



**Resource Management  
Agency  
COUNTY OF TULARE  
AGENDA ITEM**

**BOARD OF SUPERVISORS**

KUYLER CROCKER  
District One  
PETE VANDER POEL  
District Two  
AMY SHUKLIAN  
District Three  
EDDIE VALERO  
District Four  
DENNIS TOWNSEND  
District Five

**AGENDA DATE:** August 11, 2020

Public Hearing Required	Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>
Scheduled Public Hearing w/Clerk	Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>
Published Notice Required	Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>
Advertised Published Notice	Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>
Meet & Confer Required	Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>
Electronic file(s) has been sent	Yes	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>
Budget Transfer (Aud 308) attached	Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>
Personnel Resolution attached	Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>
Agreements are attached and signature line for Chairman is marked with tab(s)/flag(s)	Yes	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>

CONTACT PERSON: Celeste Perez    PHONE: 559-624-7010

**SUBJECT:** Authorization to Bid 2020 Road Repair and Accountability Act Project 2

**REQUEST(S):**  
That the Board of Supervisors:

1. Approve the Plans, Special Provisions, Proposal and Contract (“Bid Documents”) for the Construction of the 2020 Road Repair and Accountability Act Project 2; and
2. Authorize the Chair of the Board of Supervisors to sign the Plans; and
3. Approve the Advertisement for Bids of the 2020 Road Repair and Accountability Act Project 2; and
4. Adopt the Categorical Exemption prepared pursuant to the California Environmental Quality Act and the State Guidelines General Rule Exemption per Section 15300.4 Application by Public Agencies and Section 15301 Existing Facilities, respectively, for the 2020 Road Repair and Accountability Act Project 2; and
5. Authorize the Environmental Assessment Officer, or designee, to sign and file the Notice of Exemption with the County Clerk-Recorder.

**SUMMARY:**

**Background**

In April of 2017, California passed Senate Bill (SB) 1 – The Road Repair and Accountability Act. This bill establishes a new funding source for road repairs and other maintenance through revenue from gas taxes, vehicle registration fees, and other transportation related fees. A significant portion of these funds will be distributed to local agencies in the form of Road Maintenance and Rehabilitation Account (RMRA) funds (a.k.a. SB 1 funds). To receive these funds, a local agency must demonstrate transparency on the utilization of the funds by including a project list in

**SUBJECT:** Authorization to Bid 2020 Road Repair and Accountability Act Project 2  
**DATE:** August 11, 2020

an adopted budget. This project list must identify the projects with a project description, location, schedule, and estimated useful life.

On April 9, 2019, your Board identified and approved the project description, locations, schedule, and estimated useful life per RMRA guidelines for three projects in the County’s Fiscal Year 2019/2020 Budget: (1) 2020 Road Repair and Accountability Act (RRAA) Project 1; (2) 2020 Road Repair and Accountability Act (RRAA) Project 2; and (3) 2020 Road Repair and Accountability Act (RRAA) Project 3 (Resolution No. 2019-0264).

The 2020 RRAA Project 1 was approved by your Board on May 19, 2020 (Resolution No. 2020-0259) and is currently under construction. Construction for the 2020 RRAA Project 1 is anticipated to be completed by August 2020. Furthermore, County Forces have completed construction on the 2020 RRAA Project 3.

**The 2020 Road Repair and Accountability Act (RRAA) Project 2**

The 2020 Road Rehabilitation and Accountability Act (RRAA) Project 2 is a road maintenance project consisting of the repair of asphalt materials on multiple segments of existing County roads in the southern region of Tulare County. The Project is intended to enhance the safety and security of the public by providing well maintained public roadways. The work to be done consists, in general, of a combination of isolated pavement repairs followed by the installation of new (replacement) asphalt surfacing. All project locations will include corrective work to be performed on the shoulders of the roadways. In addition, all newly resurfaced roadways will receive new traffic stripes and pavement markings. The Project does not include any new travel lanes or any expansion to the existing roadways.

The 2020 RRAA Project 2 is comprised of eight (8) locations accounting for over twelve (12) miles of roadway rehabilitation.

Provided below is a summary of the project locations:

	<b>Location</b>	<b>Vicinity</b>
1	Avenue 184 between Road 80 and State Route 99	Tulare
2	Turner Drive (D122) between Tulare city limits and Road 124	Tulare
3	Avenue 56 from the alignment of Road 88 to the alignment of Road 120	Earlimart
4	Avenue 56 between Front Street and State Street	Earlimart
5	Avenue 96 between Road 192 and Road 208	Terra Bella
6	Avenue 96 between Cedar Street and Park Street	Pixley
7	Road 208 between Avenue 88 to Avenue 96	Terra Bella
8	D238 between Avenue 112 to Avenue 120	Terra Bella

**SUBJECT:** Authorization to Bid 2020 Road Repair and Accountability Act Project 2  
**DATE:** August 11, 2020

In accordance with the California Environmental Quality Act (CEQA), the County has also determined that two categorical exemptions are applicable to the proposed action: State CEQA Guidelines (14 Cal. Code Regs.) Section 15300.4 Application by Public Agencies and Section 15301 Existing Facilities.

Construction is anticipated to start October 2020.

**FISCAL IMPACT/FINANCING:**

No net County cost to the General Fund.

Funding for the 2020 RRAA Project 2 will be funded entirely through the County Roads fund. Revenue sources for the County Road fund include State Road Maintenance and Rehabilitation Account (RMRA), Local Measure R, and other State and Federal roads funding sources.

RMRA funds in the amount of approximately \$12.4 million were initially projected to be received in Fiscal Year 2019/2020. However, due to the unforeseen COVID-19 global pandemic, fuel tax revenues (SB 1 and Highway User Tax Account (HUTA)) have declined due to the decrease in driving and fuel consumption experience over the last few months. However, the competitive bidding environment currently being experienced has allow the County to proceed with the planned work despite the decrease in SB1 revenues. Based on current bidding trend and SB1 funds received to date, staff anticipates being able to complete all of the 2020 RRAA Projects.

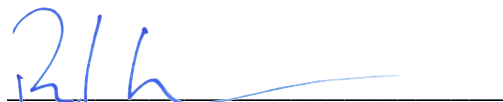
Estimated Project Costs:

Construction (including contingency):	\$5,320,000
Engineering Design:	\$80,000
Construction Engineering:	\$200,000
<b>Total:</b>	<b>\$5,600,000</b>

**LINKAGE TO THE COUNTY OF TULARE STRATEGIC BUSINESS PLAN:**

This project will enhance the safety and security of the public by improving the transportation infrastructure for both the general population in the region and the motorists using this facility.

**ADMINISTRATIVE SIGN-OFF:**

  
\_\_\_\_\_  
Reed Schenke, P.E.  
Director

cc: County Administrative Office

Attachment(s) Attachment A – Vicinity Map  
Attachment B – Notice of Exemption  
Attachment C – Bid Documents

# BEFORE THE BOARD OF SUPERVISORS COUNTY OF TULARE, STATE OF CALIFORNIA

IN THE MATTER OF AUTHORIZATION TO )  
BID 2020 ROAD REPAIR AND ) Resolution No. \_\_\_\_\_  
ACCOUNTABILITY ACT PROJECT 2 )

UPON MOTION OF SUPERVISOR \_\_\_\_\_, SECONDED BY  
SUPERVISOR \_\_\_\_\_, THE FOLLOWING WAS ADOPTED BY THE  
BOARD OF SUPERVISORS, AT AN OFFICIAL MEETING HELD AUGUST 11, 2020, BY  
THE FOLLOWING VOTE:

AYES:  
NOES:  
ABSTAIN:  
ABSENT:

ATTEST: JASON T. BRITT  
COUNTY ADMINISTRATIVE OFFICER/  
CLERK, BOARD OF SUPERVISORS

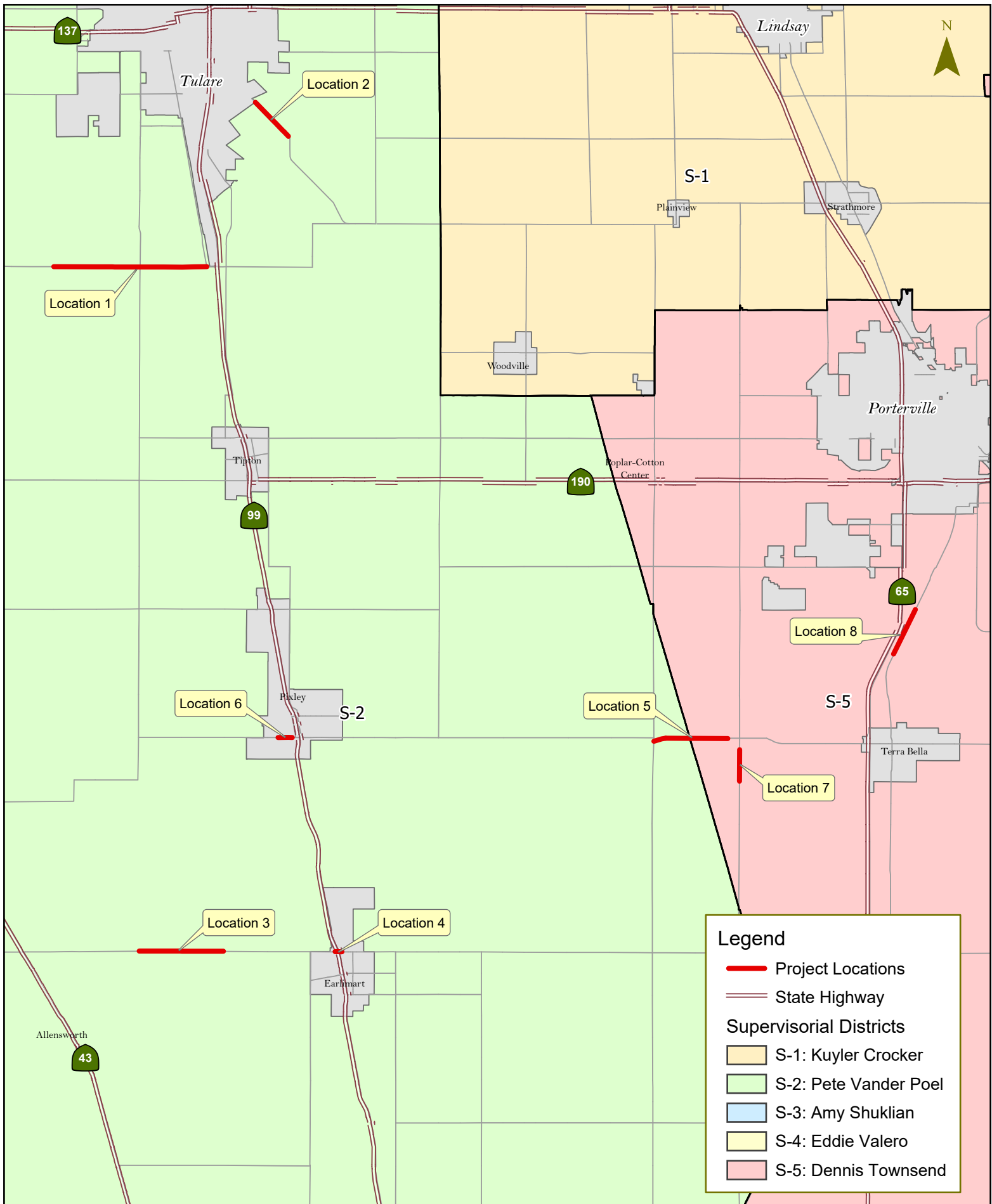
BY: \_\_\_\_\_  
Deputy Clerk

\* \* \* \* \*

1. Approved the Plans, Special Provisions, Proposal and Contract ("Bid Documents") for the Construction of the 2020 Road Repair and Accountability Act Project 2; and
2. Authorized the Chair of the Board of Supervisors to sign the Plans; and
3. Approved the Advertisement for Bids of the 2020 Road Repair and Accountability Act Project 2; and
4. Adopted the Categorical Exemption prepared pursuant to the California Environmental Quality Act and the State Guidelines General Rule Exemption per Section 15300.4 Application by Public Agencies and Section 15301 Existing Facilities, respectively, for the 2020 Road Repair and Accountability Act Project 2; and
5. Authorized the Environmental Assessment Officer, or designee, to sign and file the Notice of Exemption with the County Clerk-Recorder.

# **Attachment A**

## **Vicinity Map**

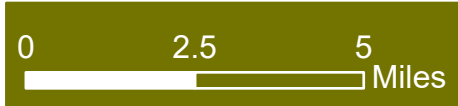


**Legend**

- Project Locations
- State Highway

**Supervisorial Districts**

- S-1: Kuyler Crocker
- S-2: Pete Vander Poel
- S-3: Amy Shuklian
- S-4: Eddie Valero
- S-5: Dennis Townsend



## **Attachment B**

### **Notice of Categorical Exemption**

# Notice of Exemption

Fee Exempt per Government Code Section 6103

- To:**  Office of Planning and Research  
1400 Tenth Street, Room 121  
Sacramento, CA 95814
- Tulare County Clerk  
Room 105, Courthouse  
221 South Mooney Boulevard  
Visalia, CA 93291

**Lead Agency:** Tulare County Resource Management Agency  
5961 South Mooney Blvd.  
Visalia, Ca 93277 Ph: (559) 624-7000  
Attn: [hguerra@co.tulare.ca.us](mailto:hguerra@co.tulare.ca.us)

**Applicant(s):** Tulare County Public Works  
5961 South Mooney Boulevard  
Visalia, CA 93277 Ph: (559) 624-7000

*Dated filed at Tulare County Clerk's Office*

**Project Title:** 2020 Road Rehabilitation and Accountability Act (RRAA) Project 2

**Project Location - Specific:** Location 1 – Avenue 184 between Road 80 and State Route 99  
Location 2 - Turner Dr (D122) between Tulare city limits and Road 124  
Location 3 - Avenue 56 from the alignment of Road 88 to the alignment of Road 120  
Location 4 - Avenue 56 between Front St and State St  
Location 5 - Avenue 96 between Road 192 and Road 208  
Location 6 - Avenue 95 between Cedar St and Park St  
Location 7 - Road 208 between Avenue 88 to Avenue 96  
Location 8 - D238 between Avenue 112 to Avenue 120

**Project Location- Section, Township, Range:** N/A

**Project Location - City:** Near the Incorporated Cities of Tulare, Porterville

**Description of Nature, Purpose, and Beneficiaries of Project:**

The Project consists of repairing asphalt materials on multiple segments of existing County roads. The work includes a combination of isolated pavement repairs followed by the installation of new asphalt surfacing followed by the application of new asphalt surfacing. All projects will include corrective work (adding a thin course of granular material for leveling to minimize drop-off heights for overlays) to be performed on the shoulders of the roadways. Further, all newly surfaced roadways will receive new traffic stripes and pavement markings. Efficient and responsive maintenance of the County road network will enhance the safety and security of the public by improving the transportation infrastructure for the general population throughout the region. Construction is anticipated to start October of 2020.

**Exempt Status:** *(check one)*

- Ministerial (Sec. 21080(b)(1); 15268);
- Declared Emergency (Sec. 21080(b)(3); 15269(a));
- Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- General Rule: CEQA guidelines 15061 (b)(3)
- Categorical Exemption: **CEQA Guidelines Class 1 Section 15301 Existing Facilities (c)**
- Statutory Exemptions:

**Reasons why project is exempt:** This action is consistent with Section 15301 Class 1, Existing Facilities (c) Existing highways and streets, sidewalks, gutters, bicycle and pedestrian trails, and similar facilities. Also, consistent with Section 15300.4, Application by Public Agencies, the County of Tulare Board of Supervisors adopted an exemption for the construction of the aforementioned facilities per the Tulare County Guidelines for the Implementation of California Environmental Quality Act of 1970, Section 300 (c)(14). Therefore, the use of CEQA Section 15301 and Tulare County Guidelines for the Implementation of CEQA of 1970, Section 300 (c)(14) are applicable and appropriate for this project.



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**Name of Public Agency Approving Project:** County of Tulare, Resource Management Agency  
**Project Planner/Representative:** Reed Schenke, Director Area Code/Telephone: 559-624-7142

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Title: Chief Environmental Planner  
Hector Guerra

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Title: Environmental Assessment Officer  
Reed Schenke, P.E. Director

Signed by Lead Agency

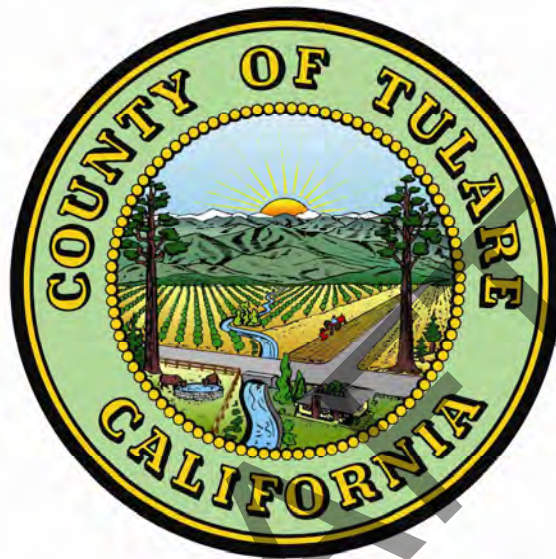
Date received for filing at OPR: N/A

## **Attachment C**

### **Bid Documents**

COUNTY OF TULARE

STATE OF CALIFORNIA



**SPECIAL PROVISIONS,  
BID AND CONTRACT**

FOR CONSTRUCTION OF

**2020 ROAD REPAIR AND ACCOUNTABILITY  
ACT (RRAA) PROJECT 2**

FUNDED BY:

ROAD REPAIR AND ACCOUNTABILITY ACT (RRAA)

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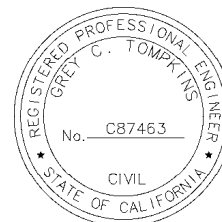
COUNTY OF TULARE  
STATE OF CALIFORNIA  
**SPECIAL PROVISIONS,  
BID AND CONTRACT**  
FOR CONSTRUCTION OF  
**2020 ROAD REPAIR AND ACCOUNTABILITY  
ACT (RRAA) PROJECT 2**

FUNDED BY:  
ROAD REPAIR AND ACCOUNTABILITY ACT (RRAA)

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
Reed Schenke P.E.  
Director  
Tulare County Resource Management Agency

THE SPECIAL PROVISIONS CONTAINED HEREIN HAVE BEEN PREPARED BY  
OR UNDER THE DIRECTION OF THE FOLLOWING REGISTERED ENGINEER:

SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_  
Grey C. Tompkins P.E.  
Project Engineer  
Tulare County Resource Management Agency



For use in connection with the 2018 Standard Specifications  
of the Department of Transportation of the State of California

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# SPECIAL NOTICES

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- See Sections 2 and 3 for Contractor's registration requirements.
- This project is exempt from Indirect Source Rule (ISR) and a Dust Control Plan is not required.

DRAFT

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**SPECIAL PROVISIONS**  
**FOR CONSTRUCTION OF**  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**

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**PROJECT PLANS (REDUCED SIZE – 11x17)..... ATTACHMENT**

DRAFT

COUNTY OF TULARE  
**STATE OF CALIFORNIA**

**NOTICE TO BIDDERS**

Completed, signed, sealed Bid for the work shown on the plans entitled:

STATE OF CALIFORNIA; COUNTY OF TULARE  
PROJECT PLANS FOR CONSTRUCTION OF  
  
2020 ROAD REPAIR AND ACCOUNTABILITY  
ACT (RRAA) PROJECT 2

will be received at the office of the Clerk of the Board of Supervisors, Administration Building, County Civic Center, 2800 West Burrel Avenue, Visalia, California, 93291, until **2:00 pm on Thursday, September 10, 2020**, **COVID-19 ADVISORY**: Due to the ongoing efforts being made to mitigate the spread of COVID-19, bids may be submitted via mail, it shall be bidder's responsibility to ensure bids are received by the Clerk of the Board prior to the time listed above. Bids may also be dropped off at the above listed address, bidders will have to call the front desk at (559) 636-5000 to have staff open the front door to accept the sealed bid packets. The bid opening will be closed to the public but will be broadcasted via Zoom video conferencing. The meeting can be accessed at <https://zoom.us/j/5329680614>, the Meeting ID is **532 968 0614**

General work description: The work to be done consists, in general, of a combination of isolated pavement repairs followed by the installation of new asphalt surfacing. Other items or details not mentioned herein that are required by the plans, Standard Specifications or these Special Provisions shall be performed, constructed, furnished or installed. Bidders may visit the project site.

This project is off of the Federal Highway System.

This project is a Non-Federal Aid project with an estimated project cost of approximately \$5,100,000.

The contract will be awarded to the lowest responsible bidder submitting a responsive bid.

The Project is to be completed within seventy five (75) working days from the date to be established in the NOTICE TO PROCEED. The Contract includes provisions for Liquidated Damages if the Project is not timely completed.

Plans, specifications, and bid forms will be available via email upon receipt of payment. Payment can be made by mailing a check or calling and paying with a credit card to Resource Management Agency – Permit Center, 5961 South Mooney Boulevard, Visalia, CA 93277; Telephone (559) 624-7000; Office Hours 9:00 AM – 4:30 PM Mon-Thurs; 9:00 AM – 11:00 AM Fri. There is a non-refundable fee of \$25.00 per set for the documents. When obtaining the documents, please verify the name of the project as several projects could be open at the same time. An unofficial set of Plans, Specifications, and other project information is available for download at the County's website at the following address:

<https://tularecounty.ca.gov/rma/index.cfm/rma-at-work/request-for-bid-proposals-construction-projects/>

**FOLLOW THESE INSTRUCTIONS: Remove perforated "Bid" Section from this Special Provisions package. Complete all required forms and exhibits and submit unbound/unstapled originals at the location described above.**

To be considered a plan holder and to receive any addendum, bidders must obtain a set of plans, specifications and Bid forms at the Resource Management Agency, and be listed on the planholders list. Bidders must be on the planholders list for their bid to be considered responsive. All addendums, prebid meeting minutes, bid clarifications, planholders list, and relevant information will be available at the County's website as mentioned above. Addendums will also be provided to contractors on the planholders list via the information provided by the contractor on the planholders list. Bid results will be posted on the County website within two working days of the bid opening.

Technical questions should be directed in writing to Grey Tompkins P.E. at the Resource Management Agency, 5961 S. Mooney Blvd, Visalia CA 93277 or at [gtompkins@co.tulare.ca.us](mailto:gtompkins@co.tulare.ca.us). **No questions shall be accepted within five (5) working days of the bid opening (Questions shall be received by 5:00 pm on Thursday, September 3, 2020).** All questions and responses will be continuously posted on the County website.

Before submitting a bid, bidders shall carefully examine the Plans and Specifications, and related documents, visit the site of the work and fully inform themselves as to all existing conditions and limitations, and shall include in the bid a sum to cover the cost of all items included in the work.

**A prebid meeting is scheduled for 2:00 pm on Tuesday September 1, 2020. This meeting will be held via Zoom video conferencing. The meeting can be accessed at <https://zoom.us/j/5329680614>, the Meeting ID is 532 968 0614. The meeting is not mandatory, but bidders are encouraged to attend. The bidder awarded the contract may need to obtain permits, licenses, or enter into other agreements to prosecute the work. Bidders are advised that, unless otherwise stated, the contract price will be full compensation for all required work and no additional compensation will be allowed. If the bidder must obtain permits, licenses, contracts or other services to prosecute the work, the bidder will pay the cost of those items and no other compensation will be paid by the County.**

Bids are required for the entire work described herein. Each Bid shall be accompanied by bidder's security in the form of cash, a bidder's bond, or a certified check or cashier's check, in the amount of ten percent (10%) of the amount bid or the bid will be considered nonresponsive.

Contractor shall comply with the Title VI of the Civil Rights Act of 1964, and in accordance with said Act, no person on the grounds of race, color, sex or national origin, shall be excluded from participation in, be denied benefits of, or be otherwise subject to discrimination under any service or activity in connection with the project.

Contractor shall comply with Title VII of the Civil Rights Act 1964, which prohibits discrimination against any employee or applicant for employment because of race, color, religion, sex or national origin.

At the time the bid is submitted, you shall possess a current valid California Class A Contractor's license.

A contractor or subcontractor shall not be qualified to bid on, be listed in a Bid (subject to the requirements of Section 4104 of the Public Contract Code), or engage in the performance of any contract for this project, unless currently registered and qualified to perform public work pursuant to California Labor Code section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Sections 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Labor Code section 1725.5 at the time the contract is awarded.

This project is subject to compliance monitoring and enforcement by the California Department of Industrial Relations.

The successful bidder must provide the performance bond, payment bond, workers compensation certificate, and liability insurance policy required by the Special Provisions and contract. Two million dollars (\$2,000,000) liability coverage is required for this project.

Substitution of securities for any moneys withheld shall be permitted pursuant to Public Contract Code section 10263. This project is subject to State contract nondiscrimination and compliance requirements pursuant to Government Code, section 12990.

Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done, have been determined by the Director of the California Department of Industrial Relations. These wages are set forth in the General Prevailing Wage Rates for this project, are on file at Resource Management Agency-Permit Center, 5961 South Mooney Boulevard, Visalia, CA 93277 and will be made available to any interested person on request. Also, the General Prevailing Wage Rates for this project, are made available on the County public works website (see link on the previous page) and the California Department of Industrial Relations' Internet website at <http://www.dir.ca.gov/DLSR/PWD>. Contractor shall be responsible to post the general prevailing wage rates at a prominent place at the job site in accordance to section 7-1.02K(2) of the Caltrans Standard Specifications. Future effective general prevailing wage rates, which have been predetermined and are on file with the California Department of Industrial Relations, are referenced, but not printed in the Special Provisions.

AB 626, approved by the Governor of the State of California on September 29, 2016, created a new Public Contract Code section 9204, which specifies new procedural requirements for claims submitted by a contractor on any public works project. Please review the language of the "Public Contract Code Section 9204 Statement" in the Proposal.

The U.S. Department of Transportation (DOT) provides a toll-free "hotline" service to report bid rigging activities. Bid rigging activities can be reported Mondays through Fridays, between 8:00 a.m. and 5:00 p.m., Eastern time, Telephone No. 1-800-424-9071. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report these activities. The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

You shall be responsible for compliance by all subcontractors with Labor Code section 1776.

All bidders are invited to attend the bid opening per the link provided. The results of the bid opening will be reported to the Board of Supervisors at a scheduled meeting. The contract will be awarded in the manner and within the time periods provided in Section 3 of the Standard Specifications, Department of Transportation of the State of California, 2018 Edition, as amended by the project Special Provisions, unless the Board of Supervisors exercises its right to reject any or all bids. The Board of Supervisors reserves the right to deem any bid as non-responsive for any information crossed out from the bid packet including information completed by the manufacturer.

The Board of Supervisors reserves the right to reject any or all bids, and/or waive any informality in any bid, and/or determine in its discretion the responsibility of any bidder.

The Board of Supervisors further reserves the right to use County Forces, or to negotiate contracts, or both, to the extent authorized by the Public Contract Code.

By order of the Board of Supervisors.

JASON T. BRITT  
County Administrative Officer/  
Clerk, Board of Supervisors.

By Original Signed  
Deputy

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**TERM**

**INTERPRETATION**

County	The County of Tulare, including its agencies, departments or divisions whose conduct or action is related to the work.
Transportation Laboratory or METS	Tulare County Resource Management Agency, except when used to identify a State form, document, or testing procedure.

The project plans for this project were approved August 11, 2020, and are entitled:

STATE OF CALIFORNIA; COUNTY OF TULARE  
PROJECT PLANS FOR CONSTRUCTION OF  
**2020 ROAD REPAIR AND ACCOUNTABILITY  
ACT (RRAA) PROJECT 2**

The following documents will be supplied to you with the Notice to Proceed:

1. One complete set of full size (24"x36") Project Plans
2. One complete set of half size (11"x17") Project Plans
3. Two complete bid books including:
  - 3.1. Notice to Contractors
  - 3.2. Special Provisions
  - 3.3. Technical Specifications
  - 3.4. Bid
  - 3.5. Contract
4. One Compact Disk (CD) with Adobe PDF versions of full size and half size plans and Special Provisions, Bid and Contract.

No additional copies will be provided. Additional bid books, if available, may be purchased at twenty-five dollars (\$25) per book.

**Replace "holiday" and its definition in Section 1-1.07B with:**

**holiday:** County legal holidays and every Sunday. When a holiday falls on a Sunday, it shall be observed on the following Monday.

**Replace "South Coast Air Quality Management District" and attributes in Section 1-1.11 with:**

Reference or agency or department unit	Website	Address	Telephone no.
San Joaquin Valley Air Pollution Control District (Central)	www.valleyair.org	1990 E. Gettysburg Avenue Fresno, CA 93726-0244	(559) 230-6000



## 2 BIDDING

**Replace Section 2-1.06 with the following:**

### 2-1.06 BID DOCUMENTS

#### 2-1.06A General

The *Special Provisions, Bid and Contract (Bid book)* includes bid forms and certifications.

The *Special Provisions, Bid and Contract* and project plans may be purchased at the Resource Management Agency – Permit Center, 5961 South Mooney Boulevard, Visalia, CA 93277 and viewed at the County’s Website:

<https://tularecounty.ca.gov/rma/index.cfm/rma-at-work/request-for-bid-proposals-construction-projects/>

The *Special Provisions, Bid and Contract* includes the *Notice to Bidders*, revised standard specifications, and Special Provisions.

The *Bid book, Special Provisions, Bid and Contract*, project plans, and any addenda to these documents may be accessed at the County Website.

#### 2-1.06B Supplemental Project Information

The County makes supplemental information available as specified in the Special Provisions.

Logs of test borings are supplemental project information.

If an *Information Handout* or cross sections are available, you may view it at the County Website.

If other supplemental project information is available for inspection, you may view it by phoning in a request. Make your request at least 7 days before viewing. Include in your request:

1. Contract number
2. Viewing date
3. Contact information, including telephone number

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

**Replace Section 2-1.10 with the following:**

### 2-1.10 SUBCONTRACTOR LIST

On the Subcontractor List form, list each subcontractor to perform work in an amount in excess of 1/2 of 1 percent of the total bid or \$10,000, whichever is greater (Pub Contract Code § 4100 et seq.).

For each subcontractor listed, the Subcontractor List form must show:

1. Business name and the location of its place of business
2. State contractor’s license number
3. Department of Industrial Relations(“DIR”) registration number
4. Portion of work it will perform, demonstrated by:
  - 4.1. Bid item numbers for the subcontracted work
  - 4.2. Percentage of the subcontracted work for each bid item listed

- 4.3. Description of the subcontracted work if the percentage of the bid item listed is less than 100 percent

**Replace Section 2-1.33A with the following:**

**2-1.33A General**

Remove the *Bid Proposal (Bid) to the Board of Supervisors* section in the Bid book and complete the forms.

Submit your forms to the Tulare County Board of Supervisors at the front desk before the bid opening time and date. The address of the Board of Supervisors is provided below:

2800 W Burrel Avenue, Visalia, CA 93291

Failure to submit the forms and information as specified may result in a nonresponsive bid.

If an agent other than the authorized corporate officer or a partnership member signs the bid, file a Power of Attorney with the County either before opening bids or with the bid. Otherwise, the bid may be nonresponsive.

The County only accepts paper bid submittals in person or through the mail as described in the Notice to Bidders. Place your completed forms inside a sealed paper envelope, and on the cover of the envelope, include:

1. Name of the contractor
2. Project title
3. Marked as a Bid
4. Bid opening date

Submit the enclosed Bid to the Clerk of the Board of Supervisors prior to bid opening.

**Delete Section 2-1.33B Bid Form Submittal Schedules**

**Replace Section 2-1.34 with the following:**

**2-1.34 BIDDER'S SECURITY**

Submit one of the following forms of bidder's security equal to at least 10 percent (10%) of the bid:

1. Cash
2. Cashier's check
3. Certified check
4. Signed bidder's bond by an admitted surety insurer who is licensed in California

If using a bidder's bond, you must use the form in the *Bid*. Failure to do so will render your bid non-responsive.

Submit cash, cashier's check, certified check, or bidder's bond, to the Clerk of the Board of Supervisors before the bid opening time.

**Replace Section 2-1.40 with the following:**

**2-1.40 BID WITHDRAWAL**

An authorized agent may withdraw a bid before the bid opening date and time by submitting a written bid withdrawal request at the location where the bid was submitted. Withdrawing a bid does not prevent you from submitting a new bid. After the bid opening, you cannot withdraw a bid.

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### 3 CONTRACT AWARD AND EXECUTION

Replace all of Section 3 with:

#### 3-1.01 AWARD OF CONTRACT

The Tulare County Board of Supervisors reserves the right to reject any or all Bids, or waive any or all discrepancies or failures in a Bid. The decision of the Tulare County Board of Supervisors regarding the amount of a bid, or existence or treatment of a discrepancy or failure in a bid will be final. The award of the contract, if it is awarded, will be to the lowest responsive and responsible bidder whose Bid complies with all the requirements prescribed. Such award, if made, will be made within sixty (60) days after the opening of the Bid. This period may be subject to an extension for such further period as may be agreed upon in writing between the Tulare County Board of Supervisors and the bidder concerned.

All bids will be compared on the basis of the Engineer’s Estimate of the quantities of work to be done.

A responsible bidder who submitted the lowest bid as determined by this section shall be awarded the contract, if it is awarded.

The following failures are not waivable and will cause a bid to be considered non-responsive:

1. Failure to sign the bid
2. Failure to furnish the required bid bond or equivalent as specified in 2-1.34 of the Special Provisions
3. Failure to include a total amount of the bid
4. Failure to submit a completed addenda certification statement
5. Failure to be listed on the planholders list

The above list is not inclusive of all failures that the Tulare County Board of Supervisors will consider non-responsive. However, the Tulare County Board of Supervisors reserves the right to waive other types of discrepancies or failures. The Tulare County Board of Supervisors’ decision or treatment regarding a bid will be final.

The contract must be signed by the successful bidder and returned together with the contract bonds and insurance certificates within **ten (10) days**, not including Saturday, Sunday or Tulare County legal holidays, after the bidder has received notice from the County that the contract is scheduled for award by the Board of Supervisors.

#### 3-1.02 BID PROTEST PROCEDURES

Bid Protests. Any bid protests must be in writing and received by County’s Director – Public Works, Tulare County Resource Management Agency, 5961 S. Mooney Boulevard, Visalia, CA 9327, before 5:00 p.m. no later than two working days following the postage of the bid summary (the “Bid Protest Deadline”) and must comply with the following requirements:

**A. General.** Only a bidder who has actually submitted a Bid is eligible to submit a bid protest against another bidder. Subcontractors and material suppliers are not eligible to submit bid protests. A bidder may not rely on the bid protest submitted by another bidder, but must timely pursue its own protest. A bid protest against the bids of more than one bidder shall be considered as separate protests against each such bidder and will be separately considered. The protesting bidder must submit a non-refundable fee in the amount of \$750.00 per protest, based upon County’s reasonable costs to administer the bid protest(s). Any such fees must be submitted to County no later than the Bid Protest Deadline, unless otherwise specified. For

purposes of this Bid Protest Procedure, a “working day” means a day that County is open for normal business, and excludes weekends and holidays observed by County.

**B. Protest Contents.** Each bid protest must contain a complete statement of the basis for the protest and all supporting documentation. Material submitted after the Bid Protest Deadline will not be considered. The protest must refer to the specific portion or portions of the Contract Documents upon which the protest is based. The protest must include the name, address, email address, and telephone number of the person representing the protesting bidder if different from the protesting bidder’s.

**C. Copies to Protested Bidders.** A copy of the protest and all supporting documents must be concurrently transmitted by fax or by email, by or before the Bid Protest Deadline, by the protesting bidder to the protested bidder and any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest(s).

**D. Response to Protest.** The protested bidder may submit a written response to the protest, provided the response is received by County’s Director – Public Works, before 5:00 p.m., within two working days after the Bid Protest Deadline or after actual receipt of the bid protest, whichever is sooner (the “Response Deadline”). The response must include all supporting documentation. Material submitted after the Response Deadline will not be considered. The response must include the name, address, email address, and telephone number of the person representing the protested bidder if different from the protested bidder’s.

**E. Copies to Protesting Bidder.** A copy of the response and all supporting documents must be concurrently transmitted by fax or by email, by or before the Response Deadline, by the protested bidder to the protesting bidder and any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.

**F. Consideration of Protests.** The Director – Public Works or his or her designee will inform the protesting and protested bidders in writing of the time and place that the Board of Supervisors will consider the protest(s).

**G. Exclusive Remedy.** The procedure and time limits set forth in this section are mandatory and are the bidder’s sole and exclusive remedy in the event of a bid protest. A bidder’s failure to comply with these procedures will constitute a waiver of any right to further pursue a bid protest, including filing a Government Code Claim or initiation of legal proceedings.

**H. Right to Award.** The County Board of Supervisors reserves the right to award the Contract to the bidder it has determined to be the responsible bidder submitting the lowest responsive bid, and to issue a notice to proceed with the Work notwithstanding any pending or continuing challenge to its determination.

### **3-1.03 TIED BIDS**

The County breaks a tied bid with a coin toss except:

1. If a small business bidder and a non–small business bidder request preferences and the reductions result in a tied bid, the County awards the contract to the small business bidder.
2. If a DBE small business bidder and a non-DBE small business bidder request preferences and the reduction results in a tied bid, the County awards the contract to the DBE small business bidder.

### **3-1.04 CONTRACTOR REGISTRATION**

No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

### **3-1.05 BONDS**

The awarded bidder must file with the signed contract, two bonds in the amount and for the purposes specified below. They must be surety bonds and must be issued by corporations duly and legally licensed to transact business in the State of California.

A Performance Bond must be furnished by the awarded bidder in the amount of one hundred percent (100%) of the contract price and must guarantee faithful performance of the contract and must insure the County during the life of the contract and for the term of one (1) year from the date of acceptance of the work against faulty or improper materials or workmanship that may be discovered during that time. The awarded bidder must maintain the Performance Bond at its own expense.

A Payment Bond must be furnished by the awarded bidder in the amount of one hundred percent (100%) of the contract price and must guarantee the payment in full of all claims for labor and material in accordance with the provisions of Sections 9550-9566 of the Civil Code of the State of California. The life of the Payment Bond must extend to thirty (30) days after the notice of completion is recorded. The awarded bidder must maintain the Payment Bond at its own expense.

All bonds required, whether Bid Bonds, Performance, Payment, or other Bonds, must be issued by an admitted surety insurer. All bonds must be issued by the same admitted surety insurer. **All bonds required by these specifications will neither be accepted nor approved by the County unless the bonds are in the form shown in these Special Provisions, and are underwritten by an admitted surety.**

An original or certified copy of the unrevoked appointment of an individual duly and currently designated as an attorney-in-fact for the surety must accompany the bid certifying an agent to issue the Performance Bond and the Payment Bond.

The County further reserves the right to satisfy itself as to the acceptability of the surety and the form of bonds. The bidder may be required to submit the following documents:

1. The original, or a certified copy, of the unrevoked appointment, power of attorney, bylaws, or other instrument authorizing the person who executed the bond to do so.
2. A certified copy of the certificate of authority of the insurer issued by the California Insurance Commissioner.
3. A certificate from the County Clerk that the certificate of authority has not been surrendered, revoked, canceled, annulled, or suspended, or in the event that it has, that renewed authority has been granted.
4. A financial statement of the assets and liabilities of the insurer to the end of the quarter calendar year prior to thirty (30) days next preceding the date of the execution of the bond, in the form of an officers' certificate as defined in Corporations Code section 173.

### **3-1.06 CONTRACTOR LICENSE**

For a federal-aid contract, the Contractor must be properly licensed as a contractor from contract award through Contract acceptance (Pub Contract Code § 20103.5).

For a non-federal-aid contract:

1. The Contractor must be properly licensed as a contractor from bid opening through Contract acceptance (Bus & Prof Code § 7028.15).
2. Joint venture bidders must obtain a joint venture license before contract award (Bus & Prof Code § 7029.1).

The Contractor will have the required license until the project is completed.

### **3-1.08 CONTRACT EXECUTION**

The successful bidder must sign the *Contract* form.

Deliver to the Engineer:

1. Signed *Contract* form (6 signed originals). Each copy of the Contract must be signed by both the company president or vice president and the company secretary or treasurer with the Contractors State License Board number and Federal Employer Identification Number.

2. The statutory Performance Bond pursuant to Public Contract Code section 20129 and the statutory Payment Bond pursuant to Civil Code sections 9550 through 9566, with either County Clerks certificates or copies of power of attorney.
3. Certification concerning Workers' Compensation Insurance.
4. Certificate(s) of Insurance in compliance with the requirements of these Special Provisions including general liability, automobile and workers' compensation.
5. Evidence that you possess a current, valid Contractors State License required to perform the work under this Contract. A copy of your license is sufficient.

The Engineer must receive these documents within **ten (10) days**, not including Saturday, Sunday or Tulare County legal holidays, after the bidder has received notice from the County that the contract is scheduled for award by the Board of Supervisors.

The awarded bidder's bond may be forfeited for failure to execute the contract within the time specified (Pub Contract Code 20172).

A copy of the Contract is included in the *Special Provisions, Bid Proposal, and Contract*.

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## 4 SCOPE OF WORK

**Replace all references to “Department” in Section 4 Scope of Work with:**

Engineer

**Add following the last paragraph of Section 4-1.06B:**

Except as provided for in Public Contract Code section 7102, you have no claim for damages or compensation for any delay or hindrance.

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## 5 CONTROL OF WORK

### Delete Section 5-1.09 PARTNERING

Replace “Department” in Section 5-1.12 with:

Engineer

Replace Section 5-1.20D of the RSS with:

#### 5-1.20D CALTRANS RELATIONS

Contractor must obtain an Encroachment permit i.e. “double” permit for work within the Caltrans right of way.

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

Replace Section 5-1.20G of the RSS with:

#### 5-1.20G-CITY OF TULARE RELATIONS

You must obtain an encroachment permit for work within the City of Tulare city limits. Prepare a Traffic Control Plan for the City of Tulare review and approval prior to receiving an encroachment permit. The Traffic Control Plan preparer must be ATSSA certified. The encroachment permit will be issued by the City of Tulare, at no cost to the Contractor, after submittal and approval of the Traffic Control Plan. You shall be fully informed of the permit requirements and shall conduct work accordingly. Subcontractors will not be required to obtain an encroachment permit.

The Prime Contractor and every Subcontractor shall have or obtain a City of Tulare business license prior to the start of work.

The provisions of this section shall be made a part of every subcontract executed pursuant to this contract.

Full compensation for conforming to the provisions in this section “City of Tulare Relations,” shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

Replace Section 5-1.24 of the RSS with:

#### 5-1.24 CONSTRUCTION SURVEYS

You must set construction stakes and markers to establish the lines and grades required for the completion of the work on the plans and as specified in the Standard Specifications and these Special Provisions and as necessary for the Engineer to check lines, grades, alignment and elevations.



