td>
</tr>
<tr>
<td>U</td>
<td>No. 15 container</td>
<td>2768–3696</td>
</tr>
<tr>
<td>Z</td>
<td>Palm Tree</td>
<td>--</td>
</tr>
</tbody>
</table>

\(^a\) Do not use containers made of biodegradable material.
\(^b\) Grown in individual container cells.
\(^c\) Bare root.

Replace the introductory clause of the 1st paragraph of section 20-3.01B(4)(b) with:

Slow-release fertilizer must be a pelleted or granular form with a nutrient release over a three (3) to four (4) month period and be within the chemical analysis ranges shown in the following table:

Replace section 20-3.01C(3) with:

Water plants as needed to keep the plants in a healthy growing condition.

Replace the 1st paragraph of section 20-4.03G with:

Operate the electric automatic irrigation systems, including external weather and other system data inputs required to operate the system in automatic mode, unless otherwise authorized.

Delete the 3rd paragraph of section 20-4.03G.
Add to the end of section 20-5.03B(3):

If you are ordered to remove existing concrete below ground within the limits of the rock blanket, saw cut the concrete before removal. This Work is change order Work.

Replace item 1 in the list in the 1st paragraph of section 20-10.03A(3) with:

1. Transplanting trees. The work plan must include methods of lifting, transporting, storing, planting, guying, watering and maintaining each tree to be transplanted. Include the root ball size, method of root ball containment, and a maintenance program for each tree.

Add to the end of section 20-10.03C(3):

Water transplanted trees immediately after planting and as needed to keep it in a healthy growing condition until contract acceptance.

Add to the end of section 20-10.03C(4):

Water existing plants as needed to keep them in a healthy growing condition until contract acceptance.

21 EROSION CONTROL

Replace the 2nd paragraph of section 21-2.03J with:

Do not incorporate materials within three (3) feet of the pavement edge.

Delete the 4th paragraph of section 21-2.03J

DIVISION IV SUBBASES AND BASES

28 CONCRETE BASES

Replace the 1st paragraph of section 28-2.01D(1)(a) with:

The cylinders for compressive strength testing under ASTM C31 or ASTM C192 must be six (6) by twelve (12) inches.

Replace the 1st paragraph of section 28-2.02B with:

The SCM content requirements in the 4th paragraph of section 90-1.02B(3) do not apply to LCB.
DIVISION V  SURFACINGS AND PAVEMENTS

39  ASPHALT CONCRETE

04-19-19

Replace the 1st and 2nd paragraphs of section 39-2.01A(3)(d) with:

If ordered, submit QC test results within three (3) business days of a request.

Add to section 39-2.01A(4)(h)(v):

AASHTO T 324 (modified) and AASHTO T 283 are not required if production start-up evaluation is within 45 days of the date the Hot Mix Asphalt Verification form is signed.

If production stops for more than 60 days, perform a production start-up evaluation. If production stops for more than 30 days but less 60 days, perform a reduced production start-up evaluation. Reduced production start-up evaluation is production start-up evaluation without AASHTO T 324 and AASHTO T 283.

If production start-up evaluation fails, do not begin production.

Add between the 3rd and 4th paragraphs of section 39-2.01A(4)(i)(i):

You must assist in collecting Engineer acceptance samples. Sample in the presence of the Engineer. Split the Engineer acceptance samples into at least four (4) parts. Engineer retains three (3) parts and you keep one (1) part.

Replace the 1st through 3rd paragraphs of section 39-2.01A(4)(i)(iv) with:

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 three (3) business day of receiving 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. By mutual agreement, the independent third party is chosen from:

1. Caltrans laboratory in a district or region not in the district or region the Project is located
2. Transportation Laboratory
3. Laboratory not currently employed by you or your HMA producer

If the ICTC portion of the split acceptance samples are not available, the independent third party uses any available material agreed by you and the Engineer as representing the disputed HMA for evaluation.

Replace the row for Moisture susceptibility (min, psi, dry strength) in the table in item 3 in the list in the paragraph of section 39-2.02A(4)(e) with:

| For RAP substitution equal to or less than 15% | AASHTO T 283 | 100 |

04-19-19
| moisture susceptibility (min, psi, dry strength) | For RAP substitution greater than 15% moisture susceptibility (psi, dry strength) | AASHTO T 283 | 100-300⁹ |

Add a footnote to the table in item 3 in the list in the paragraph of section 39-2.02A(4)(e):

⁹Not required in the following areas:
1. Southern San Luis Obispo or Santa Barbara County in District 5.
2. Kern County in District 6.
3. Kings County in District 6: route 5, post mile 0 to 17; route 33, post mile 0 to 19; route 41, post mile 0 to 16.
4. Tulare County in District 6: route 65, post mile 0 to 10; route 99, post mile 0 to 10; route 43, post mile 0 to 15.

Replace the row for Moisture susceptibility, dry strength in the table in the 1st paragraph of section 39-2.02B(2) with:

| For RAP substitution equal to or less than 15% moisture susceptibility (min, psi, dry strength) | AASHTO T 283 | 100 |
| For RAP substitution greater than 15% moisture susceptibility (psi, dry strength) | AASHTO T 283 | 100-300⁶ |

Add a footnote to the table in the 1st paragraph of section 39-2.02B(2):

⁶Not required in the following areas:
1. Southern San Luis Obispo or Santa Barbara County in District 5.
2. Kern County in District 6.
3. Kings County in District 6: route 5, post mile 0 to 17; route 33, post mile 0 to 19; route 41, post mile 0 to 16.
4. Tulare County in District 6: route 65, post mile 0 to 10; route 99, post mile 0 to 10; route 43, post mile 0 to 15.

Replace the 3rd and 4th paragraphs of section 39-2.02B(2) with:

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.

For RAP substitution greater than 15 percent and not exceeding 25 percent, the grade of the virgin binder must be the specified grade of asphalt binder for Type A HMA with the upper and lower temperature classification reduced by six (6) degrees C. Hamburg wheel track requirements are based on the grade of asphalt binder specified for Type A HMA.

Replace the 2nd sentence in the 2nd paragraph of section 39-2.02B(11) with:
For RAP substitution of 15 percent or less, RAP must be within ±3 of RAP percentage shown in your Contractor Job Mix Formula Proposal form without exceeding 15 percent. For RAP substitution of greater than 15 percent, RAP must be within ±3 of RAP percentage shown in your Contractor Job Mix Formula Proposal form without exceeding 25 percent.

Replace the 8th and 9th paragraphs of section 39-2.04C with:

For RHMA-O and RHMA-O produced with WMA water injection technology, and RHMA-O-HB and RHMA-O-HB produced with WMA water injection technology:

1. Spread and compact if the ambient air temperature is at least 55 degrees F and the surface temperature is at least 60 degrees F
2. Complete the 1st coverage using two (2) rollers before the surface temperature drops below 280 degrees F
3. Complete compaction before the surface temperature drops below 250 degrees F

For RHMA-O produced with WMA additive technology and RHMA-O-HB produced with WMA additives technology:

1. Spread and compact if the ambient air temperature is at least 45 degrees F and the surface temperature is at least 50 degrees F
2. Complete the 1st coverage using two (2) rollers before the surface temperature drops below 270 degrees F
3. Complete compaction before the surface temperature drops below 240 degrees F

Spread sand at a rate from one (1) to two (2) lb/sq yd on RHMA-O and RHMA-O-HB with or without WMA technology pavement after finish rolling activities are complete. Keep traffic off the pavement until spreading of the sand is complete.

 Replace the 2nd paragraph of section 40-1.01C(4) with:

At least 15 days before starting field qualification, submit the proposed concrete mix proportions, the corresponding mix identifications, and laboratory test reports, including measurements of the modulus of rupture and compressive strength, for each trial mixture at 3, 7, 10, 21, 28, and 42 days.

 Replace the 2nd paragraph of section 40-1.01C(9) with:

Submit your coefficient of thermal expansion test data at: https://dime.dot.ca.gov/

 Replace the 3rd paragraph of section 40-1.01D(1) with:

Provide material, labor and equipment that meets initial curing requirement to assist the Engineer in fabricating, curing and handling test beams for modulus of rupture testing. Failure to maintain the proper curing environment during initial cure will not be basis for rejection of samples, dispute resolution, or claim.
The initial curing equipment must be capable of being locked, using an ICTC Approved padlock. Ensure that the initial curing equipment is secured at all times and protected against theft and damage.

Replace the row for Density in the table in the 1st paragraph of section 40-1.01D(7)(a) with:

<table>
<thead>
<tr>
<th>Unit weight</th>
<th>California Test 518</th>
<th>1 per 4 hours</th>
</tr>
</thead>
</table>

Add to the list in the 4th paragraph of section 40-1.01D(7)(a):

6. Unit weight

Replace item 2 in the list in the 8th paragraph of section 40-1.01D(7)(a) with:

2. 1 point falls outside the suspension limit line for individual penetration, unit weight or air content measurements

Replace \( n_v \) in the 1st paragraph of section 40-1.01D(8)(b)(ii) with:

\[ n_v = \text{number of ICTC's tests (minimum of 3 required)} \]

Replace the 4th paragraph of section 40-1.01D(8)(b)(ii) with:

If your QC test results are not verified, core at least three (3) specimens from the concrete pavement under section 40-1.03M. For dispute resolution, the Engineer selects the core locations and ICTC contracts with an independent testing laboratory or uses a Caltrans laboratory to test these specimens for air content under ASTM C457. The Engineer compares these test results with your QC test results using the t-test method. If your QC test results are verified based on this comparison, the Engineer uses your QC test results for acceptance of concrete pavement for air content, otherwise, the Engineer uses the test results from the dispute resolution process and you pay for the independent testing.

Replace the note b in the table in the 1st paragraph of section 40-1.01D(8)(c)(i) with:

\[ ^b \text{Average of the individual test results of three (3) test beams.} \]

Replace the 1st sentence of section 40-1.01D(8)(c)(iii) with:

ICTC verifies and accepts pavement smoothness based on the results of your inertial profiler testing under Section 36-3.

Replace section 40-1.01D(8)(c)(v) with:

40-1.01D(8)(c)(v) Determining Modulus of Rupture from Pavement Cores

For each approved mix design, a correlation between flexural beam strength and compressive core strength may be developed to evaluate low modulus of rupture results from projects. If the average 28-day modulus of rupture is below 570 psi, the contractor may use compressive strength results from pavement cores to determine the equivalent 28-day modulus of rupture.
In the presence of engineer:

1. From the test strip, fabricate an additional three (3) beams, and take a total of fifteen (15) cores under ASTM C42 to test three (3) cores at each age of 28, 42, 56, 70, and 91 days.

2. If test strip is not constructed, fabricate additional three (3) beams on the first day of production and placement of concrete pavement, and take total 15 cores under ASTM C42 to test three (3) cores at each age of 28, 42, 56, 70, and 91 days.

3. Break three (3) beams at 28 days and take the average.

4. Break three (3) cores at each age of 28, 42, 56, 70, and 91 days under ASTM C39 and take the average at each age.

Use the following formula to calculate the equivalent 28-day modulus of rupture:

\[
\text{MOR} = \text{MORs} \times \left[\frac{\text{Cp}(t)}{\text{Cs}(t)}\right]^{1/2}
\]

where:

\[
\text{MOR} = \text{equivalent 28-day modulus of rupture in psi}
\]

\[
\text{MORs} = \text{average modulus of rupture in psi of three (3) beams taken from the test strip at 28 days}
\]

\[
\text{Cs}(t) = \text{average compressive strength in psi of three (3) cores taken from the test strip at (t): 28, 42, 56, 70, or 91 days under ASTM C39}
\]

\[
\text{Cp}(t) = \text{average compressive strength in psi of three (3) cores taken from the pavement project at (t): 28, 42, 56, 70, or 91 days under ASTM C39}
\]

Submit all test results to Engineer on the same date of completion of testing.

If the 28-day modulus of rupture is below 570 psi, select an age equal to one of the test ages from the test strip and drill three (3) concrete cores under ASTM C42 of same diameter as the test strip from the area not complying to the acceptance strength requirement and test in presence of Engineer for compressive strength under ASTM C39. The average compressive strength of three (3) concrete cores will be used to determine the equivalent 28-day modulus of rupture.

Replace introductory clause in the 4th paragraph of section 40-1.03J with:

Do not allow traffic or use equipment on concrete pavement before the concrete has attained a modulus of rupture of 550 psi based on ICTC’s testing unless:

Add to the list in the 4th paragraph of section 40-1.03J:

2.5 You must monitor for damage and immediately discontinue access and suspend operations if any damage becomes apparent

Replace the 6th paragraph of section 49-1.01D(4) with:

Except for load test piles and anchor piles, drive the 1st production pile in the control zone. Do not install any additional production piles until dynamic monitoring has been performed, and the Engineer provides
you with the bearing acceptance criteria curves for any piles represented by the dynamically monitored piles.

Replace the 3rd paragraph of section 49-2.01D with:

The payment quantity for furnish piling is the length measured along the longest side of the pile from the specified tip elevation shown to the plane of pile cutoff, except for dynamically monitored piles. For dynamically monitored piles, the payment quantity for furnish piling includes an additional length of two (2) times the largest cross-sectional dimension of the pile plus two (2) feet.

Add to the end of section 49-2.02A(2):

1. **longitudinal weld length**: The length of a continuous longitudinal weld.
2. **circumferential weld length**: The length of a continuous weld around the circumference of the pipe pile.
3. **spiral weld length**: The length of one full 360-degree spiral weld revolution around the circumference of the pipe pile.

Replace the 3rd paragraph of section 49-2.02A(4)(b)(iii)(B) with:

For welding performed under AWS D1.1:

1. Perform NDT on 25 percent of each longitudinal, circumferential, or spiral weld length using RT or UT.
2. If repairs are required in a portion of the tested weld:
   2.1. Perform additional NDT on untested areas on each end of the initial portion tested. The length of additional NDT on each end must equal 10 percent of the weld length. If it is not possible to perform 10 percent of the weld length on one end, perform the remaining percentage on the other end.
   2.2. After this additional 20 percent of NDT is performed, determine and record the total cumulative repair lengths from all NDT for each weld length. If the cumulative weld repair length is equal to or more than 10 percent of the weld length, then perform NDT on the entire weld length.
   2.3. Perform NDT on the repaired portion plus two (2) inches on each end of the repaired weld excavation.

Replace the 2nd paragraph of section 49-2.02A(4)(b)(iii)(C) with:

Perform NDT on 25 percent of the weld length performed by each welder, using RT or UT at locations selected by the Engineer. The Engineer may select several locations on a given splice. The cover pass must be ground smooth at locations to be tested.

Replace the 4th paragraph of section 49-2.02A(4)(b)(iii)(C) with:

If repairs are required in a portion of the tested weld:

1. Perform additional NDT on untested areas on each end of the initial portion tested. The length of additional NDT on each end must equal 10 percent of the pipe's outside circumference. If it is not possible to perform 10 percent of the weld length on one end, perform the remaining percentage on the other end.
2. After this additional 20 percent of NDT is performed, determine and record the total cumulative repair lengths from all NDT for each weld length. If the cumulative weld repair length is equal to or more than 10 percent of the pipe's outside circumference, then perform NDT on the entire weld length.

3. Perform NDT on the repaired portion plus two (2) inches on each end of the repaired weld excavation.

Replace the 5th paragraph of section 49-2.02B(1)(b) with:

If splicing steel pipe piles using a circumferential weld, the piles must comply with the fit-up requirements of clause 9.24.1 of AWS D1.1.

51 CONCRETE STRUCTURES

Add to the beginning of section 51-1.01C(1):

If ordered, submit concrete form design and materials data for each forming system.

Add to section 51-1.03:

51-1.03J Temporary Decking

If you are unable to complete bridge reconstruction activities before the bridge is to be opened to traffic, furnish and maintain temporary decking under section 48-4 until that portion of the Work is complete.

Replace Reserved in section 51-4.01C(2)(e) with:

For PC deck panels, shop drawings must include:

1. Panel materials, shapes, and dimensions.
2. Deck panel layout identifying the locations of each panel.
3. Reinforcing, joint, and connection details.
4. Complete details of the methods, materials, and equipment used in prestressing and precasting work.
5. Type of texture and method of forming the textured finish.
6. Methods and details for lifting, bracing, and erection.
7. Method of support and grade adjustment.
8. Methods of sealing against concrete leaks.

Replace Reserved in section 51-4.02D(7) with:

Clearly label the top surface of each panel with the word TOP as shown on the deck panel layout using waterproof paint or other authorized means.

Apply a coarse texture to at least 90 percent of the deck panel top surface area by brooming with a stiff bristled broom or by other suitable devices that results in uniform scoring parallel with the prestressing strands. The top surface texture must have a maximum 1/8-inch texture.

Each camber strip must:
1. Consist of high density expanded polystyrene with a minimum compressive strength of 55 psi.
2. Consist of a single layer and extend continuously under each deck panel.
3. Achieve a height that accounts for roadway profile, cross slope, and girder camber.
4. Have 1/4-inch v-notches or 1/2 by 1/2-inch slots cut into the top surface on 4-foot centers.

Camber strip dimensions must comply with the following table:

<table>
<thead>
<tr>
<th>Height (H) (inches)</th>
<th>Width (W) (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Greater than 2.5 and less than or equal to 3.5</td>
<td>1.75</td>
</tr>
<tr>
<td>Greater than 3.5 and less than or equal to 4</td>
<td>2</td>
</tr>
</tbody>
</table>

Chemical adhesive must be suitable for use with concrete and polystyrene.

For the concrete deck pour, the aggregate must comply with the 1/2-inch maximum or the 3/8-inch maximum combined aggregate gradation specified in section 90-1.02C(4)(d).

Add between the 5th and 6th paragraphs of section 51-4.03B:

Erect girders onto the supporting concrete, such as bent caps or abutments, after the concrete attains a compressive strength of 2,880 psi or 80 percent of the specified strength, whichever is greater.

Replace Reserved in section 51-4.03G with:

Construct the deck panel system in the following sequence:

1. After girders and diaphragms are in place, place each polystyrene camber strip along the top of each girder. Apply a continuous bead of chemical adhesive to the top and bottom of each camber strip to prevent gaps between the camber strip and concrete members.
2. Place each deck panel as shown on the deck panel layout such that each panel bears uniformly on the camber strips.
3. Abrasive blast clean deck panel and girder surfaces before placing deck reinforcement. Remove all surface laitance, curing compound, and other foreign materials. Thoroughly clean under the edges of each panel to ensure removal of construction debris before the stage 1 deck pour.
4. Place deck reinforcement.
5. Place deck concrete in a two-stage continuous pour:
   5.1. Place and vibrate stage 1 concrete over the girders by completely filling the area between the camber strips in from 15 to 30 feet longitudinal sections ahead of the stage 2 concrete deck pour. Check slots or holes in camber strips to ensure removal of air voids and full consolidation during concrete placement.
   5.2. Place stage 2 concrete deck over stage 1 concrete and deck panels as to not result in a cold joint between the two stages.

If required, install temporary bracing between the ends of each deck panel to prevent transverse panel movement that could lead to loss of bearing on the camber strips.

Loads placed on deck panels during construction must not exceed 50 psf.
Replace the row for Apparent elongation in the table in the 2nd paragraph of section 51-5.02B with:

| Apparent elongation (max, percent) | ASTM D4632 | 35 |

55 STEEL STRUCTURES

04-19-19

Replace the 3rd paragraph of section 55-1.02E(7)(a) with:

Dimensional details and workmanship for welded joints in tubular and pipe connections must comply with clause 9 of AWS D1.1.

59 STRUCTURAL STEEL COATINGS

10-19-18

Replace the 2nd paragraph in section 59-1.01D with:


Replace the 2nd paragraph of section 59-1.02C with:

Coatings selected for use must comply with the volatile organic compound concentration limits specified for the air quality district where the coating is applied. The undercoats and finish or final coats selected for use must be compatible with each other.

Add after the paragraph of section 59-2.01A(3)(a):

If requested by the Engineer, submit documentation from the coating manufacturer verifying the compatibility of the undercoats and finish or final coats selected for use.

60 EXISTING STRUCTURES

04-19-19

Replace section 60-2.02B with:

60-2.02B Materials

Design criteria for temporary support shoring and temporary bracing must comply with section 48-3.02B.

Add to section 60-3.01A:
If you are unable to complete bridge reconstruction activities before the bridge is to be opened to traffic, furnish and maintain temporary decking under section 48-4 until that portion of the Work is complete.

**Replace the 3rd and 4th paragraphs of section 60-3.02C(3) with:**

Remove asphalt concrete surfacing by cold milling under the following conditions:

1. If a membrane seal is shown:
   1.1. Remove the seal by cold milling
   1.2. Do not remove more than 1/2 inch of the existing concrete slab
2. If a membrane seal is not shown:
   2.1. Remove asphalt concrete surfacing until a 1/2-inch minimum of surfacing remains on top of existing concrete slab
   2.2. Use other authorized means to remove the remaining asphalt concrete without damage to the concrete slab

**Add to section 60-3.02C(3):**

Where a portion of the asphalt concrete surfacing is to remain, saw cut a 2-inch-deep true line along the edge to remain in place before removing asphalt concrete. Remove the asphalt concrete without damaging the surfacing to remain in place.

**Delete the 3rd paragraph of section 60-3.04B(3)(a).**

**Replace the 9th paragraph of section 60-3.04B(3)(c) with:**

Protect the overlay from moisture and do not allow traffic or equipment on the overlay (1) for a minimum of four (4) hours cure time after final finishing and (2) until each rebound test result for the final finish shows a reading of at least 28 when tested under ASTM C805. The cure time must be extended if ordered. The rebound test may not be used to reduce the four- (4)-hour cure time of the overlay.

**Replace the 10th paragraph of section 60-4.09B(2)(a) with:**

Steel parts must comply with ASTM A36/A36M or A576, Grade 1030 and must not be rimmed or capped steel.

**DIVISION VII DRAINAGE FACILITIES**

**66 CORRUGATED METAL PIPE**

**Replace the 1st paragraph in section 66-1.02D with:**

Coupling bands for corrugated metal pipe must comply with either section 66-1.02D or section 61-2.01D(2)(b).
Replace the 6th paragraph in section 66-1.02D with:

Joints for siphons and joints for pipes shown as watertight must be watertight under pressure and all conditions of expansion, contraction, and settlement, and must comply with section 61-2.01D(2)(a) for watertightness.

Replace the 4th paragraph of section 66-2.03 with:

Place cement treated structure backfill for slotted corrugated steel pipe as shown and under section 19-3.02F(3) for soil cement beddings. Cover the completed cement treated structure backfill with a curing seal of asphaltic emulsion, Grade SS1 or CSS1.

Replace the 2nd paragraph of section 80-3.02B with:

Posts and braces must comply with the strength requirements in ASTM F1043 for one of the following:

1. Group IA, regular grade, for round pipes
2. Group IC, 50,000 psi yield, for round pipes
3. Group II-L for roll-formed posts and braces

Replace the list in section 80-4.02B(1)(b) with:

1. Comply with ASTM A1064 and have a Class 1 zinc coating complying with ASTM A641
2. Be welded or woven galvanized steel wire fabric
3. Be made of at least 16-gauge wire
4. Be 36 inches wide

Replace the paragraph in section 80-4.02B(2) with:

The materials for a temporary desert tortoise fence must comply with section 80-4.02B(1).

Replace the 2nd sentence in the 1st paragraph of section 80-4.02C(2) with:

Embed the posts at maximum 10-foot intervals into the ground.

DIVISION IX TRAFFIC CONTROL DEVICES

82 SIGNS AND MARKERS

Replace the list in the 1st paragraph of section 82-2.01C with:

1. Aluminum sheeting
2. Retroreflective sheeting
3. Color imaging methods and film
4. Protective-overlay film

**Replace section 82-2.02D with:**

**82-2.02D  Color Imaging Methods and Film**

The material used for color imaging methods, film, and protective-overlay must be recommended by the retroreflective sheeting manufacturer.

Colored retroreflective sheeting must be used for the background.

Signs with green, red, blue, or brown backgrounds may use reverse-screened-process color on white retroreflective sheeting for the background color. The coefficient of retroreflection must be at least 70 percent of the coefficient of retroreflection specified in ASTM D4956 for the corresponding color of retroreflective sheeting.

The sign must have outdoor weatherability characteristics equivalent to those specified for the corresponding color of retroreflective sheeting in ASTM D4956.

**Replace section 82-5.01A with:**

Section 82-5 includes specifications for fabricating and installing markers, including milepost markers.

**Replace the 2nd paragraph in section 82-5.02E with:**

A target plate for milepost marker or Type L-1 (CA) or Type L-2 (CA) object marker installed on a metal post must be manufactured from an aluminum sheet or zinc-coated steel sheet.

**Replace section 82-5.02H with:**

**82-5.02H  Milepost Markers**

Letters and numerals on a milepost marker must be made with opaque black paint or film. The paint and film must have an equivalent outdoor weatherability as the retroreflective sheeting specified in ASTM D4956. Nonreflective, opaque, black film must be vinyl or acrylic material.

Film for letters and numerals must be computer cut and have pressure-sensitive adhesive.

**Replace the 5th paragraph of section 82-5.03 with:**

Use stencils to paint letters and numerals on milepost markers.

**83  RAILINGS AND BARRIERS**

For Midwest guardrail systems and thrie beam barrier, install steel foundation tubes and soil plates in soil.
Replace the 4th paragraph of section 83-2.03C with:

If median barrier delineation is shown, match the barrier marker spacing to the raised pavement marker spacing on the adjacent median edge line pavement delineation.

 Replace the paragraph of section 83-3.03A(11) with:

Where concrete barrier markers are shown, cement the markers to the barrier under the manufacturer's instructions. Match the barrier marker spacing to the raised pavement marker spacing on the adjacent median edge line pavement delineation.

84 MARKINGS

Replace section 84-2 with:

84-2 TRAFFIC STRIPES AND PAVEMENT MARKINGS

84-2.01 GENERAL

84-2.01A Summary

Section 84-2 includes specifications for applying traffic stripes and pavement markings. Traffic stripes and pavement markings must comply with ASTM D6628 for daytime and nighttime color. Retroreflectivity must be measured under ASTM E1710 and the sampling protocol specified in ASTM D7585.

84-2.01B Definitions

pavement marking: Transverse marking such as (1) a limit line, (2) a stop line, or (3) a word, symbol, shoulder, parking stall, or railroad-grade-crossing marking.

traffic stripe: Longitudinal centerline or lane line used for separating traffic lanes in the same direction of travel or in the opposing direction of travel or a longitudinal edge line marking the edge of the traveled way or the edge of a lane at a gore area separating traffic at an exit or entrance ramp. A traffic stripe is shown as a traffic line.

84-2.01C Submittals

For each lot or batch of traffic stripe material, primer, and glass beads, submit:

1. Certificate of compliance, including the material name, lot or batch number, and manufacture date
2. METS notification letter stating that the material is authorized for use, except for thermoplastic and primer
3. SDS
4. Manufacturer’s Instructions

For each lot or batch of thermoplastic, submit a manufacturer's certificate of compliance and the following test results from the California Test 423:

1. Brookfield Thermosel viscosity
2. Hardness
3. Yellowness index, white only
4. Daytime luminance factor
5. Yellow color, yellow only
6. Glass bead content
7. Binder content

The date of the test must be within one (1) year of use.

Submit test results for each lot of beads specifying the EPA test methods used and tracing the lot to the specific test sample. The testing for lead and arsenic content must be performed by an independent testing laboratory.

Submit the thermoplastic test stripe to the Engineer.

Submit the retroreflectivity test result within 5 days of testing the traffic stripes and pavement markings. The data must include the retroreflectivity, time, date, and GPS coordinates for each measurement.

**84-2.01D Quality Assurance**

**84-2.01D(1) General**

This section is not applicable to the Project.

**84-2.01D(2) Quality Control**

Before starting permanent application of methyl methacrylate and two component paint traffic stripes and pavement markings, apply a test stripe on roofing felt or other suitable material in the presence of the Engineer. The test stripe section must be at least 50 feet in length.

Upon request, apply a thermoplastic test stripe on suitable material in the presence of the Engineer during the application of thermoplastic traffic stripes or markings. The test stripe must be at least one (1) foot in length.

Remove loose glass beads before measuring the retroreflectivity. Obtain authorization to proceed with the application of traffic stripes and pavement markings.

Within 30 days of application, test the traffic stripes and pavement markings under the test methods and frequencies shown in the following table:

<table>
<thead>
<tr>
<th>Quality characteristic</th>
<th>Test method</th>
<th>Minimum sampling and testing frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial retroreflectivity (min. mcd·m⁻²·lx⁻¹)</td>
<td>ASTM E1710</td>
<td>ASTM D7585⁷</td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

⁷Use the referee evaluation protocol for project length less than ten (10) miles. For project lengths greater than or equal to ten (10) miles, add one evaluation for every additional mile.

Verify the glass bead application rate by stabbing the glass bead tank with a calibrated rod.
84-2.01D(3) ICTC Acceptance
The Engineer will perform a nighttime, drive-through, visual inspection of the retroreflectivity of the traffic stripes and pavement markings and notify you of any locations with deficient retroreflectivity. Test the retroreflectivity of the deficient areas to confirm striping and pavement markings meets the requirements.

The thermoplastic test stripe will be tested for yellow color, daytime luminance factor, and yellowness index requirements by METS.

84-2.02 MATERIALS
84-2.02A General
This section is not applicable to the Project.

84-2.02B Glass Beads
Each lot of glass beads must comply with EPA Test Method 3052 and 6010B or 6010C. Glass beads must contain less than 200 ppm each of arsenic and lead.
Type 1 glass beads must comply with AASHTO M 247.
Type 2 glass beads must comply with AASHTO M 247. At least 75 percent of the beads by count must be true spheres that are colorless and do not exhibit dark spots, air inclusions, or surface scratches when viewed under 20X magnification.
High-performance glass beads must be on the Authorized Material List for high-performance glass beads.
Large-gradation glass beads must be on the Authorized Material List for two component traffic paint.
Glass beads for methyl methacrylate must be on the Authorized Material List for methyl methacrylate traffic striping and pavement marking.
Glass beads for paint must comply with State Specification 8010-004.
Glass beads must be surface treated, according to the bead and the material manufacturer’s instructions, to promote adhesion with the specified material.

84-2.02C Thermoplastic
Thermoplastic must comply with State Specification PTH-02HYDRO, or PTH-02ALKYD.
Sprayable thermoplastic must comply with State Specification PTH-02SPRAY.
Each lot or batch of thermoplastic must be tested under California Test 423.

84-2.02D Methyl Methacrylate
Methyl methacrylate traffic paint must:
1. Be on the Authorized Material List for methyl methacrylate traffic striping and pavement marking
2. Be Category 2

84-2.02E Traffic Striping and Pavement Marking Tape
Traffic striping and pavement marking tape must be on the Authorized Material List for signing and delineation materials.

White tape must have an initial retroreflectivity of a minimum 700 mcd/m².
Yellow tape must have an initial retroreflectivity of a minimum 500 mcd/m².
When contrast is required for traffic stripping and pavement marking tape, the tape must be pre-formed and retroreflective, consisting of a white film with retroreflective beads and a contrasting black film border. The contrasting black border must be a nonreflective film bonded on each side of the white film to form a continuous roll. Each black border must be a minimum of two (2) inches wide. The width of the tape must be at least four (4) inches wider than the stripe width.

**84-2.02F Two-Component Paint**

Two-component traffic paint must be on the Authorized Material List for two component traffic paint.

**84-2.02G Paint**

Paint must comply with the requirements shown in following table:

<table>
<thead>
<tr>
<th>Paint type</th>
<th>Color</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterborne traffic line</td>
<td>White, yellow, and black</td>
<td>State Specification PTWB-01R2</td>
</tr>
<tr>
<td>Waterborne traffic line for the international symbol of accessibility and other curb markings</td>
<td>Blue, red, and green</td>
<td>Federal Specification TT-P-1952E</td>
</tr>
</tbody>
</table>

**84-2.02H–84-2.02L Reserved**

**84-2.03 CONSTRUCTION**

**84-2.03A General**

Establish the alignment for traffic stripes and the layouts for pavement markings with a device or method that will not conflict with other traffic control devices.

Protect existing retroreflective pavement markers during Work activities.

Remove existing pavement markers that are coated or damaged by Work activities and replace with an equivalent marker on the Authorized Material List for signing and delineation materials.

A completed traffic stripe or pavement marking must:

1. Have well defined edges
2. Be uniform
3. Be free from runs, bubbles, craters, drag marks, stretch marks, and debris

A completed traffic stripe must:

1. Be straight on a tangent alignment
2. Be a true arc on a curved alignment
3. Not deviate from the width shown by more than:
   3.1. 1/4 inch on a tangent alignment
   3.2. 1/2 inch on a curved alignment
The length of the gaps and individual stripes that form a broken traffic stripe must not deviate by more than two (2) inches from the lengths shown. The gaps and stripes must be uniform throughout the entire length of the traffic stripe.