All procedures, methods, and typical stake markings shall be in accordance with Chapter 12, Construction Surveys, of the Caltrans "Survey Manual." Copies of the "Survey Manual" may be purchased from Caltrans Publications Unit, 1900 Royal Oaks Drive, Sacramento, and California 95815, (916) 445-3520.

Staking must be performed under the direction of a licensed surveyor or registered civil engineer with the authority to perform land surveying.

Preserve stakes and marks placed. If the stakes or marks are destroyed, replace them at your own cost.

Electronic drawing files in AutoCAD format, containing 2-dimensional linework of horizontal alignments, centerlines and layout lines will be furnished to you for your use in performing construction staking. A Digital Terrain Model (DTM) will not be provided.

In using, modifying, or accessing information from the electronic files, you are responsible for confirmation, accuracy, and checking of the data from the electronic files against the data contained on the contract documents. The County and the Design Engineer hereby disclaim all responsibility from any results obtained in use of electronic files and does not guarantee any accuracy of the information. You assume full responsibility for comparing the electronic file information to the contract documents and immediately notifying the Engineer in writing of any observed discrepancies.

You understand and agree that the electronic files provided pursuant to this Contract are instruments of professional services and shall remain the property of the County and will not be disseminated to others for purposes other than this project.

Because of the possibility that information and data delivered in AutoCAD format may be altered, whether inadvertently or otherwise, the County reserves the right to retain hard copy originals of all electronic files delivered to you, which originals shall be referred to and shall govern in the event of any inconsistency between the two.

In using the electronic information, you understand that the automated conversion of information and data from the system and format used by the Design Engineer to an alternate system or format cannot be accomplished without the possibility of introduction of inaccuracies, anomalies, and errors. In the event the electronic files provided to you in AutoCAD format is so converted, you agree to assume all risks associated therewith, and to the fullest extent permitted by law, to hold harmless and indemnify the County from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising there from or in connection therewith.

In using the electronic information, you recognize that changes or modifications to electronic media introduced by anyone other than the Design Engineer may result in adverse consequences, which the Design Engineer can neither predict nor control. Therefore, and in consideration of the Design Engineer's agreement to deliver its instruments of professional service in AutoCAD format, Contractor agrees, to fullest extent permitted by law, to hold harmless and indemnify the County from and against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees, arising out of or in any way connected with the modification, misrepresentation, misuse, or reuse by others of the electronic information provided by the Design Engineer. The foregoing indemnification applies, without limitation, to any use of the electronic files on other projects.

All computations necessary to establish the exact position of the work from control points shall be made by you. All computations, survey notes, cut sheets, and other records necessary to accomplish the work shall be neat, legible, and accurate. Copies of such computation, notes, cut sheets, and other records shall be furnished to the Engineer on the same day construction stakes are set.

Upon completion of construction staking and prior to acceptance of the contract, all computations, survey notes, cut sheets, and other data used to accomplish the work shall be furnished to the Engineer and shall become the property of the County.

The contract lump sum price paid for Construction Staking shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work required for construction staking, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

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

**5-1.27E Change Order Bills**

Maintain separate records for change order work costs.

Submit change order bills to the Engineer.

**Replace “Reserved” in Section 5-1.28 with:**

**5-1.28 UTILITIES FOR CONTRACTOR’S USE**

You must make arrangements to obtain electrical power, water or compressed air or other utilities required for your operations and you must make and maintain the necessary service connections at your own expense.

**Replace Section 5-1.32 with:**

**5-1.32 AREAS FOR CONTRACTOR’S USE**

No area is available within the contract limits for your exclusive use. However, temporary storage of equipment and materials on County property may be arranged with the Engineer. Use of work areas and other County-owned property shall be at your own risk. The County shall not be held liable for damage to or loss of materials or equipment located within these areas.

Remove all equipment, materials, and rubbish from the work areas and other County-owned property you occupy and leave the areas in a presentable condition. Comply with Section 4-1.13.

You must secure, at your own expense, areas required for storage of materials and equipment or for other purposes if sufficient area is not available within the contract limits.

The County does not allow temporary residences within the County right-of-way.

**Add to the last sentence of the last paragraph in Section 5-1.38:**

or defects in workmanship and materials.

**Replace “Contract acceptance” in the first paragraph of Section 5-1.47 with:**

the date that the Tulare County Board of Supervisors approves the notice of completion.

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## 6 CONTROL OF MATERIALS

### Add to the 3<sup>rd</sup> paragraph of Section 6-1.01:

Materials produced by convict labor may not be used on this project.

### Add to section 6-1.03 of the RSS:

#### 6-1.03B Submittals

##### 6-1.03B(1) Work Plan

For local material, such as rock, gravel, earth, structure backfill, pervious backfill, imported borrow, and culvert bedding, obtained from a (1) noncommercial source, or (2) source not regulated under California jurisdiction, submit a local material plan for each material at least sixty (60) days before placing the material. The local material plan must include:

1. Certification signed by you and an engineer who is registered as a civil engineer in the State of California or a professional geologist licensed as a professional geologist by the State of California stating:

I am aware local material from a noncommercial source or a source not regulated under CA jurisdiction must be sampled and analyzed for pH and lead and may require sampling and analysis under section 6-1.03B(3) for other constituents of concern based on the land use history. I am aware that local material sources must not contain ADL at concentrations greater than 80 mg/kg total lead or equal to or greater than 5 mg/L soluble lead as determined by the Waste Extraction Test (WET) Procedures, 22 CA Code of Regs § 66261.24(a)(2) App II. I am aware that a maximum quantity of material may be excavated at the site based on the minimum number of samples taken before excavating at the site under section 6-1.03B(3).

2. Land use history of the local material location and surrounding property
3. Sampling protocol
4. Number of samples per volume of local material
5. QA and QC requirements and procedures
6. Qualifications of sampling personnel
7. Stockpile history
8. Name and address of the analytical laboratory that will perform the chemical analyses
9. Analyses that will be performed for lead and pH
10. Other analyses that will be performed for possible hazardous constituents based on:
  - 10.1. Source property history
  - 10.2. Land use adjacent to source property
  - 10.3. Constituents of concern in the ground water basin where the job site is located

The plan must be sealed and signed by an engineer who is registered as a civil engineer in the State of California or a professional geologist licensed as a professional geologist by the State of California.

If the plan requires revisions, the Engineer provides comments. Submit a revised plan within seven (7) days of receiving comments. Allow seven (7) days for the review.

##### 6-1.03B(2) Analytical Test Results

At least fifteen (15) days before placing local material, submit analytical test results for each local material obtained from a noncommercial source or a source not regulated under CA jurisdiction. The analytical test results must include:

1. Certification signed by an engineer who is registered as a civil engineer in the State of California or a professional geologist licensed as a professional geologist by the State of California stating:

The analytical testing described in the local material plan has been performed. I performed a statistical analysis of the test results using the US EPA's ProUCL software with the applicable 95 percent upper confidence limit. I certify that the material from the local material source is suitable for unrestricted use at the job site, it has a pH above 5.0, does not contain soluble lead in concentrations equal to or greater than 5mg/l as determined by the Waste Extraction Test (WET) Procedures, 22 CA Code of Regs § 66261.24(a)(2) App II, does not contain lead in concentrations above 80 mg/kg total lead, is free from all other contaminants identified in the local material plan, and will comply with the job site's basin plan and water quality objectives of the RWQCB.

2. Chain of custody of samples
3. Analytical results no older than 1 year
4. Statistical analysis of the data using US EPA's ProUCL software with a 95 percent upper confidence limit
5. Comparison of sample results to hazardous waste concentration thresholds and the RWQCB's basin plan requirements and water quality objectives for the job site location

### 6-1.03B(3) Sample and Analysis

Sample and analyze local material from a (1) noncommercial source or (2) source not regulated under CA jurisdiction:

1. Before bringing the local material to the job site
2. As described in the local material plan
3. Under US EPA Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846)

The sample collection must be designed to generate a data set representative of the entire volume of proposed local material.

Before excavating at the (1) noncommercial material source or (2) a source not regulated under CA jurisdiction, collect the minimum number of samples and perform the minimum number of analytical tests for the corresponding maximum volume of local material as shown in the following table:

**Minimum Number of Samples and Analytical Tests for Local Material**

Maximum volume of imported borrow (cu yd)	Minimum number of samples and analytical tests
< 5,000	8
5,000–10,000	12 for the first 5,000 cu yd plus 1 for each additional 1,000 cu yd or portion thereof
10,000–20,000	17 for the first 10,000 cu yd plus 1 for each additional 2,500 cu yd or portion thereof
20,000-40,000	21 for the first 20,000 cu yd plus 1 for each additional 5,000 cu yd or portion thereof
40,000–80,000	25 for the first 40,000 cu yd plus 1 for each additional 10,000 cu yd or portion thereof
> 80,000	29 for the first 80,000 cu yd plus 1 for each additional 20,000 cu yd or portion thereof

Do not collect composite samples or mix individual samples to form a composite sample.

Analyze the samples using the US EPA's ProUCL software with a 95 percent upper confidence limit. All chemical analysis must be by a laboratory certified by the SWRCB's Environmental Laboratory Accreditation Program (ELAP).

The analytical test results must demonstrate that the local material:

1. Is not a hazardous waste
2. Has a pH above 5.0
3. Has an average total lead concentration, based upon the 95 percent upper confidence limit, at or below 80 mg/kg
4. Is free of possible contaminants identified in the local material plan
5. Complies with the RWQCB's basin plan for the job site location
6. Complies with the RWQCB's water quality objectives for the job site location

#### **6-1.03C Local Material Management**

Do not place local material until authorized.

If the Engineer determines the appearance, odor, or texture of any delivered local material suggests possible contamination, sample and analyze the material. The sampling and analysis is change order work unless (1) hazardous waste is discovered or (2) the analytical test results indicate the material does not comply with section 6-1.03B(3).

Dispose of noncompliant local material at an appropriately permitted CA Class I, CA Class II or CA Class III facility. You are the generator of noncompliant local material.

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## 7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

### Add following the last paragraph of Section 7-1.02K(1):

Post job site notices in compliance with Title 8 California Code of Regulations section 16451

### Replace 2<sup>nd</sup> paragraph in Section 7-1.02K(2) with:

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

1. From the Department of Industrial Relations' website
2. On file at the Resource Management Agency Permit Center, 5961 South Mooney Boulevard Visalia, CA 93277, which shall be made available to any interested person on request.
3. From the County Public Works website (see link in the Notice to Bidder section).

### Replace Section 7-1.02K(3) with:

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

Keep accurate payroll records.

Submit a copy of your certified payroll records, weekly, including those of subcontractors. Include:

1. Each employee's:
  - 1.1. Full name
  - 1.2. Address
  - 1.3. Social security number
  - 1.4. Work classification
  - 1.5. Straight time and overtime hours worked each day and week
  - 1.6. Actual wages paid for each day to each:
    1. Journeyman
    2. Apprentice
    3. Worker
    4. Other employee you employ for the work
  - 1.7. Pay rate
  - 1.8. Itemized deductions made
  - 1.9. Check number issued
2. Apprentices and the apprentice-to-journeyman ratio

Each certified payroll record must include a Statement of Compliance form signed under penalty of perjury that declares:

1. Information contained in the payroll record is true, correct, and complete
2. Employer has complied with the requirements of sections 1771, 1811, and 1815 for any work performed by his or her employees on the public works project
3. Wage rates paid are at least those required by the Contract

The Department allows the use of a form with identical wording as the Statement of Compliance form provided by the Department. Submit all certified payroll directly to the Department of Industrial Relations (DIR) in electronic format and to the Engineer on a weekly basis.

Submitted certified payrolls for hauling and delivering ready-mixed concrete must be accompanied by a written time record. The time record must include:

1. Truck driver's full name and address
2. Name and address of the factory or batching plant
3. Time the concrete was loaded at the factory or batching plant
4. Time the truck returned to the factory or batching plant
5. Truck driver's signature certifying under penalty of perjury that the information contained in this written time record is true and correct

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

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

Make all payroll records available for inspection and copying or furnish a copy upon request of a representative of the:

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

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

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

The Department withholds from progress payments for delinquent or inadequate records (Labor Code §1771.5). If you have not submitted an adequate record by the month's 15th day for the period ending on or before the 1st of that month, the Department withholds up to 10 percent (10%) of the monthly progress estimate, exclusive of mobilization. The Department does not withhold more than ten thousand dollars \$10,000 or less than one thousand dollars (\$1,000).

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

**7-1.02K(6)(j)(iii) Material Containing Lead – Non Hazardous Waste**

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

Submit a lead compliance plan.

Lead has been previously tested in the surrounding soils and traffic stripes. It was determined that lead is present in material on the job site. Average lead concentrations are below 1,000 mg/kg total lead and below 5 mg/L soluble lead, the material on the job site:

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

Reuse all of the excavated material on the right-of-way. Handle the material under all applicable laws, rules, and regulations, including those of the following agencies:

1. Cal/OSHA
2. CVRWQCB, Region 5 – Central Valley Regional Water Quality Control Board

### 3. California Department of Toxic Substances Control

Payment for conforming to the requirements of this section is included in the prices paid for the various Contract items of work and no additional compensation will be allowed therefore.

#### **Replace Section 7-1.02K(6)(j)(iv) with:**

#### **7-1.02K(6)(j)(iv) Material Containing Lead – Hazardous Waste**

If lead testing yields concentrations exceeding the limits described per Title 8 California Code of Regulations and Title 22 California Code of Regulations, the material(s) should be treated as hazardous waste and disposal at a permitted landfill or solid waste disposal facility is required.

Follow the provisions of Section 14-11 and confirm with Engineer that no other Special Provisions are required.

Conforming to the requirements of this section is considered change order work.

#### **Replace "Reserved" in section 7-1.02L(1) with:**

According to Public Contract Code section 6109, with respect to subcontractors which are ineligible to perform work on public works projects according to Labor Code sections § 1777.1 or 1777.7:

1. The Contractor must not allow any such subcontractor to work on this project.
2. The Contractor must repay to the County any money paid to any such subcontractor allowed to work on this project.
3. The Contractor will pay the wages of the workers of any such subcontractor allowed to work on this project.

#### **Replace Section 7-1.05 with:**

#### **7-1.05 INDEMNIFICATION AND DEFENSE**

- (a) To the fullest extent permitted by law, CONTRACTOR must indemnify, defend (at CONTRACTOR'S sole cost and expense and with legal counsel approved by COUNTY, which approval may not be unreasonably withheld), protect and hold harmless COUNTY, all subsidiaries, divisions and affiliated agencies of COUNTY, and all of their representatives, partners, designees, officers, directors, employees, consultants, agents, successors and assigns, (each, an "Indemnified Party" and collectively, the "Indemnified Parties"), from and against all claims (including, without limitation, claims for bodily injury, death or damage to property), demands, obligations, damages, actions, causes of action, suits, losses, judgments, fines, penalties, liabilities, costs and expenses (including, without limitation, attorneys' fees, disbursements and court costs, and all other professional expert or consultants' fees and costs and COUNTY general and administrative expenses) of every kind and nature whatsoever (individually, a "Claim"; collectively, "Claims") which may arise out of, pertain to, or relate (directly or indirectly) to the negligence, recklessness, or misconduct of CONTRACTOR with respect to any work performed or services provided under this Contract (including, without limitation, the acts, errors and/or omissions of CONTRACTOR, its principals, officers, agents, employees, vendors, suppliers, consultants, sub-consultants, contractors, anyone employed directly or indirectly by any of them or for whose acts they may be liable or any or all of them). CONTRACTOR'S obligation to indemnify applies unless it is finally adjudicated that the liability was caused by the sole active negligence or sole willful misconduct of an Indemnified Party. If it is finally adjudicated that liability is caused by the comparative active negligence or willful misconduct of an Indemnified Party, then CONTRACTOR'S indemnification obligation shall be reduced in proportion to the established comparative liability.
- (b) The duty to defend is a separate and distinct obligation from CONTRACTOR'S duty to indemnify. CONTRACTOR shall be obligated to defend, in all legal, equitable, administrative, or special



proceedings, the Indemnified Parties immediately upon tender to CONTRACTOR of the Claim in any form or at any stage of an action or proceeding, whether or not liability is established. Payment to CONTRACTOR by any Indemnified Party or the payment or advance of defense costs by any Indemnified Party cannot be a condition precedent to enforcing the Indemnified Party's rights to indemnification under this Contract. An allegation or determination that persons other than CONTRACTOR are responsible for the Claim does not relieve CONTRACTOR from its separate and distinct obligation to defend under this section. The obligation to defend extends through final judgment, including exhaustion of any appeals. The defense obligation includes an obligation to provide independent defense counsel if CONTRACTOR asserts that liability is caused in whole or in part by the negligence or willful misconduct of an Indemnified Party. CONTRACTOR'S indemnification obligations under this Contract will survive the expiration or earlier termination of this Contract until action against the Indemnified Parties for the matter indemnified is fully and finally barred by the applicable statute of limitations or statute of repose. CONTRACTOR'S liability for indemnification under this Contract is in addition to any liability CONTRACTOR may have to COUNTY for a breach by CONTRACTOR of any of the provisions of this Contract. Under no circumstances may the insurance requirements and limits set forth in this Contract be construed to limit CONTRACTOR'S indemnification obligation or other liability under this Contract.

- (c) CONTRACTOR must indemnify and hold COUNTY harmless from all loss and liability, including attorneys' fees, court costs and all other litigation expenses, for any infringement of the patent rights, copyright, trade secret or any other proprietary right or trademark, and all other intellectual property claims of any person or persons in consequence of the use by COUNTY, or any of its officers or agents, of articles or services to be supplied in the performance of this Contract.

**Replace Section 7-1.06 with:**

**7-1.06 INSURANCE**

Bidder's and their subcontractors attention are directed to the insurance requirements below. It is highly recommended that Bidders confer with their respective insurance carriers or brokers to determine in advance of bid submission the availability of insurance certificates and endorsements as prescribed and provided herein. If an apparent low bidder fails to comply strictly with the insurance requirements, that Bidder may be disqualified from award of the Contract and forfeit its Bidder's Security.

Contractor and subcontractors shall provide and maintain insurance for the duration of the warranty period against claims for injuries to persons and damage to property, which may arise from, or in connection with, performance under the Contract by the CONTRACTOR, its agents, representatives, employees or subcontractors, if applicable.

**A. Minimum Scope & Limits of Insurance**

- 1) Coverage at least as broad as Commercial General Liability, Insurance Services Office Commercial General Liability coverage occurrence form GC 00 01, with limits no less than Two million (\$2,000,000) per occurrence including products and completed operations, property damage, bodily injury and personal & advertising injury. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (ISO CG 25 03 or 25 04) or the general aggregate limit shall be twice the required occurrence limit.
- 2) Comprehensive Automobile Liability Insurance of two million dollars (\$2,000,000) per occurrence for bodily injury and property damage. If the annual aggregate applies it must be no less than of two million dollars(\$2,000,000).
- 3) Workers' Compensation Insurance as required by the State of California, with Statutory Limits, and Employer's Liability Insurance with limit of no less than of one million dollars (\$1,000,000) per accident for bodily injury or disease.
- 4) Professional Liability of one million dollars (\$1,000,000) per occurrence or claim for design and build.

**B. Specific Provisions of the Certificate**

- 1) The General Liability and Automobile Liability policies are to be endorsed to contain the following provisions:
  1. The County, its officers, agents, officials, employees and volunteers are to be covered as additional insureds as respects: liability arising out of work or operations performed by or on behalf of the Contractor; or automobiles owned, leased, hired or borrowed by the CONTRACTOR.
  2. For any claims related to this project, the CONTRACTOR's insurance coverage shall be primary insurance as respects the COUNTY, its officers, agents, officials, employees and volunteers. Any insurance or self-insurance maintained by the COUNTY, its officers, agents, officials, employees or volunteers shall be excess of the CONTRACTOR's insurance and shall not contribute with it.
  3. Each insurance policy required by this Contract shall be endorsed to state that coverage shall not be canceled, except after thirty (30) days prior written notice has been provided to the County.
  4. CONTRACTOR hereby agrees to waive rights of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation.
  5. If any of the required insurance is written on a claims made form, the retroactive date must be before the date of contract or the beginning of the contract work and must be maintained and evidence of insurance must be provided for at least five (5) years after completion of the contract work.
- 2) The workers' compensation policy shall be endorsed with a waiver of subrogation in favor of the COUNTY for all work performed by the CONTRACTOR, its employees, agents and subcontractors. CONTRACTOR waives all rights against the COUNTY and its officers, agents, employees and volunteers for recovery of damages to the extent these damages are covered by the workers compensation and employers liability.

#### C. Deductibles and Self-Insured Retentions

Deductibles and self-insured retentions must be declared and any deductible or self-insured retention over one hundred thousand dollars (\$100,000) shall be forwarded to the COUNTY Risk Manager for approval.

#### D. Acceptability of Insurance

Insurance must be placed with insurers with a current rating given by A.M. Best and Company of no less than A(-):VII and a Standard & Poor's Rating (if rated) of at least BBB and from a company approved by the Department of Insurance to conduct business in California. Any waiver of these standards is subject to approval by the County Risk Manager.

#### E. Verification of Coverage

Prior to approval of this Contract by the COUNTY, the CONTRACTOR shall file with the submitting department, certificates of insurance with original endorsements effecting coverage and a copy of the declarations page from the policy in effect in a form acceptable to the COUNTY. Endorsements must be signed by persons authorized to bind coverage on behalf of the insurer. The COUNTY reserves the right to require certified copies of all required insurance policies at any time.

#### F. Additional Construction Insurance Requirements

- 1) Payment Bond: For public works projects of more than twenty-five thousand dollars (\$25,000) a "payment bond" is required in the full amount of the Contract price, and shall insure to the benefit of persons performing labor or furnishing materials in connection with the work of the Contract. This bond shall be maintained in full force and effect until all work under the Contract is completed and accepted by the COUNTY, or until all claims for materials and labor have been paid, whichever is longer.
- 2) Performance Bond: For public works projects of more than twenty-five thousand dollars (\$25,000) a "performance bond" is required in the full amount of the Contract price and shall

- insure the faithful performance by Contractor of all work under the Contract. It shall also insure the replacing of, or making acceptable, any defective materials or faulty workmanship.
- 3) Acceptability of Surety: Only California admitted sureties with current AM Best Rating of no less than VII.

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## 8 PROSECUTION AND PROGRESS

### Add to Section 8-1.01:

You must procure all permits, licenses, contracts and other services needed to prosecute the work and secure staging areas, including those on private property. You must pay for all permits, licenses, contracts and other services. Payment is included in the contract price and no additional compensation will be allowed.

The number of working days allowed for completion of the work shall be set forth in Section 8-1.05 of the Standard Specifications as modified by Article XIII of the Contract. In the case of a conflict between the Standard Specifications and the Contract, the Contract shall prevail.

The sum to be paid as liquidated damages shall be set forth in section 8-1.10 of the Standard Specifications as modified by Article XIII of the Contract.

### Add to Section 8-1.02:

Any time the Engineer requests a practicable progress schedule in writing, submit the updated schedule within ten (10) working days of the Engineer's written request.

### Replace Section 8-1.02C(3) with

Submit a description of your proposed schedule for authorization.

Software must be compatible with the current version of the Microsoft Windows operation system in use by the Engineer. The operation system in use by the Engineer is Microsoft Windows 10 Professional.

The schedule software must be Microsoft Project 2010 or newer.

Any proposed schedule software equal to Microsoft Project must be capable of:

1. Generating files that can be imported into Microsoft Project
2. Comparing two (2) schedules

### Submit a notice seventy-two (72) hours before starting job site activities.

Payment for conforming to the requirements of this section is included in the prices paid for the various Contract items of work and no additional compensation will be allowed.

### Replace section 8-1.10A with:

The County specifies liquidated damages (Pub Contract Code § 7203, Gov. Code, § 53069.85). Liquidated damages, if any, accrue starting on the first (1<sup>st</sup>) day after the expiration of the working days through the day of Contract acceptance except as specified in sections 8-1.10B and 8-1.10C.

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

Liquidated damages for all work shall be set at **two thousand seven hundred dollars (\$2,700)** per day.

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## 9 PAYMENT

**Replace the 12th paragraph beginning with “For these payments, interest starts to accrue...” in Section 9-1.03 with:**

For these payments, interest starts to accrue thirty (30) days after the Engineer receives acceptance from you of the progress payment amount determined by the Engineer. Acceptance of the progress payment may be in the form of an invoice matching the progress payment amount or a letter indicating that you accept the amount of the progress payment.

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

Pay your subcontractors within seven (7) days of receipt of each progress payment under Pub Cont. Code §§ 10262 and 10262.5.

**Add the following to Section 9-1.16A with:**

### **9-1.16A General**

Submit an invoice matching the progress payment amount or a signed letter indicating that you accept the progress payment amount. The Engineer does not process a progress payment without the matching invoice or the progress payment acceptance letter. Once accepted by the Engineer, submit the invoice to the following email address: RMA-AP@co.tulare.ca.us and include the Engineer's email as well.

**Add to end of first paragraph, section 9-1.16B:**

Submit a schedule of values for each lump sum item on the bid list.

**Replace section 9-1.17D(1) with:**

### **9-1.17D(1) General**

If you accept the proposed final estimate or do not submit a claim statement within thirty (30) days of receiving the estimate, the Engineer furnishes the final estimate to you and the County pays the amount due within ninety (90) days. This final estimate and payment is conclusive except as specified in sections 5-1.27, 6-3.06, and 9-1.21.

If you submit a claim statement within thirty (30) days of receiving the Engineer's proposed final estimate, the Engineer furnishes a semifinal estimate to the Contractor and the Department pays the amount due within ninety (90) days. The semifinal estimate is conclusive as to the amount of work completed and the amount payable except as affected by the claims or as specified in sections 5-1.27, 6-3.06, and 9-1.21.

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**DIVISION II GENERAL CONSTRUCTION**

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**10 GENERAL**

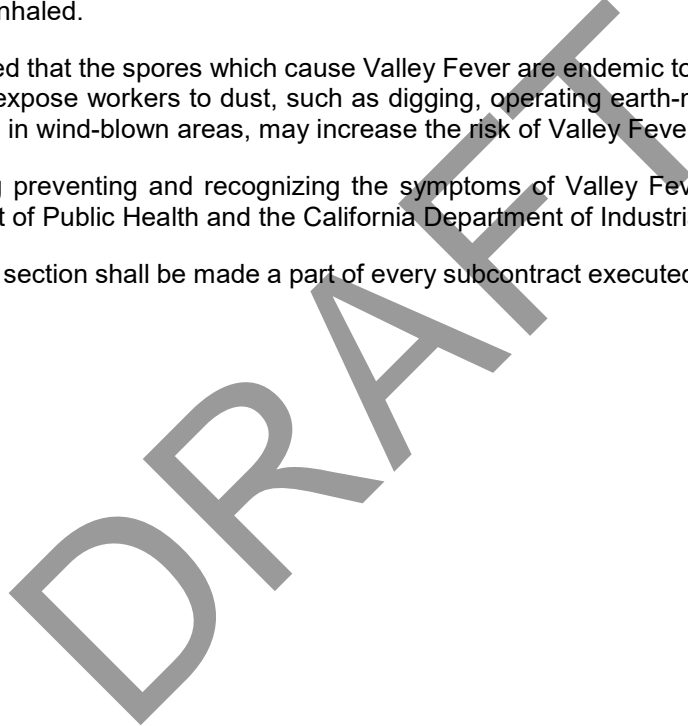
**Add to Section 10-1.01:**

Coccidioidomycosis, also known as “Valley Fever” or “cocci”, is a disease caused by *Coccidioides* fungi which infect the lungs. When the fungus spores present in soil are disturbed, the spores may become airborne and can be inhaled.

You are hereby notified that the spores which cause Valley Fever are endemic to Tulare County. Activities which disturb soil or expose workers to dust, such as digging, operating earth-moving equipment, driving vehicles, and working in wind-blown areas, may increase the risk of Valley Fever in workers.

Information regarding preventing and recognizing the symptoms of Valley Fever are available from the California Department of Public Health and the California Department of Industrial Relations.

The provisions of this section shall be made a part of every subcontract executed pursuant to this contract.



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## 12 TEMPORARY TRAFFIC CONTROL

### Add the following to Section 12-1.01:

Submit a traffic control plan for acceptance by the Engineer. The traffic control plan shall depict the traffic control devices to be used and their location and shall be prepared by a licensed Traffic Engineer or Civil Engineer. Do not install traffic control system on the job site until the Engineer provides written acceptance of the Traffic Control Plan. Payment for the traffic control plan is included in the payment for traffic control system.

### Replace Section 12-1.04 with:

You are required to pay for the cost of furnishing all flaggers, including transporting flaggers and furnishing stands and towers for flaggers to provide for the passage of traffic through the work as specified in sections 7-1.03 and 7-1.04.

### Replace Section 12-2 with:

#### 12-2 CONSTRUCTION PROJECT FUNDING SIGNS

##### 12-2.01 GENERAL

Section 12-2 includes specifications for installing construction project funding signs.

Construction project funding signs must comply with the details shown on the Caltrans's Traffic Operations Website.

Keep construction project funding signs clean and in good repair at all times.

##### 12-2.02 MATERIALS

Construction project funding signs must be wood post signs complying with Section 56-4.

Sign panels for construction project funding signs must be framed, single sheet aluminum panels complying with Section 56-2.

The background on construction project funding signs must be Type II retroreflective sheeting on the Authorized Material List for signing and delineation materials.

The legend for the types of funding on construction project funding signs must read as follows and in the following order:

THIS PROJECT IS BORUGHT TO YOU BY:

SB 1 (GAS TAX)

REBUILDING CALIFORNIA – SENATE BILL 1



The Engineer will provide the year of completion for the legend on construction project funding signs. Furnish and install a sign overlay for the year of completion within 10 working days of notification.

The size of the legend on construction project funding signs must be as described. Do not add any additional information unless authorized.

### **12-2.03 CONSTRUCTION**

Install 2 Type 1 construction project funding signs at the locations designated by the Engineer before starting major work activities visible to highway users.

Project funding signs shall remain in place and become the property of Tulare County upon completion of the project.

### **12-2.04 PAYMENT**

Not Used

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### 13 WATER POLLUTION CONTROL

**Add the following to the last paragraph of Section 13-4.03C(1):**

Before any materials are stockpiled or equipment parked / stored outside of the right of way, you must first obtain written authorization from the property owner on whose property the materials are to be stockpiled or equipment parked/stored. You must file with the Engineer said authority or a certified copy thereof together with a written release from the property owner absolving the County of Tulare from any and all responsibility in connection with the stockpiling of materials or parking/storage of equipment on said property. Before any material is stockpiled or equipment parked/stored, you must obtain written permission from the Engineer to stockpile materials or park/store equipment at the location designated in said authorization.

Failure to provide written authorization shall result in the withholding of all funds due to you until said authorization is received by the County.

Obtain all permits required by all applicable regulatory agencies and comply with all applicable codes, regulations and zoning ordinances prior to establishing a storage yard for materials and/or equipment.

Provide copies of all permits acquired to the Engineer.

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## 14 ENVIRONMENTAL STEWARDSHIP

### Add the following to Section 14-1.01:

In accordance with 14-6.05, prior to arrival and prior to leaving the project site, all construction equipment must be inspected and cleaned of mud, plant material and other debris that may contain invasive plants and/or seeds and inspected to reduce the potential spreading of noxious weeds.

You must comply with all applicable requirements and provisions of the environmental document(s) and the permits obtained for this project.

A delay to the controlling operation due to environmental requirements will be considered a temporary suspension of work under Section 8-1.06. No contract adjustment or additional compensation will be made for delays caused by environmental requirements. The days on which the suspension is in effect shall not be considered working days as defined in Section 8-1.06B.

### Replace “Reserved” in Section 14-10.03 with:

#### 14-10.03 RECYCLING AND DIVERSION OF CONSTRUCTION AND DEMOLITION DEBRIS

You must comply with Article 10 of the Tulare County Ordinance Code Chapter 3, Part IV, “Recycling and Diversion of Construction and Demolition Debris,” which requires you to recycle 100% of inert solids (asphalt, concrete, rock, stone, brick, sand, soil and fines) and 50% by weight of the remaining construction and demolition material generated by the work. Submit the required Pre-Plan portion of the Construction and Demolition Waste Recycling and Reuse Plan after the award of the contract to the Engineer with the contract documents identifying the material type, hauler, disposal location and the percentage of material to be reused or recycled. There is no filing fees required for this submission of this plan. A copy of the Ordinance, the form for the Construction and Demolition Waste Recycling and Reuse Plan and other information may be found at:

<https://tularecounty.ca.gov/rma/index.cfm/rma-documents/public-works-documents/c-d-r-r-plan-form/>

Submit to the Engineer the required Final Report of the Construction and Demolition Waste Recycling and Reuse Plan prior to the Engineer’s acceptance of the work.

Full compensation for all labor, tools, equipment and reporting requirements required for compliance with the Recycling and Diversion of Construction and Demolition Debris Ordinance shall be considered as included in the items of work generating this debris and no additional compensation will be allowed therefor.

### Replace Section 14-12.04 with:

#### 14-12.04 PERMITS AND LICENSES

Comply with Section 5-1.20B.

Comply with the requirements of the permits acquired by the County for this project located elsewhere in these Special Provisions.

You must comply with all applicable SJVUAPCD regulations and requirements.

Obtain a Demolition Permit Release from SJVUAPCD. Nothing herein or elsewhere within these Special Provisions shall be construed as limiting your responsibility for complying with all applicable rules and regulations. You are responsible for payment of all the fees required to obtain the Demolition Permit Release.

Comply with Section 7-1.02, Section 7-1.07, Section 14-9.02 and Section 14-9.03.

For projects that will result in land disturbance of greater than one acre, file the Notice of Intent and pay the appropriate fee as required by the terms of General Permit No. CSA000002, for the discharge of storm water associated with construction activity.

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

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### DIVISION III EARTHWORK AND LANDSCAPE

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#### 19 EARTHWORK

Replace Section 19-9 with:

##### 19-9.01 GENERAL

Section 19-9 includes specifications for constructing shoulder backing adjacent to the edge of new pavement surfacing.

##### 19-9.02 MATERIALS

Shoulder backing must be clean and consist of one or any combination of the following materials:

1. Broken stone
2. Crushed gravel
3. Natural rough surfaced gravel
4. Sand
5. Concrete
6. LCB
7. CTB

Shoulder backing must be graded within the percentage passing limits shown in the following table:

Sieve size	Percentage passing
2"	100
1"	100
3/4"	90-100
No. 4	35-60
No. 30	10-35
No. 200	5-15

Shoulder backing must comply with the sand equivalent requirements shown in the following table:

Quality characteristics	Test method	Requirement
Sand Equivalent		
Single type of material except RAP	California Test 217	10-35

If a combination of broken stone, crushed gravel, natural rough-surfaced gravel, and sand is used, shoulder backing must comply with the requirements shown in the following table:

Quality characteristic	Test method	Requirement
Percentage crushed particles (min, %) <sup>a</sup>		
1 fractured face	California Test 205	75
2 fractured faces		50
Durability index	California Test 229	25

<sup>a</sup>Applies to material retained on no. 4 sieve only

When tested under California Test 212 using the rodding method, the minimum unit weight of shoulder backing must be 105 lb/cu ft.

### 19-9.03 CONSTRUCTION

Remove weeds, grass, and debris from the area to receive shoulder backing.

Scarify the basement material to receive shoulder backing at least 0.25 foot deep and water immediately before placing the shoulder backing.

Place and spread shoulder backing directly on the basement material. After placing the shoulder backing, water and compact it with a minimum of 2 passes with a steel-tired roller weighing at least 8 tons, additional compaction efforts may be requested at the discretion of the Engineer. Wherever the total thickness of shoulder backing is more than 6 inches, place the backing under sections 19-5 and 19-6. Form smooth and uniform cross sections and slopes.

Do not deposit shoulder backing on new pavement.

Complete shoulder backing within 5 days after placement of adjacent new surfacing except complete shoulder backing within 15 days wherever edge treatment under section 39-2.01C(5) is placed.

Before opening a lane adjacent to uncompleted shoulder backing, place portable delineators and W8-9, Low Shoulder, signs off of and adjacent to the new pavement surfacing.

Portable delineators and signs must comply with section 12 except the signs may be set on temporary portable supports or on barricades.

Place portable delineators at the beginning and along the drop-off of the edge of pavement in the direction of travel, at maximum intervals of 500 feet on tangents and 200 feet on curves.

Place the W8-9 signs at the beginning and along the drop-off of the edge of pavement in the direction of travel, at maximum intervals of 2,000 feet.

Remove portable delineators and W8-9 signs when the shoulder backing is complete in that area.

Shoulder backing shall be graded and rolled to obtain a smooth surface and a relative compaction of 90% for the complete depth of material worked. The top 0.25 foot (3") of shoulder backing material shall consist of material conforming to Section 19-9.02 Materials or existing native material present within the county right of way and the edge of paved roadway if material conforms to Section 19-9.02.

The shoulder back shall be graded per plan and the final grade to be determined by the Engineer for existing conditions, road travel recovery and emergency parking.

### 19-9.03 PAYMENT

Shoulder backing will be measured by the station along each edge of surfacing where shoulder backing is constructed. A station shall be considered 100 feet. The length of shoulder backing to be paid for will be determined from actual measurement, or calculated from centerline stationing or post mileage as determined by the Engineer..

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## DIVISION V SURFACINGS AND PAVEMENTS

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### 36 GENERAL

Replace *Reserved* in section 36-4 with:

#### 36-4.01 GENERAL

Section 36-4 includes specifications for performing work involving residue from grinding and cold planing that contains lead from paint and thermoplastic.

#### 36-4.02 MATERIALS

Not Used

#### 36-4.03 CONSTRUCTION

The residue from grinding or cold planing contains lead from paint and thermoplastic. The average lead concentrations are less than 1,000 mg/kg total lead and 5 mg/L soluble lead. This residue:

1. Is a nonhazardous waste
2. Does not contain heavy metals in concentrations that exceed thresholds established by the Health and Safety Code and 22 CA Code of Regs
3. Is not regulated by the Federal Resource Conservation and Recovery Act, 42 USC § 6901 et seq.

Management of this material exposes workers to health hazards that must be addressed in your lead compliance plan.

The residue is generated by grinding or cold planning at:

1. Road 152 between Avenue 256 and State Route 137
2. Road 144 between Avenue 132 and State Highway 190
3. Road 122 between Avenue 272 to Avenue 271, Avenue 271 between Road 122 to Road 128, and Road 128 from Avenue 271 to Avenue 272
4. Avenue 264 between Road 100 and 108
5. Road 108 between Avenue 317 (Pratt) and Avenue 328
6. Road 224 between Fir to Avenue 250

#### 36-4.04 PAYMENT

Not Used





Aggregate must be clean and free from deleterious substances.

Aggregate used in HMA Type A must comply with the 3/4-inch HMA Types A and B gradation.

The specified aggregate gradation must be determined before the addition of asphalt binder and includes supplemental fine aggregate. The Department tests for aggregate grading under California Test 202, modified by California Test 105 if there is a difference in specific gravity of 0.2 or more between the coarse and fine parts of different aggregate blends.

Choose sieve size TV within each TV limit presented in the aggregate gradation tables.

The proposed aggregate gradation must be within the TV limits for the specified sieve sizes shown in the following tables:

**Aggregate Gradation  
(Percentage Passing)  
HMA Types A and B**

3/4-inch HMA Types A and B

Sieve sizes	TV limits	Allowable tolerance
1"	100	--
3/4"	90–100	TV ± 5
1/2"	70–90	TV ± 6
No. 4	45–55	TV ± 7
No. 8	32–40	TV ± 5
No. 30	12–21	TV ± 4
No. 200	2.0–7.0	TV ± 2

1/2-inch HMA Types A and B

Sieve sizes	TV limits	Allowable tolerance
3/4"	100	—
1/2"	95–99	TV ± 6
3/8"	75–95	TV ± 6
No. 4	55–66	TV ± 7
No. 8	38–49	TV ± 5
No. 30	15–27	TV ± 4
No. 200	2.0–8.0	TV ± 2

3/8-inch HMA Types A and B

Sieve sizes	TV limits	Allowable tolerance
1/2"	100	--
3/8"	95–100	TV ± 6
No. 4	58–72	TV ± 7
No. 8	34–48	TV ± 6
No. 30	18–32	TV ± 5
No. 200	2.0–9.0	TV ± 2

No. 4 HMA Types A and B

Sieve sizes	TV limits	Allowable tolerance
3/8"	100	--
No. 4	95–100	TV ± 7
No. 8	72–77	TV ± 7
No. 30	37–43	TV ± 7
No. 200	2.0–12.0	TV ± 4

Before the addition of asphalt binder, aggregate must have the values for the quality characteristics shown in the following table:

### Aggregate Quality

Quality characteristic	Test method	HMA type			
		A	B	RHMA-G	OGFC
Percent of crushed particles	California Test 205				
Coarse aggregate (% min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min.) (Passing no. 4 sieve and retained on no. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (% max.)	California Test 211				
Loss at 100 rev.		12	--	12	12
Loss at 500 rev.		45	50	40	40
Sand equivalent (min.) <sup>a</sup>	California Test 217	47	42	47	--
Fine aggregate angularity (% min.) <sup>b</sup>	California Test 234	45	45	45	--
Flat and elongated particles (% max. by weight @ 5:1)	California Test 235	10	10	10	10

<sup>a</sup> Reported value must be the average of 3 tests from a single sample.

<sup>b</sup> The Engineer waives this specification if HMA contains less than 10 percent of non-manufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

#### 39-1.02F Reclaimed Asphalt Pavement

You may produce HMA Type A or B, using RAP. HMA produced using RAP must comply with the specifications for HMA, except aggregate quality specifications do not apply to RAP. You may substitute RAP aggregate for a part of the virgin aggregate in HMA in a quantity not exceeding 15.0 percent of the aggregate blend.

Assign the substitution rate of RAP aggregate for virgin aggregate with the JMF submittal. The JMF must include the percent of RAP used. If you change your assigned RAP aggregate substitution rate by more than 5 percent (within the 15.0 percent limit), submit a new JMF.

Process RAP from asphalt concrete. You may process and stockpile RAP during the entire project. Prevent material contamination and segregation. Store RAP in stockpiles on smooth surfaces free of debris and organic material. Processed RAP stockpiles must be only homogeneous RAP.

#### 39-1.03 HOT MIX ASPHALT MIX DESIGN REQUIREMENTS

##### 39-1.03A General

The mix design process consists of performing California Test 367 and laboratory procedures on combinations of aggregate gradations and asphalt binder contents to determine the OBC and HMA mixture qualities. The results become the proposed JMF.

Use the *Contractor Hot Mix Asphalt Design Data* form to record aggregate quality and mix design data. Use the *Contractor Job Mix Formula Proposal* form to present the JMF.

Laboratories testing aggregate qualities and preparing the mix design and JMF must be qualified under the Caltrans Independent Assurance Program. Take samples under California Test 125.

The Engineer reviews the aggregate qualities, mix design, and JMF and verifies and authorizes the JMF.