Protect newly placed traffic stripes and pavement markings from traffic and Work activities until the traffic stripes and pavement markings are dry or hard enough to bear traffic.

Use mechanical methods to remove dirt, contaminants, and loose material from the pavement surface before applying the traffic stripe or pavement marking.

Use abrasive blast cleaning to remove laitance and curing compound from the surface of new concrete pavement before applying the traffic stripe or pavement marking.

Construct recesses as shown in the following table:

<table>
<thead>
<tr>
<th>Material</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth (mils)</td>
</tr>
<tr>
<td>Thermoplastic</td>
<td>375</td>
</tr>
<tr>
<td>Two component traffic paint</td>
<td>250</td>
</tr>
<tr>
<td>Methyl methacrylate traffic paint</td>
<td>250</td>
</tr>
</tbody>
</table>

Construct recesses for double traffic stripes in a single pass.

Before applying the traffic stripes and pavement markings:

1. Allow wet ground recesses to dry a minimum of 24 hours
2. Remove all powdery residue from dry recess
3. Keep the recesses dry and free from debris

Apply traffic stripes and pavement markings before the end of the same Work shift.

**84-2.03B Application of Traffic Stripes and Pavement Markings**

**84-2.03B(1) General**

Apply material for a pavement marking with a stencil or a preformed marking.

Immediately remove drips, overspray, improper markings, or material tracked by traffic, using an authorized method.

Apply a traffic stripe or a pavement marking only to a clean, dry surface during a period when the pavement surface temperature is above 50 degrees F.

Apply traffic stripe or pavement marking and glass beads in a single pass. You may apply the glass beads by hand on pavement markings.

Embed glass beads to a depth of 1/2 their diameters.

Distribute glass beads uniformly on traffic stripe and pavement markings.

Glass beads with integral color must match the color of the stripe or pavement marking.

Apply glass beads with two separate applicator guns when two gradations are specified.
Allow enough overlap distance between new and existing striping patterns to ensure continuity at the start and end of the transition.

The retroreflectivity of applied traffic stripes and pavement markings must comply with the requirements shown in the following table:

<table>
<thead>
<tr>
<th>Traffic stripe material</th>
<th>White (min, mcd·m⁻²·lx⁻¹)</th>
<th>Yellow (min, mcd·m⁻²·lx⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paint</td>
<td>250</td>
<td>125</td>
</tr>
<tr>
<td>Thermoplastic</td>
<td>250</td>
<td>125</td>
</tr>
<tr>
<td>Thermoplastic with wet night enhanced visibility</td>
<td>700</td>
<td>500</td>
</tr>
<tr>
<td>Two component</td>
<td>250</td>
<td>125</td>
</tr>
<tr>
<td>Methyl methacrylate</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>Tape</td>
<td>700</td>
<td>500</td>
</tr>
</tbody>
</table>

84-2.03B(2) Thermoplastic

84-2.03B(2)(a) General

Apply primer or surface preparation adhesive under the manufacturer's instructions:

1. To all roadway surfaces except for asphaltic surfaces less than six (6) months old
2. At a minimum rate of one (1) gallon per 300 square feet
3. To allow time for the thermoplastic primer to dry and become tacky before application of the thermoplastic

Do not thin the primer.

Preheat thermoplastic using preheaters with mixers having a 360-degree rotation.

Apply thermoplastic in a single uniform layer by spray or extrusion methods.

Completely coat and fill voids in the pavement surface with the thermoplastic.

Apply recessed thermoplastic at a thickness so that the top is 0 to 1/16 inch below the pavement surface.

84-2.03B(2)(b) Extruded Thermoplastic

Apply extruded thermoplastic at a temperature of 400 to 425 degrees F or as recommended by the manufacturer.

Apply extruded thermoplastic for a traffic stripe at a rate of at least 0.36 lb of thermoplastic per foot of 6-inch-wide solid stripe. The applied traffic stripe must be at least 0.060 inch thick.

Apply extruded thermoplastic pavement markings at a thickness from 0.100 to 0.150 inch.

Apply Type 2 glass beads to the surface of the molten thermoplastic at a rate of at least eight (8) lb. of beads per 100 sq ft.

84-2.03B(2)(c) Sprayable Thermoplastic

Apply sprayable thermoplastic at a temperature of 350 to 400 degrees F.
Apply sprayable thermoplastic for a traffic stripe at a rate of at least 0.24 lb of thermoplastic per foot of 6-inch-wide solid stripe. The applied stripe must be at least 0.040 inch thick.

84-2.03B(2)(d) Thermoplastic with Enhanced Wet-Night Visibility

Apply a thermoplastic traffic stripe or pavement marking with enhanced wet-night visibility in a single pass and in the following order:
1. Uniform layer of extruded thermoplastic
2. Layer of high-performance glass beads
3. Layer of Type 2 glass beads

Apply thermoplastic with enhanced wet-night visibility at a maximum speed of eight (8) mph.

Apply thermoplastic with enhanced wet-night visibility for a traffic stripe at a rate of at least 0.47 lb of thermoplastic per foot of 6-inch-wide solid stripe. The applied stripe must be at least 0.090 inch thick.

Apply thermoplastic with enhanced wet-night visibility for a pavement marking at a rate of at least 1.06 lb of thermoplastic per square foot of marking. The applied pavement marking must be at least 0.100 inch thick.

Apply high-performance glass beads at a rate of at least six (6) lb of glass beads per 100 sq ft of stripe or marking. Apply Type 2, glass beads at a rate of at least eight (8) lb of glass beads per 100 sq ft of stripe or marking.

84-2.03B(3) Methyl Methacrylate

Apply the methyl methacrylate when the pavement surface and atmospheric temperatures are from 40 to 104 degrees F.

Apply methyl methacrylate paint at a minimum thickness of 0.090 inch.

Apply recessed methyl methacrylate paint at a minimum thickness of 0.200 inch.

Apply the glass beads recommended by the methyl methacrylate manufacturer.

84-2.03B(4) Traffic Striping and Pavement Marking Tape

Do not use traffic stripe and pavement marking tape on existing open graded friction course or chip seal.

Prepare pavement surface and use primer under the traffic tape manufacturer’s written instructions. Apply tape to clean and dry pavement surface. Roll or tamp the traffic tape in place.

84-2.03B(5) Two-Component Paint

Apply a two-component painted traffic stripe or pavement marking in a single pass and in the following order:
1. Coat of two-component paint
2. Application of large gradation glass beads recommended by the two-component paint manufacturer
3. Application of Type 1 glass beads

Apply two-component paint when the pavement surface temperature is above 39 degrees F and the atmospheric temperature is above 36 degrees F. The temperature of the paint must comply with the paint manufacturer's instructions.

Apply two-component paint and glass beads at a maximum speed of 10 mph.

Apply large-gradation glass beads at a minimum rate of 11.7 lb of beads per gallon of paint.
Apply Type 1 glass beads at a minimum rate of 8.3 lb of beads per gallon of paint.

Apply two-component paint for the traffic stripes and pavement markings at the thickness and application rates shown in the following table:

<table>
<thead>
<tr>
<th>Type of pavement</th>
<th>Stripe thickness (min, inch)</th>
<th>Application rate (min, sq ft/gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMA open graded/chip seal</td>
<td>0.025</td>
<td>64</td>
</tr>
<tr>
<td>HMA dense graded</td>
<td>0.020</td>
<td>80</td>
</tr>
<tr>
<td>Concrete</td>
<td>0.020</td>
<td>80</td>
</tr>
</tbody>
</table>

Apply recessed two-component paint at a thickness between 0.020 and 0.025 inch.

84-2.03B(6) Paint

Do not apply paint if:
1. Fresh paint could become damaged by rain, fog, or condensation
2. Atmospheric temperature could drop below 50 degrees F during the drying period

Do not thin paint.

Use mechanical means to paint traffic stripes and pavement markings and to apply glass beads for traffic stripes.

The striping machine must be capable of superimposing successive coats of paint on the 1st coat and on existing stripes at a minimum speed of 5 mph.

Where the configuration or location of a traffic stripe is such that the use of a striping machine is not practicable, you may apply the traffic paint and glass beads by other methods and equipment if authorized.

Apply traffic stripes and pavement markings in 1 coat on existing pavement surfaces, at an approximate rate of 107 sq ft/gal.

Apply traffic stripes and pavement markings in 2 coats on a new pavement surface. The 1st coat of paint must be dry before applying the 2nd coat.

Apply 2-coat paint at the approximate rate of 215 sq ft/gal for each coat.

Paint a 1-coat, 3-inch-wide black stripe between the two 6-inch-wide yellow stripes of a double traffic stripe. If the two 6-inch-wide yellow stripes are applied in 2 coats, apply the black stripe concurrently with the 2nd coat of the yellow stripes.

On 2-lane highways:
1. If the 1st coat of the centerline stripe is applied in the same direction as increasing post miles, use the right-hand spray gun of the three (3) spray guns to apply a single yellow stripe
2. If the 1st coat of the centerline stripe is applied in the same direction as decreasing post miles, use the left-hand spray gun of the three (3) spray guns to apply a single yellow stripe
3. Apply the 2nd coat of centerline striping in the opposite direction of the 1st coat

Apply glass beads at an approximate rate of five (5) lb. of beads per gallon of paint.
Verify the application rate of paint by stabbing the paint tank with a calibrated rod. If the striping machine has paint gauges, the Engineer may measure the volume of paint using the gauges instead of stabbing the paint tank with a calibrated rod.

**84-2.03B(7) Contrast Striping**

Contrast striping consists of black striping placed on each side of a white stripe.

You may use permanent tape instead of paint or thermoplastic.

Apply contrast stripe paint in one coat.

Do not use glass beads or other reflective elements in contrast striping material.

**84-2.03B(8)–84-2.03B(10) Reserved**

**84-2.04 PAYMENT**

The payment quantity for a traffic stripe is the length measured along the line of the traffic stripe without deductions for gaps in the broken traffic stripe.

The payment quantity for a pavement marking is the area covered.

A double traffic stripe consisting of two-6-inch-wide yellow stripes are measured as two (2) traffic stripes except for painted traffic stripes and sprayable thermoplastic traffic stripes.

A double sprayable thermoplastic traffic stripe consisting of two six- (6)-inch-wide yellow stripes are measured as single traffic stripe.

A double painted traffic stripe consisting of two six- (6)-inch-wide yellow stripes separated by a three- (3)-inch-wide black stripe is measured as a single traffic stripe.

The payment quantity for contrast striping is the length measured along the line of the traffic stripe without deductions for gaps in the broken traffic stripe.

Replace section 84-9 with:

**84-9 EXISTING MARKINGS**

**84-9.01 GENERAL**

**84-9.01A Summary**

Section 84-9 includes specifications for removing existing markings.

Work performed on existing markings must comply with section 15.

**84-9.01B Definitions**

This section is not applicable to the Project.

**84-9.01C Submittals**
Submit your proposed method for removing traffic stripes and pavement markings at least seven (7) days before starting the removal work. Allow two (2) business days for the review.

**84-9.02 MATERIALS**

Not Used

**84-9.03 CONSTRUCTION**

**84-9.03A General**

Remove existing traffic stripes before making any changes to the traffic pattern. Remove existing traffic stripes and pavement markings before applying the following materials:

1. Traffic stripe and pavement marking tape
2. Two component traffic stripes and pavement markings
3. Methyl methacrylate traffic stripes and pavement markings

Remove contrast stripes, traffic stripes and pavement markings, including any paint in the gaps, by methods that do not remove pavement to a depth of more than 1/8 inch.

Remove pavement markings such that the old message cannot be identified. Make any area removed by grinding rectangular. Water must not puddle in the ground areas. Fog seal ground areas on asphalt concrete pavement.

Sweep up or vacuum any residue before it can (1) be blown by traffic or wind, (2) migrate across lanes or shoulders, or (3) enter a drainage facility.

**84-9.03B Remove Traffic Stripes and Pavement Markings Containing Lead**

This section is not applicable to the Project.

**84-9.03C–84-9.03J Reserved**

**84-9.04 PAYMENT**

The payment quantity for remove traffic stripe is the measured length multiplied by:

1. 0.67 for a single 4-inch-wide traffic stripe
2. 1.34 for a single 8-inch-wide traffic stripe
3. 2 for a double traffic stripe

The payment quantity for remove traffic stripe does not include the gaps in broken traffic stripes. Payment for removal of paint evident in a gap is included in the payment for remove traffic stripe of the type involved.

If no bid item is shown on the Bid Item List for remove pavement marking, remove pavement marking is paid for as remove traffic stripe of the types shown in the Bid Item List and the payment quantity for one (1) square foot of pavement marking is three (3) linear feet.
DIVISION X  ELECTRICAL WORK

86  GENERAL

04-19-19

Replace section 86-1.01B with:

86-1.01B Definitions

accessible pedestrian signal: Accessible pedestrian signal as defined in the California MUTCD.

accessible walk indication: Activated audible and vibrotactile action during the walk interval.

actuation: Actuation as defined in the California MUTCD.

ambient sound level: Background sound level in dB at a given location.

ambient sound sensing microphone: Microphone that measures the ambient sound level in dB and automatically adjusts the accessible pedestrian signal speaker's volume.

audible speech walk message: Audible prerecorded message that communicates to pedestrians which street has the walk interval.

CALiPER: Commercially Available LED Product Evaluation and Reporting. A U.S. Department of Energy program that individually tests and provides unbiased information on the performance of commercially available LED luminaires and lights.

controller assembly: Assembly for controlling a system's operations, consisting of a controller unit and auxiliary equipment housed in a waterproof cabinet.

controller unit: Part of the controller assembly performing the basic timing and logic functions.

correlated color temperature: Absolute temperature in kelvin of a blackbody whose chromaticity most nearly resembles that of the light source.

detector: Detector as defined in the California MUTCD.

electroliter: Assembly of a lighting standard and luminaire.

flasher: Device for opening and closing signal circuits at a repetitive rate.

illuminance gradient: Ratio of the minimum illuminance on a 1-foot square of sign panel to that on an adjacent 1-foot square of sign panel.

inductive loop detector: Detector capable of being actuated by an inductance change caused by a vehicle passing or standing over the loop. An inductive loop detector includes a loop or group of loops installed in the roadway and a lead-in cable installed and connected inside a controller cabinet.

junction temperature: Temperature of the electronic junction of the LED device. The junction temperature is critical in determining photometric performance, estimating operational life, and preventing catastrophic failure of the LED.

L70: Extrapolated life in hours of the luminaire when the luminous output depreciates 30 percent from the initial values.

lighting standard: Pole and mast arm supporting the luminaire.
link: Part of a system which provides a data connection between a transmitter and receiver.

LM-79: Test method from the Illumination Engineering Society of North America specifying the test conditions, measurements, and report format for testing solid state lighting devices, including LED luminaires.

LM-80: Test method from the Illumination Engineering Society of North America specifying the test conditions, measurements, and report format for testing and estimating the long-term performance of LEDs for general lighting purposes.

luminaire: Assembly that houses the light source and controls the light emitted from the light source.

mid-span access method: Procedure in which fibers from a single buffer tube are accessed and spliced to a multi-buffer tube cable without cutting the unused fibers in the buffer tube, or disturbing the remaining buffer tubes in the cable.

National Voluntary Laboratory Accreditation Program: U.S. Department of Energy program that accredits independent testing laboratories.

optical time domain reflectometer: Fiber optic test equipment that is used to measure the total amount of power loss between two points and over the corresponding distance. It provides a visual and printed display of the relative location of system components such as fiber sections, splices and connectors as well as the losses that are attributed to each component and or defects in the fiber.

pedestrian change interval: Pedestrian change interval as defined in the California MUTCD.

powder coating: Coating applied electrostatically using exterior-grade, UV-stable, polymer powder.

power factor: Ratio of the real power component to the complex power component.

power meter: Portable fiber optic test equipment that, when coupled with a light source, is used to perform end-to-end attenuation testing. Its display indicates the amount of power injected by the light source at the designed wavelength of the system under testing that arrives at the receiving end of the link.

pretimed controller assembly: Assembly operating traffic signals under a predetermined cycle length.

programming mechanism: Device to program the accessible pedestrian signal operation.

pull box: Box with a cover that is installed in an accessible place in a conduit run to facilitate the pulling in of wires or cables.

push button information message: Push button information message as defined in the California MUTCD.

push button locator tone: Push button locator tone as defined in the California MUTCD.

segment: Continuous cable terminated by 2 splices, 2 connectors or 1 splice and 1 connector.

signal face: Signal face as defined in the California MUTCD.

signal head: Signal head as defined in the California MUTCD.

signal indication: Signal indication as defined in the California MUTCD.

signal section: Signal section as defined in the California MUTCD.

signal standard: Pole with or without mast arms carrying 1 or more signal faces.

street side lumens: Lumens from a luminaire directed to light up areas between the fixture and the roadway, such as traveled ways and freeway lanes.
surge protection device: Subsystem or component that protects equipment against short-duration voltage transients in power line.

total harmonic distortion: Ratio of the rms value of the sum of the squared individual harmonic amplitudes to the rms value of the fundamental frequency of a complex waveform.

traffic-actuated controller assembly: Assembly for operating traffic signals under the varying demands of traffic as registered by detector actuation.

traffic phase: Traffic phase as defined in the California MUTCD.

vehicle: Vehicle as defined in the California Vehicle Code.

vibrotactile pedestrian device: Vibrotactile pedestrian device as defined in the California MUTCD.

Delete the 9th and 10th paragraphs of section 86-1.01C(1).

Replace section 86-1.01C(3) with:

86-1.01C(3) Luminaires

Submit for a luminaire:
1. Maximum power in watts
2. Maximum designed junction temperature
3. Heat sink area in square inches
4. Designed junction-to-ambient thermal resistance calculation with thermal resistance components clearly defined
5. L70 in hours when extrapolated for the average nighttime operating temperature
6. Life expectancy based on the junction temperature
7. Manufacturer's data sheet for the power supply, including the rated life

Submit the manufacturer's QC test data for luminaires as an informational submittal.

Replace section 86-1.01C(4) with:

86-1.01C(4) Reserved

Replace the 3rd paragraph of section 86-1.02B(1) with:

Conduit used for horizontal directional drilling must be high density polyethylene Type IPS, SDR 9 and comply with ASTM F2160.

Replace the 8th paragraph of section 86-1.02B(1) with:

High density polyethylene for innerduct must:
1. Comply with ASTM D3485, D3035, D2239, and D2447, and NEMA TC7 and TC2
2. Have a minimum tensile yield strength of 3300 psi under ASTM D638
3. Have a density of 59.6187 lb/ft³ ± 0.3121 lb/ft³ under ASTM D1505
Replace the 9th paragraph of section 86-1.02B(1) with:

04-19-19

Tracer wire must be a minimum no. 12 solid copper conductor with orange insulation Type TW, THW, RHW, or USE. For direct burial, the tracer wire insulation must be Type UF.

Replace the 4th paragraph of section 86-1.02C(1) with:

10-19-18

The cover marking must include CALTRANS and one of the following:

1. **SERVICE** for service circuits between a service point and service disconnect
2. **SERVICE IRRIGATION** for circuits from a service equipment enclosure to an irrigation controller
3. **SERVICE BOOSTER PUMP** for circuits from a service equipment enclosure to the booster pump
4. **TDC POWER** for circuits from a service equipment enclosure to telephone demarcation cabinet
5. **LIGHTING** for a lighting system
6. **SIGN ILLUMINATION** for a sign illumination system
7. **SIGNAL AND LIGHTING** for a signal and lighting system
8. **RAMP METER** for a ramp metering system
9. **TMS** for a traffic monitoring station
10. **FLASHING BEACON** for a flashing beacon system
11. **CMS** for a changeable message sign system
12. **INTERCONNECT** for an interconnect conduit and cable system
13. **FIBER OPTIC** for fiber optic cable system
14. **ELECTRICAL SYSTEMS** if more than one system is shared in the same pull box

Delete the 3rd paragraph of section 86-1.02C(2).

Replace the 1st and 2nd paragraphs of section 86-1.02C(3) with:

10-19-18

A traffic pull box and cover must comply with AASHTO HS20-44 and load tested under AASHTO M 306. The frame must be anchored to the box with 2-1/4-inch-long concrete anchors with a 1/4 inch diameter. A no. 3-1/2(T) pull box must have four (4) concrete anchors, one placed in each corner. No. 5(T) and no. 6(T) pull boxes must have six (6) concrete anchors, one placed in each corner and one near the middle of each of the longer sides.

Replace section 86-1.02C(4)(b) with:

10-19-18

**86-1.02C(4)(b) Tamper-Resistant Nontraffic Pull Box**

**86-1.02C(4)(b)(i) General**

A tamper resistant nontraffic pull box must include a pull box with one of the following:

1. Anchored cover
2. Lockable cover
3. Pull box insert

**86-1.02C(4)(b)(ii) Anchored Cover**

The anchored cover must:

1. Be of 1/2-inch-thick mild steel, hot dip galvanized, post fabrication.
2. Be hot dip galvanized after manufacturing with spikes removed from the galvanized surfaces.
3. Have a center space for a top lock nut that must be torqued to 200 ft-lb.
4. Have a center opening for a stainless steel threaded cap to cover the lock nut.
5. Weigh a minimum of 85 lb.
6. Include an all-around security skirt of 1/4-inch thick steel. The skirt must be sized to encase a nontraffic pull box or sized to fit within a traffic pull box.
7. Be welded to the skirt.

86-1.02C(4)(b)(iii) Lockable Cover

The lockable cover must:

1. Be manufactured from minimum 3/16-inch-thick galvanized steel or a polymer of minimum strength equal to 3/16 inch steel.
2. Be secured to the pull box with a locking mechanism of equal or greater strength than the manufactured material.
3. Have 1/2-by-2-inch slot holes for lifting.
4. Have dimensions complying with one of the following:
   4.1. Caltrans standards for pull box covers as shown if the lockable cover is secured to the inside lip of the pull box.
   4.2. Caltrans standards for the length and width as shown for pull box covers if the lockable cover is secured to the top of the pull box.

86-1.02C(4)(b)(iv) Pull Box Insert

The pull box insert must:

1. Be made of minimum 3/16-inch-thick or 10 gauge mild hot-dipped galvanized steel
2. Have a minimum of 2 mounting brackets that rest under the side or end wall
3. Be lockable with a padlock having a minimum 3/8-inch shackle
4. Have dimensions complying with the Caltrans standards for the length and width as shown for pull box covers

Delete section 86-1.02C(4)(d).

Delete section 86-1.02C(4)(e).

Delete section 86-1.02C(4)(f).

Replace section 86-1.02D(3) 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:

<table>
<thead>
<tr>
<th>Quality characteristic</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness (min, mil)</td>
<td>4</td>
</tr>
<tr>
<td>Width (in)</td>
<td>4</td>
</tr>
</tbody>
</table>
Quality characteristic | Requirement
---|---
Tensile strength of material (min, psi) | 2800
Message spacing intervals (ft) | 3

The warning tape must have a printed message that reads: **CAUTION: CALTRANS FACILITIES BELOW.**
The printed text height and color must be one (1) inch, black color text over bright orange background.

**Replace the 2nd paragraph of section 86-1.02E with:**

Each sensor must:
1. Have a dissipation factor less than 0.04 nF when measured in the 20 nF range
2. Have resistance greater than 20 Megaohms
3. Be 1/4 inch wide by 6 feet long by 1/16 inch thick
4. Have a RG-58C/U coaxial screen transmission cable, jacketed with high-density polyethylene, rated for direct burial and resistant to nicks and cuts
5. Operate over a temperature range from -40 to 160 degrees F
6. Have a signal to noise ratio equal to or greater than 10 to 1
7. Have an output signal of a minimum 250 mV ± 20 percent for a wheel load of 400 lb at 55 mph and 70 degrees F
8. Have an insulation resistance greater than 500 MΩ
9. Have a life cycle of a minimum 25 million equivalent single axle loadings

**Replace section 86-1.02F(1) 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 and color code requirements must comply with NEC.

**Replace the 2nd paragraph of section 86-1.02F(2)(a) with:**

Conductors must be identified as shown in the following table:

<table>
<thead>
<tr>
<th>Circuit</th>
<th>Signal phase or function</th>
<th>Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Insulation color</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Base</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signals (vehicle)a,b</td>
<td>2, 6</td>
<td>Red, yellow, brown</td>
</tr>
<tr>
<td>Circuit</td>
<td>Signal phase or function</td>
<td>Identification</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Insulation color</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Base</td>
</tr>
<tr>
<td>4, 8</td>
<td>Red, yellow, brown</td>
<td>Orange</td>
</tr>
<tr>
<td>1, 5</td>
<td>Red, yellow, brown</td>
<td>None</td>
</tr>
<tr>
<td>3, 7</td>
<td>Red, yellow, brown</td>
<td>Purple</td>
</tr>
<tr>
<td>Ramp meter 1</td>
<td>Red, yellow, brown</td>
<td>None</td>
</tr>
<tr>
<td>Ramp meter 2</td>
<td>Red, yellow, brown</td>
<td>Black</td>
</tr>
<tr>
<td>Pedestrian signals</td>
<td>Red, brown</td>
<td>Black</td>
</tr>
<tr>
<td>4p, 8p</td>
<td>Red, brown</td>
<td>Orange</td>
</tr>
<tr>
<td>1p, 5p</td>
<td>Red, brown</td>
<td>None</td>
</tr>
<tr>
<td>3p, 7p</td>
<td>Red, brown</td>
<td>Purple</td>
</tr>
<tr>
<td>Push button assembly or accessible pedestrian signal</td>
<td>Blue</td>
<td>Black</td>
</tr>
<tr>
<td>4p, 8p</td>
<td>Blue</td>
<td>Orange</td>
</tr>
<tr>
<td>1p, 5p</td>
<td>Blue</td>
<td>None</td>
</tr>
<tr>
<td>3p, 7p</td>
<td>Blue</td>
<td>Purple</td>
</tr>
<tr>
<td>Traffic signal controller cabinet</td>
<td>Ungrounded circuit conductor</td>
<td>Black</td>
</tr>
<tr>
<td>Grounded circuit conductor</td>
<td>White</td>
<td>None</td>
</tr>
<tr>
<td>Highway lighting pull box to luminaire</td>
<td>Ungrounded - line 1</td>
<td>Black</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>None</td>
</tr>
<tr>
<td>Grounded</td>
<td>White</td>
<td>None</td>
</tr>
<tr>
<td>Multiple highway lighting</td>
<td>Ungrounded - line 1</td>
<td>Black</td>
</tr>
<tr>
<td></td>
<td>Red</td>
<td>None</td>
</tr>
<tr>
<td>Circuit</td>
<td>Signal phase or function</td>
<td>Identification</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Insulation color</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Base</strong></td>
</tr>
<tr>
<td>Ungrounded - line 3</td>
<td>White</td>
<td>None</td>
</tr>
<tr>
<td>Lighting control</td>
<td>Ungrounded - Photoelectric unit</td>
<td>Black</td>
</tr>
<tr>
<td></td>
<td>Switching leg from Photoelectric unit or SM transformer</td>
<td>Red</td>
</tr>
<tr>
<td>Service</td>
<td>Ungrounded - line 1 (signals)</td>
<td>Black</td>
</tr>
<tr>
<td></td>
<td>Ungrounded - line 2 (lighting)</td>
<td>Red</td>
</tr>
<tr>
<td>Sign lighting</td>
<td>Ungrounded - line 1</td>
<td>Black</td>
</tr>
<tr>
<td></td>
<td>Ungrounded - line 2</td>
<td>Red</td>
</tr>
<tr>
<td>Flashing beacons</td>
<td>Ungrounded between flasher and beacons</td>
<td>Red or yellow</td>
</tr>
<tr>
<td>Grounded circuit conductor</td>
<td>Push button assembly or accessible pedestrian signal</td>
<td>White</td>
</tr>
<tr>
<td></td>
<td>Signals and multiple lighting</td>
<td>White</td>
</tr>
<tr>
<td></td>
<td>Flashing beacons and sign lighting</td>
<td>White</td>
</tr>
<tr>
<td></td>
<td>Lighting control</td>
<td>White</td>
</tr>
<tr>
<td></td>
<td>Service</td>
<td>White</td>
</tr>
<tr>
<td>Railroad preemption</td>
<td>Black</td>
<td>None</td>
</tr>
<tr>
<td>Spares</td>
<td>Black</td>
<td>None</td>
</tr>
<tr>
<td>Circuit</td>
<td>Signal phase or function</td>
<td>Identification</td>
</tr>
<tr>
<td>---------</td>
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<tr>
<td></td>
<td></td>
<td>Insulation color</td>
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<td>Base</td>
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</tbody>
</table>

<sup>a</sup> On overlaps, the insulation is striped for the 1st phase in the designation, e.g., phase (2+3) conductor is striped as for phase 2.

<sup>b</sup> Band for overlap and special phases as required

<sup>c</sup> Flashing beacons having separate service do not require banding.

Delete the 4th paragraph of section 86-1.02F(2)(a).

Replace the 2nd paragraph of section 86-1.02F(2)(c)(ii) with:

An equipment grounding conductor must be insulated.

Replace the 3rd paragraph of section 86-1.02F(3)(d)(ii) with:

Cable must comply with the requirements shown in the following table:

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Conductor quantity and type</th>
<th>Cable jacket thickness (mils)</th>
<th>Maximum nominal outside diameter (inch)</th>
<th>Conductor color code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Average</td>
<td>Minimum</td>
<td></td>
</tr>
<tr>
<td>3CSC</td>
<td>3 no. 14</td>
<td>44</td>
<td>36</td>
<td>0.40</td>
</tr>
<tr>
<td>5CSC</td>
<td>5 no. 14</td>
<td>44</td>
<td>36</td>
<td>0.50</td>
</tr>
<tr>
<td>9CSC</td>
<td>1 no. 12 8 no. 14</td>
<td>60</td>
<td>48</td>
<td>0.65</td>
</tr>
<tr>
<td>Cable type</td>
<td>Conductor quantity and type</td>
<td>Cable jacket thickness (mils)</td>
<td>Maximum nominal outside diameter (inch)</td>
<td>Conductor color code</td>
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<td>----------------------------------------</td>
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<tr>
<td></td>
<td></td>
<td>Average</td>
<td>Minimum</td>
<td></td>
</tr>
<tr>
<td>12CSC</td>
<td>1 no. 12</td>
<td>60</td>
<td>48</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>11 no. 14</td>
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</tr>
<tr>
<td>28CSC</td>
<td>1 no. 10</td>
<td>80</td>
<td>64</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td>27 no. 14</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### Exhibit 4a – Revised Standard Specifications – Section 10 to Section 99

<table>
<thead>
<tr>
<th>Cable type</th>
<th>Conductor quantity and type</th>
<th>Cable jacket thickness (mils)</th>
<th>Maximum nominal outside diameter (inch)</th>
<th>Conductor color code</th>
</tr>
</thead>
</table>
|            |                             | Average | Minimum          | brown/2 purple stripes,  
|            |                             |         |                  | blue/black stripe,  
|            |                             |         |                  | blue/orange stripe,  
|            |                             |         |                  | blue/silver stripe,  
|            |                             |         |                  | blue/purple stripe,  
|            |                             |         |                  | white/black stripe,  
|            |                             |         |                  | black/red stripe,  
|            |                             |         |                  | black |

**Replace the 3rd paragraph of section 86-1.02G with:**

10-19-18

The self-adhesive reflective labels must:

1. Be from three (3) to five (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 4th paragraph of section 86-1.02H with:**

10-19-18

PVC electrical tape must have a minimum thickness of six (6) mils.

**Replace section 86-1.02K with:**

10-19-18

### 86-1.02K Luminaires

#### 86-1.02K(1) General

A luminaire must:

1. Be self-contained, not requiring assembly.
2. Comply with UL 1598 for luminaires in wet locations.
3. Have a power supply with ANSI/IEC rating of at least IP65.
4. Weigh less than 35 lb.
5. Have a minimum operating life of 100,000 hours when operated for an average time of 11.5 hours at an average temperature of 70 degrees F.
6. Operate over a temperature range from -40 to 130 degrees F.
7. Be operationally compatible with photoelectric controls.
8. Have a correlated color temperature range from 2700 to 3500 K and a color rendering index of 70 or greater.
9. Have a maximum-effective projected area of 1.4 sq ft when viewed from either side or end.
10. Comply with California Test 611.
11. Have a power factor of 0.90 or greater. The total harmonic distortion, current, and voltage induced into a power line by a luminaire must not exceed 20 percent.
12. Comply with the maximum power consumption and isofootcandle curves as shown.
13. Be on the Authorized Material List for LED luminaires or must be submitted for testing and addition to the AML.