You may change the JMF during production. Do not use the changed JMF until it is authorized. Except if adjusting the JMF as specified in section 39-1.03E, perform a new mix design and submit a new JMF submittal if you change any of the following:

1. Target asphalt binder percentage
2. Asphalt binder supplier

3. Combined aggregate gradation
4. Aggregate sources
5. Substitution rate for RAP aggregate of more than 5 percent
6. Any material in the JMF

### 39-1.03B Hot Mix Asphalt Mix Design

Perform a mix design that produces HMA with the values for the quality characteristics shown in the following table:

**HMA Mix Design Requirements**

Quality characteristic	Test method	HMA type		
		A	B	RHMA-G
Air void content (%)	California Test 367	4.0	4.0	Section 39-1.03B
Voids in mineral aggregate (% min.)	California Test 367			
No. 4 grading		17.0	17.0	--
3/8" grading		15.0	15.0	--
1/2" grading		14.0	14.0	18.0–23.0 <sup>a</sup>
3/4" grading		13.0	13.0	18.0–23.0 <sup>a</sup>
Voids filled with asphalt (%)	California Test 367			Note c
No. 4 grading		76.0–80.0	76.0–80.0	
3/8" grading		73.0–76.0	73.0–76.0	
1/2" grading		65.0–75.0	65.0–75.0	
3/4" grading		65.0–75.0	65.0–75.0	
Dust proportion	California Test 367			Note c
No. 4 and 3/8" gradings		0.9–2.0	0.9–2.0	
1/2" and 3/4" gradings		0.6–1.3	0.6–1.3	
Stabilometer value (min.) <sup>b</sup>	California Test 366			
No. 4 and 3/8" gradings		30	30	--
1/2" and 3/4" gradings		37	35	23

<sup>a</sup> Voids in mineral aggregate for RHMA-G must be within this range.

<sup>b</sup> California Test 304, Part 2.13.

<sup>c</sup> Report this value in the JMF submittal.

Report the average of 3 tests. If the range of stability for the 3 briquettes is more than 8 points, prepare new briquettes and test again. The average air void content may vary from the specified air void content by  $\pm 0.5$  percent.

### 39-1.03C Job Mix Formula Submittal

Each JMF submittal must consist of:

1. Proposed JMF on a *Contractor Job Mix Formula Proposal* form
2. Mix design records on a *Contractor Hot Mix Asphalt Design Data* form dated within 12 months of submittal
3. JMF verification on a *Caltrans Hot Mix Asphalt Verification* form, if applicable
4. JMF renewal on a *Caltrans Production Start-Up Evaluation* form, if applicable
5. MSDS for the following:
  - 5.1. Asphalt binder
  - 5.2. Supplemental fine aggregate except fines from dust collectors
  - 5.3. Antistrip additives

If the Engineer requests, sample the following materials in the presence of the Engineer and place in labeled containers weighing no more than 50 lb each:

1. Coarse, fine, and supplemental fine aggregate from stockpiles, cold feed belts, or hot bins. Samples must be at least 120 lb for each coarse aggregate, 80 lb for each fine aggregate, and 10 lb for each type of supplemental fines. The Department combines these aggregate samples to comply with the JMF TVs submitted on a *Contractor Job Mix Formula Proposal* form.

2. RAP from stockpiles or RAP system. Samples must be at least 60 lb.
3. Asphalt binder from the binder supplier. Samples must be in two 1-quart cylindrical-shaped cans with open top and friction lids.

Notify the Engineer at least 2 business days before sampling materials. For aggregate and RAP, split the samples into at least 4 parts. Submit 2 parts to the Engineer and use 1 part for your testing.

### **39-1.03D Job Mix Formula Review**

The Engineer reviews each mix design and proposed JMF within 5 business days from the complete JMF submittal. The review consists of reviewing the mix design procedures and comparing the proposed JMF with the specifications.

The Engineer may verify aggregate quality characteristics during this review period.

### **39-1.03E Job Mix Formula Verification**

If you cannot submit a *Caltrans Hot Mix Asphalt Verification* form dated within 12 months before HMA production, the Engineer verifies the JMF.

Based on your testing and production experience, you may submit an adjusted JMF on a *Contractor Job Mix Formula Proposal* form before verification testing. JMF adjustments may include a change in the:

1. Asphalt binder content TV up to  $\pm 0.6$  percent from the OBC value submitted on a *Contractor Hot Mix Asphalt Design Data* form, except for RHMA-G, do not adjust the TV for asphalt rubber binder below 7.0 percent
2. Aggregate gradation TVs within the TV limits specified in the aggregate gradation tables

For HMA Type A and Type B, the Engineer verifies the JMF from samples taken from HMA produced by the plant to be used. Notify the Engineer at least 2 business days before sampling materials.

In the Engineer's presence and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Sample RAP from the RAP system. Sample HMA under California Test 125, except if you request and if authorized, you may sample from any of the following locations:

1. At the plant from deposited piles or windrows
2. From the truck with an automatic sampling device
3. Windrow
4. Mat behind the paver

You may sample from a different project, including a non-Department project, if you make arrangements for the Engineer to be present during sampling.

For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 2 split parts and keep 1 part for your testing.

The Engineer verifies each proposed JMF within 20 days of receiving all verification samples and the JMF submittal has been accepted. Verification is testing for compliance with the specifications for:

1. Aggregate quality
2. Aggregate gradation TVs within the TV limits
3. Asphalt binder content TV within the TV limit
4. HMA quality specified in the table HMA Mix Design Requirements except:
  - 4.1. Air void content, design value  $\pm 2.0$  percent

- 4.2. Voids filled with asphalt, report only if an adjustment for asphalt binder content TV is less than  $\pm 0.3$  percent from OBC
- 4.3. Dust proportion, report only if an adjustment for asphalt binder content TV is less than  $\pm 0.3$  percent from OBC

The Engineer prepares 3 briquettes from a single split sample. To verify the JMF for stability and air void content, the Engineer tests the 3 briquettes and reports the average of 3 tests. The Engineer prepares new briquettes if the range of stability for the 3 briquettes is more than 8 points.

The Engineer may use the briquettes used for stability testing to determine bulk specific gravity under California Test 308. If the same briquettes are used and the tests using bulk specific gravity fail, the Engineer prepares 3 new briquettes and determines a new bulk specific gravity.

If tests on plant-produced samples do not verify the JMF, the Engineer notifies you and you must submit a new JMF submittal or submit an adjusted JMF based on your testing. JMF adjustments may include a change in:

1. Asphalt binder content TV up to  $\pm 0.6$  percent from the OBC value submitted on a *Contractor Hot Mix Asphalt Design Data* form except do not adjust the TV for asphalt rubber binder for RHMA-G below 7.0 percent
2. Aggregate gradation TVs within the TV limits specified in the aggregate gradation tables

You may adjust the JMF only once due to a failed verification test. An adjusted JMF requires a new *Contractor Job Mix Formula Proposal* form and verification of a plant-produced sample.

The Engineer re-verifies the JMF if HMA production has stopped for longer than 30 days and the verified JMF is older than 12 months.

For each HMA type and aggregate size specified, the Engineer verifies at the Department's expense up to 2 proposed JMF, including a JMF adjusted after verification failure. The Engineer deducts \$3,000 from payments for each verification exceeding this limit. This deduction does not apply to verifications initiated by the Engineer or if a JMF expires while HMA production is stopped longer than 30 days.

#### **39-1.03F Job Mix Formula Renewal**

You may request a JMF renewal by submitting:

1. Proposed JMF on a *Contractor Job Mix Formula Proposal* form
2. Mix design documentation on a *Contractor Hot Mix Asphalt Design Data* form used for the previously verified JMF

If the Engineer requests, sample the following materials in the presence of the Engineer and place in labeled containers weighing no more than 50 lb each:

1. Coarse, fine, and supplemental fine aggregate from stockpiles, cold feed belts, or hot bins. Samples must include at least 120 lb for each coarse aggregate, 80 lb for each fine aggregate, and 10 lb for each type of supplemental fines. The Department combines these aggregate samples to comply with the JMF TVs submitted on a *Contractor Job Mix Formula Proposal* form.
2. RAP from stockpiles or RAP system. Samples must be at least 60 lb.
3. Asphalt binder from the binder supplier. Samples must be in two 1-quart cylindrical-shaped cans with open top and friction lids.
4. Asphalt rubber binder with the components blended in the proportions to be used. Samples must be in four 1-quart cylindrical-shaped cans with open top and friction lids.

Notify the Engineer at least 2 business days before sampling materials. For aggregate, RAP, and HMA, split samples into at least 4 parts. Submit 2 parts to the Engineer and use 1 part for your testing.

The Engineer reviews each complete JMF renewal submittal within 5 business days.

The Engineer may verify aggregate qualities during this review period.

The Engineer verifies the JMF under section 39-1.03E except:

1. Engineer retains samples until you provide test results for your part on a *Contractor Job Mix Formula Renewal* form.
2. Department tests samples of materials obtained from the HMA production unit after you submit test results that comply with the specifications for the quality characteristics in section 39-1.03E.
3. Engineer verifies each proposed JMF within 30 days of receiving verification samples.
4. You may not adjust the JMF due to a failed verification.
5. For each HMA type and aggregate gradation specified, the Engineer verifies at the Department's expense 1 proposed JMF.

If the Engineer verifies the JMF renewal, the Engineer provides you a *Caltrans Hot Mix Asphalt Verification* form.

### **39-1.03G Job Mix Formula Acceptance**

HMA will be accepted for use on the project when:

1. Engineer's review of the JMF shows compliance with the specifications
2. Engineer verifies the JMF through start-up testing

### **39-1.04 CONTRACTOR QUALITY CONTROL**

#### **39-1.04A General**

Establish, maintain, and change a quality control system to ensure materials and work comply with the specifications. Submit quality control test results within 24 hours of sampling.

You must identify the HMA sampling location in your QC plan. During production, take samples under California Test 125, except if you request and if authorized, sample HMA from any of the following locations:

1. At the plant from deposited piles or windrows
2. From the truck with an automatic sampling device
3. Windrow
4. Mat behind the paver

#### **39-1.04B Prepaving Conference**

Hold a prepaving conference with the Engineer at a mutually agreed time and place. Discuss methods of performing the production and paving work.

#### **39-1.04D Aggregate**

Determine the aggregate moisture content and RAP moisture content in continuous mixing plants at least twice a day during production and adjust the plant controller. Determine the RAP moisture content in batch mixing plants at least twice a day during production and adjust the plant controller.

#### **39-1.04E Reclaimed Asphalt Pavement**

Perform RAP quality control testing each day.

For Standard Construction Process – The Contractor may choose to use one of the following methods for the submission of the combined aggregate gradation:

1. Sample RAP once daily and determine the RAP aggregate gradation under California Test 367, appendix B. Results shall be submitted to the Engineer within 24 hours of sampling.
2. Use the mix design RAP values.

For Method construction Process – The combined aggregate gradations shall use the mix design RAP values.

#### **39-1.04F Density Cores**

To determine density for Standard Construction process projects, take 4- or 6-inch diameter density cores every 250 tons of hot mix asphalt placed according to part 3, "Section B, "Test site location," of California Test Method 375, "Determining the in-place density and relative compaction of hot mix asphalt pavement

using nuclear gages.” Take density cores in the Engineer's presence. Backfill and compact holes with authorized material. Before submitting a density core, mark it with, lot, subplot and core number. Each day's cores shall be accompanied by a corresponding Tulare County HMA Density Core Submittal Form and shall be placed in a protective container.

The above mentioned form can be found at:

<https://tularecounty.ca.gov/rma/index.cfm/rma-documents/public-works-documents/tulare-county-hma-density-core-submittal-form/>

If a density core is damaged, replace it with a density core taken within 1 foot longitudinally from the original density core. Relocate any density core located within 1 foot of a rumble strip to 1 foot transversely away from the rumble strip.

#### **39-1.04G Briquettes**

Prepare 3 briquettes for each stability and air void content determination. Report the average of 3 tests. Prepare new briquettes and test again when the range of stability for the 3 briquettes is more than 8 points.

You may use the same briquettes used for stability testing to determine bulk specific gravity under California Test 308. If you use these briquettes and tests using bulk specific gravity fail, you may prepare 3 new briquettes and determine a new bulk specific gravity.

#### **39-1.05 ACCEPTANCE CRITERIA**

HMA acceptance is specified in the sections for each HMA construction process.

Sample materials for testing under California Test 125 and the applicable test method, except samples may be taken:

1. At the plant from a truck with an automatic sampling device
2. At the plant from a deposited pile or windrow
3. From the mat behind the paver

Sampling shall be completed by certified personnel authorized by the approved Quality Control Plan, statistically based, and random.

HMA acceptance is based on:

1. Authorized JMF
2. Accepted QC plan for Standard Construction process projects
3. Compliance with the HMA acceptance tables
4. Visual inspection

The Department prepares 3 briquettes for each stability and air void content determination. The average of 3 tests is reported. If the range of stability for the 3 briquettes is more than 8 points, new briquettes are prepared and tested.

The Department may use the briquettes used for stability testing to determine bulk specific gravity under California Test 308. If the Engineer uses the same briquettes and the tests using that bulk specific gravity fail, the Engineer prepares 3 new briquettes and determines a new bulk specific gravity.

#### **39-1.06 DISPUTE RESOLUTION**

Work with the Engineer to avoid potential conflicts and to resolve disputes regarding test result discrepancies. Notify the Engineer within 5 days of receiving a test result if you dispute the test result.

If you or the Engineer dispute each other's test results, submit quality control test results and copies of paperwork including worksheets used to determine the disputed test results. An independent third party performs referee testing. Before the independent third party participates in a dispute resolution, the party must be accredited under the Caltrans Independent Assurance Program. The independent third party must be independent of the project. By mutual agreement, the independent third party is chosen from an independent, non-biased laboratory having the capabilities to perform the necessary test.



If split quality control or acceptance samples are not available, the independent third party uses any available material representing the disputed HMA for evaluation.

### **39-1.07 PRODUCTION START-UP EVALUATION**

The Engineer evaluates HMA production and placement at production start-up.

Within the first 750 tons produced on the 1st day of HMA production, in the Engineer's presence and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Take RAP samples from the RAP system. Sample HMA under California Test 125, except if you request and if authorized, you may sample HMA from any of the following locations:

1. At the plant from deposited piles or windrows.
2. From trucks with an automatic sampling device.
3. Windrow
4. Mat behind the paver

For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 2 split parts and keep 1 part.

For Standard Construction process projects, you and the Department must test the split samples and report test results within 3 business days of sampling. If you proceed before receipt of the test results, the Engineer may consider the HMA placed to be represented by these test results.

### **39-1.08 PRODUCTION**

A lot shall be defined as material from the same mix design of the same Project.

Sublots shall be defined as material from a lot, up to but not to exceed 750 tons HMA.

Core lots shall be defined as material from a subplot, up to but not to exceed 250 tons HMA.

No subplot shall be carried over to the next day of production and paving.

#### **39-1.08A General**

Produce HMA in a batch mixing plant or a continuous mixing plant. Proportion aggregate by hot or cold feed control.

HMA plants must be Caltrans qualified. Before production, the HMA plant must have current qualification under the Caltran's Materials Plant Quality Program.

During production, you may adjust:

1. Hot or cold feed proportion controls for virgin aggregate and RAP
2. Set point for asphalt binder content

#### **39-1.08B Mixing**

Mix HMA ingredients into a homogeneous mixture of coated aggregates.

Asphalt binder must be from 275 to 375 degrees F when mixed with aggregate.

Asphalt rubber binder must be from 350 to 425 degrees F when mixed with aggregate.

When mixed with asphalt binder, aggregate must not be more than 325 degrees F. These aggregate temperature specifications do not apply if you use RAP.

HMA with or without RAP must not be more than 325 degrees F.

### 39-1.09 SUBGRADE, TACK COAT, AND GEOSYNTHETIC PAVEMENT INTERLAYER

#### 39-1.09A General

Prepare subgrade or apply tack coat to surfaces receiving HMA. If specified, place geosynthetic pavement interlayer over a coat of asphalt binder.

#### 39-1.09B Subgrade

Subgrade to receive HMA must comply with the compaction and elevation tolerance specifications in the sections for the material involved. Subgrade must be free of loose and extraneous material. If HMA is paved on existing base or pavement, remove loose paving particles, dirt, and other extraneous material by any means including flushing and sweeping.

#### 39-1.09C Tack Coat

Apply tack coat:

1. To existing pavement, including planed surfaces
2. Between HMA layers
3. To vertical surfaces of:
  - 3.1. Curbs
  - 3.2. Gutters
  - 3.3. Construction joints
4. Outside of the limits of geosynthetic pavement interlayer between new and existing HMA layers.

Before placing HMA, apply tack coat in 1 application. The application rate must be the minimum residual rate specified for the underlying surface conditions shown in the following tables:

**Tack Coat Application Rates for HMA Type A, Type B, and RHMA-G**

HMA overlay over:	Minimum residual rates (gal/sq yd)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h asphaltic emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 asphaltic emulsion	Asphalt binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h asphaltic emulsion
New HMA (between layers)	0.02	0.03	0.02
PCC and existing HMA (AC) surfaces	0.03	0.04	0.03
Planed PCC and HMA (AC) surfaces	0.05	0.06	0.04

**Tack Coat Application Rates for OGFC**

OGFC over:	Minimum residual rates (gal/sq yd)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h asphaltic emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 asphaltic emulsion	Asphalt binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h asphaltic emulsion
New HMA	0.03	0.04	0.03
PCC and existing HMA (AC) surfaces	0.05	0.06	0.04
Planed PCC and HMA (AC) surfaces	0.06	0.07	0.05

If you dilute asphaltic emulsion, mix until homogeneous before application.

For vertical surfaces, apply a residual tack coat rate that will thoroughly coat the vertical face without running off.

If you request and if authorized, you may:

1. Change tack coat rates
2. Omit tack coat between layers of new HMA during the same work shift if:
  - 2.1. No dust, dirt, or extraneous material is present
  - 2.2. Surface is at least 140 degrees F

Immediately in advance of placing HMA, apply additional tack coat to damaged areas or where loose or extraneous material is removed.

Close areas receiving tack coat to traffic. Do not track tack coat onto pavement surfaces beyond the job site.

Asphalt binder tack coat must be from 285 to 350 degrees F when applied and shall “break” prior to asphalt placement.

Payment for Tack Coat shall be based on minimum residual application rates, as specified in the above tables, and total tonnage shall be based on the Engineer’s calculations.

### **39-1.09D Geosynthetic Pavement Interlayer**

Place geosynthetic pavement interlayer under the manufacturer's instruction.

Before placing the geosynthetic pavement interlayer and asphalt binder:

1. Repair cracks 1/4 inch and wider, spalls, and holes in the pavement. These repairs are change order work.
2. Clean the pavement of loose and extraneous material.

Immediately before placing the interlayer, apply  $0.25 \pm 0.03$  gal of asphalt binder per square yard of interlayer or until the fabric is saturated. Apply asphalt binder the width of the geosynthetic pavement interlayer plus 3 inches on each side. At interlayer overlaps, apply asphalt binder on the lower interlayer the same overlap distance as the upper interlayer.

Asphalt binder must be from 285 to 350 degrees F and below the minimum melting point of the geosynthetic pavement interlayer when applied.

Align and place the interlayer with no folds that result in a triple thickness, except that triple thickness layers less than 1 inch in width may remain if less than 1/2 inch in height. Folds that result in a triple layer greater than a 1 inch width must be slit and overlapped in a double thickness at least 2 inches in width.

The minimum HMA thickness over the interlayer must be 0.12 foot thick, including conform tapers. Do not place the interlayer on a wet or frozen surface.

Overlap the interlayer borders from 2 to 4 inches. In the direction of paving, overlap the following roll with the preceding roll at any break.

You may use rolling equipment to correct distortions or wrinkles in the interlayer.

If asphalt binder tracked onto the interlayer or brought to the surface by construction equipment causes interlayer displacement, cover it with a small quantity of HMA.

Before placing HMA on the interlayer, do not expose the interlayer to:

1. Traffic, except for crossings under traffic control, and only after you place a small HMA quantity
2. Sharp turns from construction equipment
3. Damaging elements

Pave HMA on the interlayer during the same work shift.

### **39-1.10 SPREADING AND COMPACTING EQUIPMENT**

Paving equipment for spreading must be:

1. Self-propelled
2. Mechanical
3. Equipped with a screed or strike-off assembly that can distribute HMA the full width of a traffic lane
4. Equipped with a full-width compacting device
5. Equipped with automatic screed controls and sensing devices that control the thickness, longitudinal grade, and transverse screed slope

Install and maintain grade and slope references.

The screed must produce a uniform HMA surface texture without tearing, shoving, or gouging.

The paver must not leave marks such as ridges and indentations, unless you can eliminate them by rolling.

Rollers must be equipped with a system that prevents HMA from sticking to the wheels. You may use a parting agent that does not damage the HMA or impede the bonding of layers.

In areas inaccessible to spreading and compacting equipment:

1. Spread the HMA by any means to obtain the specified lines, grades, and cross sections.
2. Use a pneumatic tamper, plate compactor, or equivalent to achieve thorough compaction.

Edge of pavement treatment shall be per the 2015 Standard Plan P75, Case B where tapered safety edge is 30 degrees plus or minus 10 degrees. Tapered safety edge shall be extruded, densified edge of uniform grade and consistency as produced with Carlson brand safety attachment. An equivalent extruded, tapered safety edge will be accepted and approved by the County upon performing an acceptable trial example or demonstration.

### **39-1.12 SMOOTHNESS**

#### **39-1.12A General**

Determine HMA smoothness with a profilograph and a straightedge.

If concrete pavement is placed on HMA:

1. Cold plane the HMA finished surface to within specified tolerances if it is higher than the grade ordered.
2. Remove and replace HMA if the finished surface is lower than 0.05 foot below the grade ordered.

#### **39-1.12B Straightedge**

The top layer of HMA pavement must not vary from the lower edge of a 12-foot straightedge:

1. More than 0.01 foot when the straightedge is laid parallel with the centerline
2. More than 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. More than 0.02 foot when the straightedge is laid within 24 feet of a pavement conform

#### **39-1.12C Profilograph**

For the top layer of HMA Type A pavement, determine the  $PI_0$  and must-grinds under California Test 526. Take 2 profiles within each traffic lane, 3 feet from and parallel with the edge of each lane.

A must-grind is a deviation of 0.3 inch or more in a length of 25 feet. You must correct must-grinds.

Profile the pavement in the Engineer's presence.

On tangents and horizontal curves with a centerline radius of curvature of 2,000 feet, the  $PI_0$  must be at most 3 inches per 0.1-mile section.

On horizontal curves with a centerline radius of curvature from 1,000 to 2,000 feet, including pavement within the superelevation transitions, the  $PI_0$  must be at most 6 inches per 0.1-mile section.

Before the Engineer accepts HMA pavement for smoothness, submit final profilograms.

Submit 1 copy of profile information in Microsoft Excel and 1 copy of longitudinal pavement profiles in ".erd" format or other ProVAL compatible format to the Resident Engineer.

The following HMA pavement areas do not require a  $PI_0$ . You must measure these areas with a 12-foot straightedge and determine must-grinds with a profilograph:

1. New HMA with a total thickness less than 0.25 foot
2. HMA sections of city or county streets and roads, turn lanes, and collector lanes less than 1,500 feet in length

The following HMA pavement areas do not require a  $PI_0$  and you must measure them with a 12-foot straightedge:

1. Horizontal curves with a centerline radius of curvature less than 1,000 feet, including pavement within the superelevation transitions of those curves
2. Within 12 feet of a transverse joint separating the pavement from:
  - 2.1. Existing pavement not constructed under the same project
  - 2.2. A bridge deck or approach slab
3. Exit ramp termini, truck weigh stations, and weigh-in-motion areas
4. If steep grades and superelevation rates greater than 6 percent are present:
  - 4.1. Ramps
  - 4.2. Connectors
5. Turn lanes
6. Areas within 15 feet of manholes or drainage transitions
7. Acceleration and deceleration lanes for at-grade intersections
8. Shoulders and miscellaneous areas
9. HMA pavement within 3 feet from and parallel to the construction joints formed between curbs, gutters, or existing pavement

#### **39-1.12D Smoothness Correction**

If the top layer of HMA Type A, Type B, or RHMA-G pavement does not comply with the smoothness specifications, grind the pavement to within specified tolerances, remove and replace it, or place an overlay of HMA. Do not start corrective work until your choice of methods is authorized by the Resident Engineer.

Remove and replace areas of OGFC not in compliance with the must-grind and straightedge specifications, except you may grind OGFC for correcting smoothness:

1. At transverse joints separating the OGFC from pavement not constructed under the same project
2. Within 12 feet of a transverse joint separating the OGFC from a bridge deck or approach slab

Corrected HMA pavement areas must be uniform rectangles with edges:

1. Parallel to the nearest HMA pavement edge or lane line
2. Perpendicular to the pavement centerline

Measure the corrected HMA pavement surface with a profilograph and a 12-foot straightedge and correct the pavement to within specified tolerances. If a must-grind area or straightedged pavement cannot be corrected to within specified tolerances, remove and replace the pavement.

On areas ground but not overlaid with OGFC, apply fog seal coat under section 37-2.

#### **39-1.13 HOT MIX ASPHALT ON BRIDGE DECKS**

Produce and place HMA on bridge decks under the Method construction process.

Aggregate must comply with: 1/2-inch & 3/4-inch HMA Types A gradations.

If authorized, aggregate may comply with the no. 4 HMA Types A and B gradation for a section or taper at a bridge end that is less than 1 inch in total depth.

If a concrete expansion dam is to be placed at a bridge deck expansion joint, tape oil-resistant construction paper to the deck over the area to be covered by the dam before placing the tack coat and HMA across the joint.

Do not leave a vertical joint more than 0.15 foot high between adjacent lanes open to traffic.

The tack coat application rate must be the minimum residual rate specified in section 39-1.09C. For HMA placed on a deck seal, use the minimum residual rate specified for a PCC underlying surface.

HMA placed on a deck seal must be placed in at least 2 approximately equal layers. The 1st layer must be at least 1 inch thick after compaction. Protect the deck seal throughout all operations.

For placement of the 1st HMA layer on a deck seal:

1. Comply with the HMA application temperature recommended by the deck seal manufacturer.
2. Deliver and place HMA using equipment with pneumatic tires or rubber-faced wheels. Do not operate other vehicles or equipment on the bare deck seal.
3. Deposit HMA on the deck seal in such a way that the deck seal is not damaged. Do not windrow the HMA material on the bridge deck seal.
4. Place HMA in a downhill direction on bridge decks with grades over 2 percent.
5. Spreading equipment need not be self-propelled.

### **39-1.14 MISCELLANEOUS AREAS AND DIKES**

The following specifications in section 39 do not apply to miscellaneous areas and dikes:

1. HMA construction process
2. HMA mix design requirements
3. Contractor quality control
4. Production start-up evaluation

Miscellaneous areas are outside the traveled way and include:

1. Median areas not including inside shoulders
2. Island areas
3. Sidewalks
4. Gutters
5. Gutter flares
6. Ditches
7. Overside drains
8. Aprons at the ends of drainage structures

Spread miscellaneous areas in 1 layer and compact to the specified lines and grades.

For miscellaneous areas and dikes:

1. Do not submit a JMF.
2. Choose the 3/8-inch or 1/2-inch HMA Type A and Type B aggregate gradations.
3. Minimum asphalt binder content must be 6.8 percent for 3/8-inch aggregate and 6.0 percent for 1/2-inch aggregate. If you request and if authorized, you may reduce the minimum asphalt binder content.
4. Choose asphalt binder Grade PG 70-10 or the same grade specified for HMA.

### **39-1.15 MINOR HOT MIX ASPHALT**

#### **39-1.15A GENERAL**

##### **39-1.15A(1) Summary**

The following specifications in section 39 do not apply to minor HMA:

1. HMA construction process
2. HMA mix design requirements
3. Contractor quality control

4. Production start-up evaluation

#### **39-1.15A(2) Definitions**

Reserved

#### **39-1.15A(3) Submittals**

Reserved

#### **39-1.15A(4) Quality Control and Assurance**

Reserved

#### **39-1.15B MATERIALS**

The minimum asphalt binder content must be 6.8 percent for 3/8-inch aggregate gradation and 6.0 percent for 1/2-inch aggregate gradation.

Choose asphalt binder Grade PG 64-10, PG 64-16, or PG 70-10.

If you request and if authorized, you may reduce the minimum asphalt binder content.

Choose the 3/8-inch or 1/2-inch HMA Type A aggregate gradation.

#### **39-1.15C CONSTRUCTION**

Produce HMA at a central mixing plant.

Choose any method and equipment to spread and compact.

The surface must be:

1. Textured uniformly
2. Compacted firmly
3. Without depressions, humps, and irregularities

Smoothness specifications do not apply.

#### **39-1.30 PAYMENT**

Section 39-1.30 includes specifications for HMA payment. The weight of each HMA mixture designated in the Bid Item List must be the combined mixture weight.

If recorded batch weights are printed automatically, the bid item for HMA is measured by using the printed batch weights, provided:

1. Total aggregate and supplemental fine aggregate weight per batch is printed. If supplemental fine aggregate is weighed cumulatively with the aggregate, the total aggregate batch weight must include the supplemental fine aggregate weight.
2. Each truckload's zero tolerance weight is printed before weighing the 1st batch and after weighing the last batch.
3. Time, date, mix number, load number, and truck identification is correlated with a load slip.
4. Copy of the recorded batch weights is certified by a licensed weighmaster and submitted to the Engineer.

If tack coat, asphalt binder, and asphaltic emulsion are paid with separate contract items, their contract items are measured under section 92 or section 94.

The Department does not adjust the unit price for an increase or decrease in the tack coat quantity. Section 9-1.06 does not apply to tack coat.

Place hot mix asphalt dike of the type specified is measured along the completed length.

Place hot mix asphalt (miscellaneous areas) is measured as the in-place compacted area.

HMA dike is paid for as place hot mix asphalt dike of the type specified in the Bid Item List and by weight for hot mix asphalt.

HMA specified to be placed in miscellaneous areas is paid for as place hot mix asphalt (miscellaneous area) and by weight for hot mix asphalt.

If minor hot mix asphalt is paid by area, it is measured from the dimensions shown; final quantities shall reflect field adjustments made by the Resident Engineer.

Payment for tack coat for minor HMA is included in payment for minor hot mix asphalt or the bid item that requires minor HMA.

Geosynthetic pavement interlayer is measured for the actual pavement area covered.

The Contractor shall, at their expense retain a third-party testing laboratory as described in Section 39-1.06 to complete the testing necessary to prove material suitability. No costs shall be borne by the County as a result of this additional testing unless written approval is provided by the Resident Engineer prior to testing.

## **39-2 STANDARD CONSTRUCTION PROCESS**

### **39-2.01 GENERAL**

Section 39-2 includes specifications for HMA produced and constructed under the Standard construction process.

### **39-2.02 CONTRACTOR QUALITY CONTROL**

#### **39-2.02A Quality Control Plan**

Establish, implement, and maintain a Quality Control (QC) Plan for HMA production and placement. The QC plan must describe the organization and procedures you will use to:

1. Control the quality characteristics
2. Determine when corrective actions are needed (action limits)
3. Implement corrective actions

When you submit the proposed JMF, submit the proposed QC plan. You and the Engineer must discuss the QC plan during the prepaving conference.

The QC plan must address the elements affecting HMA quality including:

1. Aggregate
2. Asphalt binder
3. Additives
4. Production
5. Paving

The Engineer reviews each QC plan within 5 business days from the submittal. Do not produce HMA until the Engineer authorizes the QC plan.

#### **39-2.02B Quality Control Testing**

Perform sampling and testing at the specified frequency for the quality characteristics shown in the following table:



**Minimum Quality Control—Standard Construction Process**

Quality characteristic	Test method	Minimum sampling and testing frequency	HMA type			
			A	B	RHMA-G	OGFC
Aggregate gradation <sup>a</sup>	California Test 202	1 per 750 tons and any remaining part	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>
Sand equivalent (min) <sup>c</sup>	California Test 217		47	42	47	--
Asphalt binder content (%)	California Test 379 or 382		JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (% , max)	California Test 226 or 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0	1.0	1.0
Percent of maximum theoretical density (%) <sup>d, e</sup>	QC plan	2 per business day (min.)	91–97	91–97	91–97	--
Stabilometer value (min) <sup>c, f</sup> No. 4 and 3/8" gradings 1/2" and 3/4" gradings	California Test 366	One per 4,000 tons or 2 per 5 business days, whichever is greater	30	30	--	--
			37	35	23	--
Air void content (%) <sup>c, g</sup>	California Test 367		4 ± 2	4 ± 2	TV ± 2	--
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants <sup>h</sup>	California Test 226 or 370	2 per day during production	--	--	--	--
Percent of crushed particles coarse aggregate (% , min) One fractured face Two fractured faces Fine aggregate (% , min) (Passing no. 4 sieve and retained on no. 8 sieve.) One fractured face	California Test 205	As designated in the QC plan. At least once per project	90	25	--	90
			75	--	90	75
Los Angeles Rattler (% , max) Loss at 100 rev. Loss at 500 rev.	California Test 211		12	--	12	12
			45	50	40	40

Flat and elongated particles (% max by weight @ 5:1)	California Test 235		Report only	Report only	Report only	Report only
Fine aggregate angularity (% min)	California Test 234		45	45	45	--
Voids filled with asphalt (%) <sup>i</sup> No. 4 grading 3/8" grading 1/2" grading 3/4" grading	California Test 367		76.0–80.0 73.0–76.0 65.0–75.0 65.0–75.0	76.0–80.0 73.0–76.0 65.0–75.0 65.0–75.0	Report only	--
Voids in mineral aggregate (% min) <sup>i</sup> No. 4 grading 3/8" grading 1/2" grading 3/4" grading	California Test 367		17.0 15.0 14.0 13.0	17.0 15.0 14.0 13.0	-- -- 18.0–23.0 <sup>j</sup> 18.0–23.0 <sup>j</sup>	--
Dust proportion <sup>i</sup> No. 4 and 3/8" gradings 1/2" and 3/4" gradings	California Test 367		0.9–2.0 0.6–1.3	0.9–2.0 0.6–1.3	Report only	--
Smoothness	Section 39-1.12	--	12-foot straight-edge, must grind, and P <sub>10</sub>	12-foot straight-edge, must grind, and P <sub>10</sub>	12-foot straight-edge, must grind, and P <sub>10</sub>	12-foot straight-edge, must grind, and P <sub>10</sub>
Asphalt rubber binder viscosity @ 350 °F, centipoises	Section 39-1.02D	Section 39-1.04C	--	--	1,500–4,000	1,500–4,000
Asphalt modifier	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D
CRM	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D

<sup>a</sup> Determine combined aggregate gradation containing RAP under California Test 367.

<sup>b</sup> The tolerances must comply with the allowable tolerances in section 39-1.02E.

<sup>c</sup> Report the average of 3 tests from a single split sample.

<sup>d</sup> Required for HMA Type A, Type B, and RHMA-G if the specified paved thickness is at least 0.15 foot.

<sup>e</sup> Determine maximum theoretical density (California Test 309) at the frequency specified for Test Maximum Density under California Test 375, Part 5.D.

<sup>f</sup> California Test 304, Part 2.13.

<sup>g</sup> Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

<sup>h</sup> For adjusting the plant controller at the HMA plant.

<sup>i</sup> Report only if the adjustment for the asphalt binder content TV is less than or equal to ±0.3 percent from OBC value submitted on a *Contractor Hot Mix Asphalt Design Data* form.

<sup>j</sup> Voids in mineral aggregate for RHMA-G must be within this range.

For any single quality characteristic except smoothness, if 2 consecutive quality control test results do not comply with the action limits or specifications:

1. Stop production.
2. Notify the Engineer.
3. Take corrective action.
4. Demonstrate compliance with the specifications before resuming production and placement.

**39-2.03 ACCEPTANCE CRITERIA**

**39-2.03A Testing**

The Department samples for acceptance testing and tests for the quality characteristics shown in the following table:

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**HMA Acceptance—Standard Construction Process**

Quality characteristic	Test method	HMA type			
		A	B	RHMA-G	OGFC
Aggregate gradation <sup>a</sup>	California Test 202	JMF ± tolerance <sup>c</sup>	JMF ± tolerance <sup>c</sup>	JMF ± tolerance <sup>c</sup>	JMF ± tolerance <sup>c</sup>
Sieve					
3/4"		X <sup>b</sup>			
1/2"			X		
3/8"				X	
No. 4					X
No. 8	X	X	X	X	
No. 200	X	X	X	X	
Sand equivalent (min) <sup>d</sup>	California Test 217	47	42	47	--
Asphalt binder content (%)	California Test 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF ± 0.50
HMA moisture content (% max)	California Test 226 or 370	1.0	1.0	1.0	1.0
Percent of maximum theoretical density (%) <sup>e, f</sup>	California Test 375	91–97	91–97	91–97	--
Stabilometer value (min) <sup>d, g</sup>	California Test 366				
No. 4 and 3/8" gradings		30	30	--	--
1/2" and 3/4" gradings	37	35	23	--	
Air void content (%) <sup>d, h</sup>	California Test 367	4 ± 2	4 ± 2	TV ± 2	--
Percent of crushed particles	California Test 205				
Coarse aggregate (% min)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min)					
(Passing no. 4 sieve and retained on no. 8 sieve.)					
One fractured face	70	20	70	90	
Los Angeles Rattler (% max)	California Test 211				
Loss at 100 rev.		12	--	12	12
Loss at 500 rev.	45	50	40	40	
Fine aggregate angularity (% min)	California Test 234	45	45	45	--
Flat and elongated particles (% max by weight @ 5:1)	California Test 235	Report only	Report only	Report only	Report only
Voids filled with asphalt (%) <sup>i</sup>	California Test 367				
No. 4 grading		76.0–80.0	76.0–80.0	Report only	--
3/8" grading		73.0–76.0	73.0–76.0		
1/2" grading		65.0–75.0	65.0–75.0		
3/4" grading		65.0–75.0	65.0–75.0		
Voids in mineral aggregate (% min) <sup>i</sup>	California Test 367				
No. 4 grading		17.0	17.0	--	--
3/8" grading		15.0	15.0	--	
1/2" grading		14.0	14.0	18.0–23.0 <sup>j</sup>	
3/4" grading		13.0	13.0	18.0–23.0 <sup>j</sup>	
Dust proportion <sup>i</sup>	California Test 367				
No. 4 and 3/8" gradings		0.9–2.0	0.9–2.0	Report only	--
1/2" and 3/4" gradings	0.6–1.3	0.6–1.3			

Smoothness	Section 39-1.12	12-foot straight-edge, must grind, and $Pl_0$	12-foot straight-edge, must grind, and $Pl_0$	12-foot straight-edge, must grind, and $Pl_0$	12-foot straight-edge and must grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92
Asphalt rubber binder	Various	--	--	Section 92-1.01D(2) and section 39-1.02D	Section 92-1.01D(2) and section 39-1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
CRM	Various	--	--	Section 39-1.02D	Section 39-1.02D

<sup>a</sup> The Engineer determines combined aggregate gradations containing RAP under California Test 367.

<sup>b</sup> "X" denotes the sieves the Engineer tests for the specified aggregate gradation.

<sup>c</sup> The tolerances must comply with the allowable tolerances in section 39-1.02E.

<sup>d</sup> The Engineer reports the average of 3 tests from a single split sample.

<sup>e</sup> The Engineer determines percent of maximum theoretical density if the specified paved thickness is at least 0.15 foot under California Test 375, except the Engineer uses:

1. California Test 308, Method A, to determine in-place density of each density core instead of using the nuclear gauge in Part 4, "Determining In-Place Density By The Nuclear Density Device."
2. California Test 309 to determine maximum theoretical density instead of calculating test maximum density in Part 5, "Determining Test Maximum Density."

<sup>f</sup> The Engineer determines maximum theoretical density (California Test 309) at the frequency specified for Test Maximum Density under California Test 375, Part 5.D.

<sup>g</sup> California Test 304, Part 2.13.

<sup>h</sup> The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

<sup>i</sup> Report only if the adjustment for the asphalt binder content TV is less than or equal to  $\pm 0.3$  percent from the OBC value submitted on a *Contractor Hot Mix Asphalt Design Data* form.

<sup>j</sup> Voids in mineral aggregate for RHMA-G must be within this range.

Quality Assurance testing frequencies shall comply with the Tulare County Quality Assurance Program.

For any single quality characteristic except smoothness, if test results do not comply with the specifications:

1. Stop production.
2. Take corrective action.
3. Take samples and split each sample into 4 parts in the Engineer's presence. Test 1 part for compliance with the specifications and submit 2 parts to the Engineer. The Department tests 1 part for compliance with the specifications and reserves and stores 1 parts.
4. Demonstrate compliance with the specifications before resuming production and placement.

The Department tests the density core you take from each 250 tons of HMA production. One additional core is taken and filed as a dispute core with the County. The Department determines the percent of maximum theoretical density for each density core by determining the density core's density and dividing by the maximum theoretical density.

If the specified total paved thickness is at least 0.15 foot and any layer is less than 0.15 foot, the Department determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA thickness.

Cores shall be taken from individual lifts provided they measure 0.15 foot or more in thickness.

\*Cores shall be taken prior to allowing traffic on the new pavement.

Cores shall be labeled per Section 39-1.04F

Randomly select core locations for every 250 tons of hot mix asphalt placed according to Part 3, "Section B, "Test Site Location," of California Test 375, "Determining the In-Place Density and Relative Compaction of Hot Mix Asphalt Pavement Using Nuclear Gages."

For percent of maximum theoretical density, the Engineer determines a deduction for each test result outside the specifications using the reduced payment factors shown in the following table:

**Reduced Payment Factors for Percent of Maximum Theoretical Density**

HMA Type A and B and RHMA-G percent of maximum theoretical density	Reduced payment factor	HMA Type A and B and RHMA-G percent of maximum theoretical density	Reduced payment factor
91.0	0.0000	97.0	0.0000
90.9	0.0125	97.1	0.0125
90.8	0.0250	97.2	0.0250
90.7	0.0375	97.3	0.0375
90.6	0.0500	97.4	0.0500
90.5	0.0625	97.5	0.0625
90.4	0.0750	97.6	0.0750
90.3	0.0875	97.7	0.0875
90.2	0.1000	97.8	0.1000
90.1	0.1125	97.9	0.1125
90.0	0.1250	98.0	0.1250
89.9	0.1375	98.1	0.1375
89.8	0.1500	98.2	0.1500
89.7	0.1625	98.3	0.1625
89.6	0.1750	98.4	0.1750
89.5	0.1875	98.5	0.1875
89.4	0.2000	98.6	0.2000
89.3	0.2125	98.7	0.2125
89.2	0.2250	98.8	0.2250
89.1	0.2375	98.9	0.2375
89.0	0.2500	99.0	0.2500
< 89.0	Remove and replace	> 99.0	Remove and replace

### 39-2.04 TRANSPORTING, SPREADING, AND COMPACTING

Trucks trailers and beds shall be clean and free of debris prior to loading of asphalt materials. Do not use petroleum based products such as: kerosene, diesel fuel or cutback material to clean or coat the interior of the trailers and beds. Any trucks found to be out of specification may be rejected by the RE or their designated personnel at the Contractor's expense.

Do not use petroleum based products such as kerosene, diesel fuel or cutback materials to release HMA from placement and compaction equipment.

Do not pave HMA on wet pavement or a frozen surface.

You may deposit HMA in a windrow and load it in the paver if:

1. Paver is equipped with a hopper that automatically feeds the screed
2. Loading equipment can pick up the windrowed material and deposit it in the paver hopper without damaging base material
3. Activities for deposit, pickup, loading, and paving are continuous
4. HMA temperature in the windrow does not fall below 260 degrees F

HMA handled, spread, or windrowed must not stain the finished surface of any improvement, including pavement.

HMA must be free of:

1. Segregation
2. Coarse or fine aggregate pockets
3. Hardened lumps

Longitudinal joints in the top layer must match specified lane edges. Alternate the longitudinal joint offsets in the lower layers at least 0.5 foot from each side of the specified lane edges. You may request other longitudinal joint placement patterns.

Until the adjoining through lane's top layer has been paved, do not pave the top layer of:

1. Shoulders
2. Tapers
3. Transitions
4. Road connections
5. Driveways
6. Curve widenings
7. Chain control lanes
8. Turnouts
9. Turn pockets

If the number of lanes changes, pave each through lane's top layer before paving a tapering lane's top layer. Simultaneous to paving a through lane's top layer, you may pave an adjoining area's top layer, including shoulders. Do not operate spreading equipment on any area's top layer until completing final compaction.

If leveling with HMA is specified, fill and level irregularities and ruts with HMA before spreading HMA over the base, existing surfaces, or bridge decks. You may use mechanical equipment other than a paver for these areas. The equipment must produce uniform smoothness and texture. HMA used to change an existing surface's cross slope or profile is not paid for as HMA (leveling).

If placing HMA against the edge of existing pavement, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material.

Pave HMA in maximum 0.25-foot thick compacted layers.

If the surface to be paved is both in sunlight and shade, pavement surface temperatures must be taken in the shade.

Spread HMA Type A and Type B at the atmospheric and surface temperatures shown in the following table:

Compacted layer thickness, feet	Atmospheric, °F		Surface, °F	
	Unmodified asphalt binder	Modified asphalt binder <sup>2</sup>	Unmodified asphalt binder	Modified asphalt binder <sup>2</sup>
< 0.15	55	50	60	55
0.15-0.25	45	45	50	50

<sup>2</sup> Except asphalt rubber binder.

Each paver spreading HMA must be followed by 3 rollers as follows:

1. One vibratory roller specifically designed to compact HMA. The roller must be capable of at least 2,500 vibrations per minute and must be equipped with amplitude and frequency controls. The roller's gross static weight must be at least 7.5 tons.

2. One oscillating type pneumatic-tired roller at least 4 feet wide. Pneumatic tires must be of equal size, diameter, type, and ply. The tires must be inflated to 60 psi minimum and maintained so that the air pressure does not vary more than 5 psi.
3. One steel-tired, 2-axle tandem roller. The roller's gross static weight must be at least 7.5 tons.

Each roller must have a separate operator. Rollers must be self-propelled and reversible.

If a vibratory roller is used as a finish roller, turn the vibrator off.

If the asphalt binder for HMA Type A and Type B is unmodified asphalt binder, complete:

1. First coverage of breakdown compaction before the surface temperature drops below 250 degrees F
2. Breakdown and intermediate compaction before the surface temperature drops below 200 degrees F
3. Finish compaction before the surface temperature drops below 150 degrees F

If the asphalt binder for HMA Type A and Type B is modified asphalt binder, complete:

1. First coverage of breakdown compaction before the surface temperature drops below 240 degrees F
2. Breakdown and intermediate compaction before the surface temperature drops below 180 degrees F
3. Finish compaction before the surface temperature drops below 140 degrees F

Rolling must leave the completed surface compacted and smooth without tearing, cracking, or shoving.

Do not allow traffic on new HMA pavement until its mid-depth temperature is below 160 degrees F and QC coring has been completed by the Contractor's Laboratory.

If you request and if authorized, you may cool HMA Type A with water when rolling activities are complete. Apply water under section 17-3.

The Contractor shall be responsible for obtaining the specified in-place density and surface finish.

### **39-3 EXISTING ASPHALT CONCRETE**

#### **39-3.01 GENERAL**

##### **39-3.01A General**

Section 39-3.01 includes general specifications for performing work on existing asphalt concrete facilities.

Work performed on existing asphalt concrete facilities must comply with section 15.

##### **39-3.01B Materials**

Not Used

##### **39-3.01C Construction**

Before removing a portion of an asphalt concrete facility, make a 2-inch deep saw cut to a true line along the limits of the removal area.

##### **39-3.01D Payment**

Not Used

#### **39-3.02 REPLACE ASPHALT CONCRETE SURFACING**

##### **39-3.02A General**

Section 39-3.02 includes specifications for replacing asphalt concrete surfacing

##### **39-3.02B Materials**



HMA to be used for replacing asphalt concrete surfacing must comply with Type A HMA as specified in section 39-2.

The grade of asphalt binder must be PG 64-10.

Tack coat must comply with section 39-1.02B.

### **39-3.02C Construction**

Where replace asphalt concrete surfacing is shown, remove the full depth of the existing asphalt concrete surfacing and replace with HMA. The Engineer determines the exact limits of asphalt concrete surfacing to be replaced.

Replace asphalt concrete in a lane before the lane is specified to be opened to traffic.

Before removing asphalt concrete, outline the replacement area and cut neat lines with a saw or grind to full depth of the existing asphalt concrete. Do not damage asphalt concrete and base remaining in place.

If you excavate the base beyond the specified plane, replace it with HMA.

Do not use a material transfer vehicle for replacing asphalt concrete surfacing.

Before placing HMA, apply a tack coat as specified in section 39-1.09C.

Place HMA using method compaction as specified in section 39-2.

### **39-3.02D Payment**

The payment quantity for replace asphalt concrete surfacing is the volume determined from the dimensions shown.

## **39-3.03 REMOVE ASPHALT CONCRETE DIKES**

### **39-3.03A General**

Section 39-3.03 applies to removing asphalt concrete dikes outside the limits of excavation.

### **39-3.03B Materials**

Not Used

### **39-3.03C Construction**

Reserved

### **39-3.03D Payment**

Not Used

## **39-3.04 COLD PLANING ASPHALT CONCRETE PAVEMENT**

### **39-3.04A General**

Section 39-3.05 includes specifications for cold planing asphalt concrete pavement.

Cold planing asphalt concrete pavement includes the removal of pavement markers, traffic stripes, and pavement markings within the area of cold planing.

### **39-3.04B Materials**

HMA for temporary tapers must be of the same quality that is used for the HMA overlay or comply with the specifications for minor HMA in section 39-1.15.

### **39-3.04C Construction**

#### **39-3.04C(1) General**

Do not use a heating device to soften the pavement.

The cold planing machine must be:

1. Equipped with a cutter head width that matches the planing width unless a wider cutter head is authorized.
2. Equipped with automatic controls for the longitudinal grade and transverse slope of the cutter head and:
  - 2.1. If a ski device is used, it must be at least 30 feet long, rigid, and a 1-piece unit. The entire length must be used in activating the sensor.
  - 2.2. If referencing from existing pavement, the cold planing machine must be controlled by a self-contained grade reference system. The system must be used at or near the centerline of the roadway. On the adjacent pass with the cold planing machine, a joint-matching shoe may be used.
3. Equipped to effectively control dust generated by the planing operation
4. Operated such that no fumes or smoke is produced.

Replace broken, missing, or worn machine teeth.

If you do not complete placing the HMA surfacing before opening the area to traffic, you must:

1. Construct a temporary HMA taper to the level of the existing pavement.
2. Place HMA during the next work shift.
3. Submit a corrective action plan that shows you will complete cold planing and placement of HMA in the same work shift. Do not restart cold planing activities until the corrective action plan is authorized.

#### **39-3.04C(2) Grade Control and Surface Smoothness**

Install and maintain grade and transverse slope references.

The final cut must result in a neat and uniform surface.

The completed surface of the planed pavement must not vary more than 0.02 foot when measured with a 12-foot straightedge parallel with the centerline. With the straightedge at right angles to the centerline, the transverse slope of the planed surface must not vary more than 0.03 foot.

Where lanes are open to traffic, the drop-off of between adjacent lanes must not be more than 0.15 foot.

#### **39-3.04C(3) Planed Material**

Remove cold planed material concurrently with planing activities such that the removal does not lag more than 50 feet behind the planer.

#### **39-3.04C(4) Temporary HMA Tapers**

If a drop-off between the existing pavement and the planed area at transverse joints cannot be avoided before opening to traffic, construct a temporary HMA taper. The HMA temporary taper must be:

1. Placed to the level of the existing pavement and tapered on a slope of 30:1 (horizontal:vertical) or flatter to the level of the planed area
2. Compacted by any method that will produce a smooth riding surface

Completely remove temporary tapers before placing permanent surfacing.

#### **39-3.04D Payment**

Not Used

### **39-3.05 REMOVE BASE AND SURFACING**

#### **39-3.05A General**

Section 39-3.06 includes specifications for removing base and asphalt concrete surfacing.

#### **39-3.05B Materials**

Not Used

#### **39-3.05C Construction**

Where base and surfacing are described to be removed, remove base and surfacing to a depth of at least 6 inches below the grade of the existing surfacing. Backfill resulting holes and depressions with embankment material under section 19.

#### **39-3.05D Payment**

The payment quantity for remove base and surfacing is the volume determined from the dimensions shown.

#### **39-3.06–39-3.08 RESERVED**

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**REVISED STANDARD SPECIFICATIONS 2018  
DATED 04-17-2020**

**ORGANIZATION**

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

Each revision to the *Standard Specifications* begins with a revision clause that describes or introduces a revision to the *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 *Standard Specifications* for any other reference to a paragraph of the *Standard Specifications*.

DRAFT

RSS. Use in all projects. Do not add. Inserted by boilerplate merge.

**REVISED STANDARD SPECIFICATIONS DATED  
04-17-20**

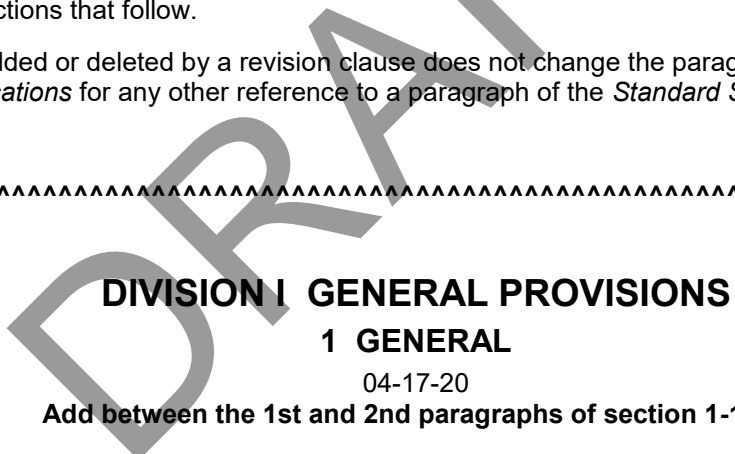
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**DIVISION I GENERAL PROVISIONS  
1 GENERAL**

04-17-20

**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:

Term	Interpretation	Conditions
Fed-Std-595	AMS Std 595	--
Grade SS1	Grade SS-1	--
Grade SS1h	Grade SS-1h	--
Grade CSS1	Grade CSS-1	--
Grade CSS1h	Grade CSS-1h	--
Grade QS1h	Grade QS-1h	--
Grade CQS1h	Grade CQS-1h	--

04-17-20



**Replace section 2-1.12B(2) with:**

10-19-18

**2-1.12B(2) DBE Commitment Submittal**

Submit DBE information under section 2-1.33.

Submit a copy of the quote from each DBE shown on the DBE Commitment form that describes the type and dollar amount of work shown on the form no later than 4 p.m. on the 5th day after bid opening. If the last day for submitting the quote falls on a Saturday or holiday, it may be submitted on the next business day with the same effect as if it had been submitted on the 5th day.

Submit a DBE Confirmation form for each DBE shown on the DBE Commitment form to establish that it will be participating in the Contract in the type and dollar amount of work shown on the form. If a DBE is participating as a joint venture partner, submit a copy of the joint venture agreement.

Failure to submit a completed DBE Confirmation form and a copy of the quote from each DBE will result in disallowance of the DBE's participation.

**Add between the 4th and 5th paragraphs of section 2-1.15B:**

10-19-18

Submit a copy of the quote from each DVBE listed on the Certified DVBE Summary form that describes the type and dollar amount of work shown on the form no later than 4 p.m. on the 4th business day after bid opening.

**Add between the 3rd and 4th paragraphs of section 2-1.15C(1):**

10-19-18

Submit a copy of the quote from each DVBE listed on the Certified DVBE Summary form that describes the type and dollar amount of work shown on the form no later than 4 p.m. on the 4th business day after bid opening.

**Add between the 1st and 2nd paragraphs of section 2-1.18C:**

10-19-18

Failure to submit a completed Certified Small Business Listing for the Non-Small Business Preference form by 4 p.m. on the 2nd business day after bid opening will result in a nonresponsive bid.

**Replace section 2-1.33B with:**

10-19-18

**2-1.33B Bid Form Submittal Schedules**

**2-1.33B(1) General**

The *Bid* book includes forms specific to the Contract. The deadlines for the submittal of the forms vary depending on the requirements of each Contract. Determine the requirements of the Contract and submit the forms based on the applicable schedule specified in section 2-1.33B.

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

**2-1.33B(2) Federal-Aid Contracts**

**2-1.33B(2)(a) General**

Section 2-1.33B(2) applies to a federal-aid contract.



**2-1.33B(2)(b) Contracts with a DBE Goal**

**2-1.33B(2)(b)(i) General**

Section 2-1.33B(2)(b) applies if a DBE goal is shown on the *Notice to Bidders*.

**2-1.33B(2)(b)(ii) Bid Form Submittal**

Submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for a  
Federal-Aid Contract with a DBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid except for the public works contractor registration number
Copy of the Bid to the Department of Transportation as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Subcontractor List	Time of bid except for the public works contractor registration number
Copy of the Subcontractor List as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Small Business Status	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid
DBE Commitment	No later than 4 p.m. on the 5th day after bid opening <sup>b</sup>
DBE Confirmation	No later than 4 p.m. on the 5th day after bid opening <sup>b</sup>
DBE Good Faith Efforts Documentation	No later than 4 p.m. on the 5th day after bid opening <sup>b</sup>

<sup>a</sup>Submit only if you choose the option.

<sup>b</sup>If the last day for submitting the bid form falls on a Saturday or holiday, it may be submitted on the next business day with the same effect as if it had been submitted on the day specified.

**2-1.33B(2)(b)(iii) Reserved**

**2-1.33B(2)(c) Contracts without a DBE Goal**

**2-1.33B(2)(c)(i) General**

Section 2-1.33B(2)(c) applies if a DBE goal is not shown on the *Notice to Bidders*.

**2-1.33B(2)(c)(ii) Bid Form Schedule**

Submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for a  
Federal-Aid Contract without a DBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid except for the public works contractor registration number
Copy of the Bid to the Department of Transportation as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Subcontractor List	Time of bid except for the public works contractor registration number
Copy of the Subcontractor List as submitted at the time of bid with the public works contractor registration numbers	10 days after bid opening
Small Business Status	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid

<sup>a</sup>Submit only if you choose the option.

**2-1.33B(2)(c)(iii) Reserved**

**2-1.33B(2)(d)–2-1.33B(2)(h) Reserved**

**2-1.33B(3) Non-Federal-Aid Contracts**

**2-1.33B(3)(a) General**

Section 2-1.33B(3) applies to non-federal-aid contracts.

**2-1.33B(3)(b) Contracts with a DVBE Goal**

**2-1.33B(3)(b)(i) General**

Section 2-1.33B(3)(b) applies if a DVBE goal is shown on the *Notice to Bidders*.

**2-1.33B(3)(b)(ii) Bid Form Submittal**

Submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for a  
Non-Federal-Aid Contract with a DVBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid except for the public works contractor registration number for a joint-venture contract
For a joint-venture contract, copy of the Bid to the Department of Transportation as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Subcontractor List	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid
Certified DVBE Summary	No later than 4 p.m. on the 4th business day after bid opening
California Company Preference	Time of bid
Request for Small Business Preference or Non–Small Business Preference <sup>a</sup>	Time of bid
Certified Small Business Listing for the Non–Small Business Preference <sup>a</sup>	No later than 4 p.m. on the 2nd business day after bid opening

<sup>a</sup>Submit only if you choose the option or preference.

**2-1.33B(3)(b)(iii) Reserved**

**2-1.33B(3)(c) Contracts without a DVBE Goal**

**2-1.33B(3)(c)(i) General**

Section 2-1.33B(3)(c) applies if a DVBE goal is not shown on the *Notice to Bidders*.

**2-1.33B(3)(c)(ii) Bid Form Submittal**

Submit the bid forms according to the schedule shown in the following table:

**Bid Form Submittal Schedule for a  
Non-Federal-Aid Contract without a DVBE Goal**

Form	Submittal deadline
Bid to the Department of Transportation	Time of bid except for the public works contractor registration number for a joint-venture contract
For a joint-venture contract, copy of the Bid to the Department of Transportation as submitted at the time of bid with the public works contractor registration number	10 days after bid opening
Subcontractor List	Time of bid
Opt Out of Payment Adjustments for Price Index Fluctuations <sup>a</sup>	Time of bid
California Company Preference	Time of bid
Certified DVBE Summary <sup>b</sup>	No later than 4 p.m. on the 4th business day after bid opening
Request for Small Business Preference or Non-Small Business Preference <sup>a</sup>	Time of bid
Certified Small Business Listing for the Non-Small Business Preference <sup>a</sup>	No later than 4 p.m. on the 2nd business day after bid opening

<sup>a</sup>Submit only if you choose the option or preference.

<sup>b</sup>Submit only if you obtain DVBE participation or you are the apparent low bidder, 2nd low bidder, or 3rd low bidder and you choose to receive the specified incentive.

**2-1.33B(3)(c)(iii) Reserved**

**2-1.33B(3)(d)–2-1.33B(3)(h) Reserved**

**2-1.33B(4)–2-1.33B(9) Reserved**

**3 CONTRACT AWARD AND EXECUTION**

04-17-20

**Replace the 1st paragraph of Section 3-1.04 with:**

Submit any bid protest to the Office Engineer before contract award.

04-17-20

#### 4 SCOPE OF WORK

10-18-19

**Replace the 7th and 8th paragraphs of section 4-1.07B with:**

10-18-19

The Department decides whether to accept a VECP and the estimated net construction-cost savings from adopting the VECP or parts of it. The Department may require you to accept a share of the investigation cost as a condition of reviewing a VECP. In determining the estimated net construction-cost savings, the Department excludes your VECP preparation cost and the Department's VECP investigation costs, including parts paid by you. After written acceptance, the Department considers the VECP and deducts the agreed cost of the investigation.

**Replace item 4 in the list in the 9th paragraph of section 4-1.07B with:**

10-18-19

- 4. Adjusts the payment so that the Change Order results in a credit to the Department of 50 percent of the estimated net construction-cost savings, except if the VECP provides a reduction in traffic congestion or avoids traffic congestion

**Replace the 10th paragraph of section 4-1.07B with:**

10-18-19

If a VECP providing for a reduction in traffic congestion or avoiding traffic congestion is accepted by the Department, the Department adjusts the payment that results in a credit to the Department of 40 percent of the estimated net construction-cost savings attributable to the VECP. Submit detailed traffic handling comparisons between the existing Contract and the proposed change, including estimates of the traffic volumes and congestion.

**Delete the 12th paragraph of section 4-1.07B**

10-18-19

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#### 5 CONTROL OF WORK

04-17-20

**Replace the 6th paragraph of section 5-1.13B(2) with:**

10-19-18

If the Department authorizes the termination or substitution of a listed DBE, make good faith efforts to find another DBE. The substitute DBE must (1) perform at least the same dollar amount of work as the original DBE under the Contract to the extent needed to meet the DBE goal and (2) be certified as a DBE with the most specific available NAICS or work code applicable to the type of work the DBE will perform on the Contract at the time of your request for substitution. Submit your documentation of good faith efforts within 7 days of your request for authorization of the substitution. The Department may authorize a 7-day extension of this submittal period at your request. Refer to 49 CFR 26 app A for guidance regarding evaluation of good faith efforts to meet the DBE goal.

**Replace the 2nd sentence in the 2nd paragraph of section 5-1.13C with:**

10-19-18

The substitute must be another DVBE, unless DVBEs are not available. The substitute must perform the work originally stated.

**Replace the 6th paragraph of section 5-1.13C with:**

10-19-18

If a DVBE substitute is not available, requests for substitutions of a listed DVBE must include:

1. Contact with the DVBE advocate from the Department and the Department of Veteran Affairs
2. Search results from the Department of General Services' website of available DVBEs
3. Communication with a DVBE community organization nearest the job site, if applicable
4. Documented communication with DVBEs describing the work to be performed, the percentage of the total bid, the corresponding dollar amount, and the responses to the communication

**Replace section 5-1.24 with:**

10-19-18

**5-1.24 CONSTRUCTION SURVEYS**

**5-1.24A General**

The Department places stakes and marks under chapter 12, "Construction Surveys," of the Department's *Surveys Manual*.

Submit your request for Department-furnished stakes:

1. Once staking area is ready for stakes
2. On a Request for Construction Staking form

After your submittal, the Department starts staking within 2 business days.

Preserve stakes and marks placed by the Department. If the stakes or marks are destroyed, the Department replaces them at the Department's earliest convenience and deducts the cost.

**Replace section 5-1.26 with:**

10-19-18

**5-1.26 RESERVED**

**Replace the 2nd and 3rd paragraphs of section 5-1.43A with:**

10-18-19

Submit potential claim records using the Department's Internet potential claim system. For information on submittal of potential claim records using the Internet potential claim system, go to the Department's Division of Construction website.

A potential claim record that you submit using the Internet potential claim system is the same as the originator of the claim and you signing the potential claim record.

For the Internet potential claim system, potential claim records are:

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

Submit a Closed Potential Claim Record form if you choose not to pursue an Initial Potential Claim Record that has been submitted.

**Replace item 3.3.4 in the list in the 2nd paragraph of section 5-1.43D with:**

04-17-20

- 3.3.4. Equipment rates at the rental rates listed in Labor Surcharge and Equipment Rental Rates in effect when the affected work related to the potential claim was performed

**Add between the 2nd and 3rd paragraphs of section 5-1.43D:**

04-17-20

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

**Replace section 5-1.43E(1)(i) with:**

04-17-20

Pay the DRA or each DRB member \$2,000 per day for the DRA's or DRB member's participation at each on-site meeting.

On-site meetings include:

1. Initial project meeting
2. Progress meetings
3. Dispute meetings

The payment includes full compensation for on-site time, travel expenses, transportation, lodging, travel time, and incidentals for each day or portion thereof.

Before a DRA or DRB member spends any time reviewing the plans or specifications, evaluating positions, preparing recommendations, completing forms, or performing any other off-site DRA- or DRB-related tasks, the parties must agree to pay for the tasks. Pay the DRA or DRB member \$200 per hour for these off-site tasks. This payment includes full compensation for incidentals such as expenses for telephone, fax, and computer services.

The Department does not pay for (1) any DRA- or DRB-related work performed after Contract acceptance or (2) your cost of preparing for or attending ADR resolution meetings.

The Department pays:

1. \$2,000 for each DRA on-site meeting
2. \$6,000 for each DRB on-site meeting
3. \$200 per hour for agreed off-site DRA- or DRB-related tasks

The Department does not adjust the unit price for an increase or decrease in the quantity of:

1. DRA on-site meeting
2. DRB on-site meeting
3. Hourly off-site DRA- or DRB-related tasks

Within 60 days of receipt of Department payment, submit copies of associated invoices and supporting documents in the form of a canceled check or bank statement for DRA- or DRB- payment verification.

**Replace section 5-1.43E(2)(a) with:**

04-17-20

Section 5-1.43E(2) applies to a contract with an estimated cost from \$3 million to \$10 million.

**Replace item 1.2 in the list in the 1st paragraph of section 5-1.43E(2)(b) with:**

- 1.2. Have completed training by the Department

10-19-18

**Replace section 5-1.43E(3)(a) with:**

Section 5-1.43E(3) applies to a contract with an estimated cost of over \$10 million.

04-17-20

**Replace item 1.2 in the list in the 1st paragraph of section 5-1.43E(3)(b) with:**

- 1.2. Have completed training by the Department

10-19-18

^^

**6 CONTROL OF MATERIALS**

04-19-19

**Replace section 6-1.03 with:**

04-19-19

**6-1.03 LOCAL MATERIALS**

**6-1.03A General**

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, the Department tests material for quality characteristics from an untested local source. If satisfactory material from that source is used in the work, the Department does not charge you for the tests; otherwise, the Department deducts the test costs.

^^

**7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC**

10-18-19

**Replace item 1.3 in the list in the 2nd paragraph of section 7-1.02K(3) with:**

- 1.3. Last four digits of social security number pursuant to Labor Code § 226(a)

10-18-19

**Replace the 6th through 10th paragraphs of section 7-1.02K(3) with:**

04-19-19

You may submit certified payroll records electronically using the Department's secure file transfer protocol site. For information on electronic submission of certified payroll records, go to the Department's Division of Construction website.

Submit payroll records electronically in a nonmodifiable PDF file, using the following file-naming convention:

TT-EA-WE-DOCTYPE.PDF

where:

TT = district, leading zero

EA = Contract number, excluding the district identification number, expressed as 6 characters

WE = week ending date entered as month, leading zero; day of month, leading zero; year, last 2 digits

DOCTYPE = labor payroll document type, CP for Certified Payroll, FB for Fringe Benefit Statement, or SC for Statement of Compliance

Before submitting the payroll records electronically, you and your subcontractors must each complete and sign the Request for Electronic Submission of Certified Payroll Records and e-mail it in PDF format to the district Labor Compliance Office. The Department provides you and your subcontractors' assigned representatives the accounts and user identifications by e-mail after each Request for Electronic Submission of Certified Payroll Records is received.

Each electronic submission must:

1. Include certified payroll records in a nonmodifiable PDF file
2. Include a signed Statement of Compliance form with each weekly record as a nonmodifiable PDF file
3. Be received by the Department by close of business on the 15th day of the month for the prior month's work

**Replace the 12th paragraph of section 7-1.02K(3) with:**

10-18-19

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

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

**Replace the 1st sentence in the 5th paragraph of section 7-1.02K(6)(a) with:**

10-19-18

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

**Replace section 7-1.02K(6)(j)(iii) with:**

10-18-19

**7-1.02K(6)(j)(iii) Unregulated Earth Material Containing Lead**

Reserved

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

10-18-19

Submit the names and emergency telephone numbers of the nearest fire suppression agencies before the start of job site activities as an informational submittal. Post the names and phone numbers at a prominent place at the job site.

Submit a copy of your fire prevention plan required by Cal/OSHA as an informational submittal before the start of job site activities.

04-19-19

Cooperate with fire prevention authorities in performance of the work.



Immediately report fires occurring within and near the project limits by dialing 911 and to the nearest fire suppression agency by using the emergency phone numbers retained at the job site.

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

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

**Replace the 2nd paragraph of section 7-1.02M(3) with:**

04-19-19

For the list of permitted sites, go to the Department of Conservation, Division of Mine Reclamation website.

**Replace the 13th paragraph of section 7-1.03 with:**

10-18-19

For a taper on a bridge deck or approach slab, construct the taper with rapid setting concrete under section 60-3.02B(2) or polyester concrete under section 60-3.04B(2). Prepare the surface to receive the taper under section 60-3.02C(7). For tapers with aggregate fillers, rake conform edges to ensure smooth transitions. Cure the taper for at least 3 hours or the minimum time recommended by the manufacturer before opening to traffic.

**Replace the 4th sentence in the 16th paragraph of section 7-1.03 with:**

10-18-19

When not shown and if ordered, providing flaggers is change order work.

**Replace the 3rd sentence in the 7th paragraph of section 7-1.04 with:**

10-18-19

When not shown and if ordered, providing flaggers is change order work.

**Replace the 13th paragraph of section 7-1.04 with:**

10-18-19

Equipment must enter and leave the highway via existing ramps and crossovers and must move in the direction of traffic. All movements of workers and construction equipment on or across lanes open to traffic must be performed in a manner that do not endanger the public. Your vehicles or other mobile equipment leaving an open traffic lane to enter the construction area must slow down gradually in advance of the location of the turnoff to give the traffic following an opportunity to slow down. When leaving a work area and entering a roadway carrying traffic, your vehicles and equipment must yield to traffic. Compensation for flaggers, used for all movement of workers and construction vehicles and equipment on or across lanes open to traffic, is included in the bid items of work involved.

AA

**8 PROSECUTION AND PROGRESS**

04-17-20

**Replace the row for Safety in the table in the 2nd paragraph of section 8-1.03 with:**

10-19-18

Safety	Injury and Illness Prevention Program, Code of Safe Practices, and job site posters
--------	---

**Replace the 2nd paragraph of section 8-1.07C with:**

04-17-20

Losses for idle equipment, idle workers, and moving or transporting equipment are eligible for delay-related payment adjustments.

**Replace item 3 in the list in the 3rd paragraph of section 8-1.07C with:**

04-19-19

3. Delay days exclude Saturdays and holidays.

**Add to section 8-1.07C:**

04-17-20

If you claim additional costs due to impacts from an excusable delay, you must comply with section 5-1.42. Support your claim for additional costs based on the difference between the cost to perform the work as planned and the cost to perform the work as changed as determined under section 9-1.04. The Department adjusts payment for the work portion that was impacted.

**Replace section 8-1.14E with:**

10-18-19

**8-1.14E Payment Adjustment for Termination**

If the Department issues a termination notice, the Engineer determines the payment for termination during the performance period, from contract approval date to contract acceptance date, based on the following:

1. Direct cost for the work performed:
  - 1.1. Including:
    - 1.1.1. Mobilization
    - 1.1.2. Demobilization
    - 1.1.3. Securing the job site for termination
    - 1.1.4. Losses from the sale of materials
  - 1.2. Not including:
    - 1.2.1. Cost of materials you keep
    - 1.2.2. Profit realized from the sale of materials
    - 1.2.3. Cost of material damaged by:
      - 1.2.3.1. Act of God
      - 1.2.3.2. Act of a public enemy
      - 1.2.3.3. Fire
      - 1.2.3.4. Flood.
      - 1.2.3.5. Governor-declared state of emergency
      - 1.2.3.6. Landslide
      - 1.2.3.7. Tsunami
    - 1.2.4. Other credits
2. Cost of remedial work, as estimated by the Engineer, is not reimbursed.
3. Allowance for profit not to exceed 4 percent of the cost of the work performed where a likelihood of having made a profit had the Contract not been terminated is shown.
4. Material handling costs for material returned to the vendor or disposed of as ordered.
5. Costs in determining the payment adjustment due to the termination, excluding attorney fees and litigation costs.
6. Overhead costs.

Termination of the Contract does not relieve the surety of its obligation for any just claims arising out of the work performed.

AA

**9 PAYMENT**

04-17-20

**Add between the 1st and 2nd paragraphs of section 9-1.04A:**

04-17-20

The Tentative Daily Extra Work Agreement form is used to identify the labor, materials, and equipment used on change order work paid at force account. Signatures on this form do not constitute final agreement regarding payment.

**Replace section 9-1.07B(5) with:**

10-19-18

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

The Engineer calculates the quantity of asphalt in HMA containing RAP using the following formula:

$$Qrap = HMARTT \times Xaa$$

where:

$$Xaa = Xta - [(Xrap \times Xra \times (Xta - 100)) / (100 \times (Xra - 100))]$$

and:

*Qrap* = quantity in tons of asphalt used in HMA containing RAP

*HMARTT* = HMA containing RAP, total tons placed

*Xaa* = asphalt content of HMA containing RAP adjusted to exclude the asphalt content in RAP, expressed as a percentage of the total weight of HMA containing RAP

*Xta* = total theoretical asphalt content in HMA containing RAP from the job mix formula, expressed as a percentage of the total weight of HMA containing RAP

*Xrap* = RAP percentage in HMA containing RAP from the job mix formula, expressed as a percentage of the total dry weight of aggregate in HMA containing RAP

*Xra* = average asphalt content of RAP from the job mix formula, expressed as percentage of total weight of RAP

**Replace the 2nd sentence in the 7th paragraph of section 9-1.11E with:**

04-19-19

The cost is determined under section 9-1.05 except no markup is allowed.

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

10-19-18

**9-1.16C Materials On Hand**

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

1. Compliant with other Contract parts
2. Material cost exceeds either of the following:
  - 2.1. \$50,000
  - 2.2. \$25,000 if the requestor is certified as one or more of the following:
    - 2.2.1. DVBE
    - 2.2.2. DBE
    - 2.2.3. Small business as certified by Department of General Services, Office of Small Business and Disabled Veteran Business Enterprise Services

3. Purchased
4. Invoice is submitted
5. Stored within the State and you submit evidence that the stored material is subject to the Department's control
6. Protected from weather and contamination
7. Water pollution control measures are established and maintained
8. Requested on the Department-furnished form

**Replace the 1st paragraph of section 9-1.16E(3) with:**

10-18-19

During each estimate period you fail to comply with a Contract part, including the submittal of a document as specified, such as QC plans, schedules, traffic control plans and water pollution control submittals, the Department withholds a part of the progress payment except as specified below for the failure to submit a document during the last estimate period.

**Replace the 3rd paragraph of section 9-1.17C with:**

10-18-19

If you claim that the total for work completed, excluding deductions, in the proposed final estimate is less than 90 percent of your total bid, the Department adjusts the final payment to cover your overhead. The adjustment in the final estimate is 10 percent of the difference between 90 percent of your total bid and the total for work completed, excluding deductions. The Department does not make this adjustment on a terminated contract.

**Replace section 9-1.17D(2)(b) with:**

04-17-20

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

**9-1.17D(2)(b)(i) General**

Section 9-1.17D(2)(b) includes specifications for overhead claims.

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

**9-1.17D(2)(b)(ii) Definitions**

**actual daily overhead rates:** The home office overhead and field office overhead rates expressed per business day for the contract performance period. The home office overhead rate is calculated using the Eichleay Formula and is based on overhead cost pools and all allocation bases from Contract and company revenues.

**added work:** Equals the value of the work completed minus the total bid.

**contract performance period:** The period from Contract approval to Contract acceptance.

**9-1.17D(2)(b)(iii) Submittals**

Submit the following for an overhead claim:

1. Final amount of additional payment requested.
2. Specific identification of each claim and dates associated with each claim for which you seek reimbursement for specific overhead costs.
3. Audit report prepared by an independent CPA for the contract performance period identifying the actual daily overhead rates, supporting calculations and documentation for both field and home office overhead excluding a profit markup.

Field office overhead costs from which the actual daily overhead rate is calculated must be:

1. Allowable under 48 CFR 31
2. Supported by reliable records
3. Related solely to the project
4. Incurred during the contract performance period
5. Comprised of only time-related field office overhead costs
6. Not a direct cost

Home-office overhead costs from which the actual daily overhead rate is calculated must be:

1. Allowable under 48 CFR 31
2. Supported by reliable records
3. Incurred during the contract performance period
4. Comprised of only fixed home-office overhead costs
5. Not a direct cost

Failure to submit the audit report for an overhead claim with the claim statement is a waiver of the overhead claim and operates as a bar to arbitration on the claim (Pub Cont Code § 10240.2).

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

Within 20 days of the Engineer's request, make your financial records available for an audit by the State for verifying the actual daily overhead rates in your audit report. The actual rate of time-related overhead is subject to authorization by the Engineer.

The Department pays for 1/2 the cost of the report unless otherwise specified. The cost is determined under section 9-1.05 except no markup is allowed.

\*\*\*\*\*  
**DIVISION II GENERAL CONSTRUCTION**  
**10 GENERAL**

04-19-19

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

04-19-19

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:

04-19-19

AWS code	Year of adoption
D1.1	2015
D1.3	2018
D1.4	2018
D1.5	2015
D1.6	2017
D1.8	2016

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

04-19-19

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:

04-19-19

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:

04-19-19

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 2 mm [1/16 in].

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

04-19-19

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:

04-19-19

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 section 12 with:

10-18-19

## 12 TEMPORARY TRAFFIC CONTROL

04-17-20

### 12-1 GENERAL

#### 12-1.01 GENERAL

Section 12-1 includes general specifications for providing temporary traffic control.

Temporary traffic control, including flagging, apparel, temporary traffic control devices, and equipment for flaggers, must comply with the *California MUTCD*, Part 6, "Temporary Traffic Control."

#### 12-1.02 MATERIALS

Not Used

#### 12-1.03 CONSTRUCTION

Assign flaggers to:

1. Control traffic
2. Warn the public of any dangerous conditions resulting from the work activities
3. Provide for the passage of traffic through the work as specified for the passage of traffic for public convenience and public safety

Maintain flagging apparel, traffic control devices, and equipment for flaggers in good repair.

#### 12-1.04 PAYMENT

Not Used

### 12-2 RESERVED

### 12-3 TEMPORARY TRAFFIC CONTROL DEVICES

#### 12-3.01 GENERAL

##### 12-3.01A General

##### 12-3.01A(1) Summary

Section 12-3.01 includes general specifications for providing temporary traffic control devices.

Providing temporary traffic control devices includes installing, placing, maintaining, repairing, replacing, and removing temporary traffic control devices.

Do not use different types of channelizing devices on the same alignment. The types include plastic drums, portable delineators, channelizers, tubular markers, traffic cones, and Type I and Type II barricades.

##### 12-3.01A(2) Definitions

**Category 1 temporary traffic control devices:** Small devices weighing less than 100 lb certified as crashworthy by crash testing or crash testing of similar devices. Category 1 temporary traffic control devices include traffic cones, plastic traffic drums, portable delineators, and channelizers.

**Category 2 temporary traffic control devices:** Small devices weighing less than 100 lb that are not expected to produce significant changes in vehicular velocity but could cause harm to impacting vehicles. Category 2 temporary traffic control devices include barricades and portable sign supports.

**Category 3 temporary traffic control devices:** Devices weighing 100 lb or more that are expected to produce significant changes in the vehicular velocity of impacting vehicles. Category 3 temporary traffic control devices include crash cushions, impact attenuator vehicles, temporary railing, temporary barrier, and end treatments for temporary railings and barriers.

**orange:** Orange, red-orange, fluorescent orange, or fluorescent red-orange.



**useable shoulder area:** Any longitudinal paved or unpaved contiguous surface adjacent to the traveled way with:

1. Enough weight-bearing capacity to support temporary traffic control devices, such as flashing arrow signs, PCMSs, and impact attenuator vehicles
2. Slope not greater than 6:1 (horizontal:vertical)

### **12-3.01A(3) Submittals**

At least 5 business days before starting any work using the devices or within 2 business days after the request if the devices are already in use, submit as informational submittals:

1. Self-certification for crashworthiness of Category 1 temporary traffic control devices. Either you or the manufacturer must perform the self-certification. Include:
  - 1.1. Date
  - 1.2. Federal aid number for a federal-aid contract
  - 1.3. Contract number, district, county, route, and post miles of the project limits
  - 1.4. Company name, street address, city, state, and zip code of the certifying vendor
  - 1.5. Printed name, signature, and title of the certifying person
  - 1.6. Types of Category 1 temporary traffic control devices
2. List of proposed Category 2 temporary traffic control devices

Obtain a standard form for self-certification from the Engineer.

Submit a sample of the type of portable delineator that you will be using before placing the delineators on the job site.

### **12-3.01A(4) Quality Assurance**

Reserved

### **12-3.01B Materials**

The condition of temporary traffic control devices must comply with the most current edition of the American Traffic Safety Services Association publication *Quality Guidelines for Temporary Traffic Control Devices and Features*.

Category 2 temporary traffic control devices must be on FHWA's list of acceptable crashworthy Category 2 hardware for work zones. For this list, go to FHWA's Safety Program website.

Category 2 temporary traffic control devices must be labeled with the FHWA acceptance letter code and the name of the manufacturer. The label must be legible and permanently affixed to the temporary traffic control device by the manufacturer.

Category 3 temporary traffic control devices must be on the Authorized Material List for highway safety features.

Retroreflectivity for the following materials must comply with Table 2A-3, "Minimum Maintained Retroreflectivity Levels," of the *California MUTCD* and be on the Authorized Material List for signing and delineation materials:

1. Retroreflective sheeting for barricades
2. Retroreflective bands for portable delineators
3. Retroreflective sheeting for construction area signs
4. Retroreflective sheeting for channelizers
5. Reflectors for Type K temporary railing
6. Retroreflective cone sleeves
7. White and orange retroreflective stripes for plastic traffic drums

The following temporary traffic control devices must be visible from 1,000 feet during the hours of darkness under an illumination of legal high-beam headlights by persons with 20/20 vision or vision corrected to 20/20:

1. Retroreflective bands on portable delineators
2. Retroreflective sheeting on channelizers
3. Retroreflective cone sleeves on traffic cones

#### **12-3.01C Construction**

Perform all layout work necessary to place channelizing devices:

1. On the proper alignment
2. Uniformly at the location and spacing described
3. Straight on a tangent alignment
4. On a true arc in a curved alignment

If temporary traffic control devices are damaged, displaced, or stop operating or functioning as described from any cause during the progress of the work, immediately repair, repaint, or replace the components and restore them to their original locations and positions.

If ordered, furnish and place additional temporary traffic control devices. This work is change order work unless the temporary traffic control devices are being furnished and placed for public safety or public convenience.

Level and plumb a portable system.

Delineate the location of a trailer mounted system with a taper consisting of 9 traffic cones placed 25 feet apart, except where the system is placed within a lane closure or behind a barrier or guardrail.

When a portable system is not in use, remove it from the job site, place it behind a barrier or guardrail, or move it to an area at least 15 feet from the edge of the traveled way.

#### **12-3.01D Payment**

Not Used

### **12-3.02 TRAFFIC CONES**

#### **12-3.02A General**

Section 12-3.02 includes specifications for placing traffic cones.

#### **12-3.02B Materials**

A traffic cone must be flexible, orange, and manufactured from commercial-quality material designed for the intended purpose.

The outer section of the portion above the base of the traffic cone must be translucent and fabricated of a highly pigmented, orange, PV compound. The overall height of a traffic cone must be at least 28 inches and the bottom inside diameter of the traffic cone must be at least 10.5 inches.

During the hours of darkness, a traffic cone must have a retroreflective cone sleeve.

Retroreflective cone sleeves must be permanently affixed, double-band, sleeves consisting of 2 white retroreflective bands. The top band must be 6 inches wide and placed a maximum of 4 inches from the top of the cone. The lower band must be 4 inches wide and placed 2 inches below the bottom of the top band. You may use traffic cones with double-band retroreflective cone sleeves during daylight hours.