A luminaire must include a surge protection device to withstand high-repetition noise transients caused by utility line switching, nearby lightning strikes, and other interferences. The device must protect the luminaire from damage and failure due to transient voltages and currents as defined in Tables 1 and 4 of ANSI/IEEE C64.41.2 for location category C-High. The surge protection device must comply with UL 1449 and ANSI/IEEE C62.45 based on ANSI/IEEE C62.41.2 definitions for standard and optional waveforms for location category C-High.

The luminaire must operate over the entire voltage range from 120 to 480 V(ac), 60 ± 3 Hz or one of the following:
1. From 95 to 277 V(ac) for luminaires rated 120 V(ac) or 240 V(ac)
2. From 347 to 480 V(ac) for luminaires rated 480 V(ac)

The fluctuations of line voltage must have no visible effect on the luminous output.

The L70 of the luminaire must be the minimum operating life or greater. Illuminance measurements must be calibrated to standard photopic calibrations.

The luminaire's housing must withstand a 1008 hour cyclic salt fog spray/UV test under ASTM D5894 and an evaluation under ASTM D714 with a blister size of eight (8) or greater and no more than medium density.

The luminaire's housing must be marine-grade alloy with less than 0.2 percent copper or die cast aluminum. All exposed aluminum must be anodized. A chromate conversion undercoating must be used underneath a thermoplastic polyester powder coat.

External bolts, screws, hinges, hinge pins, and door closure devices must be corrosion resistant.

The housing must be designed to prevent the buildup of water on its top surface. Exposed heat sink fins must be oriented to allow water to run off the luminaire and carry dust and other accumulated debris away from the unit. The optical assembly of the luminaire must be protected against dust and moisture intrusion to at least an UL 60529 rating of IP66. The power supply enclosure must be protected to at least an UL 60529 rating of IP43.

If the components are mounted on a down-opening door, the door must be hinged and secured to the luminaire's housing separately from other components. The door must be secured to the housing to prevent accidental opening. A safety cable must mechanically connect the door to the housing.

A luminaire must have a barrier-type terminal block secured to the housing to connect field wires. The terminal screws must be captive and equipped with wire grips for conductors up to no. 6.

The conductors and terminals must be identified and marked.

If needed, each refractor or lens must be made of UV-inhibiting high-impact plastic, such as acrylic or polycarbonate, or heat and impact-resistant glass. The refractor or lens must be resistant to scratching. Polymeric materials, except for the lenses of enclosures containing either the power supply or electronic components of the luminaire, must be made of UL94 V-0 flame-retardant materials.

The luminaire must be permanently marked inside the unit and outside of its packaging box. Marking consists of:
1. Manufacturer's name or trademark
2. Month and year of manufacture
3. Model, serial, and lot numbers
4. Rated voltage, wattage, and power in VA

An LED luminaire must:

1. Comply with Class A emission limits under 47 CFR 15(B) for the emission of electronic noise.
2. Have a power supply with:
   2.1. 2 leads to accept standard 0-10 V(dc).
   2.2. Dimming control compatible with IEC 60929, Annex E. If the control leads are open or the analog control signal is lost, the circuit must default to 100-percent power.
   2.3. Case temperature self-rise of 77 degrees F or less above ambient temperature in free air with no additional heat sinks.
3. Have passive thermal management with enough capacity to ensure proper heat dissipation and functioning of the luminaire over its minimum operating life. The maximum junction temperature for the minimum operating life must not exceed 221 degrees F.
4. Have a junction-to-ambient thermal resistance of 95 degrees F per watt or less.
5. Contain circuitry that automatically reduces the power to the LEDs so the maximum junction temperature is not exceeded when the ambient temperature is 100 degrees F or greater.
6. Have a heat sink made of aluminum or other material of equal or lower thermal resistance. The use of fans or other mechanical devices is not allowed for cooling the luminaire.

The catastrophic loss or failure of one (1) LED must not result in the loss of more than twenty (20) percent of the total luminous output of the LED luminaire.

86-1.02K(2) Roadway Luminaires

A roadway luminaire must:

1. Have a housing color that matches a color no. 26152 to 26440, 36231 to 36375, or 36440 of AMS-STD-595
2. Have an ANSI C136.41-compliant, locking-type, photocontrol receptacle with dimming connections and a watertight shorting cap
3. Not allow more than 2.5 percent of the rated lumens to project above 80 degrees measured up from the vertical plane in the direction of the roadway
4. Have equipment identification character labels outside the unit on the side that will face the road. Equipment identification characters consist of:
   4.1. R1 for Roadway 1, R2 for Roadway 2, R3 for Roadway 3, and R4 for Roadway 4
   4.2. Rated wattage

The luminaire’s housing must have a slip fitter that must:

1. Fit on mast arms with outside diameters from 1-5/8 to 2-3/8 inches
2. Be adjustable to a minimum of ±5 degrees From the axis of the tenon in a minimum of 5 steps: +5, +2.5, 0, -2.5, -5
3. Have clamping brackets that:
   3.1. Are made of corrosion-resistant materials or treated to prevent galvanic reactions
   3.2. Do not bottom out on the housing bosses when adjusted within the designed angular range
   3.3. Do not permanently set in excess of 1/32 inch when tightened

86-1.02K(3) Overhead Sign Luminaires

An overhead sign luminaire must:
1. Have a uniformity average to minimum ratio of 10:1 for the distribution of light reflected on a 16' wide by 10' high sign panel
2. Not allow more than 2.5 percent of the rated lumens to project above 65 degrees measured up from the horizontal plane in the direction of the sign panel
3. Mount at a maximum height of 12 inches above the top of the mounting rails
4. Mount directly to the sign structure as shown or with a mounting adapter that meets the material requirements of the luminaire’s housing

Replace section 86-1.02M with:

86-1.02M  Photoelectric Controls

Photoelectric control types are as shown in the following table:

<table>
<thead>
<tr>
<th>Control type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Pole-mounted photoelectric unit. Test switch and a 15-A circuit breaker per ungrounded conductor, housed in an enclosure.</td>
</tr>
<tr>
<td>II</td>
<td>Pole-mounted photoelectric unit. Contactor, a 15-A circuit breaker per ungrounded conductor, and test switch located in a service equipment enclosure.</td>
</tr>
<tr>
<td>III</td>
<td>Pole-mounted photoelectric unit. Contactor, a 15-A circuit breaker per ungrounded conductor, and a test switch housed in an enclosure.</td>
</tr>
<tr>
<td>IV</td>
<td>A photoelectric unit that plugs into a NEMA twist-lock receptacle, integral with the luminaire.</td>
</tr>
<tr>
<td>V</td>
<td>A photoelectric unit, contactor, a 15-A circuit breaker per ungrounded conductor, and test switch located in a service equipment enclosure.</td>
</tr>
</tbody>
</table>

The pole-mounted adaptor for Type I, II, and III photoelectric controls must include a terminal block and cable supports or clamps to support the wires.

Photoelectric unit must:
1. Have a screen to prevent artificial light from causing cycling.
2. Have a rating of 60 Hz, 105-130 V(ac), 210-240 V(ac), or 105-240 V(ac).
3. Operate at a temperature range from -20 to 55 degrees C.
4. Consume less than 10 W.
5. Be a 3-prong, twist-lock type with a NEMA IP 65 rating, ANSI C136.10-compliant.
6. Have a fail-on state.
7. Fit into a NEMA-type receptacle.
8. Turn on from 1 to 5 footcandles and turn off from 1.5 to 5 times the turn-on level. Measurements must be made by procedures in EEI-NEMA Standards for Physical and Electrical Interchangeability of Light-Sensitive Control Devices Used in the Control of Roadway Lighting.

Type I, II, III, and V photoelectric controls must have a test switch to allow manual operation of the lighting circuit. Switch must be:
1. Single-hole mounting, toggle type
2. 15 A, single pole and single throw
3. Labeled Auto-Test on a nameplate
Photoelectric control's contactor must be:

1. Normally open
2. Mechanical-armature type with contacts of fine silver, silver alloy, or equal or better material
3. Installed to provide a minimum space of 2-1/2 inches between the contactor terminals and the enclosure's sides

The terminal blocks must be rated at 25 A, 600 V(ac), molded from phenolic or nylon material, and be the barrier type with plated-brass screw terminals and integral marking strips.

**Replace section 86-1.02N with:**

### 86-1.02N Fused Splice Connectors

The fused splice connector for 240 and 480 V(ac) circuits must simultaneously disconnect both ungrounded conductors. The connector must not have exposed metal parts except for the head of the stainless steel assembly screw. The head of the assembly screw must be recessed a minimum of 1/32 inch below the top of the plastic boss that surrounds the head.

The connector must protect the fuse from water or weather damage. Contact between the fuse and fuse holder must be spring loaded.

Fuses must:

1. Be standard, midget, ferrule type
2. Have a nontime-delay feature
3. Be 13/32 by 1-1/2 inches

Fuse ratings for luminaires are shown in the following table:

<table>
<thead>
<tr>
<th>Circuit voltage</th>
<th>Fuse voltage rating</th>
<th>Soffit and roadway luminaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 V(ac)</td>
<td>250 V(ac)</td>
<td>5 A</td>
</tr>
<tr>
<td>240 V(ac)</td>
<td>250 V(ac)</td>
<td>5 A</td>
</tr>
<tr>
<td>480 V(ac)</td>
<td>500-600 V(ac)</td>
<td>5 A</td>
</tr>
</tbody>
</table>

Fuse ratings for transformers are shown in the following table:

<table>
<thead>
<tr>
<th>Circuit voltage</th>
<th>Fuse voltage rating</th>
<th>1 kVA</th>
<th>2 kVA</th>
<th>3 kVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 V(ac)</td>
<td>250 V(ac)</td>
<td>10 A</td>
<td>20 A</td>
<td>30 A</td>
</tr>
<tr>
<td>240 V(ac)</td>
<td>250 V(ac)</td>
<td>6 A</td>
<td>10 A</td>
<td>20 A</td>
</tr>
<tr>
<td>480 V(ac)</td>
<td>500-600 V(ac)</td>
<td>3 A</td>
<td>6 A</td>
<td>10 A</td>
</tr>
</tbody>
</table>
Replace section 86-1.02P(1) with:

86-1.02P(1) General
The enclosures must be rated NEMA 3R and include a dead front panel and a hasp with a 7/16-inch-diameter hole for a padlock.

Except for a service equipment enclosure, an enclosure must:
1. Be manufactured from steel and either galvanized, cadmium plated, or powder coated
2. Mount to a standard, pole, post, or sign structural frame
3. Provide a minimum space of 2-1/2 inches between the internal components and the enclosure’s sides

The enclosure's machine screws and bolts must not protrude outside the cabinet wall.
The fasteners on the exterior of an enclosure must be vandal resistant and not be removable. The exterior screws, nuts, bolts, and washers must be stainless steel.

Replace the 1st paragraph of section 86-1.02P(2) with:

Service equipment enclosure must:
1. Comply with the Electric Utility Service Equipment Requirements Committee
2. Meet the requirements of the service utility
3. Be watertight
4. Be factory wired and manufactured from steel and galvanized or have factory-applied, rust-resistant prime and finish coats, except Types II and III
5. Be marked as specified in NEC to warn of potential electric-arc flash hazards

Delete the 5th paragraph of 86-1.02P(2).

Add between 6th and 7th paragraphs of section 86-1.02P(2):

Service equipment enclosure must have the meter view windows located on the front side of the enclosure for Types III-AF, BF, CF and DF.

Service equipment enclosure must have the meter view windows located on the back side of the enclosure for Types III-AR, BR, CR and DR.

Replace the 7th paragraph of section 86-1.02P(2) with:

The meter area must have a sealable, lockable, weather-tight cover that can be removed without the use of tools.

Delete the 2nd sentence of the 9th paragraph of section 86-1.02P(2).

Delete section 86-1.02P(3).
Replace section 86-1.02Q(4)(a) with:

86-1.02Q(4)(a) General
The doors of a telephone demarcation cabinet must be attached using continuous aluminum steel piano hinges.

Add between the 2nd and 3rd paragraphs of section 86-1.02R(2):

Bracket arms must be long enough to allow proper alignment of signals and backplate installation.

Replace item 2 in the list in the 5th paragraph of section 86-1.02R(4)(a)(iii) with:

2. Be a black color throughout, including the door, matching color no. 17038, 27038, or 37038 of AMS-STD-595

Add to the beginning of section 86-1.02T:

Accessible pedestrian signal must be on the Authorized Material List for Accessible Pedestrian Signals.

Replace the 5th and 6th paragraphs of section 86-1.02T with:

The color of a metallic housing must match color no. 33538 of AMS-STD-595.
The color of a plastic housing must match color no. 17038, 27038, or 37038 of AMS-STD-595.

Replace the 7th paragraph of section 86-1.02T with:

Accessible pedestrian signal must:
1. Have controllable and programmable volume level and messaging
2. Be weatherproof and shockproof

Replace the 11th paragraph of section 86-1.02T with:

The cable between the accessible pedestrian signal assembly and the pedestrian signal head must be rated for outdoor use and have a:
1. Minimum four no. 18 stranded or larger 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. 80 degrees C
3. Nominal outside diameter less than 350 mils
4. Conductor color code of black, white, red and green

Replace the 1st paragraph of section 86-1.02U with:

The housing for a push button assembly must be made of die-cast aluminum, permanent mold-cast aluminum, or UV-stabilized self-extinguishing structural plastic.
The housing must have a uniform color that matches color no. 17038, 27038, or 37038 of AMS-STD-595.
Replace the 2nd paragraph of section 86-1.02W(4) with:

The cured hot-melt rubberized asphalt sealant must comply with the requirements shown in the following table:

<table>
<thead>
<tr>
<th>Quality characteristic</th>
<th>Test method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cone penetration, 25 °C, 150 g, 5 s (max, 1/10 mm)</td>
<td>ASTM D5329</td>
<td>35</td>
</tr>
<tr>
<td>Flow, 60 °C, 5 hr (max, mm)</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Resilience, 25 °C (min, %)</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Softening point (min, °C)</td>
<td>ASTM D36</td>
<td>82</td>
</tr>
<tr>
<td>Ductility, 25 °C, 5 cm/min (min, cm)</td>
<td>ASTM D113</td>
<td>30</td>
</tr>
<tr>
<td>Flash point, Cleveland Open Cup (min, °C)</td>
<td>ASTM D92</td>
<td>288</td>
</tr>
<tr>
<td>Viscosity, no. 27 spindle, 20 rpm, 190 °C (Pa•s)</td>
<td>ASTM D4402</td>
<td>2.5–3.5</td>
</tr>
</tbody>
</table>

Replace the 2nd paragraph of section 86-1.02Y with:

A transformer must be a dry type designed for operation on a 60 Hz supply. The transformer must have a decal showing a connection diagram. The diagram must show either color coding or wire tagging with primary (H1, H2) or secondary (X1, X2) markers and the primary and secondary voltage and volt-ampere rating. A transformer must comply with the electrical requirements shown in the following table:

<table>
<thead>
<tr>
<th>Quality characteristic</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating (V(ac))</td>
<td>120/240, 120/480, 240/120, 240/480, 480/120, or 480/240</td>
</tr>
<tr>
<td>Efficiency (%)</td>
<td>&gt; 95</td>
</tr>
<tr>
<td>Secondary voltage regulation and tolerance from half load to full load (%)</td>
<td>±3</td>
</tr>
</tbody>
</table>

87 ELECTRICAL SYSTEMS

04-19-19

Replace Reserved in section 87-1.01C with:

Submit a digital file for geographic information system mapping for:

1. Conduit
2. Pull boxes
3. Cabinets
4. Service equipment enclosures
5. Standards

The digital file must consist of:

1. Longitudinal and latitude coordinates, under the WGS84 reference coordinate system. The coordinates must be in decimal format having six (6) significant figures after the decimal point. Coordinates must be read at the center of pull boxes, cabinet, standards, and service equipment enclosures; and on top of conduit at 20-foot intervals before backfilling.
2. Type, depth and size for conduits.
3. Type for pull boxes, standards, cabinets, and service equipment enclosures.

   Replace item 4 in the list in the 1st paragraph of section 87-1.01D(2)(a) with:

4. Luminaires

   Replace the 7th paragraph of section 87-1.03A with:

   Notify the Engineer immediately if an existing facility is damaged by your activities:

1. Damaged existing traffic signal systems must be repaired or replaced within 24 hours. If the system cannot be fixed within 24 hours or it is located on a structure, provide a temporary system until the system can be fixed.
2. Damaged existing lighting systems must be repaired or replaced by nightfall. If the system cannot be fixed by nightfall, provide a temporary system until the system can be fixed.

   Add to the end of section 87-1.03A:

Collect the geographic information system mapping data.

   Replace the 12th paragraph of section 87-1.03B(1) with:

For Type 1, 2, and 5 conduits, use threaded bushings and bond them using a jumper. For other types of conduit, use nonmetallic bushings or end bell.

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

Place a minimum of two (2) inches of sand bedding in a trench before installing the conduit and eighteen (18) inches of slurry cement over the conduit before placing additional backfill material.

The slurry must be pigmented to match AMS-STD-595.

   Replace the 1st sentence in the 6th paragraph of section 87-1.03B(3)(c) with:

Backfill trench with slurry concrete under section 19-3.02E.

   Replace the 9th paragraph of section 87-1.03B(3)(c) with:

Install innerducts as one continuous unit between vaults. Innerducts may be interrupted inside pull boxes located between vaults and cabinets.
Replace section 87-1.03D with:

87-1.03D Reserved

Replace section 87-1.03E(2) with:

04-19-19

Dig a trench for the electrical conduits or direct burial cables. Do not excavate until the installation of the
conduit or direct burial cables.

Place excavated material in a location that will not interfere with traffic or surface drainage.

After placing the conduit or direct burial cable, backfill the trench.

Compact the backfill to a minimum relative compaction of:

1. 95 percent when placed within the hinge points and in areas where pavement is to be constructed
2. 90 percent when placed outside the hinge points and not under pavement

Restore the sidewalks, pavement, and landscaping at a location before starting excavation at another
location.

Replace section 87-1.03E(3) with:

10-19-18

87-1.03E(3) Concrete Pads, Foundations, and Pedestals

Construct foundations for standards, poles, metal pedestals, and posts under section 56-3.

Construct concrete pads, foundations, and pedestals for controller cabinets, telephone demarcation cabinets,
and service equipment enclosures on firm ground.

Install anchor bolts using a template to provide proper spacing and alignment. Moisten the forms and ground
before placing the concrete. Keep the forms in place until the concrete sets for at least 24 hours to prevent
damage to the surface.

Use minor concrete for pads, foundations, and pedestals.

Construct a pad in front of a Type III service equipment enclosure. The pad must be 24 inches in length,
four (4) inches in thickness, and must match the width of the foundation.

In unpaved areas, place the top of the foundation six (6) inches above the surrounding grade, except place
the top:

1. 1 foot 6 inches above the grade for 336L cabinets
2. 1 foot 8 inches above the grade for Type C telephone demarcation cabinets
3. 2 inches above the grade for Type III service equipment enclosures

The pad must be two (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 four (4) inches above
the surrounding grade, except place the top:

1. 1 foot 6 inches above the grade for 336L cabinets
2. 1 foot 8 inches above the grade for Type C telephone demarcation cabinets
3. Level with the finished grade for Type G and Type A cabinets and Type III service equipment
   enclosures

The pad must be level with the finished grade in paved areas.
Apply an ordinary surface finish under section 51-1.03F.

Allow the foundation to cure for at least seven (7) days before installing any equipment.

Replace the last paragraph of section 87-1.03F(1) with:

Install a tracer wire.

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

Install a Type 1 or 2 inductive loop conductor except use Type 2 for Type E and F loop detectors.

Delete the last paragraph of section 87-1.03G.

Replace the 4th paragraph of section 87-1.03H(2) with:

Use Method B as follows:
1. Cover the splice area completely with an electrical insulating coating and allow it to dry.
2. Apply three (3) layers of half-lapped, PVC electrical tape.
3. Apply two (2) layers of butyl-rubber, stretchable tape with liner.
4. Apply three (3) layers of half-lapped, PVC, pressure-sensitive, adhesive tape.
5. Cover the entire splice with an electrical insulating coating and allow it to dry.

Replace section 87-1.03N 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 ten (10) A fuse in the pull box and an additional fuse splice connector with a five (5) A fuse in the handhole.

Install a fuse splice connector with a fuse on primary side of transformer.

Crimp the connector terminals onto the ungrounded conductors using a tool under the manufacturer's instructions. Insulate the terminals and make them watertight.

Add to the end of section 87-1.03T:

When replacing an existing accessible pedestrian signal, the housing color must match the color of the existing housing.

Add to the end of section 87-1.03U:

When replacing an existing push button assembly, the housing color must match the color of the existing housing.

Add between the 1st and 2nd paragraphs of section 87-1.03Y:

Use a submersible type transformer inside pull boxes.
Replace the 2nd paragraph of section 87-2.03A with:

Tighten the cap screws of the luminaire's clamping bracket to 10 ft-lb for roadway luminaires.

Replace section 87-3 with:

87-3 SIGN ILLUMINATION SYSTEMS

87-3.01 GENERAL

Section 87-3 includes specifications for constructing sign illumination systems.

Sign illumination system includes:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors
5. Overhead sign luminaires
6. Service equipment enclosure
7. Photoelectric control

The components of a sign illumination system are shown on the Project plans.

87-3.02 MATERIALS

This section is not applicable to the Project.

87-3.03 CONSTRUCTION

Perform the conductor test.

Install overhead sign luminaires under the manufacturer's instructions.

Do not modify the sign structure or mounting channels.

Perform the operational tests for the system.

87-3.04 PAYMENT

Not Used

Replace section 87-4.01D with:

87-4.01D Quality Assurance

This section is not applicable to the Project.

Replace section 87-4.02B with:

87-4.02B Battery Backup System

A battery backup system includes the cabinet, batteries, and electronics assembly complying with Caltrans standards.

The electronics assembly includes the inverter/charger unit, power transfer relay, manually-operated bypass switch, battery harness, utility interconnect wires, battery temperature probe, and relay contact wires.
Replace the 2nd sentence in the 15th paragraph of section 87-4.02C with:

The background must comply with color no. 14109 of AMS-STD-595.

Replace section 87-4.03B with:

87-4.03B Battery Backup System Cabinets
Install the battery backup system cabinet to the right of the controller cabinet.
If installation on the right side is not possible, obtain authorization for installation on the left side.
Provide access for power conductors between the cabinets using:
1. 2-inch nylon-insulated, steel chase nipple
2. 2-inch steel sealing locknut
3. 2-inch nylon-insulated, steel bushing

Remove the jumper between the terminals labeled BBS-1 and BBS-2 in the 5 position terminal block in the controller cabinet before connecting the electronics assembly.

Replace section 87-7.02 with:

87-7.02 MATERIALS
Flashing beacon control assembly includes:
1. Enclosure.
2. Barrier-type terminal blocks rated for 25 A, 600 V(ac), made of molded phenolic or nylon material and have plated-brass screw terminals and integral marking strips.
3. Solid state flasher complying with section 8 of NEMA standards publication no. TS 1 for 10 A, dual circuits.
4. 15-A, circuit breaker per ungrounded conductor.
5. Single-hole-mounting toggle type, single-pole, single-throw switches rated at 12-A, 120 V(ac). Switches must be furnished with an indicating nameplate reading Auto - Test. A 15-A circuit breaker may be used in place of the toggle switch.

Replace 87-8 with:

87-8 PEDESTRIAN HYBRID BEACON SYSTEMS
87-8.01 GENERAL
87-8.01A Summary
Section 87-8 includes specifications for constructing pedestrian hybrid beacon system.
A pedestrian hybrid beacon system includes:
1. Foundations
2. Pull boxes
3. Conduit
4. Conductors and cables
5. Standards
6. Pedestrian hybrid beacon face
7. Pedestrian signal heads  
8. Service equipment enclosure  
9. Controller assembly  
10. Accessible pedestrian signals  
11. Push button assemblies  
12. Luminaires  
13. Fuse splice connectors  
14. Battery backup system

The components of a pedestrian hybrid beacon system are shown on the Project plans.

87-8.01B Definitions

This section is not applicable to the Project.

87-8.01C Submittals

This section is not applicable to the Project.

87-8.01D Quality Assurance  
87-8.01D(1) General

This section is not applicable to the Project.

87-8.01D(2) Quality Control

Verify the sequence for the pedestrian hybrid beacon system per California Chapter 4F, Figure 3F-3 "Sequence for a Pedestrian Hybrid Beacon" during the operational test.

Test the battery backup system under section 87-1.01D(2)(c).

87-8.02 MATERIALS

87-8.02A General

The system must comply with California MUTCD, Chapter 4F.

The battery backup system must comply with section 87-4.02B.

87-8.02B Pedestrian Hybrid Beacon Face

A pedestrian hybrid beacon face consists of three 12-inch signal heads.

87-8.03 CONSTRUCTION

Install pedestrian hybrid beacon system under sections 87-4.03A and 87-4.03B.

87-8.04 PAYMENT

Not Used

Replace the 1st paragraph of section 87-12.03 with:

Install changeable message sign on sign structure under section 56-2.
Replace section 87-14.02 with:

87-14.02 MATERIALS

87-14.02A General

Vehicle speed feedback sign consists of a housing, display window, and radar unit.

Sign must:
1. Comply with the California MUTCD, Chapter 2B
2. Have an operating voltage of 120 V(ac) for permanent installations
3. Have a maximum weight of 45 lb
4. Have a wind load rating of 90 mph
5. Have an operating temperature range from -34 to 165 degrees F
6. Have a retroreflective white sheeting background

87-14.02B Housings

Housing must:
1. Be weatherproof (NEMA 3R or better) and vandal resistant
2. Be made of 0.09-inch-gauge welded aluminum with the outer surfaces being UV resistant
3. Have the manufacturer's name, model number, serial number, date of manufacture, rated voltage and rated current marked inside
4. Have the internal components easily accessible for field repair without removal of the sign

87-14.02C Display Windows

Display window consists of a cover, LED character display, and dimming control. Character display and cover must deflect together without damage to the internal electronics and speed detection components.

Cover must be:
1. Vandal resistant and shock absorbent
2. Field replaceable with the removal of external stainless-steel, tamper proof fasteners

Cover must be made of a minimum 0.25-inch-thick, shatter-resistant polycarbonate.

LED character display must:
1. Consist of two 7-segment, solid-state, numeric characters, which must:
   1.1. Be a minimum 15 inches in height
   1.2. Be visible and legible from a minimum distance of 1500 feet and legible from a minimum distance of 750 feet
   1.3. Consist of a minimum 16 LEDs, which must:
      1.3.1. Be amber and have a wavelength from 590 to 600 nm and rated for minimum 100,000 hours
      1.3.2. Must maintain a minimum 85 percent of the initial light output after 48 months of continuous use over the temperature range
2. Be capable of displaying the detected vehicle speed within one (1) second
3. Remain blank when no vehicles are detected within the radar detection zone
4. Have the option to flash the pre-set speed limit when the detected vehicle speed is 5 miles higher than the pre-set speed
5. Be viewable only by the approaching traffic

Dimming control must:
1. Automatically adjust the character light intensity to provide optimum character visibility and legibility under all ambient lighting conditions
2. Have minimum three (3) manual dimming modes of different intensities

**87-14.02D Radar Units**

Radar unit must:

1. Be able to detect up to three (3) lanes of approaching traffic
2. Operate with an internal, low power, 24.159 GHz (K-band)
3. Be FCC approved Part 15 certified
4. Have a speed accuracy of ±1 mph
5. Have a maximum 15 W power consumption

Replace 87-19 with:

**87-19 FIBER OPTIC CABLE SYSTEMS**

**87-19.01 GENERAL**

**87-19.01A Summary**

Section 87-19 includes specifications for constructing fiber optic cable systems.

A fiber optic cable system includes:

1. Conduit and accessories
2. Vaults
3. Warning tape
4. Fiber optic cables
5. Fiber optic splice enclosures
6. Fiber distribution units
7. Fiber optic markers
8. Fiber optic connectors and couplers

The components of a fiber optic system are shown on the Project plans.

**87-19.01B Definitions**

This section is not applicable to the Project.

**87-19.01C Submittals**

At least 15 days before cable installation, submit:

1. Manufacturer’s procedures for pulling fiber optic cable
2. Test reports from a laboratory accredited to International Standards Organization/International Electrotechnical Commission 17025 by the American Association for Laboratory Accreditation (A2LA) or the ANSI-ASQ National Accreditation Board (ANAB) for:
   2.1. Water penetration
   2.2. Cable temperature cycling
   2.3. Cable impact
   2.4. Cable tensile loading and fiber strain
   2.5. Cable compressive loading
   2.6. Compound flow
2.7. Cyclic flexing

3. Proof of calibration for the test equipment including:
   3.1. Name of calibration facility
   3.2. Date of calibration
   3.3. Type of equipment, model number and serial number
   3.4. Calibration result

Submit optical time-domain reflectometer data files for each test in a Microsoft Excel format.

After performing the optical time-domain reflectometer test and the power meter and light source test, submit within four (4) business days a hard copy and electronic format:

1. Cable Verification Worksheet
2. Segment Verification Worksheet
3. Link Loss Budget Worksheet

The worksheets are available at the Division of Construction website.

87-19.01D Quality Assurance

87-19.01D(1) General

This section is not applicable to the Project.

87-19.01D(2) Quality Control

Notify the Engineer four (4) business days before performing field tests. Include exact location of the system or components to be tested. Do not proceed with the testing until authorized. Perform each test in the presence of the Engineer.

The optical time-domain reflectometer test consists of:

1. Inspecting the cable segment for physical damage.
2. Measuring the attenuation levels for wavelengths of 1310 and 1550 nm in both directions for each fiber using the optical time-domain reflectometer.
3. Comparing the test results with the data sheet provided with the shipment. If there are attenuation deviations greater than 5 percent, the test will be considered unsatisfactory and the cable segment will be rejected. The failure of any single fiber is a cause for rejection of the entire segment. Replace any rejected cable segments and repeat the test.

The power meter and light source test consists of:

1. Testing each fiber in a link using a light source at one end of the link and a power meter at the other end
2. Measuring and recording the power loss for wavelengths of 1310 and 1550 nm in both directions

Index matching gel is not allowed.

Installation and splicing of the fiber optic cable system must be performed by a certified fiber optic installer.

The optical time-domain reflectometer test and the power meter and light source test must be performed by a certified fiber optic technician.

The certification for the fiber optic installer and fiber optic technician must be from an organization recognized by the International Certification Accreditations Council and must be current throughout the duration of the Project.
**87-19.02 MATERIALS**

**87-19.02A General**

All metal components of the fiber optic cable system must be corrosion resistant.

All connectors must be factory-installed and tested.

Patch cords, pigtails, and connectors must comply with ANSI/TIA-568.

Pigtails must have a minimum 80 N pull out strength.

A splice cassette may be used in place of a pigtail and a splice tray.

Each cable reel must have a weatherproof label or tag with information specified in ANSI/ICEA S-87-640 including:

1. Contractor's name
2. Contract number
3. Number of fibers
4. Cable attenuation loss per fiber at 1310 and 1550 nm

The labeled or tagged information must also be in a shipping record in a weatherproof envelope. The envelope must be removed only by the Engineer.

**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. 4 feet wide by 4 feet high by 4 feet 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 CALTRANS and FIBER OPTIC.
87-19.02C Fiber Optic Cable

The fiber optic cable must:

1. Comply with 7 CFR parts 1755.900, 1755.901, and 1755.902, and ANSI/ICEA S-87-640
2. Be a single mode, zero-dispersion, and have non-gel loose type buffer tubes
3. Have no splices
4. Have a Type H or Type M outer jacket
5. Be shipped on a reel
6. Have 10 feet of length on each end of the cable accessible for testing

87-19.02D Fiber Optic Splice Enclosures

A fiber optic splice enclosure must:

1. Not exceed 36 inches in length, eight (8) inches in width, and eight (8) inches in height
2. Be made of thermoplastic material, weatherproof, chemical and UV resistant, and re-sealable
3. Accommodate a minimum of eight (8) internal splice trays
4. Have from 1/4 to 1 inch in diameter cable entry ports
5. Have brackets, clips and cable ties
6. Have means to anchor the dielectric member of the fiber optic cable
7. Include grounding hardware

87-19.02E Fiber Distribution Units

The fiber distribution unit consists of a housing, a patch panel, a 12-multicolor pigtail, and a splice tray.

The fiber distribution unit must be self-contained and pre-assembled.