#### **12-3.02C Construction**

Use the same type of retroreflective cone sleeve for all cones used on the project.

Anchor the base of a traffic cone if it does not have enough size and weight to keep the cone in an upright position.

#### **12-3.02D Payment**

Not Used

### **12-3.03 PLASTIC TRAFFIC DRUMS**

#### **12-3.03A General**

##### **12-3.03A(1) Summary**

Section 12-3.03 includes specifications for placing plastic traffic drums.

##### **12-3.03A(2) Definitions**

Reserved

##### **12-3.03A(3) Submittals**

Submit a certificate of compliance for plastic traffic drums.

##### **12-3.03A(4) Quality Assurance**

Reserved

#### **12-3.03B Materials**

A plastic traffic drum must comply with the manufacturer's instructions for weight and ballast.

A plastic traffic drum must:

1. Be orange LDPE
2. Be flexible and collapsible upon vehicle impact
3. Have a weighted base to maintain an upright position and prevent displacement by passing traffic
4. Have a height such that the top of the drum is at least 36 inches above the traveled way

The weighted base must:

1. Be detachable
2. Be shaped to prevent rolling upon impact
3. Have a 38-inch maximum outside diameter
4. Have a 4-inch maximum height above the ground surface

#### **12-3.03C Construction**

Use 1 type of plastic traffic drum on the project.

Use the same type and brand of retroreflective sheeting for all plastic traffic drums used on the project.

Do not use sandbags or comparable ballast.

Moving plastic traffic drums from location to location if ordered after initial placement is change order work.

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

Not Used

### **12-3.04 PORTABLE DELINEATORS**

#### **12-3.04A General**

Section 12-3.04 includes specifications for placing portable delineators.

#### **12-3.04B Materials**

A portable delineator, including its base, must be made of a material that has enough rigidity to remain upright when unattended and must be flexible or collapsible upon impact by a vehicle. The base must be (1) shaped to prevent rolling after impact and (2) anchored or weigh enough to keep the delineator in an upright position. Ballast for a portable delineator must comply with the manufacturer's instructions.

A portable delineator must be a minimum of 36 inches in height. The vertical portion of a portable delineator must be predominantly orange. The post must be not less than 3 inches in width or diameter. Retroreflectorization of a portable delineator that has a height of less than 42 inches must be provided by two 3-inch-wide white bands placed a maximum of 2 inches from the top with a maximum of 6 inches between the bands. Retroreflectorization of a portable delineator that has a height of 42 inches or more

must be provided by four 4- to 6-inch-wide alternating orange and white stripes with the top stripe being orange.

**12-3.04C Construction**

Use only 1 type of portable delineator on the project.

**12-3.04D Payment**

Not Used

**12-3.05 CHANNELIZERS**

**12-3.05A General**

Section 12-3.05 includes specifications for placing channelizers.

**12-3.05B Materials**

A channelizer must be on the Authorized Material List for signing and delineation materials.

Its post must be orange.

A channelizer must be affixed with 3-by-12-inch, retroreflective, white sheeting.

**12-3.05C Construction**

Install channelizers on clean, dry surfaces.

Cement the channelizer bases to the pavement as specified for cementing pavement markers to the pavement in section 81-3.

When no longer required for the work, remove the channelizers and the underlying adhesive used to cement the channelizer bases to the pavement.

Do not remove channelizers that are shown to be left in place at the time of work completion.

**12-3.05D Payment**

Not Used

**12-3.06–12-3.09 RESERVED**

**12-3.10 BARRICADES**

**12-3.10A General**

Section 12-3.10 includes specifications for placing barricades.

**12-3.10B Materials**

Markings for barricade rails must be alternating orange and white retroreflective stripes.

Orange retroreflective sheeting must match color PR no. 6, Highway Orange, of the FHWA Color Tolerance Chart.

The interface between the rail surface and the retroreflective sheeting must be free of air bubbles or voids.

The predominant color of barricade components other than the rails must be white or unpainted galvanized metal or aluminum.

You may use a Type III barricade as a sign support if the barricade has been successfully crash tested under *NCHRP Report 350* criteria or the Manual for Assessing Safety Hardware (MASH) crash testing guidelines as a single unit with an attached sign panel of the size and type to be used.

A sign panel for a construction area sign or marker panel to be mounted on a barricade must comply with section 12-3.11B(2).

Do not imprint an owner identification on the retroreflective face of any rail.

### 12-3.10C Construction

Place each barricade such that the stripes slope downward in the direction road users are to pass.

Place each sand-filled bag near the ground level on the lower parts of the frame or stays to serve as ballast for the barricades. Do not place ballast on top of barricades or over any retroreflective barricade rail face that is facing traffic.

Do not remove barricades that are shown to be left in place at the time of work completion.

Moving a barricade from location to location is change order work if ordered after initial placement of the barricade.

### 12-3.10D Payment

Not Used

## 12-3.11 CONSTRUCTION AREA SIGNS

### 12-3.11A General

#### 12-3.11A(1) Summary

Section 12-3.11 includes specifications for placing construction area signs.

04-17-20

Construction area signs include general information signs and all temporary signs and object markers required for the direction of traffic within the project limits.

10-18-19

#### 12-3.11A(2) Definitions

**background:** Dominant sign color.

**legend:** Letters, numerals, tildes, bars, arrows, route shields, symbols, logos, borders, artwork, and miscellaneous characters that are intended to convey specific meanings on traffic signs.

#### 12-3.11A(3) Submittals

Reserved

#### 12-3.11A(4) Quality Assurance

Reserved

### 12-3.11B Materials

#### 12-3.11B(1) General

04-17-20

Construction area sign must be the product of a commercial sign manufacturer.

10-18-19

The style, font, size, and spacing of the legend must comply with the *Standard Alphabets* published in the FHWA's Standard Highway Signs Book.

The sign must be visible from 500 feet and legible from 300 feet at noon on a cloudless day and during the hours of darkness under an illumination of legal low-beam headlights by persons with 20/20 vision or vision corrected to 20/20. A fabric sign panel on a portable sign is not subject to the visibility and legibility requirements for headlight illumination during the hours of darkness.

04-17-20

Construction area sign must have a black legend on a retroreflective, fluorescent orange background. W10-1 advance warning sign for highway-rail grade crossings must have a black legend on a retroreflective fluorescent yellow background.

10-18-19

#### 12-3.11B(2) Stationary-Mounted Signs

04-17-20

Stationary-mounted sign must comply with section 82-2 and must have Type XI retroreflective sheeting.

A temporary sign support of any type placed within 15 feet from the edge of the traveled way must comply with the specifications for a Category 2 temporary traffic control device.

The sign post must be good, sound wood posts with the breakaway feature as shown for a roadside sign.

Fastening hardware and back braces must be commercial-quality materials.

### **12-3.11B(3) Portable Signs**

Each portable sign must consist of a base, standard or framework, and a sign panel. Units delivered to the job site must be capable of being placed into immediate operation.

A sign panel for a portable sign must comply with the specifications for a stationary-mounted sign panel or be fabricated from one of the following materials:

1. Type VI, retroreflective, elastomeric roll-up fabric
2. Nonretroreflective, cotton, drill fabric
3. Nonretroreflective, flexible, industrial, nylon fabric
4. Another type of fabric if authorized

Do not use nonretroreflective portable signs during the hours of darkness.

The bottom of the portable sign panel must be at least 1 foot above the edge of the traveled way.

### **12-3.11B(4) Temporary Object Markers**

A temporary object marker must be mounted on a stationary wood or metal post and must comply with section 82.

A marker panel for a Type N (CA), Type P (CA), or Type R (CA) object marker must comply with the specifications for a marker panel for a stationary sign panel in section 12-3.11B(2).

A target plate, post, and the hardware for a Type K (CA) and Type L (CA) temporary object marker must comply with the specifications for these items in section 82.

### **12-3.11B(5) General Information Signs**

Reserved

### **12-3.11C Construction**

#### **12-3.11C(1) General**

Place all construction area signs outside of the traveled way. Do not block a bicycle or pedestrian pathway with a construction area sign.

Place, install, maintain, and remove temporary object markers shown as construction area signs as specified for construction area signs.

Maintain accurate information on construction area signs. Immediately replace or correct signs that convey inaccurate information.

During the progress of work, immediately cover or remove unneeded signs.

Cover each unneeded sign such that the message cannot be seen. Securely fasten the cover to prevent movement from wind.

Check each covered sign daily for damage to the cover and immediately replace any cover if needed.

Clean each construction area sign panel at the time of installation and at least once every 4 months thereafter.

Be prepared to furnish additional construction area sign panels, posts, and mounting hardware or portable sign mounts on short notice due to changing traffic conditions or damage caused by traffic or other conditions. Maintain an inventory of commonly required items at the job site or make arrangements with a supplier who is able to furnish the items daily on short notice.

Replace any damaged construction area sign or repair the sign if authorized.

Remove any sign panel that exhibits irregular luminance, shadowing, or dark blotches at nighttime under vehicular headlight illumination.

### **12-3.11C(2) Stationary-Mounted Signs**

Install stationary-mounted signs as described for the installation of roadside signs except:

1. Back braces and blocks for sign panels are not required for signs 48 inches or smaller in width and diamond-shaped signs 48 by 48 inches or smaller.
2. Bottom of the sign panel must be at least 7 feet above the edge of the traveled way.
3. You may install a construction area sign on an above-ground, temporary platform sign support or on an existing lighting standard or other support if authorized. Do not make holes in a standard to support the sign if it is installed on an existing lighting standard.
4. Post embedment must be at least 2.5 feet if the post hole is backfilled around the post with commercial-quality concrete. The concrete must contain at least 295 pounds of cementitious material per cubic yard.

The Engineer determines the post size and number of posts if the type of sign installation is not shown.

Excavate each post hole by hand methods without the use of power equipment. You may use power equipment where you determine that subsurface utilities are not present in the area of the proposed post hole if authorized. The post-hole diameter must be at least 4 inches greater than the longest cross-sectional dimension of the post if it is backfilled with commercial-quality concrete.

Furnishing, installing, maintaining, moving, and removing any additional construction area signs if ordered is change order work.

### **12-3.11C(3) General Information Signs**

Reserved

### **12-3.11D Payment**

Not Used

## **12-3.12 TELESCOPING FLAG TREES**

### **12-3.12A General**

Section 12-3.12 includes specifications for placing telescoping flag trees.

### **12-3.12B Materials**

Telescoping flag trees must be manufactured from commercial-quality material designed for the intended purpose and capable of maintaining an upright position at all times while in use.

### **12-3.12C Construction**

Not Used

### **12-3.12D Payment**

Not Used

## **12-3.13–12-3.19 RESERVED**

## **12-3.20 TYPE K TEMPORARY RAILING**

### **12-3.20A General**

#### **12-3.20A(1) Summary**

Section 12-3.20 includes specifications for placing Type K temporary railing and Type K temporary terminal sections.

Type K temporary railing must consist of interconnected PC concrete barrier panels.

You may have your name or logo on each panel of Type K temporary railing. The name or logo must not be more than 4 inches in height and must be located not more than 12 inches above the bottom of the rail panel.

Reinforcing steel must comply with section 52.

#### **12-3.20A(2) Definitions**

Reserved

#### **12-3.20A(3) Submittals**

Submit a certificate of compliance for Type K temporary railing not cast at the job site.

#### **12-3.20A(4) Quality Assurance**

Reserved

#### **12-3.20B Materials**

##### **12-3.20B(1) General**

Concrete must comply with the specifications for minor concrete except load tickets and a certificate of compliance are not required.

Steel bars to receive bolts at the ends of the concrete panels must comply with ASTM A36/A36M. The bolts must comply with ASTM A307.

You may substitute a round bar of the same diameter for the end-connecting bolt shown. If a round bar is used, the round bar must:

1. Comply with ASTM A36/A36M
2. Have a minimum length of 26 inches
3. Have a 3-inch-diameter, 3/8-inch-thick plate welded on the upper end using a 3/16-inch fillet weld

The final surface finish of the railing must comply with section 51-1.03F(2).

Cure the exposed surfaces of the railing by the water method, the forms-in-place method, or the curing compound method using curing compound no. 1.

##### **12-3.20B(2) Type K Temporary Terminal Section**

The closure plate for a Type K temporary terminal section must be a white, commercial-quality steel plate shaped to conform to the cross section of the barrier. The mechanical expansion anchors for connecting the closure plate to the railings must comply with section 75-3 for concrete anchorage devices.

#### **12-3.20C Construction**

##### **12-3.20C(1) General**

Before placing Type K temporary railing on the job site, paint the exposed surfaces of the railing with white paint complying with the specifications for acrylic emulsion paint for exterior masonry. The repainting of the units is change order work if it is ordered after the units are in place.

Place Type K temporary railing on a firm, stable foundation. Grade the foundation to provide a uniform bearing surface throughout the entire length of the railing.

Structure excavation and backfill must comply with section 19-3 except compaction of earth fill placed behind Type K temporary railing in a curved layout is not required.

Place and maintain the abutting ends of PC concrete units in alignment without substantial offset from each other.

The drilling of holes and bonding of threaded rods or dowels must comply with the specifications for drilling and bonding dowels in section 51-1.

Install a reflector on the top or face of the rail of each rail unit placed within 10 feet of a traffic lane. Apply adhesive for mounting the reflector under the reflector manufacturer's instructions.



Install a Type P marker panel at each end of railing placed adjacent to a 2-lane, two-way highway and at the end facing traffic for railing installed adjacent to a one-way roadbed. If the railing is placed on a skew, install the marker at the end of the skew nearest the traveled way. Type P marker panels must comply with section 82 except you must furnish the marker panels.

After removing Type K temporary railing:

1. Restore the area to its previous condition or construct it to its planned condition if temporary excavation or embankment was used to accommodate the railing.
2. Remove all threaded rods or dowels to a depth of at least 1 inch below the surface of the concrete. Fill the resulting holes with mortar under section 51-1 except cure the mortar by the water method or by the curing compound method using curing compound no. 6.

If the Engineer orders a lateral move of Type K temporary railing and repositioning is not shown, the lateral move is change order work and the railing is not measured in the new position.

### **12-3.20C(2) Type K Temporary Terminal Section**

When the Type K temporary terminal section is no longer required, remove the anchor bolts connecting the closure plate to the concrete barrier or cut the bolts flush with the face of the barrier. If the anchor bolts are removed, fill the holes with grout.

### **12-3.20D Payment**

The payment quantity for temporary railing (Type K) is the length measured along the top of the railing.

### **12-3.21 TEMPORARY TRAFFIC SCREENS**

#### **12-3.21A General**

Section 12-3.21 includes specifications for installing temporary traffic screens.

#### **12-3.21B Materials**

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.

Temporary traffic screen panels must be CDX grade or better, plywood or weather-resistant strand board.

Wale boards 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 screws with full-thread length.

#### **12-3.21C Construction**

Install and anchor temporary traffic screens to the top of the Type K temporary railing. The temporary traffic screen must have 3-foot-long openings spaced at 200-foot intervals.

A lateral move of Type K temporary railing with attached temporary traffic screen is change order work if ordered and repositioning is not shown.

#### **12-3.21D Payment**

The payment quantity for temporary traffic screen is the length measured along the line of the screen with no deductions for openings in the temporary traffic screen.

### **12-3.22 TEMPORARY CRASH CUSHION MODULES**

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

Section 12-3.22 includes specifications for placing sand-filled temporary crash cushion modules in groupings or arrays.

If activities expose traffic to a fixed obstacle, protect the traffic from the obstacle with a sand-filled temporary crash cushion. The crash cushion must be in place before opening traffic lanes adjacent to the obstacle.

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

Each sand-filled temporary crash cushion module must be manufactured after March 31, 1997 and be on the Authorized Material List for highway safety features.

The color of each module must be standard yellow with black lids as furnished by the manufacturer. Each module must be free from structural flaws and objectionable surface defects.

For a module requiring a seal, the top edge of the seal must be securely fastened to the wall of the module by a continuous strip of heavy-duty tape.

Fill each module with sand under the manufacturer's instructions and to the sand capacity in pounds for each module shown. Sand for filling the modules must be clean, commercial-quality, washed concrete sand. When sand is placed in a module, the sand must contain no more than 7 percent water when tested under California Test 226.

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

Use the same type of crash cushion module for a single grouping or array.

Temporary crash cushion arrays must not encroach on the traveled way.

Secure the sand-filled modules in place before starting an activity requiring a temporary crash cushion.

Maintain sand-filled temporary crash cushions in place at each location, including times when work is not actively in progress. You may remove the crash cushions during the work shift for access to the work if the exposed fixed obstacle is 15 feet or more from the nearest lane carrying traffic. Reset the crash cushion before the end of the work shift.

Immediately repair sand-filled temporary crash cushion modules damaged due to your activities. Remove and replace any module damaged beyond repair. Repair and replacement of temporary crash cushion modules damaged by traffic are change order work.

You may place sand-filled temporary crash cushion modules on movable pallets or frames complying with the dimensions shown. The pallets or frames must provide a full-bearing base beneath the modules. Do not move the modules and supporting pallets or frames by sliding or skidding along the pavement or bridge deck.

Attach a Type R or Type P marker panel to the front of the temporary crash cushion if the closest point of the crash cushion array is within 12 feet of the traveled way. Firmly fasten the marker panel to the crash cushion with commercial quality hardware or by other authorized methods. Attach the Type R marker panel such that the top of the panel is 1 inch below the module lid. Attach the Type P marker panel such that the bottom of the panel rests upon the pallet or roadway surface if pallets are not used.

A lateral move of a temporary crash cushion module is change order work if ordered and the repositioning is not shown.

Remove sand-filled temporary crash cushion modules, including sand, pallets or frames, and marker panels, at Contract acceptance. Do not install sand-filled temporary crash cushion modules in the permanent work.

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

The payment quantity for temporary crash cushion module does not include:

1. Modules placed for public safety
2. Modules placed in excess of the number described
3. Repositioned modules

### **12-3.23 IMPACT ATTENUATOR VEHICLES**

#### **12-3.23A General**

##### **12-3.23A(1) Summary**

Section 12-3.23 includes specifications for using impact attenuator vehicles.

##### **12-3.23A(2) Definitions**

**impact attenuator vehicle:** Support truck towing a deployed attenuator mounted to a trailer or a support truck with a deployed attenuator mounted to the support truck.

##### **12-3.23A(3) Submittals**

Submit a certificate of compliance for each attenuator.

##### **12-3.23A(4) Quality Assurance**

Before using an impact attenuator vehicle, conduct a meeting with the Engineer, subcontractors, and other parties involved with traffic control to discuss the operation of the impact attenuator vehicle during moving lane closures and when placing and removing components of a stationary traffic control system.

Schedule the location, time, and date for the meeting with all participants. Furnish a meeting facility located within 5 miles of the job site or at another location if authorized.

##### **12-3.23B Materials**

An impact attenuator vehicle must be on the Authorized Material List for highway safety features. The vehicle must comply with Veh Code Div 12.

Each attenuator must be individually identified with the manufacturer's name, address, attenuator model number, and a specific serial number. The name and number must be a minimum 1/2 inch high and located on the left, street side, lower front corner.

An impact attenuator vehicle must comply with the following test levels as specified in the National Cooperative Highway Research Program Report 350:

1. Test level 3 if the preconstruction posted speed limit is 50 mph or more
2. Test level 2 or 3 if the preconstruction posted speed limit is 45 mph or less

The impact attenuator vehicle must comply with the attenuator manufacturer's instructions for:

1. Support truck except the weight of the support truck must be within the allowable vehicle weight limits shown on the Authorized Material List for highway safety features and the manufacturer's instructions
2. Trailer-mounted attenuator
3. Truck-mounted attenuator

A flashing arrow sign must comply with section 12-3.30 except you may use a PCMS instead of a flashing arrow sign. A PCMS used as a flashing arrow sign must comply with the specifications for an arrow board in the *California MUTCD*.

Each impact attenuator vehicle must have:

1. Inverted V chevron pattern placed across the entire rear of the attenuator composed of alternating 4-inch-wide, nonreflective black stripes and 4-inch-wide, yellow retroreflective stripes sloping at 45 degrees
2. Type II flashing arrow sign
3. Flashing or rotating amber light
4. Operable 2-way communication system for maintaining contact with workers

**12-3.23C Construction**

Do not use an impact attenuator vehicle until authorized.

Monitor the placement and use of the attenuator vehicle on a regular basis and adjust the use of the attenuator to match changing field conditions as construction progresses.

After placing the components of a stationary traffic control system, you may place the impact attenuator vehicle in advance of the work area or at another authorized location to protect traffic and workers.

Secure objects, including equipment, tools, and ballast, on impact attenuator vehicles to prevent their loosening upon impact by an errant vehicle.

Do not use a damaged attenuator in the work. Replace any attenuator damaged from an impact during work activities.

**12-3.23D Payment**

Not Used

**12-3.24–12-3.29 RESERVED**

**12-3.30 FLASHING ARROW SIGNS**

**12-3.30A General**

Section 12-3.30 includes specifications for placing flashing arrow signs.

**12-3.30B Materials**

A flashing arrow sign must comply with the requirements shown in the following table:

**Flashing Arrow Sign Requirements**

Type	Panel size (min, inches)	Number of panel lights (min)	Legibility distance <sup>a</sup> (min, miles)
I	48 x 96	15	1
II	36 x 72	13	3/4

<sup>a</sup>The legibility distance is the distance that a flashing arrow sign must be legible at noon on a cloudless day and during the hours of darkness by persons with 20/20 vision or vision corrected to 20/20.

A flashing arrow sign must be finished with commercial-quality nonreflective black enamel and must be equipped with yellow or amber lamps that form arrows or arrowheads. Each lamp must be equipped with a visor and the lamps must be controlled by an electronic circuit that provides from 30 to 45 complete operating cycles per minute for each of the displays and modes specified. The control must be capable of dimming the lamps by reducing the voltage to 50 ± 5 percent for nighttime use. Type I signs must have both manual and automatic photoelectric-dimming controls. Dimming in both modes must be continuously variable over the entire dimming range.

A flashing arrow sign must be capable of operating in the following display modes:

1. Pass left display
2. Pass right display
3. Simultaneous display
4. Caution display or alternating diamond

A flashing arrow sign must be capable of operating in the flashing arrow mode or the sequential mode.

In the flashing arrow mode, all lamps forming the arrowhead and shaft must flash on and off simultaneously.

In the sequential mode, either arrowheads or arrows must flash sequentially in the direction indicated.

In the simultaneous display mode, the lamps forming both the right and left arrowheads and the lamps forming the arrow shaft or center 3 lamps for Type I signs must flash simultaneously. For Type II signs, the lamps forming the right and left arrowhead, but not the center lamp, may be illuminated continuously; the lamps forming the shaft and the center lamp of the arrowheads must flash on and off simultaneously.

In the caution display mode, a combination of lamps not resembling any other display or mode must flash.

Each flashing arrow sign must be:

1. Mounted on a truck or trailer
2. Capable of operating when the vehicle is moving
3. Capable of being placed and maintained in operation at locations described

A Type II flashing arrow sign must be controllable by the operator of the vehicle while the vehicle is in motion.

The bottom of the flashing arrow sign must be a minimum of 7 feet above the roadway when mounted.

The trailer for a flashing arrow sign must be equipped with (1) devices to level and plumb the sign and (2) a supply of electrical energy capable of operating the sign.

#### **12-3.30C Construction**

Not Used

#### **12-3.30D Payment**

Not Used

### **12-3.31 PORTABLE FLASHING BEACONS**

#### **12-3.31A General**

Section 12-3.31 includes specifications for placing, maintaining, and removing portable flashing beacons.

#### **12-3.31B Materials**

Each portable flashing beacon must have:

1. Standard and base
2. Signal section
3. Flasher unit
4. Battery power source

The components must be assembled to form a complete, self-contained, portable flashing beacon that can be delivered to the job site and placed into immediate operation.

The portable flashing beacon must be weatherproof and operate a minimum of 150 hours between battery recharging and routine maintenance.

The signal section must be yellow and comply with section 86-1.02R(4)(a), except it must be rated for 25 W at 12 V.

The flash rate for the flashing unit must comply with chapter 4L, "Flashing Beacons," of the *California MUTCD*.

The standard must be adjustable to allow variable mounting of the signal section from 6 to 10 feet, from the bottom of the base to the center of the lens, and be capable of being secured at the desired height. The standard must be securely attached to the base and have a length of multiconductor, neoprene-jacketed cable long enough for the full vertical height.

The base must be (1) large enough to accommodate at least two 12 V automotive-type storage batteries and (2) a shape and weight such that the beacon will not roll if struck by a vehicle or pushed over.

#### **12-3.31C Construction**

Remove portable flashing beacons from the traveled way at the end of each night's work. You may store the flashing beacon at selected central locations within the highway where designated by the Engineer.

Moving portable flashing beacons from location to location if ordered after initial placement is change order work.

#### **12-3.31D Payment**

The payment quantity for flashing beacon (portable) is the number of portable flashing beacon locations with each location counting as 1 measurement unit.

### **12-3.32 PORTABLE CHANGEABLE MESSAGE SIGNS**

#### **12-3.32A General**

##### **12-3.32A(1) Summary**

Section 12-3.32A includes specifications for placing, maintaining, and removing portable changeable message signs.

##### **12-3.32A(2) Definitions**

Reserved

##### **12-3.32A(3) Submittals**

If requested, submit a certificate of compliance for each PCMS.

Submit your cell phone number before starting the first activity that requires a PCMS.

##### **12-3.32A(4) Quality Assurance**

Reserved

#### **12-3.32B Materials**

Each PCMS consists of a sign panel, a controller unit, a power supply, and a structural support system.

The PCMS must:

1. Be assembled to form a complete self-contained unit that can be delivered to the job site and placed into immediate operation.
2. Operate at an ambient air temperature from -4 to 158 degrees F.
3. Not be affected by mobile radio transmissions other than those required to control the PCMS.
4. Be capable of displaying a 3-line message with at least 7 characters per line.
5. Provide a complete alphanumeric selection.
6. Be internally or externally illuminated during the hours of darkness, when non-illuminated pixels are used.
7. Have a dimming control that automatically adjusts the character light intensity to provide optimum character visibility and legibility under all ambient lighting conditions. The dimming control must have a minimum 3 manual dimming modes of different intensities.

A message with 18-inch high characters or 15-inch high characters must be visible from a distance of 1,500 feet and legible from a distance of at least 750 feet at noon on a cloudless day and during the night by persons with 20/20 vision or vision corrected to 20/20.

A message with 10-inch high characters must be legible from a distance of at least 650 feet at noon on a cloudless day and during the night by persons with 20/20 vision or vision corrected to 20/20.

The controller must:

1. Be an all solid-state unit.
2. Include at least 5 preprogrammed messages.

3. Have a user adjustable display rate.
4. Have a user adjustable flashing-off time.
5. Include a screen to review the messages before being displayed on the sign.
6. Include a keyboard message entry system. The keyboard must be equipped with a security lockout feature.
7. Have nonvolatile memory to store an infinite number of user created messages.
8. Be installed at a location that allows the user to perform all the functions from a single position.

### **12-3.32C Construction**

Use a PCMS with characters:

1. At least 18 inches in height where the useable shoulder area is 15 feet wide or more
2. At least 12 inches in height where the useable shoulder area is less than 15 feet wide
3. At least 10 inches in height if the PCMS is:
  - 3.1. Mounted on a service patrol truck or incident response vehicle
  - 3.2. Used for traffic control where the posted speed limit is less than 40 mph

Place a PCMS as far from the traveled way as practicable where it is legible to approaching traffic without encroaching on the traveled way. Where the vertical roadway curvature restricts the sight distance of approaching traffic, place the sign on or before the crest of the curvature where it is most visible to the approaching traffic. Where the horizontal roadway curvature restricts the sight distance of approaching traffic, place the sign at or before the curve where it is most visible to approaching traffic. Where practicable, place the sign behind guardrail or Type K temporary railing.

If multiple signs are needed, place each sign on the same side of the road at least 1,000 feet apart on freeways and expressways and at least 500 feet apart on other types of highways.

Operate the PCMS under the manufacturer's instructions.

When in operation, place the bottom of a PCMS at least 7 feet above the roadway in areas where pedestrians are anticipated and 5 feet above the roadway elsewhere. Place the top of the PCMS no more than 14.5 feet above the roadway.

If more than one PCMS is simultaneously visible to traffic, only one sign may display a sequential message at any time. Do not use dynamic message displays, such as animation, rapid flashing, dissolving, exploding, scrolling, horizontal movement, or vertical movement of messages. The message must be centered within each line of the display.

You may use an additional PCMS if more than 2 phases are needed to display a message.

Display only messages shown or ordered.

Repeat the entire message continuously in not more than 2 phases of at least 3 seconds per phase. The sum of the display times for both of the phases must be a maximum of 8 seconds. If more than 2 phases are needed to display a message, use an additional PCMS.

You must be available by cell phone during activities that require a sign. Be prepared to immediately change the displayed message if ordered. You may operate the sign with a 24-hour timer control or remote control if authorized.

Keep the PCMS clean to provide maximum visibility.

After the initial placement, move a sign from location to location as ordered.

### **12-3.32D Payment**

Not Used

### **12-3.33 PORTABLE SIGNAL SYSTEMS**

#### **12-3.33A General**

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

A portable signal system must comply with section 87-20, except it must be trailer mounted.

#### **12-3.33B Materials**

Not Used

#### **12-3.33C Construction**

If the portable 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

### **12-3.34 TEMPORARY FLASHING BEACON SYSTEMS**

#### **12-3.34A General**

Section 12-3.34 includes specifications for installing, maintaining, and removing temporary flashing beacon systems.

A temporary flashing beacon system must comply with section 87-20.

#### **12-3.34B Materials**

The sign panels installed on a temporary flashing beacon system must comply with section 12-3.11.

#### **12-3.34C Construction**

Not Used

#### **12-3.34D Payment**

Not Used

### **12-3.35 AUTOMATED WORK ZONE INFORMATION SYSTEMS**

#### **12-3.35A General**

##### **12-3.35A(1) Summary**

Section 12-3.35 includes specifications for installing automated work zone information systems.

##### **12-3.35A(2) Definitions**

Reserved

##### **12-3.35A(3) Submittals**

Reserved

##### **12-3.35A(4) Quality Assurance**

Assign an on-site system coordinator. The coordinator must be available locally to service, maintain, and relocate system components as necessary. The coordinator must be accessible 24–7 while the system is deployed. If the system fails to perform as specified, perform any necessary remedial work and replace any failed components within 24 hours of notification of a system or component failure.

#### **12-3.35B Materials**

##### **12-3.35B(1) General**

The AWIS must be a proven system that has been successfully deployed and operated in actual work zones or congested areas.

The system must acquire traffic data throughout the work zone and automatically display predetermined information to motorists without operator intervention after system initialization.



Real-time information must be displayed to motorists using a PCMS. The sign must comply with section 12-3.32.

The system must be controlled either locally or remotely by a dedicated controller or computer.

Authorized users must be able to both locally and remotely override motorist information messages.

Traffic sensors must not require adjustments after the initial deployment.

#### **12-3.35B(2) General System Function Requirements**

The general system functions of the AWIS must be capable of:

1. Preventing any unauthorized users or systems from gaining access to the PCMSs through an industry authentication and encryption standard level of security.
2. Providing current operational status locally and remotely. Operational status must include current traffic data and messages, communications system, and power status.
3. Delivering notifications either by telephone, voice, or text messages to alert support staff of trouble conditions.
4. Generating trouble alerts for conditions such as (1) low roadside equipment power or voltage, (2) system communications failure, (3) low speed traffic detected, and (4) excessive delay detected.
5. Adjusting the thresholds of reduced speed and congestion-induced delay at which the system initiates a trouble alert.
6. Allowing programming of the hours during which the trouble condition alerting subsystem initiates notification to authorized users.
7. Measuring periodically and automatically the power levels of all equipment. Alert support staff, locally and remotely via a telephone message, in time to provide supplemental power before the system ceases to operate.
8. Displaying preprogrammed messages based on the time of day and day of week.

#### **12-3.35B(3) Motorist Information Message Requirements**

The AWIS must be capable of:

1. Displaying predetermined speed, delay, diversion, and closure messages to motorists when user-adjustable thresholds are exceeded.
2. Updating its speed and delay advisory messages at least once per minute. The actual message updates must be consistent with traffic conditions.
3. Selecting messages for each PCMS independently, based on the traffic conditions downstream of the sign.
4. Recording motorist information messages in a comma-separated values file with time and date stamps, including message overrides with user ID.
5. Displaying default messages when traffic conditions, system algorithms, and user parameters do not dictate that an advisory message should be displayed.
6. Displaying separate, independent, default messages on each PCMS.
7. Analyzing traffic parameters in work zones in which there are multiple speed limits.

The following parameters for the selection and presentation of information messages must be adjustable by the user:

1. Message update frequency
2. Minimum delay necessary to trigger a delay advisory message
3. Persistence of delay before a delay message is displayed
4. Level of delay required to trigger a diversion message
5. Change in delay needed to cause a delay advisory message update
6. Change in downstream speed at which a speed advisory message update occurs

#### **12-3.35B(4) System Communication Requirements**

The wireless communications subsystem of the AWIS must:

1. Operate independently of the public cellular phone system for receiving data to ensure reliable communications
2. Communicate independent of the line of sight or distance
3. Incorporate an error detection and correction mechanism to ensure the integrity of all traffic condition data and motorist information messages
4. Configure automatically during system initialization

#### **12-3.35B(5) Traffic Data Acquisition Requirements**

The AWIS must collect accurate traffic data using a speed measurement technique with an accuracy of  $\pm 5$  mph, allowing specific information messages. The system must collect data during reduced visibility conditions, including precipitation, fog, darkness, excessive dust, and road debris.

The system must (1) archive the data with time and date stamps and (2) aggregate the data in operator-definable time increments, accessible 24–7 to the Engineer in a comma-separated values file.

#### **12-3.35B(6) User Interface**

The system must have a user interface to control the AWIS PCMS communications. The interface must be (1) software compatible with a Windows environment or (2) a web service accessed by a web browser.

Provide any software on a CD or other Engineer-authorized data-storage device for installation at the Department's Transportation Management Center.

The user interface must, at a minimum, provide the user with a list of AWIS PCMSs in the field, location information for each AWIS PCMS, and a real-time on-board display of the message in the field. Control options must, at a minimum, provide the user the ability to change the on-board messages and flash rate.

#### **12-3.35C Construction**

Obtain authorization for the message content and the threshold used for triggering the message before displaying any message on a PCMS.

Provide complete setup and support for the AWIS PCMS communications.

#### **12-3.35D Payment**

Not Used

#### **12-3.36 PORTABLE TRANSVERSE RUMBLE STRIPS**

Reserved

#### **12-3.37 PORTABLE RADAR SPEED FEEDBACK SIGN SYSTEMS**

##### **12-3.37A General**

Section 12-3.37 includes specifications for placing, maintaining, and removing portable radar speed feedback sign systems.

##### **12-3.37B Materials**

A portable radar speed feedback sign system consists of a radar speed feedback sign system and a power source.

The system must comply with section 87-14, except:

1. System must be mounted on a trailer
2. LED character display must remain blank when no vehicles are detected or when the detected vehicle speed is 10 miles less than the pre-set speed

##### **12-3.37C Construction**

Place the portable radar speed feedback sign:

1. As far from the traveled way as practicable where it is visible and legible to approaching traffic. Where practicable, place the sign behind a barrier or guardrail.
2. At or before the crest of roadway vertical curvatures that restrict sight distance.

3. At or before the curve of horizontal roadway curvatures that restrict sight distance.

#### 12-3.37D Payment

Not Used

### 12-3.38 AUTOMATED FLAGGER ASSISTANCE DEVICES

#### 12-3.38A General

##### 12-3.38A(1) Summary

Section 12-3.38 includes specifications for placing, maintaining, and removing automated flagger assistance devices (AFADs).

##### 12-3.38A(2) Definitions

**automated flagger assistance devices:** Devices that enable a flagger to be positioned out of the lane of traffic and are used to control motorists through work zones. They are designed to be remotely operated either by a single flagger at one end of the work zone or at a central location, or by separate flaggers near the devices.

##### 12-3.38A(3) Submittals

Submit a copy of the manufacturer's operating instructions for the automated flagger assistance devices.

##### 12-3.38A(4) Quality Assurance

Reserved

#### 12-3.38B Materials

The automated flagger assistance device must comply with the *California MUTCD*, Section 6E.04, and Section 6E.06, "Red/Yellow Lens Automated Flagger Assistance Devices."

04-17-20

The device must:

10-18-19

1. Be equipped with a gate arm, which must not extend into the opposing lane
2. Alternately display a steadily illuminated circular red lens and a flashing circular yellow lens to control traffic
3. Have a fail-safe device that prevents the operator from inadvertently actuating a simultaneous flashing circular yellow lens at both ends of the work zone
4. Have a device that monitors for malfunctions and prevents the display of conflicting indication
5. Have a 24-by-30-inch R10-6 STOP HERE ON RED sign mounted on the trailer

The device must continuously monitor the wireless communication links and verify transmission and reception of data between the devices. If communication is lost, the devices must immediately display the circular red/stop indication and lower the gate arms.

#### 12-3.38C Construction

The devices must:

1. Be placed where a flagger station is shown with an unobstructed view from the operator
2. Be placed outside of the traveled lane
3. Be attended by the operator when in use
4. Have a minimum of 9 cones placed on a taper in advance of the device and along the edge of shoulder or edge of the traveled way at 25-foot intervals to a point not less than 25 feet past the device
5. Be clearly visible to approaching traffic and illuminated during the hours of darkness

If any device unit becomes inoperative, do one of the following:

1. Replace the unit with the same type and model.
2. Revert to human flagging operations.

3. Terminate all construction activities requiring the use of the devices.

Incorporate the devices into the traffic control using one of the following methods:

1. Method 1: Place one device at each end of the closure.
2. Method 2: Place one device at one end of the closure and a flagger at the opposite end of the closure.

Use two operators for both methods, except you may use a single operator if:

1. Operator has an unobstructed view of the devices
2. Operator has an unobstructed view of approaching traffic in both directions
3. Second flagger is on-site to assist with manual flagging should the device malfunction, or to direct traffic when drivers fail to comply with the devices

When AFADs are in operation:

1. Use portable transverse rumble strips at your discretion
2. Do not use the 48-inch-by-48-inch C9A (CA) sign
3. Do not use the gate cones

#### **12-3.38D Payment**

If automated flagger assistance devices bid item is not shown on the Bid Item List, providing AFADS is change order work.

#### **12-3.39–12-3.40 RESERVED**

### **12-4 MAINTAINING TRAFFIC**

#### **12-4.01 GENERAL**

##### **12-4.01A General**

Section 12-4.01 includes general specifications for maintaining traffic through construction work zones.

If local authorities regulate traffic, notify them at least 5 business days before the start of job site activities. Cooperate with the local authorities to handle traffic through the work zone and to make arrangements to keep the work zone clear of parked vehicles.

##### **12-4.01B Materials**

Not Used

##### **12-4.01C Construction**

Not Used

##### **12-4.01D Payment**

Not Used

#### **12-4.02 TRAFFIC CONTROL SYSTEMS**

##### **12-4.02A General**

###### **12-4.02A(1) Summary**

Section 12-4.02 includes specifications for providing a traffic control system to close traffic lanes, shoulders, ramps, and connectors.

A traffic control system for a closure includes flagging and the temporary traffic control devices described as part of the traffic control system. Temporary traffic control devices must comply with section 12-3.

###### **12-4.02A(2) Definitions**

**Construction Zone Enhanced Enforcement Program (COZEEP):** Program that provides California Highway Patrol officers to monitor the movement of traffic within the work zone.

**designated holidays:** Designated holidays are shown in the following table:

<b>Designated Holidays</b>	
Holiday	Date observed
New Year's Day	January 1st
Washington's Birthday	3rd Monday in February
Memorial Day	Last Monday in May
Independence Day	July 4th
Labor Day	1st Monday in September
Veterans Day	November 11th
Thanksgiving Day	4th Thursday in November
Christmas Day	December 25th

If a designated holiday falls on a Sunday, the following Monday is a designated holiday. If November 11th falls on a Saturday, the preceding Friday is a designated holiday.

**12-4.02A(3) Submittals**

**12-4.02A(3)(a) General**

Submit a request for a minor deviation from the specified work hours. For a project in District 7, submit the request at least 15 days before the proposed closure date. Your request may be authorized if (1) the Department does not accrue a significant cost increase and (2) the work can be expedited and better serve the traffic.

If a closure is not opened to traffic by the specified time, submit a work plan that ensures that future closures will be opened to traffic by the specified time. Allow 2 business days for review.

Submit closure schedule requests and closure schedule amendments using LCS to show the locations and times of the requested closures.

Submit a traffic break request using LCS to show the location and time of the requested traffic break.

**12-4.02A(3)(b) Closure Schedules**

Every Monday by noon, submit a closure schedule request for planned closures for the next week.

Except for a project in District 7, the next week is defined as Sunday at noon through the following Sunday at noon.

For a project in District 7, the next week is defined as Friday at noon through the following Friday at noon.

Submit a closure schedule request from 25 days to 125 days before the anticipated start of any job site activity that reduces:

1. Horizontal clearances of traveled ways, including shoulders, to 2 lanes or fewer due to activities such as temporary barrier placement and paving
2. Vertical clearances of traveled ways, including shoulders, due to activities such as pavement overlays, overhead sign installation, or falsework girder erection

Submit closure schedule changes, including additional closures, by noon at least 3 business days before a planned closure.

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

The Department notifies you through LCS of authorized and unauthorized closures and closures that require coordination with other parties as a condition for authorization.

**12-4.02A(3)(c) Contingency Plans for Closures**

Submit a contingency plan for an activity that could affect a closure if a contingency plan is specified in the special provisions or if a contingency plan is requested.

If a contingency plan is requested, submit the contingency plan within 1 business day of the request.

The contingency plan must identify the activities, equipment, processes, and materials that may cause a delay in the opening of a closure to traffic. The plan must include:

1. List of additional or alternate equipment, materials, or workers necessary to ensure continuing activities and on-time opening of closures if a problem occurs. If the additional or alternate equipment, materials, or workers are not on the job site, specify their location, the method for mobilizing these items, and the required time to complete mobilization.
2. General time-scaled logic diagram displaying the major activities and sequence of the planned activities. For each activity, identify the critical event that will activate the contingency plan.

Submit revisions to a contingency plan at least 3 business days before starting the activity requiring the contingency plan. Allow 2 business days for review.

#### **12-4.02A(3)(d) Traffic Break Schedule**

Every Monday by noon, submit a traffic break request for the next week. Support for a traffic break is based on local California Highway Patrol staffing levels and may not be available for the date or time requested.

Traffic break requests are limited to the hours when a shoulder or lane closure is allowed.

Cancel a traffic break request using LCS at least 48 hours before the start time of the traffic break.

The Department notifies you through LCS of authorized and unauthorized traffic breaks.

The Department does not adjust time or payment if (1) a California Highway Patrol officer is unavailable for the requested date or time or (2) your request is not authorized.

#### **12-4.02A(4) Quality Assurance**

Reserved

#### **12-4.02B Materials**

Not Used

#### **12-4.02C Construction**

##### **12-4.02C(1) General**

Work that interferes with traffic is limited to the hours when closures are allowed.

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

Do not simultaneously close consecutive ramps in the same direction of travel servicing 2 consecutive local streets unless authorized.

Notify the Engineer of delays in your activities caused by the denial of either (1) an authorized closure or (2) a closure schedule request for the specified time frame allowed for closures.

Discuss the contingency plan for any activity that could affect the closure schedule with the Engineer at least 5 business days before starting the activity requiring the plan.

If you do not open a closure to traffic by the specified time, suspend work and submit a work plan. No further closures are allowed until your work plan has been authorized.

If the Engineer orders you to remove a closure before the time designated in the authorized closure schedule, any delay caused by this order is an excusable delay.

The Engineer may reschedule a closure that was canceled due to unsuitable weather.

You may use automated flagger assistance devices to enhance the traffic control system for a lane closure on a two-lane convention highway, except if a bid item for automated flagger assistance devices is shown in the Bid Item List, the use of AFADs is required.

Do not use automated flagger assistance devices:

1. On multi-lane highways
2. As a substitute or a replacement for a temporary traffic control signal
3. If the devices impair access for pedestrians and bicycles, unless alternate access is provided
4. If the usable shoulder area is not wide enough to place a trailer mounted device
5. If the distance between the devices is more than 800 feet, except when each device is controlled by a separate operator and radio communication is available between the AFAD operators

#### **12-4.02C(2) Lane Closure System**

##### **12-4.02C(2)(a) General**

The Department provides LCS training. Request the LCS training at least 30 days before submitting the 1st closure request. The Department provides the training within 15 days after your request.

LCS training is web-based or held at a time and location agreed upon by you and the Engineer. For web-based training, the Engineer provides you the website address to access the training.

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

Each representative must maintain a unique password and current user information in the LCS.

The project is not accessible in LCS after Contract acceptance.

##### **12-4.02C(2)(b) Status Updates for Authorized Closures**

Update the status of authorized closures using the LCS Mobile web page.

For a stationary closure on a traffic lane, use code:

1. 10-97 immediately before you place the 1st cone on the traffic lane
2. 10-98 immediately after you remove all of the cones from the traffic lane

For a stationary closure on the shoulder, use code:

1. 10-97 immediately before you place the 1st cone after the last advance warning sign
2. 10-98 immediately after you remove the last cone before the advance warning signs

For a moving closure, use code:

1. 10-97 immediately before the actual start time of the closure
2. 10-98 immediately after the actual end time of the closure

For closures not needed on the authorized date, use code 10-22 within 2 hours after the authorized start time.

If you are unable to access the LCS Mobile web page, immediately notify the Engineer of the closure's status.

#### **12-4.02C(3) Closure Requirements and Charts**

##### **12-4.02C(3)(a) General**

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

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

Closure of the adjacent traffic lane is not required during any of the following activities:

1. Work behind a barrier

2. Paving, grinding, or grooving
3. Installation, maintenance, or removal of traffic control devices except for temporary railing

**12-4.02C(3)(b) Complete Freeway or Expressway Closure Requirements**

Reserved

**12-4.02C(3)(c) HOV, Express, and Bus Lane Closure Requirements**

Reserved

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

Reserved

**12-4.02C(3)(e) Closure Restrictions for Special Events and Venues**

Reserved

**12-4.02C(3)(f) Closure Restrictions for Designated Holidays and Special Days**

Reserved

**12-4.02C(3)(g) Freeway or Expressway Lane Requirement Charts**

Reserved

**12-4.02C(3)(h) Complete Freeway or Expressway Closure Hour Charts**

Reserved

**12-4.02C(3)(i) Complete Connector Closure Hour Charts and Connector Lane Requirement Charts**

Reserved

**12-4.02C(3)(j) Complete Ramp Closure Hour Charts and Ramp Lane Requirement Charts**

Reserved

**12-4.02C(3)(k) Conventional Highway Lane Requirement Charts**

Reserved

**12-4.02C(3)(l) Complete Conventional Highway Closure Hour Charts**

Reserved

**12-4.02C(3)(m) City Street Closure Hour Charts and City Street Lane Requirement Charts**

Reserved

**12-4.02C(3)(n) Concrete Slab and Approach Slab Replacement Closure Hours Table**

Reserved

**12-4.02C(3)(o)–12-4.02C(3)(s) Reserved**

**12-4.02C(4)–12.4.02C(6) Reserved**

**12-4.02C(7) Traffic Control System Requirements**

**12-4.02C(7)(a) General**

Control traffic using stationary closures.

If components of the traffic control system are displaced or cease to operate or function as specified, immediately repair them to their original condition or replace them and place them back in their original locations.

Vehicles equipped with attenuators must comply with section 12-3.23.

Each vehicle used to place, maintain, and remove components of a traffic control system on a multilane highway must have a Type II flashing arrow sign that must operate whenever the vehicle is used for placing, maintaining, or removing the components. For a stationary closure, vehicles with a Type II flashing arrow sign not involved in placing, maintaining, or removing the components must display only



the caution display mode. If a flashing arrow sign is required for a closure, activate the sign before the closure is in place.

#### **12-4.02C(7)(b) Stationary Closures**

Except for channelizing devices placed along open trenches or excavations adjacent to the traveled way, remove the components of the traffic control system for a stationary closure from the traveled way and shoulders at the end of each work period. You may store the components at authorized locations within the limits of the highway.

If a traffic lane is closed with channelizing devices for excavation work, move the devices to the adjacent edge of the traveled way when not excavating. Space the devices as shown for the lane closure.

#### **12-4.02C(7)(c) Moving Closures**

For a moving closure, use a PCMS that complies with section 12-3.32 except the sign must be truck mounted. The full operational height to the bottom of the sign may be less than 7 feet above the ground but must be as high as practicable.

If you use a flashing arrow sign in a moving closure, the sign must be truck mounted. Operate the flashing arrow sign in the caution display mode if it is being used on a 2-lane, two-way highway.

#### **12-4.02C(7)(d) Traffic Breaks**

You may request a traffic break for special operations such as:

1. Installation, removal, or replacement of an overhead power line or other utility cable across the highway
2. 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

If the Department authorizes the traffic break, the Engineer notifies you and arranges the traffic break with the California Highway Patrol through COZEEP. The duration of a traffic break must not exceed 5 minutes or as authorized.

Two California Highway Patrol officers per vehicle are required for traffic breaks occurring any time from 2200 to 0600 hours.

A minimum of 2 California Highway Patrol vehicles will be assigned to conduct a traffic break.

Place a PCMS approximately 2,000 feet upstream of the work area or as agreed upon by the Engineer. The PCMS must comply with section 12-3.32 except the PCMS must not be trailer mounted. Monitor the traffic during the traffic break. If a queue develops, reposition the PCMS truck far enough upstream of the traffic break to provide real-time notification to motorists before they approach the traffic queue.

#### **12-4.02C(8) Traffic Control System Signs**

##### **12-4.02C(8)(a) General**

Traffic control system signs must comply with section 12-3.11.

##### **12-4.02C(8)(b) Connector and Ramp Closure Signs**

Inform motorists of a temporary closing of a (1) connector or a (2) freeway or expressway entrance or exit ramp using:

1. SC6-3(CA) (Ramp Closed) sign for closures of 1 day or less
2. SC6-4(CA) (Ramp Closed) sign for closures of more than 1 day

SC6-3(CA) and SC6-4(CA) signs must be stationary mounted at the locations shown and must remain in place and visible to motorists during the connector or ramp closure.

Notify the Engineer at least 2 business days before installing the sign and install the sign from 7 to 15 days before the closure.

## **12-4.02C(9) Flagging**

### **12-4.02C(9)(a) General**

#### **12-4.02C(9)(a)(i) Summary**

Section 12-4.02C(9) includes specifications for flaggers, AFAD operators, additional flaggers, advance flaggers and flagger stations.

#### **12-4.02C(9)(a)(ii) Definitions**

04-17-20

**AFAD operator:** Flagger certified by the manufacturer to operate the specific automated flagger assistance device.

10-18-19

**additional flagger:** Flagger that controls the flow of traffic at intermediate locations within the limits of a closure with reversible control, at intersections, driveways and other traffic merging points.

**advance flagger:** Flagger positioned upstream of the traffic control system, who warns approaching traffic of road work ahead and potentially stopped traffic within the advance warning signs.

04-17-20

**incidental flagger:** Flagger that performs flagging that is not part of a traffic control system.

#### **12-4.02C(9)(a)(iii) Submittals**

Submit as informational submittals:

1. Flagger certification for each flagger including AFAD operators. The submittal must include:
  - 1.1. Name of the individual receiving certification.
  - 1.2. Name of entity providing certification.
  - 1.3. Date of certification.
  - 1.4. Certification expiration date.
2. AFAD manufacturer certification for each AFAD operator. The submittal must include:
  - 2.1. Name of the manufacturer's authorized trainer.
  - 2.2. Name of the trainee.
  - 2.3. Description of device type and model for which training was provided.
  - 2.4. Date when the training was provided.
3. Training qualifications for each incidental flagger.

#### **12-4.02C(9)(a)(iv) Quality Assurance**

Flaggers must be at least 18 years of age and maintain a valid government issued identification and must possess proof of certification during flagging operations.

Effective July 1, 2020, flaggers that are part of a traffic control system must be certified by an authorized flagger training provider. The authorized flagger training provider list is available at the Department's Division of Construction website.

In addition, AFAD operators must be certified by the AFAD manufacturer on:

1. Device type and model to be used on the project
2. Installation procedures
3. Local and remote-controlled operation
4. Maintenance of the device

Incidental flaggers must be trained under 8 CA Code of Regs § 1599.

10-18-19

#### **12-4.02C(9)(b) Materials**

Not Used

**12-4.02C(9)(c) Construction**

**12-4.02C(9)(c)(i) General**

Not Used

**12-4.02C(9)(c)(ii) Flaggers**

**12-4.02C(9)(c)(ii)(A) General**

Flaggers should stand in a conspicuous place and be visible to approaching vehicles.

04-17-20

Flaggers must wear a hard hat, safety glasses, and Class 3, high-visibility, safety apparel under ANSI/SEA 107-2004.

Flaggers must be equipped with a 24-by-24-inch "STOP/SLOW" paddle with a rigid staff tall enough to maintain the bottom of the paddle a minimum of 6 feet above the pavement.

10-18-19

**12-4.02C(9)(c)(ii)(B) Automated Flagger Assistance Device Operators**

When AFADs are in operation, the AFAD operators must:

1. Be positioned away from the traveled way
2. Be positioned where they have an unobstructed line of sight to approaching vehicles and to the devices
3. Keep a backup hand held AFAD remote control readily available

A pilot car driver must not operate a device and must not be considered as one of the flaggers present on-site available to operate a device.

**12-4.02C(9)(c)(ii)(C) Additional Flaggers**

Provide additional flaggers at any of the following locations:

1. At high-volume intersections and driveways between the two flagger stations as shown
2. At Multi-lane and circular intersections

Additional flaggers use the STOP/SLOW sign paddle to control vehicles merging into the closure with reversible control.

If additional flaggers are not shown, providing additional flaggers is change order work.

**12-4.02C(9)(c)(ii)(D) Advance Flaggers**

Provide advance flaggers when any of the following conditions exist:

1. Queued traffic reaches the W20-4 (One Lane Road Ahead) sign.
2. When the horizontal roadway curvature restricts the sight distance of approaching traffic.
3. When the vertical roadway curvature restricts the sight distance of approaching traffic.

Advance flaggers use the SLOW sign paddle to warn approaching vehicles of the flagging operation ahead and signals the drivers to slow down. If the STOP/SLOW paddle is used, the STOP side must be covered.

If advance flaggers are not shown, providing advance flaggers is change order work.

**12-4.02C(9)(c)(iii) Flagger Stations**

Place flagger stations such that approaching vehicles have sufficient distance to react and follow the flagger's instructions.

Place a minimum of four cones at 50 feet intervals in advance of flagger stations.

During the hours of darkness, illuminate flagger stations under 8 CA Regs § 1523. Do not start flagging until flagger stations are illuminated.

Place advance warning signs W20-1, C9A(CA), and W3-4 upstream of the additional flagger station at intersections as shown.

Place advance warning signs W20-1, C9A(CA), and W3-4 upstream of the advance flagger station.

You may use a PCMS in place of an advance flagger. The PCMS must alternately display the messages "Prepare to Stop" and "Flagger Ahead". If the PCMS must be placed outside the project limits before the W20-1 construction area sign, place a portable W20-1 sign 500 feet in advance of the PCMS.

#### **12-4.02C(9)(d) Payment**

Not Used

#### **12-4.02C(10)–12-4.02C(12) Reserved**

#### **12-4.02D Payment**

The Department pays for change order work for a traffic control system by force account for increased traffic control and uses a force account analysis for decreased traffic control.

The Department does not pay for furnishing, placing, relocating, and removing PCMSs used for a traffic break.

The Department deducts the full cost of COZEEP support provided for the traffic break.

The hourly rate for each California Highway Patrol officer providing COZEEP support is \$115. This rate includes full compensation for each hour or portion thereof that the officer provides the support. Markups are not added to any expenses associated with COZEEP support.

The minimum number of hours for an officer is 4 hours, except if a closure is already in place and the Engineer authorizes your request for an on-duty officer to conduct a traffic break, the minimum number of hours for an officer is 1 hour.

For a cancellation less than 48 hours before the scheduled start time of COZEEP support, except for a cancellation due to adverse weather or extenuating circumstances, the Department deducts:

1. Minimum of \$50 per California Highway Patrol officer if the officer is notified before the start time
2. Maximum of 4 hours of pay per officer if the officer is not notified before the start time

#### **12-4.03 FALSEWORK OPENINGS**

04-17-20

##### **12-4.03A General**

Section 12-4.03 includes specifications for providing falsework openings.

##### **12-4.03B Materials**

Not Used

##### **12-4.03C Construction**

###### **12-4.03C(1) General**

Reserved

###### **12-4.03C(2) Temporary Railing**

Install Type K temporary railing on both sides of vehicular openings through falsework. If ordered, install temporary railing at other falsework less than 12 feet from the edge of a traffic lane. This is change order work.

Temporary railings for vehicular openings must start 150 feet in advance of the falsework and extend past the falsework in the direction of adjacent traffic flow. For 2-way traffic openings, temporary railing must extend at least 60 feet past the falsework in the direction of adjacent traffic flow.

Install temporary crash cushion modules as shown at the approach end of temporary railings located less than 15 feet from the edge of a traffic lane. For 2-way traffic openings install temporary crash cushion modules at the departing end of temporary railings located less than 6 feet from the edge of a traffic lane.

The Engineer determines the exact location and length of railing and the type of flare to be used.

Install temporary railing for protecting the falsework before erecting it. Do not remove temporary railing until authorized.

#### **12-4.03D Payment**

Not Used

10-18-19

### **12-4.04 TEMPORARY PEDESTRIAN ACCESS ROUTES**

#### **12-4.04A General**

##### **12-4.04A(1) Summary**

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

A temporary pedestrian access route includes temporary traffic control devices as shown except for Type K temporary railing and temporary crash cushions.

##### **12-4.04A(2) Definitions**

Reserved

##### **12-4.04A(3) Submittals**

If work activities require the closure of a pedestrian route and a temporary pedestrian access route is not shown, submit a work plan for a temporary pedestrian access route. The work plan must:

1. Describe the activities, processes, equipment, and materials that will be used to provide the temporary access route
2. Show the locations of the routes and the placement of traffic control devices for each stage of work
3. Include a time-scaled logic diagram displaying the sequence and duration of the planned activities for each stage of work
4. Be sealed and signed by an engineer who is registered as a civil engineer in the State

Submit "Temporary Pedestrian Access Route Contractor Compliance Report," within 2 business days after construction of a temporary pedestrian access route.

Submit "Temporary Pedestrian Access Route Contractor Weekly Report," within 2 business days of completing a weekly inspection.

##### **12-4.04A(4) Quality Assurance**

###### **12-4.04A(4)(a) General**

Reserved

###### **12-4.04A(4)(b) Quality Control**

Perform a review of the temporary pedestrian access route after it is constructed and document compliance on the "Temporary Pedestrian Access Route Contractor Compliance Report."

The Department will conduct a verification inspection after receiving the compliance report.

For a temporary pedestrian access route in use perform a weekly review and document compliance on the "Temporary Pedestrian Access Route Contractor Weekly Report."

#### **12-4.04B Materials**

The walkway surface must be slip resistant and surfaced with minor HMA or commercial-quality, bituminous material, commercial-quality concrete, or wood.

A handrail with a circular cross section must have an outer diameter from 1-1/4 to 2 inches. A handrail with a noncircular cross section must have a perimeter from 4 to 6-1/4 inches and a maximum cross-section dimension of 2-1/4 inches.

Fasteners must be rounded to prevent injury to a pedestrian's fingers, hands, and arms and to eliminate sharp edges that could catch on clothing.

A detectable warning surface must be on the Authorized Material List for detectable warning surfaces and match yellow color no. 33538 of AMS.Std.595.

Temporary traffic control devices used to channelize pedestrians must:

1. Be free of sharp or rough edges
2. Have a continuous detectable edging at least 6 inches high and at no more than 2 inches above the walkway surface
3. Be at least 32 inches in height
4. Have smooth connection points between devices to allow for a handrail
5. Have a top and bottom surface in the same vertical plane

#### **12-4.04C Construction**

Notify the Engineer 5 business days before closing an existing pedestrian route. Do not close the route until authorized.

If work activities require the closure of a pedestrian route and a temporary pedestrian access route is not shown, provide a temporary pedestrian access route near the traveled way. You may route pedestrians using the existing sidewalk or by constructing a temporary access route.

If a bid item for a temporary pedestrian access route is not shown on the Bid Item List, then constructing a temporary pedestrian access route is change order work, except when the closure is a result of your means and methods.

Construct a temporary pedestrian access route such that:

1. Walkway surface is firm and stable and free of irregularities
2. Cross slope of the pedestrian route is at most 50:1 (horizontal:vertical)
3. Longitudinal slope of the pedestrian route is at most 20:1 (horizontal:vertical)
4. Walkway, landings, blended transitions, and curb ramps are at least 60 inches wide except where not feasible, the width must be at least 48 inches wide with a 60-by-60-inch passing space at least every 200 feet
5. Lateral joints or gaps between surfaces are less than 1/2 inch wide
6. Discontinuities in surface heights are less than 1/2 inch and beveled if greater than 1/4 inch with a slope no greater than 2:1 (horizontal:vertical)
7. Ramps have:
  - 7.1. Longitudinal slope of at most 12:1 (horizontal:vertical)
  - 7.2. Rise less than 30 inches
  - 7.3. Protective edging at least 2 inches high on each side and handrails at a height from 34 to 38 inches above the walkway surface if the rise is greater than 6 inches
8. Curb ramps have:
  - 8.1. Longitudinal slope of at most 12:1 (horizontal:vertical)
  - 8.2. Protective edging at least 2 inches high on each side if the curb ramp does not have flares and the rise is greater than 6 inches
9. Pedestrians are channelized when routed off existing pedestrian routes

Construct handrails such that they are continuous, smooth and free of sharp or rough edges.

Provide an overhead covering to protect pedestrians from falling objects and drippings from overhead structures.

If the temporary access route is next to traffic or work activities, place a temporary barrier to separate the route from vehicles and equipment.

Install a detectable warning surface at locations where a curb ramp, landing, or blended transition connects to a street. Install the warning surface such that it extends a minimum of 36 inches in the

direction of travel and for the full width of the landing, blended transition, or curb ramp, excluding the flares.

Maintain the temporary pedestrian access route clear of obstructions. Do not allow traffic control devices, equipment, or construction materials to protrude into the walkway. Maintain a continuous unobstructed path connecting all pedestrian routes, parking lots, and bus stops located within the project limits.

Remove the temporary pedestrian access route when the Engineer determines it is no longer needed.

Provide a temporary pedestrian access route through falsework under section 16-2.02.

**12-4.04D Payment**

Not Used

**12-4.05 BRIDGE CLEANING AND PAINTING ACTIVITIES**

**12-4.05A General**

Section 12-4.05 includes specifications for maintaining traffic during bridge cleaning and painting activities.

Signs must comply with section 12-3.11.

**12-4.05B Materials**

Not Used

**12-4.05C Construction**

For bridge cleaning and painting activities, place the signs as shown in the following table in addition to those shown on the plans:

Sign no.	Sign description	Requirement
W20-1	Road Work Ahead	Place portable 30-by-30-inch signs at locations where traffic approaches a bridge with work underway. If the approach speed is greater than 50 mph, the sign must be 48 by 48 inches. The sign panel base material must not be plywood. Attach 2 orange, 16 sq in flags to each sign.
--	Cleaning and Painting Operations	Place a 48-by-48-inch sign near each W20-1 sign. Use 4-inch-high black lettering and include your name, address, and telephone number on an orange background.

The Engineer determines the exact locations of the signs. Do not use signs until needed. Maintain the signs in place during bridge cleaning and painting activities. Remove the signs at the end of each work shift.

After each day's bridge cleaning and painting activities, remove obstructions from the roadway to allow for free passage for traffic. Remove blast cleaning residue from the traveled way before opening the area to traffic.

You may lay supply lines along the top of curbs adjacent to railing posts if the lines do not interfere with traffic. Remove the lines when work is not in progress.

**12-4.05D Payment**

Not Used

**12-4.06 TOLL BRIDGES**

Reserved

**12-4.07–12-4.10 RESERVED**

**12-5 RESERVED**

**12-6 TEMPORARY PAVEMENT DELINEATION**

**12-6.01 GENERAL**

Section 12-6 includes specifications for placing temporary pavement delineation except for delineation on a seal coat project.

Temporary painted traffic stripes and painted pavement markings used for temporary delineation must comply with section 84-2.

Temporary signs for no-passing zones must comply with section 12-3.11.

**12-6.02 MATERIALS**

**12-6.02A General**

The following types of temporary pavement delineation must be on the Authorized Material List for signing and delineation materials:

1. Temporary pavement markers for long term day/night use (180 days or less)
2. Temporary pavement markers for short term day/night use (14 days or less)
3. Temporary (removable) striping and pavement marking tape (180 days or less)
4. Permanent traffic striping and pavement marking tape
5. Channelizers

**12-6.02B Temporary Pavement Markers**

Temporary pavement markers must be the same color as the lane line or centerline markers being replaced.

Temporary pavement markers must be for long-term day or night use, 180 days or less, except you may use temporary pavement markers for short-term day or night use, 14 days or less, if you place the permanent pavement delineation before the end of the 14 days.

**12-6.02C Channelizers**

Channelizers used for temporary edge line delineation must be orange and surface mounted.

**12-6.03 CONSTRUCTION**

**12-6.03A General**

If work activities obliterate pavement delineation, place temporary or permanent pavement delineation before opening the traveled way to traffic. The temporary pavement delineation must consist of a lane line and centerline pavement delineation for traveled ways open to traffic. On multilane roadways, freeways, expressways, and 2-lane roadways with shoulders 4 feet or more in width, the temporary pavement delineation must also include edge line delineation for traveled ways open to traffic.

Establish the alignment for temporary pavement delineation, including the required lines or markers. Surfaces to receive an application of paint or removable traffic tape must be dry and free from dirt and loose material. Do not apply temporary pavement delineation over existing pavement delineation or any other temporary pavement delineation. Maintain temporary pavement delineation until no longer needed or replace it with a new striping detail of temporary or permanent pavement delineation.

When the Engineer determines the temporary pavement delineation is no longer required for the direction of traffic, remove the temporary pavement delineation, including any underlying adhesive for temporary pavement markers, from the final layer of surfacing and from the pavement to remain in place. Remove temporary pavement delineation that conflicts with any subsequent or new traffic pattern for the area.

**12-6.03B Temporary Lane Line and Centerline Delineation**

If lane lines or centerlines are obliterated and temporary pavement delineation to replace the lines is not shown, the minimum lane line and centerline delineation must consist of temporary pavement markers placed longitudinally at 24-foot maximum intervals.



For temporary lane line or centerline delineation consisting entirely of temporary pavement markers for short-term day or night use, 14 days or less, do not use the markers for more than 14 days on lanes opened to traffic. Place the permanent pavement delineation before the end of the 14 days. If the permanent pavement delineation is not placed within 14 days, replace the temporary pavement markers with additional temporary pavement delineation equivalent to the pattern described for the permanent pavement delineation for the area.

If no-passing centerline pavement delineation is obliterated, install the following temporary no-passing zone signs before opening lanes to traffic:

1. W20-1 (Road Work Ahead) sign from 1,000 to 2,000 feet in advance of the no-passing zone
2. R4-1 (Do Not Pass) sign at the beginning of the no-passing zone and at 2,000-foot maximum intervals within the no-passing zone
3. W7-3a (Next \_\_\_ Miles) plaque beneath the W20-1 sign for continuous zones longer than 2 miles
4. R4-2 (Pass With Care) sign at the end of the no-passing zone

The Engineer determines the exact location of temporary no-passing zone signs. Maintain the temporary no-passing zone signs in place until you place the permanent no-passing centerline pavement delineation.

Remove the temporary no-passing zone signs when the Engineer determines they are no longer required for the direction of traffic.

#### **12-6.03C Temporary Edge Line Delineation**

On multilane roadways, freeways, expressways, and 2-lane roadways with shoulders 4 feet or more in width open to traffic where edge lines are obliterated and temporary pavement delineation to replace those edge lines is not shown, provide temporary pavement delineation for:

1. Right edge lines consisting of any of the following:
  - 1.1. Solid 6-inch-wide traffic stripe tape of the same color as the stripe being replaced.
  - 1.2. Traffic cones placed longitudinally at 100-foot maximum intervals.
  - 1.3. Portable delineators or channelizers placed longitudinally at 100-foot maximum intervals.
2. Left edge lines consisting of any of the following:
  - 2.1. Solid 6-inch-wide traffic stripe tape of the same color as the stripe being replaced.
  - 2.2. Traffic cones placed longitudinally at 100-foot maximum intervals.
  - 2.3. Portable delineators or channelizers placed longitudinally at 100-foot maximum intervals.
  - 2.4. Temporary pavement markers placed longitudinally at 6-foot maximum intervals.

You may apply temporary traffic stripe paint of the same color as the stripe being replaced instead of solid 6-inch-wide temporary traffic stripe tape where the removal of the temporary traffic stripe is not required.

The Engineer determines the lateral offset for traffic cones, portable delineators, and channelizers used for temporary edge line delineation. If traffic cones or portable delineators are used for temporary edge line delineation, maintain the cones or delineators during the hours of the day when they are in use.

Cement the bases of channelizers used for temporary edge line delineation to the pavement with hot melt bituminous adhesive as specified in section 81-3 for cementing pavement markers to pavement.

#### **12-6.03D Temporary Traffic Stripe, Pavement Marking, and Pavement Markers**

##### **12-6.03D(1) General**

Reserved

##### **12-6.03D(2) Temporary Traffic Stripe Tape**

Except where the temporary traffic stripe is used for 14 days or less, apply temporary removable traffic stripe tape under the manufacturer's instructions and as follows:

1. Slowly roll the tape with a rubber-tired vehicle or roller to ensure complete contact with the pavement surface.
2. Apply the tape straight on a tangent alignment and on a true arc on a curved alignment.

3. Do not apply the tape when the ambient air or pavement temperature is less than 50 degrees F unless otherwise authorized.

For temporary traffic stripe tape used for 14 days or less, apply the temporary removable traffic stripe tape under the manufacturer's instructions.

#### **12-6.03D(3) Temporary Traffic Stripe Paint**

Apply temporary traffic stripe paint under section 84-2.03, except you may apply 1 or 2 coats of the temporary traffic stripe paint for new or existing pavement.

You are not required to remove painted temporary traffic stripe that will be covered by paving work.

#### **12-6.03D(4) Temporary Pavement Marking Tape**

Apply temporary removable pavement marking tape as specified for applying temporary removable traffic stripe tape in section 12-6.03D(2).

#### **12-6.03D(5) Temporary Pavement Marking Paint**

Apply temporary pavement marking paint under section 84-2.03, except you may apply 1 or 2 coats of the temporary pavement marking paint.

You are not required to remove of painted temporary pavement markings that will be covered by paving work.

You may use permanent or temporary removable pavement marking tape instead of temporary pavement marking paint.

#### **12-6.03D(6) Temporary Pavement Markers**

Place temporary pavement markers under the manufacturer's instructions. Cement temporary markers to the surfacing with the manufacturer's recommended adhesive except do not use epoxy adhesive in areas where the removal of the pavement markers is required.

You may use retroreflective pavement markers instead of temporary pavement markers for long-term day or night use, 180 days or less, except to simulate patterns of broken traffic stripe. Retroreflective pavement markers used for temporary pavement markers must comply with section 81-3, except the waiting period before placing pavement markers on new asphalt concrete surfacing as specified in section 81-3.03 does not apply. Do not use epoxy adhesive to place pavement markers in areas where the removal of the pavement markers is required.

#### **12-6.04 PAYMENT**

The Department does not pay for additional temporary pavement delineation used to replace temporary pavement markers.

Temporary traffic stripe is measured as specified for traffic stripe in section 84.

Temporary pavement marking is measured as specified for pavement marking in section 84.

### **12-7 TEMPORARY PAVEMENT DELINEATION FOR SEAL COATS**

#### **12-7.01 GENERAL**

Section 12-7 includes specifications for placing temporary pavement delineation for a seal coat project.

Temporary signs for no-passing zones must comply with section 12-3.11.

#### **12-7.02 MATERIALS**

Temporary raised pavement markers for seal coat applications must be temporary pavement markers for short-term day or night use, 14 days or less, on the Authorized Material List for signing and delineation materials.

#### **12-7.03 CONSTRUCTION**

Before applying binder that will obliterate existing traffic stripes, place temporary raised pavement markers on the existing traffic stripes except for right edge lines at 24-foot maximum intervals. Place 2

markers side by side on double traffic stripes with 1 marker placed on each stripe longitudinally at 24-foot maximum intervals. Place temporary raised pavement markers under the manufacturer's instructions. Before opening the lanes to uncontrolled traffic, remove the covers from the temporary raised pavement markers.

If you obliterate no-passing centerline pavement delineation, install the following temporary no-passing zone signs before opening lanes to traffic:

1. W20-1 (Road Work Ahead) sign from 1,000 to 2,000 feet in advance of the no-passing zone
2. R4-1 (Do Not Pass) sign at the beginning of the no-passing zone and at 2,000-foot maximum intervals within the no-passing zone
3. W7-3a (Next \_\_\_ Miles) plaque beneath the W20-1 sign for continuous zones longer than 2 miles
4. R4-2 (Pass With Care) sign at the end of the no-passing zone

The Engineer determines the exact location of the temporary no-passing zone signs. Maintain the temporary no-passing zone signs in place until you place the permanent no-passing centerline pavement delineation. Remove the temporary no-passing zone signs when the Engineer determines they are no longer required for the direction of traffic.

Maintain temporary pavement delineation until you replace it with the permanent pavement delineation.

**12-7.04 PAYMENT**

Not Used

**12-8-12-10 RESERVED**

AA

**13 WATER POLLUTION CONTROL**

04-17-20

**Add to the end of section 13-1.01C(1):**

04-17-20

Submittals for additional or new WPC practices to manage run-on, run-off, and stormwater conveyance must:

1. Describe the activities, processes, equipment, and materials that will be used to manage the run-on, run-off, and stormwater conveyance through the job site
2. Show the locations of the management practices
3. Include a time-scaled logic diagram displaying the sequence and duration of the management practices for each stage of work
4. Be sealed and signed by an engineer who is registered as a civil engineer in the State

**Add after the 2nd paragraph of section 13-1.01C(5):**

04-19-19

For partial listing of disposal facilities and their waste acceptance list, go to SWRCB website.

**Replace the 3rd paragraph of section 13-1.01D(3) with:**

04-17-20

Training for assistant WPC managers who inspect, repair, and maintain WPC practices, collect water quality samples, and record water quality data must include:

1. Review of the sampling and analysis plan and the *Construction Site Monitoring Program Guidance Manual*
2. Health and safety review
3. Sampling simulations

The training for assistant WPC managers must comply with the requirements described under "WPC Manager Training," and includes:

1. Obtaining a certificate by completing the 8-hour WPC manager training
2. Reviewing updates, revisions, and amendments to the training

For training requirements, go to the Construction Storm Water and Water Pollution Control website.

**Replace the 1st paragraph of section 13-1.01D(4)(a) with:**

04-17-20

Assign a WPC manager to implement the WPCP or SWPPP. Assign an alternate WPC manager to perform the responsibilities of the WPC manager in the manager's absence. The alternate WPC manager must have the same qualifications as the WPC manager. You may assign an assistant WPC manager to act under the supervision of the WPC manager to inspect, repair, and maintain WPC practices, collect water quality samples, and record water quality data. You may have more than one assistant WPC manager.

**Replace the 1st paragraph of section 13-1.01D(4)(b) with:**

04-17-20

The WPC manager must:

1. Comply with the requirements provided in the Construction General Permit for QSP
2. Comply with the requirements described under "WPC Manager Training," including:
  - 2.1. Obtaining a certificate by completing the 8-hour training
  - 2.2. Reviewing updates, revisions, and amendments to the training

For the requirements, go to the Construction Storm Water and Water Pollution Control website.

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

04-19-19

**Replace item 7 in the list in the 1st paragraph of section 13-1.01D(4)(c) with:**

04-17-20

7. Revise the WPCP or recommend changes to the SWPPP

**Replace the 3rd sentence in the 4th paragraph of section 13-1.03A with:**

04-17-20

Additional WPC work is change order work except when the additional WPC practices are a result of your means and methods.

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

04-19-19

Within 7 days after Contract approval, submit one printed copy and an electronic copy on a read-only CD, DVD, or other authorized data-storage device 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 item 4 in the list in the 2nd paragraph of section 13-2.01C with:**

04-19-19

4. Show the locations and types of temporary WPC practices that will be used in the work for whichever has the longest duration in the first:
  - 4.1. 60 days
  - 4.2. Construction phase

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

04-19-19

After the Engineer authorizes the WPCP, submit one printed copy and an electronic copy on a read-only CD, DVD, or other Engineer-authorized data-storage device of the authorized WPCP.

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

04-19-19

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

04-17-20

Within 15 days of Contract approval, submit 1 printed copy and an electronic copy on a read-only CD, DVD, or other authorized data-storage device of your SWPPP unless different quantities are ordered at the preconstruction conference.

You must assign a QSD to develop and revise the SWPPP.

**Replace item 4 in the list in the 2nd paragraph of section 13-3.01C(2)(a) with:**

04-19-19

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. 60 days
    - 4.2.2. Construction phase

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

04-19-19

Submit an electronic copy on a read-only CD, DVD, or other Engineer-authorized data-storage device and 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:**

04-19-19

Submit a revised SWPPP annually before September 15th and any time:

**Add after the 7th paragraph of section 13-3.01C(2)(a):**

04-19-19

Revise the SWPPP through amendment. The annual SWPPP amendment must include an annual winterization plan.

The annual winterization plan must describe the preparation for the upcoming rainy season including:

- 1. Updated schedule
- 2. Materials and labor
- 3. Management of stormwater through the job site including:
  - 3.1. Run-on
  - 3.2. Run-off
  - 3.3. Conveyance downslope
- 4. Management of areas within the job site including:
  - 4.1. Areas where work is suspended
  - 4.2. Areas of soil stabilization
  - 4.3. New disturbed soil areas
- 5. Changes to monitoring locations
- 6. Slope stabilization

04-19-19

**Delete section 13-3.01C(5).**

^^

### 14 ENVIRONMENTAL STEWARDSHIP

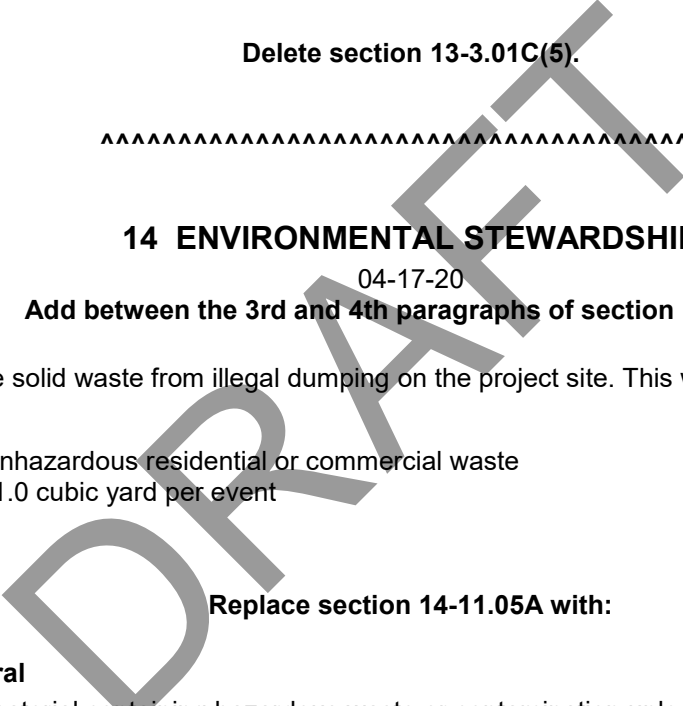
04-17-20

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

04-19-19

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 1.0 cubic yard per event



**Replace section 14-11.05A with:**

10-18-19

#### 14-11.05A General

Do not stockpile material containing hazardous waste or contamination unless authorized in your excavation and transportation plan. Stockpiles containing hazardous waste or contamination must not be placed where affected by surface run-on or run-off. Cover stockpiles with a minimum 12-mils-thick plastic sheeting. Do not place stockpiles in ESAs. Stockpiled material must not enter storm drains, inlets, or waters of the State.

**Add to the beginning of section 14-11.14D:**

04-19-19

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

**Add to the beginning of section 14-11.14E:**

04-19-19

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.

Replace *Reserved* in section 14-11.15 with:

04-17-20

**14-11.15A General**

Section 14-11.15 includes specifications for disposing of electrical equipment containing hazardous materials.

**14-11.15B Submittals**

**14-11.15B(1) General**

Reserved

**14-11.15B(2) Identification of Disposal Facilities**

Thirty days before starting work submit the name and address of the appropriately permitted facilities where electrical equipment containing hazardous materials will be taken to dispose or recycle them.

**14-11.15C Waste Management**

**14-11.15C(1) General**

When you mishandle and damage electrical equipment you are the generator of resulting hazardous waste and are responsible for cleanup, management, and disposal of this hazardous waste and the associated costs for the work under section 14-11.06.

**14-11.15C(2) Universal Waste**

**14-11.15C(2)(a) General**

Universal wastes include removed:

1. Light bulbs
2. E-waste including, electronic devices as described in 22 CA Code Regs § 66273.3(a), containing:
  - 2.1. Circuit boards, including controller boxes and LED lights
  - 2.2. Computer screens or video screens
  - 2.3. Computer keyboards
  - 2.4. Cathode ray tube devices
3. Batteries as described in 22 CA Code Regs § 66273.2
4. Mercury-containing equipment as described in section 22 CA Code Regs §66273.4(a); such as lamps, timers, and switches
5. Fluorescent tubes, bulbs, and lamps

Manage and dispose of universal waste under 22 CA Code Regs § 66261.9. Transport universal wastes to an appropriately permitted recycling or disposal facility.

**14-11.15C(2)(b) Undamaged Lithium Thionyl Chloride batteries**

Package removed equipment containing undamaged lithium thionyl chloride batteries and place the packages in US DOT approved sealed shipping containers. Transport the containers to a recycling or disposal facility. Notify the receiving facility 48 hours before delivery. Affix a label to containers of intact units identifying the contents as "Universal Waste: Lithium Thionyl Chloride Batteries."

Ship lithium thionyl chloride batteries that are separated from the electrical equipment units they powered to a recycling or disposal facility under 49 CFR 173.185. Package the batteries such that contact between them and resulting short circuits are avoided. Prevent accidental contact between batteries by:

1. Covering terminal ends to prevent them from touching each other
2. Placing batteries in a sealed plastic bag packed with loose fill, such as vermiculite

The outer packaging must comply with 49 CFR 173.24 and 173.24a. Transport lithium thionyl chloride batteries to an approved hazardous waste recycling or disposal facility. For a partial list of facilities, go to:

<http://www.calrecycle.ca.gov/Electronics/Recovery/Approved/Default.htm>

**14-11.15C(3) Damaged Lithium Thionyl Chloride batteries**

Damaged Lithium thionyl chloride batteries are designated as an extremely hazardous waste under 22 CA Code of Regs, Div 4.5, Ch 11, Art 5, App 10.

When lithium thionyl chloride batteries are damaged by your mishandling you are the generator of the resulting hazardous waste and responsible for cleanup, management, and disposal of this hazardous waste and the associated costs for the work under section 14-11.06.

Lithium thionyl chloride batteries found damaged are Department-generated hazardous waste under section 14-11.07. Management of this Department-generated hazardous waste is change order work.

Use a hazardous waste manifest to transport this damaged equipment to an appropriately permitted disposal facility.

**14-11.15C(4) Electrical Equipment Containing PCBs**

**14-11.15C(4)(a) General**

PCBs are found in electrical equipment produced before 1979 such as transformers, capacitors, and fluorescent light ballasts.

**14-11.15C(4)(b) Transformers and Capacitors**

Manage and dispose of transformers and capacitors containing PCBs under 40 CFR Part 761 and 22 CA Code of Regs Div 4.5.

**14-11.15C(4)(c) Undamaged Fluorescent Light Ballasts**

Manage and dispose of fluorescent light ballasts containing PCBs under 22 CA Code of Regs § 67426.1 et seq. Fluorescent light ballasts containing PCBs must be packaged and transported by a hauler with a current DTSC registration certificate and documentation of compliance with the CA Highway Patrol Basic Inspection of Terminals Program. The hauler must transport the fluorescent light ballasts containing PCBs to a facility permitted for hazardous waste disposal by DTSC.

**14-11.15C(4)(d) Damaged Fluorescent Light Ballasts**

Damaged fluorescent light ballasts containing PCBs are designated as extremely hazardous waste by DTSC.

When fluorescent light ballasts containing PCBs are damaged by your mishandling you are the generator of the resulting hazardous waste and responsible for cleanup, management, and disposal of this hazardous waste and the associated costs for the work under section 14-11.06.

Fluorescent light ballasts containing PCBs found damaged are Department-generated hazardous waste under section 14-11.07. Management of this Department-generated hazardous waste is change order work.

Use a hazardous waste manifest to transport damaged equipment to an appropriately permitted disposal facility.

**14-11.15C(5) Lead Acid Batteries**

Removed lead acid batteries are Department-generated hazardous waste. Manage hazardous waste lead acid batteries under 22 CA Code Regs § 66266.80 and 66266.81. Do not dispose of or attempt to dispose of, a lead-acid battery on or in any land, including dumpsters, landfills, lakes, streams, or the ocean.