The housing must:

1. Be a 19-inch rack-mountable modular-metal enclosure
2. Be a one rack unit
3. Have cable clamps to secure buffer tube to the chassis
4. Have cable accesses with rubber grommets or similar material to prevent the cable from coming in contact with the bare metal
5. Be weatherproof
6. Have a hinged top door with a latch or thumbscrew to hold it in the closed position

A patch panel must have a minimum of 12-singlefiber type connector sleeves.

A pigtail must:

1. Be a simplex single mode fiber in a 900 µm tight buffer with a 12-inch-outer-diameter PVC jacket
2. Have a fiber optic connector attached on one end and bare fiber on the other end
3. Be at least three (3) feet in length
4. Have the manufacturer's part number on the jacket

Pigtails must be single-fiber or ribbon type.

87-19.02F Patch Cords

Patch cords must:

1. Be a singlemode fiber in a 900 µm tight buffer with a 0.12-inch-outer-diameter PVC jacket
2. Have fiber optic connectors attached on both ends
3. Be at least six (6) feet in length
4. Have manufacturer's part number on the jacket

Duplex patch cords must be of round cable structure, and not have zip-cord structure.

**87-19.02G Splice Trays**

Splice trays must:
1. Have brackets to spool incoming fibers a minimum of two (2) turns.
2. Have means to secure and protect incoming buffer tubes, pigtails, and a minimum of twelve (12) heat shrink fusion splices.
3. Be stackable.
4. Have a snap-on or hinged cover. The cover may be transparent.

**87-19.02H Fiber Optic Markers**

Fiber optic markers must be:
1. Type K-2 (CA) object markers for vaults or pull boxes.
2. Disk markers for paved areas and transition points from unpaved to paved areas. The disk marker must be metallic, lead free and four (4) inches in diameter, and must have a mounting stem at the center of the disk. The mounting stem must be a minimum three (3) inches long and a minimum 0.70 inch in diameter.
3. Non-reflective Class 1, Type F, flexible post delineators for unpaved areas.

**87-19.02I Fiber Optic Connectors and Couplers**

Connectors must be:
1. 0.1-inch ceramic ferrule pre-radiused type
2. Capped when not used

Couplers must be made of the same material as the connector's housing and have ceramic sleeves.

Singlemode fiber optic connectors must have a yellow strain relief boot or a yellow base.

**87-19.03 CONSTRUCTION**

**87-19.03A General**

Perform the optical time-domain reflectometer test:
1. On the fiber optic cable upon its arrival to the job Site and before its installation. Complete the Cable Verification Worksheet. Do not install the fiber optic cable until the Engineer's written approval is received.
2. After the fiber optic cable segments have been pulled, but before breakout and termination. Complete the Segment Verification Worksheet.
3. Once the passive cabling system has been installed and is ready for activation. If the measured individual fusion splice losses exceed -0.30 dB, re-splice and retest. At the conclusion of the optical time-domain reflectometer test, perform the power meter and light source test. If the measured link loss exceeds the calculated link loss, replace the unsatisfactory cable segments or splices and retest. Complete the Link Loss Budget Worksheet.

**87-19.03B Vaults Installation**

Install a vault as shown and with the side facing the roadway a minimum of two (2) feet from the edge of pavement or back of dike, away from traffic.
Install the top of the vault flush with surrounding grade in paved areas and two (2) inches above the surrounding grade in unpaved areas.

Place six (6) inches of minor concrete around vaults. In unpaved areas, finish top of concrete at a two (2) percent slope away from cover. In paved areas, finish top of concrete to match existing slope.

Bolt the steel cover to the vault when not working in it.

**87-19.03C Fiber Optic Cable Installation**

Install fiber optic cable by a certified installer or a representative from the fiber optic cable manufacturer during installation.

When using mechanical aids to install fiber optic cable:

1. Maintain a cable bend radius at least twenty times the outside diameter of the cable
2. Use cable grips having a ball bearing swivel
3. Use a pulling force on a cable not to exceed 500 pound-foot or manufacturer's recommended pulling tension, whichever is less

When installing the cable using the air blown method, the cable must withstand a static air pressure of 110 psi.

Lubricate the cable using a lubricant recommended by the cable manufacturer.

Install fiber optic cable without splices except where shown.

Provide a minimum of 65 feet of slack for each fiber optic cable at each vault. Divide the slack equally on each side of the splice enclosure.

Install tracer wires in the fiber optic conduits and innerducts as shown. Provide a minimum five (5) feet of slack tracer wire in each pull box and vault from each direction. You may splice tracer wire at intervals of not less than 500 feet and only inside vaults or pull boxes.

If a fiber optic cable and tracer wire is installed in an innerduct, pulling a separate fiber optic cable into a spare duct to replace damaged fiber will not be allowed.

Apply a non-hygroscopic filling compound to fiber optic cable openings.

Seal the ends of conduit and innerducts after cables are installed.

Install strain relief for fiber optic cable entering a fiber optic enclosure.

Identify fibers and cables by direct labeling, metal tags, or bands fastened in such a way that they will not move. Use mechanical methods for labeling.

Provide identification on each fiber optic cable or each group of fiber optic cables in each vault and at the end of terminated fibers. Fiber optic cable must be identified as shown in the following table:

<table>
<thead>
<tr>
<th>Sequence order</th>
<th>Description</th>
<th>Code</th>
<th>Numbers of characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fiber type</td>
<td>S: Singlemode</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Fiber count</td>
<td>###: Example 048</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Begin point</td>
<td>T: TMC, H: Hub</td>
<td>1 or 2</td>
</tr>
<tr>
<td>Sequence order</td>
<td>Description</td>
<td>Code</td>
<td>Numbers of characters</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>4</td>
<td>Begin point county abbreviation</td>
<td>AA or AAA: Examples: Orange (ORA), San Mateo (SM)</td>
<td>2 or 3</td>
</tr>
<tr>
<td>5</td>
<td>Begin point route number</td>
<td>###: Examples: 005, 082, 114</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Begin point post mile</td>
<td>#####: 02470 (example 024.70): Actual PM value to the 1/100 value</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>End Point</td>
<td>In the same way as for Begin Point</td>
<td>1 or 2</td>
</tr>
<tr>
<td>8</td>
<td>End point county abbreviation</td>
<td>In the same way as for Begin Point County Abbreviation</td>
<td>2 or 3</td>
</tr>
<tr>
<td>9</td>
<td>End point route number</td>
<td>In the same way as Begin Point Route Number</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>End point post mile</td>
<td>In the same way as Begin Point Post Mile</td>
<td>5</td>
</tr>
</tbody>
</table>

Cable identification example: The cable code S 048 SV SM 084 02470 SV SC 082 02510 describes a singlemode, 48 strand, cable starting at a fiber optic vault in San Mateo County on Route 84 at post mile 24.70, and ending at another fiber optic vault in Santa Clara County on Route 82 at post mile 25.10.

Place labels on the cables at the following points:
1. Fiber optic vault and pull box entrances and exits
2. Splice enclosures entrance and exit
3. Fiber distribution unit entrance

Lace fiber optic cable inside controller cabinets and secure to the cage.

Support the fiber optic cable within six (6) inches from a termination and every two (2) feet.

Secure fiber optic cables to the cable racks. Store excess cable in a figure 8 fashion.

**87-19.03D Fiber Optic Cable Splices**

Use fusion splicing for fiber optic cables.

Splice single-buffer tube cable to multi-buffer tube cable using the mid-span access method under manufacturer's instructions. Any mid-span access splice or fiber distribution unit termination must involve only those fibers being spliced as shown.

Place fiber splices in the splice enclosures installed in the vaults.

**87-19.03E Splice Enclosures Installation**

Maintain an equal amount of slack on each side of the splice enclosure.

Secure the fiber optic splices in splice tray.

Secure the splice trays to the inner enclosure.

Label cables and buffer tubes.

Do not seal fiber splice enclosure until authorized and the power meter and light source test is performed. Seal the enclosure under manufacturer's instructions.

Flash test the outer enclosure under manufacturer's instructions in the presence of the Engineer. Visually inspect the enclosure. If bubbles are present, identify the locations where the bubbles are present, take corrective actions and repeat the flash test until no bubbles are present.

Attach the splice enclosure to the side wall of a vault or hub with a minimum two (2) feet distance between the ground and the bottom of the enclosure.

Secure fiber optic cables to the chassis using cable clamps for fiber optic units.

Connect a minimum of one bonding conductor to a grounding electrode after mounting the fiber optic enclosure to the wall. If there are multiple bonding conductors, organize the conductors in a neat way.

**87-19.03F Fiber Optic Distribution Unit Installation**

Spool incoming buffer tubes two (2) feet in the splice tray and expose one (1) foot of individual fibers.

Maintain a minimum two- (2)-inch-bend radius during and after installation in the splice tray.

Splice incoming fibers in the splice tray.

Restrain each fiber in the splice tray. Do not apply stress on the fiber when located in its final position.

Secure buffer tubes near the entrance of the splice tray.

Secure splice trays under manufacturer's instructions.

Label splice tray after splicing is completed.

Install patch cords in fiber distribution units and patch panels. Permanently label each cord and each connector in the panel with the system as shown.
**87-19.03G Fiber Optic Markers Installation**

Install fiber optic markers at 12-inch offset on the side furthest away from the edge of travel way:

1. For fiber optic cable at 500 feet apart in areas where the distance between vaults or pull boxes is greater than 500 feet
2. Adjacent to vaults and pull boxes
3. For fiber optic cable turns at:
   3.1. Beginning of the turn
   3.2. Middle of the arc
   3.3. End of the turn

When a fiber optic cable crosses a roadway or ramp, install a disk marker over the conduit trench on:

1. Every shoulder within six (6) inches from the edge of pavement
2. Delineated median
3. Each side of a barrier

Install markers under section 81 except each retroreflective face must be parallel to the road centerline and facing away from traffic.

**87-19.04 PAYMENT**

Not Used

Replace section 87-20 with:

04-19-19

**87-20.01 GENERAL**

Section 87-20 includes specifications for providing, maintaining, and removing temporary electrical systems.

Obtain ICTC's authorization for the type of temporary electrical system and its installation method.

A temporary system must operate on a continuous, 24-hour basis.

A temporary electrical system must have a primary power source and a back-up power source from:

1. Commercial power from a utility company
2. Generator system
3. Photovoltaic system

**87-20.02 MATERIALS**

**87-20.02A General**

Material and equipment may be new or used.

Temporary wood poles must comply with section 48-6.

The components of a temporary system are shown on the Project plans.

If you use Type UF-B cable, the minimum conductor size must be No. 12.

A back-up power source must:

1. Have an automatic transfer switch
2. Start automatically and transfer the system load upon reaching the operating voltage in the event of a power source failure
87-20.02B Temporary Flashing Beacon Systems
A temporary flashing beacon system consists of a flashing beacon system, wood post, and a power source. The system must comply with the specifications for a flashing beacon system in section 87-7, except it may be mounted on a wood post or a trailer.

87-20.02C Temporary Lighting Systems
A temporary lighting system consists of a lighting system, a power source, and wood poles. The system must comply with the specifications for a lighting system in section 87-2, except it may be mounted on a wood pole or a trailer.

87-20.02D Temporary Signal Systems
A temporary signal system consists of a signal and lighting system, wood poles and posts, and a power source. The system must comply with the specifications for a signal and lighting system in section 87-4, except:
1. Signal heads may be mounted on a wood pole, mast arm, tether wire, or a trailer
2. Flashing beacons may be mounted on a wood post, or a trailer

87-20.02E Generators
A generator must:
1. Be 120 V(ac) or 120/240 V(ac), 60 Hz, 2.5 kW minimum, continuous-duty type
2. Be powered by a gasoline, LPG, or diesel engine operating at approximately 1,800 rpm with an automatic oil feed
3. Be equipped to provide automatic start-stop operation with a 12 V starting system
4. Have generator output circuits that have overcurrent protection with a maximum setting of 15 A
5. Have enough fuel storage to operate when it is unattended
6. Have a spark arrester complying with Pub Cont Code § 4442

87-20.02F Automatic Transfer Switches
An automatic transfer switch must provide:
1. Line voltage monitoring in the event of a power outage that signals the back-up power source to start
2. Start delay, adjustable from 0 to 6 seconds, to prevent starting if the power outage is only momentary and a stop delay, adjustable from 0 to 8 minutes, to allow the back-up power source to unload
3. Transfer delay from 0 to 120 seconds to allow the back-up power source to stabilize before connecting to the load and retransfer delay from 0 to 32 minutes to allow the line voltage to stabilize
4. Mechanical interlock to prevent an application of power to the load from both sources and to prevent backfeeding from the back-up power source to the primary power source

87-20.03 CONSTRUCTION
87-20.03A General
Provide electrical and telecommunication services for temporary systems. Do not use existing services unless authorized.

Provide power for the temporary electrical systems.
Commercial power must be 120 V(ac) or 120/240 V(ac) single phase. Make arrangements with the utility company for providing service. Protect the power source in a locked enclosure. Provide keys to all locks to the Engineer.

Install conductors and cables in a conduit, suspended from wood poles at least 25 feet above the roadway, or use direct burial conductors and cables.

You may saw slots across paved areas for burial conductors and cables. Install conduit outside the paved area at a minimum of twelve (12) inches below grade for Type 1 and 2 conduit and at a minimum of eighteen (18) inches below grade for Type 3 conduit.

Install direct burial conductors and cables outside the paved area at a minimum depth of twenty-four (24) inches below grade.

Place the portions of the conductors installed on the face of wood poles in either Type 1, 2, or 3 conduit between the point 10 feet above grade at the pole and the pull box. The conduit between the pole and the pull box must be buried at a depth of at least 18 inches below grade.

Place conductors across structures in a Type 1, 2, or 3 conduit. Attach the conduit to the outside face of the railing.

Mount the photoelectric unit at the top of the standard or wood post.

You may abandon in place conductors and cables in sawed slots or in conduit installed below the ground surface.

**87-20.03B Temporary Flashing Beacon Systems**

Protect each flashing beacon with a fused splice connector on the line side. Wherever conductors are run overhead, install the splice connector in the line side outside of the control assembly.

**87-20.03C Temporary Lighting Systems**

Protect each luminaire with a fused splice connector on the line side. Wherever conductors are run overhead, install the fuse splice connectors in the line side before entering the mast arm.

**87-20.03D Temporary Signal Systems**

You may splice conductors that run to a terminal compartment or a signal head on a pole to the through conductors of the same phase in a pull box adjacent to the pole. Do not splice conductors or cables except in a pull box or in a NEMA 3R enclosure.

ICTC or GSA provides the timing for the temporary signal.

Maintain the temporary signal.

**87-20.04 PAYMENT**

Not Used

Replace item 7 in the list in the 2nd paragraph of section 87-21.03B(2) with:

10-19-18

7. Camera system
DIVISION XI  MATERIALS

90  CONCRETE

10-18-19

Add to section 90-1.01B:
10-18-19

CIP structural concrete members: CIP components of bridge structures, piling, retaining walls, sound walls, box culverts, drainage inlets, approach slabs, bridge railing, and bridge barriers.

Replace section 90-1.01C(6) with:
10-18-19

90-1.01C(6)  Mix Design

90-1.01C(6)(a)  General
Submit the concrete mix design before using the concrete in the Work and before changing the mix proportions or an aggregate source.

90-1.01C(6)(b)  Cast-In-Place Structural Concrete Members
For CIP structural concrete members, submit with your mix design results from the tests specified in 90-1.01D(10)(d) and the results from the tests shown in the following table:

<table>
<thead>
<tr>
<th>Quality characteristic</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity and absorption of coarse aggregate</td>
<td>ASTM C127</td>
</tr>
<tr>
<td>Specific gravity and absorption of fine aggregate</td>
<td>ASTM C128</td>
</tr>
<tr>
<td>Durability index for fine aggregate</td>
<td>California Test 229</td>
</tr>
<tr>
<td>Soundness</td>
<td>California Test 214</td>
</tr>
<tr>
<td>Resistance to degradation</td>
<td>ASTM C131</td>
</tr>
<tr>
<td>Organic impurities</td>
<td>California Test 213</td>
</tr>
<tr>
<td>Chloride concentration of water for washing aggregates and</td>
<td>California Test 422</td>
</tr>
<tr>
<td>mixing concrete</td>
<td></td>
</tr>
<tr>
<td>Sulfate concentration of water for washing aggregates and</td>
<td>California Test 417</td>
</tr>
<tr>
<td>mixing concrete</td>
<td></td>
</tr>
<tr>
<td>Impurities in water for washing aggregates and mixing</td>
<td>ASTM C191 or ASTM C266 and ASTM C109</td>
</tr>
<tr>
<td>concrete</td>
<td></td>
</tr>
</tbody>
</table>

Replace section 90-1.01C(8) with:
10-18-19

90-1.01C(8)  Testing
90-1.01C(8)(a) General

If the concrete is tested for shrinkage, submit the test data with the mix design.

If prequalification is specified, submit certified test data or trial batch test reports under section 90-1.01D(5)(b).

If 56 days are allowed for the concrete to attain the compressive strength described, submit test results under section 90-1.01D(5)(a).

90-1.01C(8)(b) Cast-In-Place Structural Concrete Members

For CIP structural concrete members, submit test results within three (3) business days after completing each QC test. For submittal of test results, go to:

http://dime.dot.ca.gov/

For CIP structural concrete members, include the following with the test results:

1. Contract number
2. Mix design number
3. Test sample identification number
4. Date and time of test
5. Batch plant
6. Batch number
7. Bridge number and description of element
8. Supporting data and calculations
9. Name, certification number, and signature of the QC tester

If additional compressive strength test results are needed for CIP structural concrete members to facilitate your schedule, submit a plot of the strength projection curve.

Add to the end of section 90-1.01C:

10-18-19

90-1.01C(11) Quality Control Plan for Cast-In-Place Structural Concrete Members

Section 90-1.01C(11) applies to CIP structural concrete members.

Submit three (3) copies of the QC plan for review.

Submit an amended QC plan or an addendum to the QC plan when there are any changes to:

1. Concrete plants
2. Testing laboratories
3. Plant certification or laboratory accreditation status
4. Tester or inspector qualification status
5. QC personnel
6. Procedures and equipment
7. Material sources
8. Material testing

Allow ICTC five (5) business days to review an amended QC plan or an addendum to the QC plan.

90-1.01C(12) Concrete Materials Quality Control Summary Report for Cast-In-Place Structural Concrete Members
Section 90-1.01C(12) applies to CIP structural concrete members.

During concrete production for CIP structural concrete members, submit a concrete materials QC summary report at least once a month. The report must include:

1. Inspection reports.
2. Test results.
3. Documentation of:
   3.1. Test result evaluation by the QC manager
   3.2. Any discovered problems or deficiencies and the corrective actions taken
   3.3. Any testing of repair Work performed
   3.4. Any deviations from the specifications or regular practices with explanation
4. Certificate of compliance for the structural concrete material signed by the QC manager. The certificate must state that the information contained in the report is accurate, the minimum testing frequencies specified in section 90-1.01D(10)(d) are met, and the materials comply with the Contract.

90-1.01C(13) Polymer Fibers

For concrete used in concrete bridge decks or PCC deck overlays, submit:

1. Fiber manufacturer's product data and application instructions
2. Certificate of compliance for each shipment and type of fiber

Replace the 3rd paragraph of section 90-1.01D(5)(a) with:

10-18-19

If the concrete is designated by compressive strength, the strength of concrete that is not steam cured is determined from cylinders cured under Method 1 of California Test 540.

Add to the end of section 90-1.01D:

10-18-19

90-1.01D(7) Qualifications for Cast-In-Place Structural Concrete Members

Section 90-1.01D(7) applies to CIP structural concrete members.

QC laboratory testing personnel must have an ACI Concrete Laboratory Testing Technician, Level 1 certification or an ACI Aggregate Testing Technician, Level 2 certification, whichever certification includes the test being performed.

QC field testing personnel and field and plant inspection personnel must have an ACI Concrete Field Testing Technician, Grade I certification.

90-1.01D(8) Certifications for Cast-In-Place Structural Concrete Members

Each concrete plant used for CIP structural concrete members must have a current:

1. Certification for ready mixed concrete production facilities from the National Ready Mixed Concrete Association. Plant Certification Checklist and supporting documentation must be available upon request.
2. Authorization under the Caltrans MPQP.

Each QC testing laboratory must be an authorized laboratory with current accreditation from the AASHTO Accreditation Program for the tests performed.

90-1.01D(9) Preconstruction Meeting for Cast-In-Place Structural Concrete Members
Section 90-1.01D(9) applies to CIP structural concrete members.

Before concrete placement, hold a meeting to discuss the requirements for structural concrete QC. The meeting attendees must include the Engineer, the QC manager, and at least one (1) representative from each concrete plant performing CIP structural concrete activities for the Contract.

90-1.01D(10) Quality Control

90-1.01D(10)(a) General

This section is not applicable to the Project.

90-1.01D(10)(b) Cast-In-Place Structural Concrete Members

90-1.01D(10)(b)(i) General

Section 90-1.01D(10)(b) applies to CIP structural concrete members.

Develop, implement, and maintain a QC program that includes inspection, sampling, and testing of structural concrete materials for CIP structural concrete members.

Perform all sampling, testing, and inspecting required to control the process and to demonstrate compliance with the Contract and the authorized QC plan.

Provide a QC field inspector at the concrete delivery point while placement activities are in progress.

Provide a testing laboratory and the testing personnel for QC testing.

The QC inspector and the QC manager must be fully authorized by the Contractor to reject material.

QC testers and inspectors must be your employees or must be hired by a subcontractor providing only QC services. QC testers and inspectors must not be employed or compensated by a subcontractor or by other persons or entities hired by subcontractors who will provide other services or materials for the Project.

If lightweight concrete, RSC, or SCC is used as structural concrete, you must also comply with the sampling and testing specifications of that section.

90-1.01D(10)(b)(ii) Quality Control Plan

The QC plan must detail the methods used to ensure the quality of the Work and provide the controls to produce concrete. The QC plan must include:

1. Names and documentation of certification or accreditation of the concrete plants and testing laboratories to be used
2. Names, qualifications, and copies of certifications for the QC manager and all QC testing and inspection personnel to be used
3. Organization chart showing QC personnel and their assigned QC responsibilities
4. Example forms, including forms for certificates of compliance, hard copy test result submittals, and inspection reports
5. Methods and frequencies for performing QC procedures, including inspections and material testing
6. Procedures to control quality characteristics, including standard procedures to address properties outside of the specified operating range or limits, and example reports to document nonconformances and corrective actions taken
7. Procedures for verifying:
   7.1. Materials are properly stored during concrete batching operations
   7.2. Batch plants have the ability to maintain the concrete consistency during periods of extreme heat and cold
   7.3. Admixture dispensers deliver the correct dosage within the accuracy requirements specified

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4A-72
7.4. Delivery trucks have a valid National Ready Mixed Concrete Association certification card

8. Procedures for verifying that the weighmaster certificate for each load of concrete shows:
   8.1. Concrete as batched complies with the authorized concrete mix design weights
   8.2. Moisture corrections are being accurately applied to the aggregates
   8.3. Cementitious materials are from authorized sources
   8.4. Any water that is added after batching at the plant

9. Procedures for visually inspecting the concrete during discharge operations

Allow ICTC five (5) business days to review an amended QC plan or an addendum to the QC plan.

90-1.01D(10)(b)(iii) Quality Control Manager

Assign a QC manager. The QC manager must have one of the following qualifications:

1. Civil engineering license in the State
2. ACI Concrete Laboratory Testing Technician, Level 1 certification
3. NICET Level II concrete certification
4. ICC Reinforced Concrete Special Inspector certification
5. ASQ Certified Manager of Quality/Organizational Excellence with the qualifying ten (10) years of experience and body of knowledge in the field of concrete

During concrete placement, the QC manager must be at the plant or job Site within three (3) hours of receiving notification from the Engineer.

90-1.01D(10)(b)(iv) Quality Control Testing Frequencies

For each mix design used to produce CIP structural concrete, perform sampling and testing in compliance with the following tables:

<table>
<thead>
<tr>
<th>Quality characteristic</th>
<th>Test method</th>
<th>Minimum testing frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate gradation</td>
<td>California Test 202</td>
<td>Once per each day of pour</td>
</tr>
<tr>
<td>Sand equivalent</td>
<td>California Test 217</td>
<td></td>
</tr>
<tr>
<td>Cleanness value</td>
<td>California Test 227</td>
<td></td>
</tr>
<tr>
<td>Moisture content of fine aggregate</td>
<td>California Test 226</td>
<td>1–2 times per each day of pour, depending on conditions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality characteristic</th>
<th>Test method</th>
<th>Minimum testing frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slump</td>
<td>ASTM C143/C143M</td>
<td>Once per 100 cu yd or each day of pour, whichever is more frequent, and when requested by the Engineer</td>
</tr>
<tr>
<td>Uniformitya</td>
<td>ASTM C143/C143M, California Test 533, and California Test 529</td>
<td>When ordered by the Engineer</td>
</tr>
<tr>
<td>Quality characteristic</td>
<td>Test method</td>
<td>Minimum testing frequency</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Air content, (freeze-thaw area)</td>
<td>California Test 504(^b)</td>
<td>If concrete is air entrained, once per 30 cu yd or each day of pour, whichever is more frequent</td>
</tr>
<tr>
<td>Air content, (non-freeze-thaw area)</td>
<td>California Test 504(^b)</td>
<td>If concrete is air entrained, once per 100 cu yd or each day of pour, whichever is more frequent</td>
</tr>
<tr>
<td>Temperature</td>
<td>California Test 557</td>
<td>Once per 100 cu yd or each day of pour, whichever is more frequent</td>
</tr>
<tr>
<td>Density</td>
<td>California Test 518</td>
<td></td>
</tr>
<tr>
<td>Compressive strength(^c,d)</td>
<td>California Test 521</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)As specified in section 90-1.01D(4).
\(^b\)Use ASTM C173/C173M for lightweight concrete.
\(^c\)Mark each cylinder with the Contract number, the date and time of sampling, and the weighmaster certificate number.
\(^d\)You may need additional test samples to facilitate your schedule.

**90-1.01D(10)(b)(v) Inspection Reports**

Document each inspection performed by a QC inspector in an inspection report that includes:

1. Contract number
2. Mix design number
3. Date and time of inspection
4. Plant location
5. Concrete placement location
6. Batch number
7. Reviewed copies of weighmaster certificates
8. Description of the inspection performed
9. Name, certification number, and signature of the QC inspector

**90-1.01D(10)(b)(vi) Rejection of Material**

If any of the QC concrete test results fail to comply with the specified requirements, the batch of concrete must not be incorporated in the work. Notify the Engineer. Repeat the QC concrete tests on each subsequent batch until the test results comply with the specified requirements.

If three (3) consecutive batches fail to comply with the specified requirements, (1) revise concrete operations as necessary to bring the concrete into compliance and (2) increase the frequency of QC testing. The revisions must be authorized before resuming production. After production resumes, you must receive authorization before returning to the QC testing frequency authorized in the QC plan.

**90-1.01D(11) ICTC Acceptance**

**90-1.01D(11)(a) General**

This section is not applicable to the Project.
90-1.01D(11)(b) Cast-In-Place Structural Concrete Members

ICTC accepts concrete incorporated into CIP structural concrete members based on only ICTC’s test results. QC test results will not be used for acceptance.

Replace the table in the 1st paragraph of section 90-1.02A with:

<table>
<thead>
<tr>
<th>Type of work</th>
<th>Maximum length change of laboratory cast specimens at 28 days drying (average of 3) (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paving and approach slab concrete</td>
<td>0.050</td>
</tr>
<tr>
<td>Bridge deck concrete</td>
<td>0.032</td>
</tr>
</tbody>
</table>

Add to the end of section 90-1.02A:

For new bridge decks or PCC deck overlays, fibers must comply with ASTM D7508. Microfibers must be from 1/2 to 2 inches long. Macrofibers must be from 1 to 2-1/2 inches long.

Replace the introductory clause of the 6th paragraph of section 90-1.02H with:

For pavement, the total cementitious material must be composed of one of the following options, by weight:

Add after the 6th paragraph of section 90-1.02H:

For structures, the total cementitious material must be composed of one of the following options, by weight:

1. 25 percent natural pozzolan or fly ash with a CaO content of up to ten (10) percent and 75 percent Portland cement.
2. 20 percent natural pozzolan or fly ash with a CaO content of up to ten (10) percent, five (5) percent silica fume, and 75 percent Portland cement.
3. 12 percent silica fume, metakaolin, or UFFA, and 88 percent Portland cement.
4. 50 percent GGBFS and 50 percent Portland cement.
5. 25 to 50 percent fly ash with a CaO content of up to 10 percent, and no natural pozzolan. The remaining portion of the cementitious material must be Portland cement or a combination of Portland cement and UFFA, metakaolin, GGBFS, or silica fume.

Replace section 90-1.03B(2) with:

90-1.03B(2) Water Method

The water method must consist of keeping the concrete continuously wet by applying water for a curing period of at least seven (7) days after the concrete is placed.

Keep the concrete surface wet by applying water with an atomizing nozzle that forms a mist until the surface is covered with curing media. Do not allow the water to flow over or wash the concrete surface. At the end of the curing period, remove curing media.
Use any of the following curing media to retain moisture:

1. Mats, rugs, or carpets
2. Earth or sand blankets
3. Sheeting materials complying with the durability and water vapor transmission rate specified in section 5 of ASTM C171

To ensure proper coverage during curing:

1. Cover the entire concrete surface with the curing media
2. Secure the curing media joints to retain moisture
3. Keep the curing media within three (3) inches of the concrete at all points along the surface being cured

Monitor concrete surface temperature during curing. Ensure that surface temperature is maintained at 140 degrees F or below. If the surface temperature exceeds 140 degrees F, determine cause and provide alternative curing methods to the Engineer for authorization.

Delete the 2nd paragraph of section 90-3.02A.

Replace the 2nd paragraph of section 90-4.01A with:

The specifications for (1) shrinkage in section 90-1.02A, (2) shrinkage reducing chemical admixture in section 51-1.02B, and (3) polymer fibers in section 51-1.02B do not apply to PC concrete members.

Add to section 90-4.01C(1):

Submit your QC test results for the tests performed under section 90-4.01D as an informational submittal. The QC test results must be submitted electronically through the Data Interchange for Materials Engineering website within three (3) business days of completion of each QC test and must include the concrete mix design number.

96 GEOSYNTHETICS

Replace the 3rd table in the 3rd paragraph of section 96-1.02R with:

<table>
<thead>
<tr>
<th>Quality characteristic</th>
<th>Test method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class 10</td>
<td>Class 12</td>
</tr>
<tr>
<td>Mass per unit area (oz/sq yd)</td>
<td>ASTM D5261</td>
<td>10</td>
</tr>
<tr>
<td>Grab tensile break strength (min, lb)</td>
<td>ASTM D4632</td>
<td>230</td>
</tr>
<tr>
<td>Grab tensile break elongation (min, %)</td>
<td>ASTM D4632</td>
<td>50</td>
</tr>
<tr>
<td>Quality characteristic</td>
<td>Test method</td>
<td>Requirement</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Class 10</td>
</tr>
<tr>
<td>Puncture strength (min, lb)</td>
<td>ASTM D6241</td>
<td>700</td>
</tr>
<tr>
<td>Trapezoidal tear strength (min, lb)</td>
<td>ASTM D4533</td>
<td>95</td>
</tr>
<tr>
<td>UV resistance (min, %)</td>
<td>ASTM D7238</td>
<td></td>
</tr>
</tbody>
</table>
5 MODIFICATIONS TO SPECIAL PROVISIONS

5.1 General
The Design-Builder shall prepare and modify SSPs and nSSPs required for the Project Work as required by this RFP. Specifically refer to ITP Appendix C for Proposal SSP submittal requirements.

5.2 Draft nSSPs
The Design-Builder shall update and edit the required nSSPs according to the instructions in the hidden text included in the nSSP and the guidelines given in the Caltrans Ready-To-List Guide. Once edits are complete, the nSSP shall be submitted to ICTC for review and Approval.

Edits to the nSSPs within the limits of what is allowed by the hidden text instructions of the nSSP will require up to two (2) weeks for each review by ICTC. Edits beyond what is allowed by the hidden text instructions will require up to four (4) weeks for each review.

The Design Builder shall bear the risk of schedule impacts associated with nSSP reviews. Once approved for use, each approved nSSP shall follow the same process as Standard Special Provisions (SSPs) for inclusion in RFC packages, except that written notice of Approval shall accompany the nSSP.

5.3 Reserved

5.4 Modified SSPs
The Design-Builder shall edit SSPs as necessary according to instructions in the hidden text in the SSP and the Caltrans Construction Contract Development Guide.
5.5 Reserved