Upon removal immediately place batteries upright in non-reactive, structurally-secure, closed containers such as polyethylene buckets or drums for transport. Package the batteries under 49 CFR 172.101 and 49 CFR 173.59. Prevent accidental contact between batteries by:

1. Covering terminal ends to prevent them from touching each other
2. Placing batteries in a sealed plastic bag packed with loose fill, such as vermiculite

Label the container with the date the first battery is placed in it and identify the contents as "Lead-acid Batteries."





**Replace item 2 in the list in the 1st paragraph of section 20-1.03C(1) with:**

2. Controlling weeds and pests

10-18-19

**Replace the 2nd paragraph of section 20-2.01A(4)(d) with:**

In the presence of the Engineer, perform a functional test for each system that demonstrates:

10-19-18

1. Components of the system are functioning and integrated with one another. 10-18-19
2. Controller programming is complete including external weather, learned flow, and other system data inputs required to operate the system in the automatic mode. 10-19-18
3. Watering schedule is appropriate for the plants, current weather, season, and site conditions. 10-19-18
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).**

10-19-18

**Replace the 1st paragraph of section 20-2.01B(5) with:**

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.

10-19-18

**Replace the 2nd paragraph of section 20-2.01B(5) with:**

Pull box covers used for control and neutral conductors for irrigation equipment operated by the irrigation controller must be marked *SPRINKLER CONTROL*.

04-19-19

**Add to section 20-2.01B:**

04-19-19

**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).

10-19-18

**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:

10-19-18

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

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

04-19-19

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

Space remote control valve boxes at least 2 feet from the edge of the adjacent valve box.

04-17-20

**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).

10-19-18

**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.

10-19-18

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.

04-19-19

**Add to the end of the 4th paragraph of section 20-2.06B(2)(a):**

Notify the Engineer at least 10 business days before accessing the network communications to integrate new irrigation controllers into the network.

10-18-19

**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:

10-19-18

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

10-19-18

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

**Replace the paragraph of section 20-2.07B(3) with:**

10-18-19

Corrugated HDPE pipe must comply with ASTM F667 or be Type S complying with AASHTO M252 or AASHTO M294. Couplings and fitting must be as recommended by the pipe manufacturer.

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

04-19-19

Threaded nipples for swing joints and risers must be schedule 80, PVC 1120 or PVC 1220 pipe, and comply with ASTM D1785.

**Add to the end of section 20-2.10B(6):**

10-18-19

Flanged adapters used to connect pipe to gate valves must be metal.

**Replace section 20-2.10B(7) with:**

04-17-20

Each pressure regulating valve used on the downstream side of the control valves must be:

1. Threaded type with outflow pressure clearly marked on the regulator
2. Plastic body with a working pressure of 125 psi or greater
3. Stainless-steel compression spring

Each pressure regulating valve used on the upstream side of the control valves must be:

1. Flanged or threaded and manufactured of brass or bronze
2. Capable of withstanding a working pressure of 300 psi or greater
3. Adjustable with a stainless-steel spring and seat
4. Tapped and plugged for a pressure gauge and if shown with a gauge installed

Replace the table in the 3rd paragraph of section 20-3.01B(2)(a) with:

10-19-18

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

<sup>a</sup>Do not use containers made of biodegradable material.

<sup>b</sup>Grown in individual container cells.

<sup>c</sup>Bare root.

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

10-19-18

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

Replace section 20-3.01C(3) with:

10-19-18

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

Replace item 3 in the list in the 2nd paragraph of section 20-4.01A with:

10-18-19

3. Controlling weeds and pests

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

10-18-19

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

Delete the 3rd paragraph of section 20-4.03G.

10-19-18

Replace the 1st paragraph of section 20-5.03A(2) with:

10-18-19

Preemergent must be granular oxadiazon.

**Replace the paragraph of section 20-5.03A(3)(c) with:**

10-18-19  
After compaction, apply preemergent at the maximum label rate. Do not apply preemergent more than 12 inches beyond the inert ground cover limits. Complete the preemergent application and inert ground cover placement within the same day.

**Add to the end of section 20-5.03B(3):**

10-19-18  
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:**

10-19-18  
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.

**Replace item 2 in the list in the 1st paragraph of section 20-10.03A(3) with:**

10-18-19  
2. Maintain existing planted areas. The work plan must include controlling the weeds, fertilizing, mowing and trimming of turf areas, watering, and controlling pests.

**Replace item 6 in the list in the 2nd paragraph of section 20-10.03A(4) with:**

10-18-19  
6. Pests

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

10-19-18  
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):**

10-19-18  
Water existing plants as needed to keep them in a healthy growing condition until contract acceptance.

AA

## 21 EROSION CONTROL

04-17-20

Replace section 21-2.01C(3) with:

10-18-19

At least 60 days before seed application, submit proof that the purchase order for seed required for the Contract has been placed and accepted by the seed vendor. Include the seed's botanical names, quantity ordered, and the anticipated date of delivery on the purchase order.

Submit a copy of the supplier's seed analysis report and seed label for each seed species before application.

Seed analysis report must show:

1. Seed variety including botanical name and common name
2. Percent pure live seed
3. Percent by weight inert matter
4. Percent by weight other crop seed
5. Percent by weight weed seed
6. Name of restricted noxious weed seed by number per pound of seed
7. Germination test results
8. Name and address of the supplier or grower
9. Name and address of the seed laboratory
10. Date of the analysis

Seed labels must show:

1. Seed variety including botanical name and common name
2. Lot number or other lot identification
3. Origin
4. Net weight
5. Percent pure live seed
6. Percent total viability
7. Percent by weight inert matter
8. Percent by weight other crop seed
9. Percent by weight weed seed
10. Name of restricted noxious weed seed by number per pound of seed
11. Name and address of the supplier or grower
12. Date the seed was labeled

Replace section 21-2.01D(3) with:

10-18-19

Seed must be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts or by a seed technologist certified by the Society of Commercial Seed Technologists. Seed test must be performed for germination within 12 months before application.

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

04-19-19

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

04-19-19

Delete the 4th paragraph of section 21-2.03J







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

04-19-19

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):**

04-19-19

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

**Replace the 1st sentence in the 5th paragraph of section 39-2.01A(4)(i)(i) with:**

04-17-20

The Engineer conditions each at-the-plant sample of HMA mixture for testing under AASHTO 283 in compliance with sections 7.1.2, 7.1.3, and 7.1.4 of AASHTO R 30.

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

04-19-19

You and the Engineer must work together to avoid potential conflicts and to resolve disputes regarding test result discrepancies. You and the Engineer may only dispute each other's test results if one party's test results pass and the other party's test results fail.

If there is a dispute, submit your test results and copies of paperwork including worksheets used to determine the disputed test results within 3 business 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 resource program and the Department's Independent Assurance Program. The independent third party must have no prior direct involvement with this Contract. By mutual agreement, the independent third party is chosen from:

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

If the Department's 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 1st paragraph of section 39-2.01B(2)(b) with:**

04-17-20

If the proposed JMF indicates that the aggregate is being treated with dry lime or lime slurry with marination, or the HMA with liquid antistrip, then testing the untreated aggregate under AASHTO T 283 and California Test 389 is not required.

**Replace the table in the 3rd paragraph of section 39-2.01C(3)(f) with:  
Tack Coat Application Rates for HMA**

04-17-20

HMA over:	Minimum residual rates (gal/sq yd)		
	CSS-1/CSS-1h, SS-1/SS-1h, and QS-1h/CQS-1h asphaltic emulsion	CRS-1/CRS-2 and QS-1/CQS-1 asphaltic emulsion	Asphalt binder and PMCRS-2/PMCRS-2h asphaltic emulsion
New HMA (between layers)	0.02	0.03	0.02
Concrete pavement and existing asphalt concrete surfacing	0.03	0.04	0.03
Planed pavement	0.05	0.06	0.04

**Replace the 2nd paragraph of section 39-2.02A(4)(b)(iii) with:**

10-18-19

When tested under AASHTO T 308, the uncorrected binder content of the combined RAP sample must be within  $\pm 2.00$  percent of the average uncorrected asphalt binder content reported on page 4 of your Contractor Hot Mix Asphalt Design Data form. If a new processed RAP stockpile is required, the average uncorrected binder content of the new processed RAP stockpile tested under AASHTO T 308 must be within  $\pm 2.00$  percent of the average uncorrected binder content reported on page 4 of your Contractor Hot Mix Asphalt Design Data form. You must use the same ignition oven used to determine the uncorrected asphalt binder content reported on page 4 of your Contractor Hot Mix Asphalt Design Data form.

**Replace item 2 in the 4th paragraph of section 39-2.02A(4)(b)(iii) with:**

10-18-19

2. Moisture content at least once a day

**Replace footnote a in the table in item 1 in the list in the paragraph of section 39-2.02A(4)(e) with:**

04-17-20

<sup>a</sup>The Engineer determines combined aggregate gradations containing RAP under California Test 384. The Engineer uses the correlation factor from Contractor Hot Mix Asphalt Design Data form and mathematically combines the virgin and corrected RAP aggregate gradations at the correct proportions to obtain the combined gradation.

10-18-19

**Replace the table in item 2 in the list in the paragraph of section 39-2.02A(4)(e) with:**

10-18-19

**Reclaimed Asphalt Pavement Quality**

Quality characteristic	Test method	Requirement
Uncorrected binder content (% within the average value reported <sup>a</sup> )	AASHTO T 308	$\pm 2.00$
Specific gravity (within the average value reported <sup>b</sup> )	AASHTO T 209	$\pm 0.06$

<sup>a</sup>Average uncorrected binder content of three ignition oven tests performed at JMF verification. Engineer must use the same ignition oven used to determine the average uncorrected binder content at JMF verification.

<sup>b</sup>Average maximum specific gravity reported on page 4 of Contractor Hot Mix Asphalt Design Data form.

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:

04-19-19

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	100-300 <sup>h</sup>

Replace the row for *Hamburg wheel track (min number of passes at inflection point)* in the table in item 3 in the paragraph of section 39-2.02A(4)(e) with:

04-17-20

Hamburg wheel track (number of passes at inflection point)	California Test 389	Report only
--	---------------------	-------------

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

04-19-19

<sup>h</sup>Not 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 *Hamburg wheel track (min number of passes at inflection point)* in the 1st paragraph of section 39-2.02B(2) with:

04-17-20

Hamburg wheel track (number of passes at inflection point)	California Test 389 <sup>c</sup>	Report only
--	----------------------------------	-------------

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

04-19-19

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	100-300 <sup>e</sup>

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

04-19-19

Not 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:**

04-19-19

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 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:**

04-19-19

For RAP substitution of 15 percent or less, RAP must be within  $\pm 3$  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  $\pm 3$  of RAP percentage shown in your Contractor Job Mix Formula Proposal form without exceeding 25 percent.

**Replace the row for *Hamburg wheel track (min number of passes at 0.5-inch rut depth)* in the table in item 2 in the paragraph of section 39-2.03A(4)(e)(i) with:**

04-17-20

Hamburg wheel track (min number of passes at 0.5-inch rut depth)	California Test	
Base binder grade:	389	
PG 64 or lower		15,000
PG 70		20,000

**Replace the row for *Hamburg wheel track (min number of passes at inflection point)* in the table in item 2 in the paragraph of section 39-2.03A(4)(e)(i) with:**

04-17-20

Hamburg wheel track (number of passes at inflection point)	California Test	Report only
	389	

Replace the row for *Hamburg wheel track (min number of passes at 0.5-inch rut depth)* in the table in 1st paragraph of section 39-2.03B(2) with:

04-17-20

Hamburg wheel track (min number of passes at 0.5-inch rut depth) Base binder grade: PG 64 or lower PG 70	California Test 389 <sup>d</sup>	15,000 20,000
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Replace the row for *Hamburg wheel track (min number of passes at inflection point)* in the table in 1st paragraph of section 39-2.03B(2) with:

04-17-20

Hamburg wheel track (number of passes at inflection point)	California Test 389 <sup>d</sup>	Report only
--	-------------------------------------	-------------

Replace the table in the 3rd paragraph of section 39-2.04C with:  
**Tack Coat Application Rates for OGFC**

04-17-20

OGFC over:	Minimum residual rates (gal/sq yd)		
	CSS-1/CSS-1h, SS-1/SS-1h, and QS-1h/CQS-1h asphaltic emulsion	CRS-1/CRS-2 and QS-1/CQS-1 asphaltic emulsion	Asphalt binder and PMCRS-2/PMCRS-2h asphaltic emulsion
New HMA	0.03	0.04	0.03
Concrete pavement and existing asphalt concrete surfacing	0.05	0.06	0.04
Planed pavement	0.06	0.07	0.05

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

04-19-19

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 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 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 1 to 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.



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

04-17-20

6. Unit weight

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

04-17-20

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:**

04-17-20

$n_v$  = number of Department's tests (minimum of 3 required)

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

04-17-20

If your QC test results are not verified, core at least 3 specimens from the concrete pavement under section 40-1.03M. For dispute resolution, the Engineer selects the core locations and the Department contracts with an independent testing laboratory or uses the Department's 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:**

04-17-20

<sup>b</sup>Average of the individual test results of 3 test beams.

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

04-17-20

The Department 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:**

04-17-20

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



3. Break 3 beams at 28 days and take the average.
4. Break 3 cores at each age of 28, 42, 56, 70, and 91 days under ASTM C 39 and take the average at each age.

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

$$MOR = MORs \times [Cp(t)/Cs(t)]^{1/2}$$

where:

*MOR* = equivalent 28-day modulus of rupture in psi

*MORs* = average modulus of rupture in psi of 3 beams taken from the test strip at 28 days

*Cs(t)* = average compressive strength in psi of 3 cores taken from the test strip at (t): 28, 42, 56, 70, or 91 days under ASTM C39

*Cp(t)* = average compressive strength in psi of 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 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 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:**

04-17-20

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

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

04-17-20

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

**Replace section 40-2 with:**

10-18-19

## **40-2 CONTINUOUSLY REINFORCED CONCRETE PAVEMENT**

### **40-2.01 GENERAL**

#### **40-2.01A Summary**

Section 40-2 includes specifications for constructing continuously reinforced concrete pavement.

Constructing continuously reinforced concrete pavement includes terminal joints and expansion joints.

#### **40-2.01B Definitions**

Reserved

#### **40-2.01C Submittals**

For field qualification, submit the test data for the coefficient of thermal expansion of the concrete.

If you request to use plastic chairs to support the transverse bars, submit a sample of the plastic chair, including:

1. Manufacturer's instructions for the applicable use and load capacity
2. Chair spacing
3. Your calculation for the load on a chair for the area of bar reinforcement it supports

During production, submit the test data for the coefficient of thermal expansion as an informational submittal.

#### **40-2.01D Quality Assurance**

For field qualification, test the coefficient of thermal expansion of the concrete under AASHTO T 336. The coefficient of thermal expansion must not exceed 6.0 microstrain/degree F.

During the evaluation of the test strip, the Engineer visually checks the reinforcement and dowel and tie bar placement.

During production, test the coefficient of thermal expansion of the concrete at a frequency of 1 test for each 5,000 cu yd of paving but not less than 1 test for a project with less than 5,000 cu yd of concrete.

### **40-2.02 MATERIALS**

#### **40-2.02A General**

Reserved

#### **40-2.02B Transverse Bar Assembly**

Transverse bar assemblies may be used to support longitudinal bars instead of transverse bars and other support devices.

#### **40-2.02C Intermediate Transverse Bars**

Intermediate transverse bars do not need to be epoxy-coated for a project not shown to be in a high desert or any mountain climate region.

#### **40-2.02D Joints**

Joint seals for transverse expansion joints must comply with section 51-2.02.

Geosynthetic bond breaker for expansion joint support slabs must comply with section 36-2.

### **40-2.03 CONSTRUCTION**

#### **40-2.03A General**

Reserved

#### **40-2.03B Bar Reinforcement**

Place bar reinforcement under section 52-1.03D except you may request to use plastic chairs. Plastic chairs will be considered only for support directly under the transverse bars. You must demonstrate the vertical and lateral stability of the bar reinforcement and plastic chairs during the construction of the test strip.

For a transverse bar in a curve with a radius under 2,500 feet, place the reinforcement in a single continuous straight line across the lanes and aligned with the radius point as shown.

Lap splice bar reinforcement under section 52-6. For low carbon, chromium-steel bar reinforcement, the length of lap splice must be at least 30 inches.

#### **40-2.03C Construction Joints**

Transverse construction joints must be perpendicular to the lane line. Construct the joints so that the nearest longitudinal bar splice is at least 42 inches away from each side of the joint.

Clean joint surfaces before placing concrete against the surfaces. Remove laitance, curing compound, and other foreign materials.

**40-2.03D Correcting Noncompliant Pavement Work**

**40-2.03D(1) General**

The specifications for repairing cracks in section 40-1.03N do not apply to CRCP. Do not apply high-molecular-weight methacrylate to cracks in CRCP.

CRCP that develops raveling areas of 6 by 6 inches or greater requires partial depth repair.

**40-2.03D(2) Partial Depth Repair**

Partial depth repair must comply with section 41-4 except:

1. Determine a rectangular boundary which extends 6 inches beyond the damaged area. The depth of the saw cut must be between 2 inches from the surface to 1/2 inch above the longitudinal bars.
2. Provide additional reinforcement if each length of the repair boundaries is equal to or greater than 3 feet.

**40-2.03D(3) Full-Depth Repair**

**40-2.03D(3)(a) General**

Remove the full-depth of CRCP except for the portion of reinforcement to remain in place. Provide continuity of the reinforcement. For low carbon, chromium-steel bar reinforcement, the length of lap splice must be at least 30 inches. Splicing must comply with section 52-6. Do not damage the base, concrete, and reinforcement to remain in place. Place concrete in the area where you removed CRCP.

**40-2.03D(3)(b) Transverse Cracks**

Make initial full-depth transverse saw cuts normal to the lane line a distance of 3 feet on each side of the transverse crack.

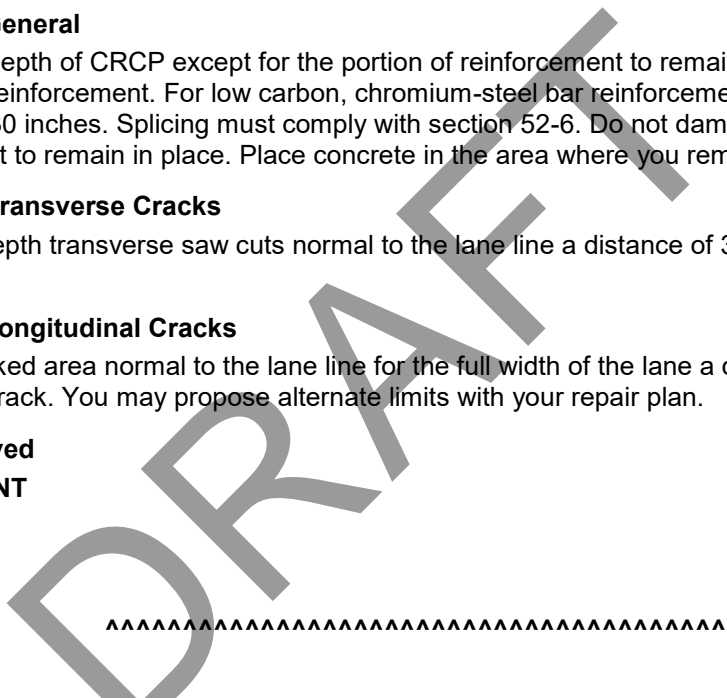
**40-2.03D(3)(c) Longitudinal Cracks**

Remove the cracked area normal to the lane line for the full width of the lane a distance of 1 foot beyond each end of the crack. You may propose alternate limits with your repair plan.

**40-2.03E Reserved**

**40-2.04 PAYMENT**

Not Used



\*\*\*\*\*

**41 EXISTING CONCRETE PAVEMENT**

04-17-20

**Replace the 2nd paragraph of section 41-10.01C with:**

04-17-20

At least 15 days before delivery of the chemical adhesive to the job site, submit the SDS and the manufacturer's instructions for:

1. Handling and storage
2. Installation procedures
3. Minimum cure time
4. Use of chemical adhesive

**Replace the 3rd paragraph of section 41-10.02A with:**

04-17-20

Each chemical adhesive system container must clearly and permanently show the:

1. Manufacturer's name

- 2. Material name
- 3. Lot or batch number
- 4. Expiration date
- 5. Evaluation report number
- 6. Directions for use
- 7. Storage requirement
- 8. Warnings or precautions required by State and federal laws and regulations

**Replace section 41-10.03A with:**

04-17-20

**41-10.03A General**

Drill holes for bars as shown without damaging the adjacent concrete. Clean drilled holes under the chemical adhesive manufacturer's installation instructions. Holes must be dry at the time of placing the chemical adhesive and bars. Immediately after inserting the bar into the chemical adhesive, support the bar to prevent movement until chemical adhesive has cured the minimum time recommended by the manufacturer.

Use a grout retention ring when drilling and bonding dowel bars. Apply dowel bar lubricant to the entire exposed portion of the dowel bar.

If the Engineer rejects a bar installation: stop paving, drilling, and bonding activities. Adjust your procedures and obtain the verbal authorization before resuming paving, drilling, and bonding.

Cut the rejected bar flush with the pavement joint surface and coat the exposed end of the bar with chemical adhesive. Offset the new hole 3 inches horizontally from the rejected hole's center.

\*\*\*\*\*

**DIVISION VI STRUCTURES**

**46 GROUND ANCHORS AND SOIL NAILS**

04-17-20

**Replace section 46-1.01C(2) with:**

04-17-20

**46-1.01C(2) Shop Drawings**

**46-1.01C(2)(a) General**

Submit shop drawings and supporting calculations to OSD, Documents Unit for initial review. Notify the Engineer of the submittal. Include in the notification the date and contents of the submittal.

Submit 6 copies of the general project information, 5 copies of the fabricators plan, and 3 copies of the construction plan.

Shop drawings and calculations must be sealed and signed by an engineer who is registered as a civil engineer in the State.

Allow 30 days for the Department's review.

After review, submit from 6 to 12 copies of final shop drawings and supporting calculations, as requested, for authorization and use during construction.

**46-1.01C(2)(b) General Project Information Plan**

General project information plan must include:

- 1. Name, address, email address, and phone number of the contractor or subcontractor performing the work.

2. Wall construction schedule with construction sequence.
3. Wall construction staging schedule.
4. Table of lengths, tendon sizes, centralizers, and drilled-hole diameters.
5. For ground anchors, calculations for determining the bonded length and assumed bonded strength. Do not rely on any capacity from the grout-to-ground bond within the unbonded length.
6. Procedures for installing verification and proof test nails.
7. Bench width requirements for installation equipment.
8. Excavation lift height and maximum duration of exposure for each wall zone, including:
  - 8.1. Methods to stabilize the exposed excavated face if face is not maintaining its integrity
  - 8.2. Supporting calculations

**46-1.01C(2)(c) Fabrication Plan**

Fabrication plan must include:

1. Details and specifications for:
  - 1.1. Ground anchors and anchorage system
  - 1.2. Production and test soil nails
2. Corrosion protection details and repair procedure for:
  - 2.1. Damaged sheathing
  - 2.2. Couplers
3. Testing equipment including jacking frame and appurtenant bracing.
4. For ground anchors, details for the transition between the corrugated plastic sheathing and the anchorage assembly. If shims are used during lock-off, include:
  - 4.1. Shim thickness
  - 4.2. Supporting calculations

You may start fabrication early by requesting an authorization of the fabrication plan portion before the complete shop drawings submittal is authorized. If the early fabrication plan is authorized, you are fully responsible for any changes that may occur after starting fabrication.

**46-1.01C(2)(d) Construction Plan**

Construction plan must include:

1. Methods of excavation for the staged lifts and types of excavation equipment.
2. Details for measuring the movement of the excavated face and the wall during stability testing and construction.
3. Measures to ensure wall and slope stability during construction.
4. Details for providing the bonded and unbonded length. If packers or other similar devices are used, include the type.
5. For soil nails, details for isolating installed proof test soil nails during shotcrete application.
6. Dewatering plan to divert, control, and dispose of surface and groundwater during construction
7. Drilling methods and equipment, including:
  - 7.1. Size of drilled hole
  - 7.2. Space requirements
8. Grout mix design and testing procedures.
9. Grout placement equipment and procedures, including minimum required cure time.
10. Testing equipment including method and equipment for measuring movement during testing.
11. For soil nails, include procedure for extracting grouted soil nails.

**Add to the list in the 1st paragraph of section 46-1.01C(3):**

12. Digital photo logs of extracted test soil nails

**Replace the 2nd paragraph of section 46-1.01C(3) with:**

10-19-18

Submit the test data in electronic and hard copy format within 1 business day after testing is complete. Upon completion of the wall, send an email of the soil nail test results as a tabulated spreadsheet to the Engineer and Geotechnical.Data@dot.ca.gov. Include the contract number and Department's structure number of the wall in the subject line of the email.

**Replace Not Used in section 46-1.01D(1) with:**

10-19-18

Welding must comply with AWS D1.1.

**Add to the end of section 46-1.03A:**

10-19-18

Shotcrete must comply with section 53-2.

**Delete the 3rd paragraph of section 46-1.03B.**

10-19-18

**Replace the 1st paragraph of 46-2.02B with:**

04-17-20

Strand tendons, bar tendons, and bar couplers must comply with section 50-1.02B and must be on the Authorized Material List for post-tensioning systems.

**Replace the 1st sentence in the 2nd paragraph of section 46-2.02B with:**

10-19-18

The anchorage enclosure and the steel tube and bearing plate of the anchorage assembly must be galvanized steel and comply with sections 55-1.02D(1) and 55-1.02E(1).

**Replace item 9 in the list in the 3rd paragraph of section 46-2.02D with:**

10-19-18

9. Have the physical properties shown in Table 4.1 of *Recommendations for Prestressed Rock and Soil Anchors* published by the Post-Tensioning Institute

**Replace the 4th paragraph of section 46-2.03D with:**

10-19-18

Immediately after lock-off, perform a lift-off test to verify that the lock-off load has been attained. The lift-off load must be within 10 percent of the specified lock-off load. If necessary adjust the shim thickness to achieve the lock-off load. If the load is not within 10 percent of the specified lock-off load, the anchorage must be reset and another lift-off load reading must be made. Repeat the process until the specified lock-off load is obtained.

**Replace the 2nd paragraph of section 46-3.01A with:**

10-19-18

A soil nail consists of a solid steel bar with an anchorage assembly that is placed in a drilled hole and then grouted.

**Replace section 46-3.01D(2)(b)(ii)(1) with:**

10-19-18

**46-3.01D(2)(b)(ii)(1) General**

Determine the test load using the following equation:

$$T = Lb \times Qb$$

where:

$T$  = test load, pounds

$Lb$  = soil nail bonded length, feet, 10 feet minimum

$Qb$  = test load per unit length of bond, pounds/foot

**Replace the 8th paragraph of section 46-3.01D(2)(b)(ii)(2) with:**

04-19-19

If the Engineer revises soil nail lengths or test load per unit length of bond values, any additional verification test soil nails are change order work.

**Replace section 46-3.02A with:**

04-19-19

**46-3.02A General**

Each production soil nail must be either a solid steel bar encapsulated full length in a grouted corrugated plastic sheathing or an epoxy-coated prefabricated solid steel bar partially encapsulated in a grouted corrugated plastic sheathing as shown.

Epoxy-coated prefabricated solid steel bars must comply with the specifications for epoxy-coated prefabricated reinforcement in section 52-2.03, except the average coating thickness after curing must be from 10 to 15 mils.

Solid steel bar for test soil nails is not required to be epoxy coated or encapsulated in grouted plastic sheathing.

**Replace the heading of section 46-3.02B with:**

10-19-18

**Anchorage Assemblies**

**Replace section 46-3.02C with:**

10-19-18

**46-3.02C Solid Steel Bars**

Solid steel bars must be either:

1. Threaded bars with spirally-deformed, ribbed threads continuous along the entire length of the bar.
2. Deformed reinforcing bars with at least a 6-inch length of thread cut into the bar on the anchorage end. Use coarse threading and the next larger reinforcing bar size.

Solid steel bars must comply with ASTM A615/A615M or A706/A706M, Grade 60 or ASTM A615/A615M, Grade 75.

Splicing must be authorized.

Epoxy coating at the anchorage end of epoxy-coated bars may be omitted for a maximum of 6 inches. Metal surfaces of assembled splices of epoxy-coated bars must be epoxy coated.

Choose the solid steel bar size and grade for test soil nails. Test soil nail bars must not be smaller than the production soil nails they represent.

**Replace the 1st paragraph of section 46-3.03A with:**

10-19-18

Determine the drilled-hole diameter and installation method required to achieve the test load per unit length of bond values shown.

**Replace the introductory clause to the list in the 3rd paragraph of section 46-3.03B with:**

10-19-18

Install verification test soil nails by any of the following means:

**Replace the 7th and 8th paragraphs of section 46-3.03B with:**

10-19-18

Remove each verification and proof test soil nail to 6 inches behind the front face of the shotcrete after testing is complete. Fill the voids with grout.

If ordered, extract verification and proof test soil nails selected by the Engineer. Fill the voids with grout. Photograph the extracted test nails in 5-foot section intervals.

**Replace the 3rd paragraph of section 46-3.03C with:**

10-19-18

Splice the solid steel bar only where shown on the authorized shop drawings or at the end of a soil nail that is ordered to be lengthened.

**Replace the 1st sentence in the 7th paragraph of section 46-3.03C with:**

10-19-18

Hand tighten the nut on the end of the production soil nail bar before shotcrete hardening begins. Ensure the bearing plate is fully seated on the shotcrete.

^^

**48 TEMPORARY STRUCTURES**

04-17-20

**Replace *signed* at each occurrence in section 48 with:**

04-17-20

sealed and signed



**Replace section 48-1.01 with:**

04-17-20

**48-1.01 GENERAL**

**48-1.01A Summary**

Section 48-1 includes general specifications for constructing temporary structures.

If a railroad company is involved, falsework, temporary supports, and jacking support systems must comply with any additional requirements of the railroad company.

**48-1.01B Definitions**

**frame:** Portion of a bridge between expansion joints.

**jacking:** Positioning of new or existing structures or portions thereof, by jacks or other mechanical methods.

**previously welded splice:** Splice made in a temporary-structure member in compliance with AWS D1.1 or other recognized welding standard, before contract award.

**temporary-structure adjustment:** Grading or adjusting of temporary structures.

**48-1.01C Submittals**

**48-1.01C(1) General**

Submit 6 copies of shop drawings and 2 copies of calculations for:

1. Falsework
2. Temporary supports
3. Temporary decking
4. Jacking
5. Adjustment

**48-1.01C(2) Temporary-Structure Inspection Report**

Temporary-structure inspection reports must be:

1. Prepared daily during jacking and temporary-structure adjustment activities. Reports must be submitted:
  - 1.1. By close of business the following business day
  - 1.2. Before opening the roadway on or under the temporary structure to traffic
2. Prepared before placing concrete

The temporary-structure inspection report must be prepared, sealed, and signed by the temporary-structure engineer.

The temporary-structure inspection report must include:

1. Description of the progress of the jacking and adjustment activities
2. Description and evaluation of the condition of the temporary structure and supported structure
3. Inspection findings and the certifications listed in section 48-1.01D(2) that are completed by the temporary-structure engineer

**48-1.01C(3) Adjustment Plan Shop Drawings**

Submit adjustment plan shop drawings if the falsework or temporary supports are to be adjusted more than 1/2 inch.

The adjustment plan shop drawings and calculations must be sealed and signed by the temporary-structure engineer.

Adjustment plan shop drawings and calculations must include:

1. Methods and sequencing for the adjustment.
2. Descriptions of equipment to be used.

3. Location of jacks or other adjustment equipment.
4. Detailed sequence for releasing of bracing.
5. Details and calculations for the stability and adjustment of the falsework or temporary supports during all stages of the adjustment including any additional required temporary bracing.
6. Calculations that include stresses, deflections, and loads in all load carrying members, bracing, and equipment as well as any redistributed loads resulting from the adjustment. Calculations must also include the effect of the adjustment sequence.

#### **48-1.01D Quality Assurance**

##### **48-1.01D(1) General**

Reserved

##### **48-1.01D(2) Temporary-Structure Engineer**

The temporary-structure engineer must:

1. Be registered as a civil engineer in the State.
2. Have experience in temporary structure design or temporary structure construction inspection.
3. Seal and sign the shop drawings.
4. Be present during all jacking and adjustment activities.
5. Prepare, seal, and sign a daily temporary-structure inspection report during jacking and temporary-structure adjustment activities.
6. The temporary-structure engineer must inspect and certify that:
  - 6.1. Temporary structure is stable before jacking activities or adjustments and before concrete is placed.
  - 6.2. Temporary structure complies with the authorized shop drawings.
  - 6.3. Materials and workmanship are satisfactory for the work.
7. Stop activity if any unanticipated issues occur.
8. Propose revisions to the authorized shop drawings to address any issues. Do not resume temporary structure activities until the proposed revisions are authorized.

The temporary-structure engineer may assign a representative to perform the temporary structure activities specified in section 48-1.01D. The temporary-structure engineer must submit a letter that is sealed and signed certifying that the representative:

1. Is registered as a civil engineer in the State
2. Has experience in temporary structure design or temporary structure construction inspection
3. Is familiar with the authorized shop drawings and the stresses the members are required to sustain
4. Will attend at least 1 job site visit with the Engineer and your temporary-structure superintendent to discuss the authorized shop drawings

#### **Add to list in the 2nd paragraph of section 48-2.01A:**

5. Includes illumination for vehicular and pedestrian traffic

04-17-20

#### **Add to the end of section 48-2.01A:**

Falsework used as temporary supports must comply with section 48-3.

04-17-20

**Replace section 48-2.01B with:**

04-17-20

**48-2.01B Definitions**

**independent support system:** Support system that is in addition to a falsework removal system that employs methods of holding falsework from above by winches, hydraulic jacks with prestressing steel, HS steel rods, or cranes.

**falsework release:** Lowering of falsework to the point that it no longer supports the loads imposed by the permanent structure, or any element, that the falsework was designed to support during construction. Falsework release includes blowing sand from sand jacks, turning screws on screw jacks, and removing wedges.

**falsework removal:** Releasing, lowering, and disposing of the falsework.

**Replace the last paragraph of section 48-2.01C(1) with:**

04-17-20

Submit a falsework lighting plan at least 10 days before starting construction on falsework containing openings for vehicular traffic, pedestrians, or railroad.

The plan must include:

1. Location, spacing, and mounting heights of luminaires
2. Types of luminaires
3. Calculations of illumination levels used to determine placement of luminaries
4. Plot of illumination points used to demonstrate compliance with the illumination levels requirements
5. Lighting circuit diagrams

**Replace section 48-2.01C(2) with:**

04-17-20

**48-2.01C(2) Shop Drawings**

Submit shop drawings and calculations for falsework.

The falsework shop drawings and calculations must be sealed and signed by the temporary-structure engineer for any of the following conditions:

1. Height of any portion of the falsework measured from the ground line to the soffit of the superstructure is more than 14 feet
2. Any individual falsework clear span is more than 16 feet
3. Falsework contains openings for vehicular, pedestrian, or railroad traffic
4. Falsework removal systems support falsework from above by winches, hydraulic jacks with prestressing steel, HS rods or cranes

Shop drawings and calculations for falsework piles with a calculated loading capacity greater than 100 tons must be sealed and signed by an engineer who is registered as a civil or geotechnical engineer in the State.

Falsework shop drawings and calculations must include:

1. Details of erection and removal activities.
2. Methods and sequences of erection and removal, including equipment.
3. Maximum falsework adjustment height.
4. Details for the stability of falsework during all stages of erection and removal activities.
5. Superstructure placing diagram showing concrete placing sequence and construction joint locations. If a schedule for placing concrete is shown, no deviation is allowed.
6. Assumed soil bearing values for falsework footings.
7. Maximum horizontal distance falsework piles may be pulled for placement under caps.

8. Maximum deviation of falsework piles from vertical.
9. Anticipated total falsework and formwork settlements, including footing settlement and joint take-up.
10. Grade, species, and type of any timber or structural composite lumber. Include manufacturer's tabulated working stress values for composite lumber.
11. Design calculations that include stresses and deflections in load carrying members.
12. Provisions for complying with temporary bracing requirements.
13. Welding standard used for welded members, including previously welded splices.
14. The following information for falsework removal systems employing methods of holding falsework from above by winches, hydraulic jacks with prestressing steel, HS steel rods, or cranes:
  - 14.1. Design code used for the analysis of the structural members of the independent support system
  - 14.2. Provisions for complying with current Cal/OSHA requirements
  - 14.3. Load tests and ratings within 1 year of intended use of hydraulic jacks and winches
  - 14.4. Location of the winches, hydraulic jacks with prestressing steel, HS steel rods, or cranes
  - 14.5. Analysis showing that the bridge deck and overhang are capable of supporting all loads at all time
  - 14.6. Analysis showing that winches will not overturn or slide during all stages of loading
  - 14.7. Location of deck and soffit openings if openings are needed
  - 14.8. Details of repair for the deck and soffit openings after falsework removal

Submit separate falsework shop drawings and calculations for each:

1. Single bridge or portion of bridge
2. Frame for multi-frame bridges

**Add to section 48-2.01D:**

04-17-20

**48-2.01D(3) Falsework Lighting**

After the installation of falsework lighting, measure the illumination levels in the presence of the Engineer, during the hours of darkness. For pavement and pedestrian walkway lighting, the measurements must be taken at ground level with the meter sensor pointing upward. For portal lighting, measurements must be taken at the face of the surface areas specified with the meter sensor perpendicular to the surface areas.

Falsework lighting must comply with the illumination levels shown in the following table:

<b>Illumination Levels</b>		
Illumination Area	Average Illuminance (fc) ( $E_{avg}$ )	Uniformity ( $E_{avg}/E_{min}$ )
Pavement	0.6	4.0
Portal	1.0	4.0
Pedestrian Walkway	2.0	4.0

**Replace the 1st paragraph of section 48-2.01D(2) with:**

04-17-20

Except for previously welded splices, welding must comply with AWS D1.1. Welding of bar reinforcement must comply with AWS D1.4.

**Replace *Reserved* in section 48-2.02A with:**

04-17-20

Wood must comply with the NDS. Timber used for falsework construction must be seasoned with moisture content not to exceed 19 percent.

**Add to the end of section 48-2.02B(1):**

04-17-20

Where falsework for multiple level bridges is supported on the deck of a structure:

1. Falsework must bear directly on either:
  - 1.1. Girder stems, bent caps, or end diaphragms of the supporting structure.
  - 1.2. Falsework sills that transmit the load to the girder stems, bent caps, or end diaphragms without applying any stress to the deck slab.
2. Additional falsework must be in place beneath the supporting structure when construction loads are imposed on the supporting structure. Design and construct additional falsework to support all construction loads imposed on the supporting structure from the upper structure.

Design the falsework lighting, for pavement, portals, and pedestrian walkways at or under falsework openings, to illuminate:

1. Falsework portals during the hours of darkness
2. Pavement, with portals less than 150 feet apart, during the hours of darkness
3. Pavement, with portals 150 feet or more apart, 24 hours a day
4. Pedestrian walkways 24 hours a day

Lighting branch circuits must not exceed 20 A.

**Replace the 2nd sentence in the 1st paragraph of section 48-2.02B(2) with:**

04-17-20

The minimum total design load for any falsework for combined live and dead load is 100 psf, including members that support walkways.

**Replace the 4th paragraph of section 48-2.02B(2) with:**

10-19-18

The assumed horizontal load the falsework bracing system must resist must be the sum of the actual horizontal loads due to equipment, construction sequence or other causes, and a wind loading. The assumed horizontal load in any direction must be at least 2 percent of the total dead load.

**Replace the table in the 7th paragraph of section 48-2.02B(2) with:**

04-17-20

Height zone, H (feet above ground)	Wind pressure value	
	Shores or columns adjacent to traffic (psf)	At other locations (psf)
H≤30	20	15
30<H≤50	25	20
50<H≤100	30	25
H>100	35	30

Replace the table in the 8th paragraph of section 48-2.02B(2) with:

04-17-20

Height zone, H (feet above ground)	Wind pressure value	
	For members over and bents adjacent to traffic opening (psf)	At other locations (psf)
H≤30	2.0 Q	1.5 Q
30<H≤50	2.5 Q	2.0 Q
50<H≤100	3.0 Q	2.5 Q
H>100	3.5 Q	3.0 Q

NOTE:

$$Q = 1 + 0.2W, \text{ but not more than } 10$$

where:

$W$  = width of the falsework system in feet, measured in the direction of the wind force

Replace section 48-2.02B(3)(b) with:

04-17-20

**48-2.02B(3)(b) Timber**

Design stresses for timber and timber connections must not exceed stresses specified in the current NDS.

Adjustment factors used to determine allowable stresses for timber members and connections must comply with NDS for the appropriate condition of use and species.

Deflection due to concrete loading only must not exceed 1/240 of the span length.

Pile design load for timber piles must not exceed 45 tons.

Replace the 1st and 2nd paragraphs of section 48-2.02B(3)(c) with:

04-17-20

Except for flexural compressive stresses, the design load for identified grades of steel must not exceed the allowable strength specified in the AISC *Steel Construction Manual*.

Except for flexural compressive stresses, the design load for unidentified steel must not exceed the allowable strength specified for steel complying with ASTM A36/A36M in the AISC *Steel Construction Manual* or as shown in the following table:

Quality characteristic	Requirement
Tension, axial and flexural (psi)	22,000
Compression, axial (psi)	16,000 - 0.38(L/r) <sup>2a</sup>
Shear on gross section of web of rolled shapes (psi)	14,500
Web yielding for rolled shapes (psi)	27,000
Modulus of elasticity (E) (psi)	30 x 10 <sup>6</sup>

NOTES:

$L$  = unsupported length, inches

$r$  = radius of gyration of the member, inches

<sup>a</sup>L/r must not exceed 120

Replace the table in the 3rd paragraph of section 48-2.02B(3)(c) with:

10-19-18

Quality characteristic	Requirement
Compression, flexural (psi)	$12,000,000/[(L \times d)/(b \times t)]^a$
Deflection due to concrete loading only	1/240 of the span
Modulus of elasticity (E) (psi)	$30 \times 10^6$

NOTES:

$L$  = unsupported length, inches

$d$  = least dimension of rectangular columns or the width of a square of equivalent cross-sectional area for round columns, or the depth of beams, inches

$b$  = width of the compression flange, inches

$t$  = thickness of the compression flange, inches

$F_y$  = specified minimum yield stress in psi

<sup>a</sup>Not to exceed (1) 22,000 psi for unidentified steel, (2) 22,000 psi for steel complying with ASTM A36/A36M, or (3)  $0.6F_y$  for other identified steel

**Add to section 48-2.02:**

04-17-20

**48-2.02C Falsework Lighting**

**48-2.02C(1) General**

A falsework luminaire must:

1. Be commercially available
2. Include brackets and locking screws

**48-2.02C(2) Pavement Illumination**

Not Used

**48-2.02C(3) Portal Illumination**

Portal illumination includes plywood clearance guides 4 feet wide by 8 feet high and luminaires.

**48-2.02C(4) Pedestrian Walkway Illumination**

Not Used

04-17-20

**Delete the 3rd paragraph of section 48-2.03A.**

**Add to section 48-2.03A:**

04-17-20

During concrete placement, if (1) events occur that the Engineer determines will result in a structure that does not comply with the structure as described or (2) settlement variance is greater than 3/8-inch from the values shown on shop drawings, stop concrete placement and apply corrective measures. If the measures are not provided before initial concrete set occurs, stop concrete placement at the location ordered.

Detour traffic from the lanes over which falsework is being erected, released, adjusted, or removed.

**Replace the 3rd paragraph of the section 48-2.03B with:**

04-17-20

Falsework piles must be driven and assessed under section 49. The actual nominal driving resistance must be at least twice the falsework pile design load. For pile acceptance, the required number of hammer blows in the last foot of driving is determined using the formula in 49-2.01A(4)(c).

**Add between the 2nd and 3rd paragraphs of section 48-2.03C:**

10-19-18

Falsework erection includes adjustments or removal of components that contribute to the horizontal stability of the falsework system.

**Delete the 8th paragraph of section 48-2.03C.**

04-17-20

**Replace section 48-2.03D with:**

04-17-20

**48-2.03D Removal**

Release and remove falsework such that portions of falsework to be removed remain stable.

Falsework release includes blowing sand from sand jacks, turning screws on screw jacks, and removing wedges.

Except for concrete above the deck, do not release falsework supporting any span of a:

1. Simple span bridge before 10 days after the last concrete has been placed
2. Continuous or rigid frame bridge before 10 days after the last concrete has been placed:
  - 2.1. In that span
  - 2.2. In adjacent portions of each adjoining span for a length equal to one-half of the span where falsework is to be released
3. Simple span, continuous, or rigid frame bridge until the supported concrete has attained a compressive strength of 2,880 psi or 80 percent of the specified strength, whichever is greater

Do not release falsework for prestressed portions of structures until prestressing steel has been tensioned.

Do not release falsework supporting any span of a continuous or rigid frame bridge until all required prestressing is complete (1) in that span and (2) in adjacent portions of each adjoining span for a length equal to at least one half of the span where falsework is to be released.

Release falsework supporting spans of CIP girders, slab bridges, or culverts before constructing or installing railings or barriers on the spans, unless authorized.

Release falsework for arch bridges uniformly and gradually. Start at the crown and work toward the springing. Release falsework for adjacent arch spans concurrently.

Do not release falsework that supports overhangs, deck slabs between girders, or girder stems that slope 45 degrees or more from vertical before 7 days after deck concrete has been placed.

You may release falsework supporting the sides of girder stems that slope less than 45 degrees from vertical before placing deck concrete if you install lateral supports. Lateral supports must be:

1. Designed to resist rotational forces on the girder stem, including forces due to concrete deck placement
2. Installed immediately after each form panel is removed
3. Installed before releasing supports for the adjacent form panel



Do not release falsework for bent caps supporting steel or PC concrete girders before 7 days after placing bent cap concrete.

Release falsework for structural members subject to bending as specified for simple span bridges.

Do not release falsework for box culverts and other structures with decks lower than the roadway pavement and span lengths of 14 feet or less until the last placed concrete has attained a compressive strength of 1,600 psi. Curing of the concrete must not be interrupted. Falsework release for other box culverts must comply with the specifications for the release of bridge falsework.

Do not release falsework for arch culverts sooner than 40 hours after concrete has been placed.

Remove falsework piling to at least 2 feet below the original ground or streambed. Remove falsework piling driven within ditch or channel excavation limits to at least 2 feet below the bottom and side slopes of the excavated areas.

Falsework removal systems employing methods of holding falsework by winches, hydraulic jacks with prestressing steel, HS steel rods, or cranes must also be supported by an independent support system when the falsework is over vehicular, pedestrian, or railroad traffic openings open to traffic.

Bridge deck and soffit openings used to facilitate falsework removal activities must:

1. Have a 6-inch maximum diameter opening.
2. Be located away from the wheel paths for deck openings.
3. Be formed with corrugated HDPE pipe complying with section 20-2.07B(3).

Before filling the bridge deck and soffit openings with concrete:

1. Trim HDPE pipes 1 inch from the exposed surface of the top of deck, bottom overhand, and soffit
2. Clean and roughen concrete surfaces of opening. Fill the opening with rapid setting concrete complying with section 60-3.02B(2) or with a concrete mix of equal or higher strength than the deck. Finish surface must comply with section 51-10.3F(2).

Falsework removal over roadways with a vertical traffic opening of less than 20 feet must start within 14 days after the falsework is eligible to be released and must be completed within 45 days after it is eligible to be released.

**Replace section 48-2.03E with:**

04-17-20

#### **48-2.03E Falsework Lighting**

##### **48-2.03E(1) General**

Notify the Engineer at least 5 business days before the installation of the falsework lighting.

Fasten power cables to the supporting structure at a minimum 3-foot intervals and within 12 inches from every box. Encase cables within 8 feet of the ground in a minimum 1/2-inch Type 1 conduit.

Enclose splices in junction boxes.

Provide power for the falsework lighting under section 87-20.

Energize lighting circuits immediately after supporting structures have been erected.

##### **48-2.03E(2) Pavement Illumination**

Provide pavement illumination on roadways beneath falsework structures.

Install luminaires:

1. Along the sides of the opening not more than 4 feet behind or 2 feet in front of the roadway face of the temporary railing
2. 12 to 16 feet above the roadway surface without obstructing the light pattern on the pavement

3. Aimed to avoid glare to motorists
4. Spaced to comply with the illumination levels table
5. At the ends no more than 10 feet inside portal faces

Measure the illumination levels at a minimum two points per lane, one on each side within one-quarter of the lane width from the lane stripe. Use this pattern to start the measurements at both ends of the falsework and then at 15-foot intervals through the length of the pavement under the falsework.

#### **48-2.03E(3) Portal Illumination**

Provide portal illumination on the sides facing traffic. Install luminaires and clearance guides immediately after falsework vertical members are erected.

Fasten clearance guides:

1. To the vertical support adjacent to the traveled way, facing traffic
2. Vertically with the bottom of the clearance guide from 3 to 4 feet above the roadway
3. With the center located approximately 3 feet horizontally behind the railing face on the roadway side

Paint clearance guides before each installation with not less than 2 applications of flat white paint.

If ordered, repainting is change order work.

Install luminaires on the structure directly over the vertical support, approximately 16 feet above the pavement and 6 feet in front of the guides. Aim the luminaires to illuminate the exterior falsework beam, the clearance guides, and the overhead clearance sign and comply with the illumination levels table.

Measure the illumination levels at the center and four corners of the clearance guides, at the exterior falsework beam, and at the overhead clearance sign.

#### **48-2.03E(4) Pedestrian Walkway Illumination**

Provide pedestrian walkway illumination immediately after the protective overhead covering is erected.

Install the luminaires a minimum 8 feet clearance in the protective overhead covering and center them over the pedestrian walkway. Space the luminaires through the pedestrian walkway as needed to comply with the illumination levels table. Install luminaires at the ends no more than 7 feet inside the pedestrian walkway openings.

Measure the illumination levels at a minimum two points, one on each side within one-quarter of the walkway width from the edge. Use this pattern to start the measurements at both ends of the falsework and then at 10-foot intervals through the length of the pedestrian walkway.

**Replace item 11 in the list in the 1st paragraph of section 48-3.01C(2) with:**

11. Mitigation plan for jacking the structure if settlement occurs in the temporary supports.

04-17-20

**Delete the 4th paragraph of section 48-3.01C(2).**

10-19-18

**Replace the 1st paragraph of section 48-3.01D(1) with:**

Welding, welder qualification, and welding inspection for temporary supports must comply with AWS D1.1 and section 48-2.

04-17-20

**Replace section 48-3.02B with:**

04-17-20

**48-3.02B Design Criteria**

The Engineer does not authorize temporary support designs based on allowable stresses or design load greater than those specified in section 48-2.02B(3).

If falsework loads are imposed on temporary supports, the temporary supports must also satisfy the deflection criteria in section 48-2.02B(3).

The temporary support system must support the initial jacking loads and the minimum temporary support design loads and forces shown. As a minimum, the horizontal load to be resisted in any direction by the temporary support system must be (1) the sum of actual horizontal loads due to equipment, construction sequence, or other causes plus an allowance for wind and (2) not less than 5 percent of the total supported dead load at the location being considered. Adjust vertical design loads for the weight of the temporary supports and jacking system, construction equipment loads, and additional loads imposed by jacking activities. Construction equipment loads must be at least 20 psf of deck surface area of the frame involved.

Temporary supports must resist the described lateral design forces applied at the point where the column to be removed meets the superstructure. If the temporary support lateral stiffness exceeds the described minimum stiffness, increase the lateral design forces to be compatible with the temporary support stiffness.

Place temporary supports, that are resisting transverse lateral loads, within 1/2 of the span length from the existing bent. Place temporary supports, that are resisting longitudinal lateral loads, within the frame where columns are to be removed.

You may use the permanent piles as part of the temporary support foundation. Do not move or adjust permanent piles from the locations shown. If you install permanent piles longer than described to support the temporary supports above the top of the footing and later cut off the piles at their final elevation, you must use shear devices adequate to transfer all pile reactions into the footing.

Design temporary support footings to carry the loads imposed without exceeding the estimated soil bearing values or anticipated settlements. You must determine soil bearing values.

Where temporary supports are placed on the deck of an existing structure:

1. Temporary supports must bear either:
  - 1.1. Directly on girder stems, bent caps, or end diaphragms of the supporting structure
  - 1.2. On falsework sills that transmit the load to the stems, bent cap, or end diaphragms without overstressing any member of the new or existing structure
2. Temporary supports must not induce permanent forces into the completed structure or produce cracking.
3. Place additional temporary supports beneath the existing structure where temporary support loads are imposed on the existing structure. Design and construct the additional temporary supports to support all loads from the upper structure and construction activities.

Provide additional bracing as required to withstand all imposed loads during each phase of temporary support erection and removal. Include wind loads complying with section 48-2.02B(2) in the design of additional bracing.

Mechanically connect (1) the structure to the temporary supports and (2) the temporary supports to their foundations. Mechanical connections must be capable of resisting the lateral design forces. Friction forces developed between the structure and temporary supports (1) are not considered an effective mechanical connection and (2) must not be used to reduce lateral forces.

Design mechanical connections to accommodate movement resulting from adjustments made to the temporary supports.

If the concrete is to be prestressed, design temporary supports to support changes to the loads caused by prestressing forces.

Temporary supports must comply with the specifications for falsework in section 48-2.02B(4).

**Replace section 48-4.01 with:**

04-17-20

**48-4.01 GENERAL**

**48-4.01A Summary**

Section 48-4 includes specifications for temporary decking for joint or deck reconstruction.

Temporary decking must consist of a steel plate system that spans the incomplete work.

Concrete anchorage devices and nonskid surface must comply with section 75-3.

**48-4.01B Definitions**

Reserved

**48-4.01C Submittals**

Submit shop drawings and calculations for temporary decking.

Shop drawings and calculations for temporary decking must be sealed and signed by an engineer who is registered as a civil engineer in the State.

Temporary decking shop drawings and calculations must include:

1. Storage location of equipment and materials that allows for 1 shift of work and placement of temporary decking within the time allowed
2. Construction sequence and schedule details
3. Cure time for concrete to be placed under temporary decking
4. Details for removing temporary decking and restoring the existing structure

If temporary decking is not shown, shop drawings and calculations must also include:

1. Design calculations, including the description, location, and value, of all loads
2. Details of the connection between the temporary decking and the existing or new structure

Submit a certificate of compliance for temporary decking materials.

Sections 48-1.01C(2), 48-1.01C(3), and 48-1.01D(2) do not apply for temporary decking.

**48-4.01D Quality Assurance**

Reserved

**Replace *Not Used* in section 48-4.02 with:**

04-17-20

**48-4.02A General**

Yield strength of steel plate must be greater than or equal to 36 ksi.

Bolts must comply with ASTM F3125, Grade A325.

Nuts must comply with ASTM A563/563M.

Material for temporary tapers must be rapid setting concrete or polyester concrete complying with section 60-3.02B(2) or 60-3.04B(2).

**48-4.02B Design Criteria**

If temporary decking is not shown, the temporary decking design must:

1. Comply with the unfactored permit loads, braking force, and HL93 loads except lane load from the current *AASHTO LRFD Bridge Design Specifications with California Amendments*.
2. Not exceed the allowable stresses or design loads specified in section 48-2.02B(3).
3. Have live load deflection not exceeding 1/300 of the temporary decking span for the design load.
4. Provide for temporary decking with a uniform surface with a coefficient of friction of at least 0.35 when measured under California Test 342.
5. Provide for temporary decking that is mechanically connected to the existing structure and adjacent approaches. If a steel plate spans a joint, the mechanical connection must accommodate at least 50 percent of the movement rating shown for that joint.
6. Not overstress, induce permanent forces into, or produce cracking in the existing structure.

**Replace section 48-4.03 with:**

04-17-20

**48-4.03 CONSTRUCTION**

For bolted connections, drill the holes without damaging the adjacent concrete. Do not damage existing reinforcement.

If the temporary decking does not extend the entire width of the roadway, taper the sides of the temporary decking at a 12:1 (horizontal: vertical) ratio.

Cure temporary tapers at least 3 hours before allowing traffic on the temporary decking.

If unanticipated displacements, cracking, or other damage occurs to the existing structure or to any new components installed in or adjacent to the deck, stop work on the deck and perform corrective measures.

Edges of steel plate systems must be in full contact with the existing deck and the adjacent approach slab. If used, shims must be securely attached to the plate.

Do not allow traffic on deck concrete until it has attained the compressive strength shown.

When temporary decking is no longer needed, immediately remove temporary decking materials and connections from the existing structure. Patch holes with rapid setting concrete complying with section 60-3.02. Remove modifications to the existing structure except where permanent alterations are shown.

10-19-18

**Delete the 4th paragraph of section 48-5.01C.**

**Replace the 1st paragraph of section 48-5.02B with:**

10-19-18

The jacking support system must resist the structure dead load and lateral design forces shown, plus any additional loads from jacking equipment and activities. As a minimum, the horizontal load to be resisted in any direction for the jacking support system and temporary bracing must be (1) the sum of actual horizontal loads due to equipment, construction sequence, or other causes plus an allowance for wind as specified in Section 48-2.02B(2) and (2) not less than 2 percent of the total dead load of the structure being jacked. You must determine soil bearing values for support footings. If the jacking support stiffness exceeds the described minimum stiffness, increase the lateral design forces to be compatible with the jacking support lateral stiffness.

**Replace the 1st paragraph of section 48-5.03 with:**

10-19-18

Construct the jacking support system under the specifications for falsework in section 48-2.03.

**Add to the end of section 48-6.01C(1):**

Sections 48-1.01C(2), 48-1.01C(3), and 48-1.01D(2) do not apply for temporary wood poles.

04-17-20

**Replace Reserved in section 48-6.01D(1) with:**

A temporary-structure engineer is not required.

04-17-20

**Delete the 3rd paragraph of section 48-6.02B.**

04-17-20

^^

**49 PILING**

04-19-19

**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.

10-19-18

**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 2 times the largest cross-sectional dimension of the pile plus 2 feet.

10-19-18

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

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

10-19-18

**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

10-19-18

- 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 2 inches on each end of the repaired weld excavation.

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

10-19-18

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:**

10-19-18

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 2 inches on each end of the repaired weld excavation.

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

04-19-19

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.

**Replace section 49-3.01B(2) with:**

04-19-19

**49-3.01B(2) Mass Concrete**

Section 49-3.01B(2) applies to CIP concrete piles with a diameter greater than 8 feet.

For piles with a diameter greater than 8 feet and less than or equal to 14 feet:

1. The specifications for SCM content in the 4th paragraph of section 90-1.02B(3) do not apply.
2. The SCM content of the concrete must comply with the following:
  - 2.1. Any combination of portland cement and fly ash satisfying:

Equation 1:

$$(12 \times FM)/MC \geq X$$

where:

*FM* = fly ash complying with AASHTO M 295, Class F, with a CaO content of up to 10 percent, including the quantity in blended cement, lb/cu yd

*MC* = minimum quantity of cementitious material specified, lb/cu yd

$X = 3.0$  for  $8 < D \leq 10$ , where  $D =$  pile diameter in feet  
 $X = 4.0$  for  $10 < D \leq 14$ , where  $D =$  pile diameter in feet

Equation 2:

$$MC - MSCM - PC \geq 0$$

where:

*MC* = minimum quantity of cementitious material specified, lb/cu yd

*MSCM* = minimum sum of SCMs that satisfies equation 1, lb/cu yd

*PC* = quantity of portland cement, including the quantity in blended cement, lb/cu yd

- 2.2. You may replace any portion of the portland cement with any SCM complying with section 90-1.02B(3) if equations 1 and 2 are satisfied as specified above.

For piles with a diameter greater than 14 feet, the concrete must comply with the specifications for mass concrete in section 51-6.

**Add to the end of section 49-3.02C(1):**

04-19-19

You may construct CIDH concrete piles 24 inches in diameter or larger by excavating and depositing concrete under slurry.

**Delete the 2nd paragraph of section 49-3.02C(8).**

04-19-19

**Replace section 49-4.01 with:**

04-19-19

#### **49-4.01 GENERAL**

##### **49-4.01A Summary**

Section 49-4 includes specifications for drilling holes and installing steel soldier piles in the holes.

Steel soldier piles must comply with section 49-2.03.

##### **49-4.01B Definitions**

Reserved

##### **49-4.01C Submittals**

Reserved

##### **49-4.01D Quality Assurance**

Reserved

^^

## **51 CONCRETE STRUCTURES**

04-17-20

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

04-19-19

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



**Replace section 51-1.01C(5) with:**

04-17-20

**51-1.01C(5) Drill and Bond Dowel—Chemical Adhesive**

For each lot or batch of chemical adhesive used for drill and bond dowel chemical-adhesive systems, submit the following:

1. Certificate of compliance, including the material name and lot or batch number
2. Manufacturer's installation procedures, including the minimum cure time
3. SDS

For each chemical adhesive, submit 1 test sample for every 100 cartridges or fraction thereof to be used. The test sample must consist of 1 cartridge of chemical adhesive, 1 mixing nozzle, and 1 retaining nut. Submit test samples to METS at least 25 days before use.

Each test sample must clearly and permanently show the following:

1. Manufacturer's name
2. Material name
3. Lot or batch number
4. Expiration date
5. Evaluation report number
6. Directions for use
7. Storage requirements
8. Warnings or precautions required by State and federal laws and regulations

**Add to the end of section 51-1.01D(3):**

04-17-20

**51-1.01D(3)(c) Drill and Bond Dowel—Chemical Adhesive**

The Department will verify the chemical adhesive used in the drill and bond dowel chemical adhesive system is chemically consistent with the chemical adhesive material on the Authorized Materials List.

**Add to the end of section 51-1.02B:**

10-18-19

Concrete for concrete bridge decks or PCC deck overlays must contain:

1. Polymer fibers. Each cubic yard of concrete must contain at least 1 pound of microfibers and at least 3 pounds of macrofibers.
2. Shrinkage reducing admixture. Each cubic yard of concrete must contain at least 3/4 gallon of a shrinkage reducing admixture. If you use the maximum dosage rate shown on the Authorized Material List for the shrinkage reducing admixture, your submitted shrinkage test data does not need to meet the shrinkage limitation specified in section 90-1.02A.

**Replace section 51-1.02D with:**

04-17-20

**51-1.02D Rapid Strength Concrete**

For bridge decks or PCC deck overlays:

1. RSC must have a minimum 28-day compressive strength of 4,500 psi
2. RSC must contain at least 675 pounds of cementitious material per cubic yard
3. If your RSC shrinkage test results are 0.24 percent or less without the use of a shrinkage reducing admixture:

- 3.1 Use of shrinkage reducing admixture is not required
- 3.2 Fibers are not required
4. If you use the maximum dosage rate shown on the Authorized Material List for shrinkage reducing admixture, your shrinkage test results must be 0.032 percent or less

RSC must have a minimum 28-day compressive strength of 4,000 psi.

If you use chemical admixtures or SCMs, the same proportions must be used when testing.

If you use aggregate that is not on the Authorized Material List for innocuous aggregate, the cement in your proposed mix design must comply with one of the following:

1. Any hydraulic cement, with or without any proposed SCM, must have an expansion ratio of less than 0.10 percent when tested with glass aggregate under ASTM C1260. Test specimens must be prepared using proportions of ingredients under ASTM C441.
2. For Portland cement, the quantity of SCM in your proposed mix design must satisfy equation 1 of section 90-1.02B(3).

The specifications for a reduction in the operating range and contract compliance for cleanness value and sand equivalent specified in section 90-1.02C(2) and section 90-1.02C(3) for aggregate, do not apply to RSC used for a bridge element.

**Replace the 1st paragraph of section 51-1.02H with:**

04-17-20

Chemical adhesives for bonding dowels must be on the Authorized Material List for chemical adhesives and must be appropriate for the installation conditions of the project.

**Delete the 5th paragraph of section 51-1.03C(2)(b).**

10-18-19

**Add to the end of section 51-1.03E(1):**

04-17-20

Repair rejected holes, that will not be encased in concrete, with bonding material complying with section 51-1.02C.

**Replace the 2nd paragraph of section 51-1.03E(3) with:**

04-17-20

If reinforcement is encountered during drilling before the specified depth is attained, notify the Engineer. Unless coring through the reinforcement is authorized. Drill a new hole adjacent to the rejected hole to the depth shown.

**Replace section 51-1.03E(5) with:**

04-17-20

**51-1.03E(5) Drill and Bond Dowel—Chemical Adhesive**

Install dowels for the drill and bond dowel chemical adhesive system under the manufacturer's instructions. When installing dowels in new concrete, install after the concrete has cured for at least 28 days.

Drill the holes without damaging the adjacent concrete. Remove all loose dust and concrete particles from the hole and protect the hole from deleterious materials until the anchor is installed.

If reinforcement is encountered during drilling before the specified depth is attained, notify the Engineer. Unless coring through the reinforcement is authorized. Drill a new hole adjacent to the rejected hole to the depth shown.

Immediately after inserting the dowel into the chemical adhesive, support the dowel as necessary to prevent movement until the chemical adhesive has cured the minimum time specified in the manufacturer's instructions. Dowels must not be adjusted by bending. The adhesive must be fully cured before the dowel is put into service.

Replace dowels that fail to bond or are damaged.

**Replace the 2nd paragraph of section 51-1.03H with:**

10-18-19

Cure the top surface of bridge decks by (1) misting and (2) the water method using a curing medium under section 90-1.03B(2). After strike-off, immediately and continuously mist the deck with an atomizing nozzle that forms a mist and not a spray. Continue misting until the curing medium has been placed and the application of water for the water method has started. At the end of the curing period, remove the curing medium and apply curing compound on the top surface of the bridge deck during the same work shift under section 90-1.03B(3). The curing compound must be curing compound no. 1.

**Delete the 4th paragraph of section 51-1.03H.**

10-18-19

**Add to section 51-1.03:**

10-19-18

**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.

**Add to the end of section 51-2.01A(1):**

10-18-19

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 concrete used to fill blocked-out recesses for joint seal assemblies.

**Replace the 2nd paragraph of section 51-4.01C(1) with:**

04-19-19

For PC PS concrete girders and deck panels, submit an erection work plan. The work plan must be signed by an engineer who is registered as a civil engineer in the State and include procedures, details, and sequences for:

1. Unloading
2. Lifting
3. Erecting
4. Temporary bracing installation

**Replace the 1st paragraph of section 51-4.01C(2)(a) with:**

04-19-19

Submit shop drawings for PC concrete members to the OSD Documents Unit unless otherwise specified.

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

04-19-19

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 the 2nd paragraph of section 51-4.02B with:**

04-19-19

Handle, store, transport, and erect PC members in a position such that the points of support and directions of the reactions with respect to the member are approximately the same as when the member is in its final position.

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

04-19-19

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:

**Polystyrene Camber Strip Dimensions**

Height (H) (inches)	Width (W) (inches)
1 to 2.5	1.5
Greater than 2.5 and less than or equal to 3.5	1.75
Greater than 3.5 and less than or equal to 4	2

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).



**52-1.02E(2) Dowels for Drill and Bond Dowel—Chemical Adhesive**

Dowels for drill and bond dowel chemical-adhesive systems must be one of the following:

1. Threaded rods complying with ASTM F1554, Grade 36
2. Deformed bar reinforcement complying with section 52-1.02B
3. Stainless steel reinforcement complying with ASTM A955/A955M, Grade 60, UNS Designation S31653, S32304, S32205, or S31803

AA

**53 SHOTCRETE**

10-18-19

**Replace the 1st paragraph of section 53-1.01A with:**

Section 53-1 includes general specifications for applying shotcrete.

10-18-19

**Replace section 53-1.01B with:**

10-18-19

**53-1.01B Definitions**

**shotcrete:** Concrete pneumatically projected at high velocity onto a surface to achieve compaction.

**dry-mix shotcrete:** Dry aggregates and cementitious materials are mixed before entering the delivery hose. Mixing water is added at the nozzle.

**wet-mix shotcrete:** Dry aggregates, cementitious materials, and water are mixed before entering the delivery hose. If used, accelerator may be added at the nozzle.

**rebound:** Aggregate coated with cement paste that ricochets away from the surface against which the shotcrete is being applied.

**Replace *Reserved* in section 53-1.01D with:**

10-18-19

Air pressure and shotcrete supply at the nozzle must be uniform and provide a steady, continuous flow of shotcrete. Inspect nozzles and nozzle body components before each work shift. Replace nozzles and components under the manufacturer's instructions.

**Replace the introductory clause to the list in the 2nd paragraph of section 53-1.02 with:**

10-18-19

For dry-mix shotcrete:

**Replace the introductory clause to the list in the 3rd paragraph of section 53-1.02 with:**

10-18-19

For wet-mix shotcrete:

**Replace the 1st sentence in item 2 in the list in the 3rd paragraph of section 53-1.02 with:**

10-18-19

2. You may substitute a maximum of 40 percent coarse aggregate for the fine aggregate.

**Replace section 53-1.03B with:**

10-18-19

**53-1.03B Preparing Receiving Surfaces**

Evenly grade the receiving surface before applying shotcrete. No point on the graded slope may be above the slope plane shown.

Thoroughly compact the receiving surface. The receiving surface must contain enough moisture to provide a firm foundation and prevent excess absorption of water from the shotcrete. The receiving surface must be free of surface water.

Forms must comply with section 51-1.03C(2). Reinforce, secure, and brace forms to maintain form alignment against distortion from shotcrete operations. Install and maintain alignment control means at corners or offsets not established by forms or shotcrete operations.

Use ground wires to establish thickness, surface planes, and finish lines. Use temporary coverings to protect adjacent surfaces from the nozzle stream.

**Replace section 53-1.03C with:**

10-18-19

**53-1.03C Applying Shotcrete**

Dry-mix or wet-mix shotcrete must be applied by the nozzle.

Apply shotcrete using small circular motions of the nozzle while building the required thickness. Direct the nozzle perpendicular to the receiving surface with the nozzle held at such a distance to produce maximum consolidation and full encapsulation of the reinforcement. Shotcrete must completely encase reinforcement and other obstructions.

Apply shotcrete first in corners, voids, and areas where rebound or overspray cannot easily escape. Do not incorporate rebound or overspray in the work.

Before applying subsequent layers of shotcrete:

1. Allow shotcrete to stiffen sufficiently. Remove hardened overspray and rebound from adjacent surfaces, including exposed reinforcement.
2. Use a cutting rod, compressed air blowpipe, or other authorized methods to remove all loose material, overspray, laitance, or other deleterious materials that may compromise the bond of the subsequent layers of shotcrete.
3. Bring the receiving surface to a saturated surface-dry condition immediately before applying subsequent layer.

For dry-mix shotcrete:

1. Adjust air volume, material feed volume, and distance of the nozzle from the work as necessary to encase reinforcement.
2. Maintain uniform water pressure at the nozzle of at least 15 psi greater than the air pressure at the machine.
3. Do not use aggregate and cementitious materials that have been mixed for more than 45 minutes.

For wet-mix shotcrete:

1. Transport shotcrete under section 90-1.02G(3).
2. Apply ground wires at approximately 7-foot centers.
3. Select a slump range that will effectively encapsulate reinforcement within the work but not cause shotcrete to sag or slough during application.

**Replace section 53-1.03D with:**

10-18-19

**53-1.03D Finishing Shotcrete**

Apply shotcrete to the line and grade shown. Leave finished shotcrete surface as gun finish unless otherwise described.

Do not initiate cutting or finishing until the shotcrete has set sufficiently to avoid sloughing or sagging. The finished surface must be smooth and uniform for the type of work involved.

Remove and replace loose areas of shotcrete.

Cure shotcrete for at least 7 days by any of the methods specified in section 90-1.03B. If the curing compound method is used for a gun or roughened surface, apply the curing compound at twice the specified rate. If you add a coloring agent to the shotcrete and you use the curing compound method for curing the shotcrete, use curing compound no. 6.

Protect shotcrete under section 90-1.03C.

**Replace the 2nd paragraph of section 53-1.04 with:**

10-18-19

The Department does not pay for shotcrete applied outside the dimensions shown or to fill low areas of receiving surfaces.

**Replace the paragraph of section 53-2.01A with:**

10-18-19

Section 53-2 includes specifications for applying structural shotcrete. Structural shotcrete must be applied using wet-mix shotcrete.

**Replace *qualifications* in item 1.1 in the list in the 1st paragraph of section 53-2.01C with:**

10-18-19

certifications

**Replace the paragraph of section 53-2.01D(2) with:**

10-18-19

Nozzlemen performing the work must hold current ACI CPP 660.1-17 certification as a nozzleman for wet-mix shotcrete. Nozzlemen performing overhead shotcrete work must hold current qualifying ACI CPP 660.1-17 certification in the overhead shooting orientation for wet-mix shotcrete.

**Replace the 2nd paragraph of section 53-2.01D(3) with:**

10-18-19

Each nozzleman performing the work must construct 1 unreinforced test panel and 1 reinforced test panel for each proposed mix design. The test panel orientation must match the orientation of the work.

**Replace the 1st sentence in the 1st paragraph of section 53-2.01D(4)(b) with:**

10-18-19

Obtain at least four 3-inch-diameter test cores from each 50 cu yd, or portion thereof, of shotcrete applied.



**Add between the 1st and 2nd paragraphs of section 53-2.01D(4)(b):**

10-19-18

For soil nail walls, do not core through waler bars.

**Replace section 53-2.02 with:**

10-18-19

**53-2.02 MATERIALS**

Shotcrete must comply with the specifications for concrete in section 90-1.

Shotcrete must have a minimum compressive strength of 3,600 psi, unless otherwise described.

Mortar and alternative filler material must comply with section 60-3.05B(2).

**Delete the 2nd paragraph of section 53-2.03.**

10-18-19

**Add between the 3rd and 4th paragraphs of section 53-2.03:**

10-18-19

Before applying shotcrete, reinforcement must be:

1. Free from loose rust, oil, curing compound, overspray, or other material deleterious to the bond between concrete and steel.
2. Lapped separated by one of the following:
  - 2.1. Three times the diameter of the largest reinforcing bar.
  - 2.2. Three times the maximum size aggregate.
  - 2.3. Two inches, whichever is least, unless otherwise specified. Lapped bars must be in the same plane and parallel to the shooting direction.
3. Securely tied to minimize movement or vibration.

The temperature of reinforcement and receiving surfaces must be below 90 degrees F before applying shotcrete.

Apply the wet-mix shotcrete continuously removing accumulations of rebound and overspray using a compressed air blowpipe. Ensure the nozzleman and the blowpipe operator work together and the nozzleman does not get ahead of the blowpipe operator.

10-18-19

**Delete the 4th paragraph of section 53-2.03.**

**Replace the 7th paragraph of section 53-2.03 with:**

10-18-19

If a finish coat is used, clean the surface before applying the finish coat. Wash receiving surface with an air-water blast to remove all loose material, laitance, overspray, or other material that may compromise the bond of subsequent layers of shotcrete.

10-18-19

**Delete the 8th paragraph of section 53-2.03.**

Replace the 12th paragraph of section 53-2.03 with:

10-18-19

After removing field QC test cores, fill the holes with mortar or alternative filler material. If using mortar, apply mortar under section 51-1.03E(2). If using an alternative filler material, apply a bonding epoxy before placing the filler material. Apply the alternative filler material under the manufacturer's instructions.

AA

## 55 STEEL STRUCTURES

04-19-19

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

04-19-19

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

AA

## 56 OVERHEAD SIGN STRUCTURES, STANDARDS, AND POLES

04-17-20

Replace section 56-1.01D(2)(b)(i) with:

04-19-19

### 56-1.01D(2)(b)(i) General

Perform NDT of steel members under AWS D1.1 and the requirements shown in the following tables:

**Nondestructive Testing for Steel Standards and Poles**

Weld location	Weld type	Minimum required NDT
Circumferential splices around the perimeter of tubular sections, poles, and arms	CJP groove weld with backing ring	100% UT or RT
Longitudinal seam	CJP or PJP groove weld	Random 25% MT
Longitudinal seam within 6 inches of a circumferential weld	CJP groove weld	100% UT or RT
Welds attaching base plates, flange plates, pole plates, or mast arm plates to poles or arm tubes	CJP groove weld with backing ring and reinforcing fillet	t ≥ 1/4 inch: 100% UT and 100% MT t < 1/4 inch: 100% MT after final weld pass
	External (top) fillet weld for socket-type connections	100% MT
Hand holes and other appurtenances	Fillet and PJP welds	MT full length on random 25% of all standards and poles
Longitudinal seam on the telescopic female end, designated slip-fit length plus 6 inches	CJP groove weld	100% UT or RT

NOTE: t = pole or arm thickness

**Nondestructive Testing for Overhead Sign Structures**

Weld location	Weld type	Minimum required NDT
Base plate to post	CJP groove weld with backing ring and reinforcing fillet	100% UT and 100% MT
Base plate to gusset plate	CJP groove weld	100% UT
Circumferential splices of pipe or tubular sections	CJP groove weld with backing ring	100% UT or RT
Split post filler plate welds	CJP groove weld with backing bar	100% UT or RT
Longitudinal seam weld for pipe posts	CJP groove weld	t < 1/4 inch: 25% MT t ≥ 1/4 inch: 25% UT or RT
	PJP groove weld	Random 25% MT
Chord angle splice weld	CJP groove weld with backing bar	100% UT or RT
Truss vertical, diagonal, and wind angles to chord angles	Fillet weld	Random 25% MT
Upper junction plate to chord (cantilever type truss)	Fillet weld	Random 25% MT
Bolted field splice plates (tubular frame type)	CJP groove weld	100% UT and 100% MT
Cross beam connection plates (lightweight extinguishable message sign)	Fillet weld	Random 25% MT
Arm connection angles (lightweight extinguishable message sign)	Fillet weld	100% MT
Mast arm to arm plate (lightweight extinguishable message sign)	CJP groove weld with backing ring	t ≥ 1/4 inch: 100% UT and 100% MT t < 1/4 inch: 100% MT after final weld pass
Post angle to post (lightweight extinguishable message sign)	Fillet weld	100% MT
Hand holes and other appurtenances	Fillet and PJP welds	MT full length on random 25% of all sign structures

NOTE: t = pole or arm thickness

**Replace section 56-1.01D(2)(b)(ii) with:**

04-19-19

**56-1.01D(2)(b)(ii) Ultrasonic Testing**

For UT of welded joints with any members less than 5/16-inch thick or tubular sections less than 24 inches in diameter, the acceptance and repair criteria must comply with Clause 9.27.1.1 of AWS D1.1.

When performing UT, use an authorized procedure under AWS D1.1, Annex S.

For UT of other welded joints, the acceptance and repair criteria must comply with Table 6.3 of AWS D1.1 for cyclically loaded nontubular connections.

After galvanization, perform additional inspection for toe cracks along the full length of all CJP groove welds at tube-to-transverse base plate connections using UT.

Replace section 56-2.02F with:

04-17-20

**56-2.02F Pipe Posts**

Pipe posts must be welded or seamless steel pipes. The maximum ultimate tensile strength of pipe posts must not exceed 90 ksi. Manufactured pipe posts must comply with one of the following:

1. ASTM A53/A53M, Grade B
2. ASTM A106/A106M, Grade B
3. ASTM A1085, Grade A
4. API Specification 5L PSL2 Grades B, X42R, X42M, X52M or Grade X52N, using nominal pipe sizes for threaded end pipe

You may fabricate pipe posts from structural steel complying with ASTM A36/A36M, ASTM A709/A709M, Grade 36, or ASTM A572/A572M, Grades 42 or 50.

Spiral seam welds are not allowed.

AA

**57 WOOD AND PLASTIC LUMBER STRUCTURES**

10-18-19

Add to section 57-2.02B:

HDPE shims must be commercial quality.

04-19-19

Replace section 57-2.02C with:

10-18-19

**57-2.02C Construction**

Install lagging members 4 inches thick or less with a 3/8-inch gap between members. Install lagging members greater than 4 inches thick with a 1/2-inch gap between members.

Replace the table in the 4th paragraph of section 57-3.02C with:

10-19-18

Quality characteristic	Test method	Requirement
Density of concrete core (kg/m <sup>3</sup> , min)	ASTM D792	1,762
28-day compressive strength of concrete core (psi, min)	ASTM C579	5,000
Structural strength of shell: Tensile strength, tensile modulus (percent loss) Flexural strength, flexural modulus (percent loss)	ASTM D638 ASTM D790	Less than 10 after UV deterioration test specified for plastic lumber
Dry film thickness of coating (mils, min)	--	15
Color change of coating	ASTM D4587, Test Cycle 2	No visible color change when tested for 800 hours
Initial adhesion of coating (psi, min)	ASTM D4541, Test Method D, E, or F and Protocol 2	150
Decrease in initial adhesion of coating, decrease (percent)	ASTM D4541, Test Method D, E, or F and Protocol 2 ASTM D1183, Test Condition D <sup>a</sup>	No more than 10 following 2 exposure cycles

<sup>a</sup>Use a low temperature phase at 4 ± 5 °F and high temperature phase at 140 ± 5 °F.

\*\*\*\*\*

## 59 STRUCTURAL STEEL COATINGS

10-19-18

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

10-19-18

Measure coating adhesion strength with a self-aligning adhesion tester under ASTM D4541, Test Method D, E, or F and Protocol 2.

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

10-19-18

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):

10-19-18

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.

AA

## 60 EXISTING STRUCTURES

10-18-19

**Replace section 60-2.02B with:**

04-19-19

### 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:**

10-19-18

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:**

04-19-19

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):**

04-19-19

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).**

04-19-19

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

04-19-19

Protect the overlay from moisture and do not allow traffic or equipment on the overlay (1) for a minimum of 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 4-hour cure time of the overlay.

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

10-19-18

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

**Replace section 60-4.10 with:**

10-18-19

**60-4.10 BRIDGE SEAT EXTENDERS FOR RETROFITS**

**60-4.10A General**

**60-4.10A(1) Summary**

Section 60-4.10 includes specifications for fabricating and installing bridge seat extenders.

Bridge seat extenders must comply with the specifications for miscellaneous bridge metal in section 75-3.

**60-4.10A(2) Definitions**

Reserved

**60-4.10A(3) Submittals**

Submit a work plan showing the method of grouting pipe seat extenders to prevent grout from entering the hinge area.

**60-4.10A(4) Quality Assurance**

Inspect bridge seat extender materials at the fabrication site.

Notify the Engineer:

1. When materials have been delivered to the fabrication site
2. At least 10 days before starting fabrication

**60-4.10B Materials**

**60-4.10B(1) General**

Reserved

**60-4.10B(2) Pipe Seat Extenders**

Pipe seat extenders must consist of double extra-strong steel pipes, HS threaded rods, nuts, and washers.

Double-extra strong steel pipe must comply with ASTM A53/A53M, Grade B. HS threaded rods, nuts, and washers must comply with section 55-1.02D(1).

Galvanize double-extra strong steel pipe under section 75-1.02B. After galvanizing, any alterations resulting in new exposed surfaces, including holes or cut ends, must be coated as specified for repairing damaged galvanized surfaces under section 75-1.02B.

Grout for bonding the pipe to the cored hole must comply with section 60-4.06B(2). Any filler materials or seals must not restrict joint movement.

**60-4.09B(3) Slab Bridge Seat Extenders**

Slab bridge seat extenders must consist of steel plates, support tubes, bolts, bars, nuts, washers, pins, and elastomeric bearing pads.

Slab bridge seat extender must comply with section 55. Elastomeric bearing pads must comply with section 51-3.02. The support tubes must comply with ASTM A500/A500M, Grade B.

Galvanize seat extender under section 75-1.02B. After galvanizing, any alterations resulting in new exposed surfaces, including holes or cut ends, must be coated as specified for repairing damaged galvanized surfaces under section 75-1.02B.





No more than 5 business days after placing permeable material, submit:

1. At least one ASTM D6913 test on permeable material sampled at:
  - 1.1. Job site
  - 1.2. Authorized location
2. Verification that the permeable materials testing results meet the gradation requirements

**62-1.01D Quality Assurance**

Submit verification that the placed material complies with the gradation for the Class 4 and Class 5 permeable materials.

Submit verification of the uniformity coefficient for Class 5 permeable material.

For Department acceptance, the depth of the permeable material will be measured after the in-place washing is complete.

**62-1.02 MATERIALS**

**62-1.02A General**

Not Used

**62-1.02B Class 4 Permeable Material**

Class 4 permeable material must consist of sand, gravel, or crushed stone that is hard, durable, and clean. The material must be free from organic material, clay balls, or other deleterious substances.

The percentage composition by weight of Class 4 permeable material in place must comply with the gradation requirements shown in the following table:

**Class 4 Permeable Material Gradation Requirements**

Sieve size	Percentage passing
2"	100
1-1/2"	95-100
3/4"	50-100
3/8"	15-55
No. 4	0-25
No. 8	0-5
No. 100	0

Class 4 permeable material must have a durability index of not less than 40.

**62-1.02C Class 5 Permeable Material**

Reserved

**62-1.02D Miscellaneous Metal**

Fabricate the parts shown in the table below from the corresponding materials shown:

**Miscellaneous Metal Parts**

Part	Material
Ladders	Steel
Handrails	Steel
Trash screen	Steel
Components of riser support brackets	Stainless steel complying with ASTM A276, Grade 304 CIP inserts must be ferrule loop type

**62-1.02E Filter Fabric**

Class D filter fabric must comply with the requirements shown in the following table:

**Class D Filter Fabric**

Quality characteristic	Test method	Requirement
Permittivity (min and max, sec <sup>-1</sup> )	ASTM D4491	1.6–1.8
Apparent opening size, average roll value (min and max, US standard sieve size)	ASTM D4751	60–80
Grab breaking load, 1-inch grip, in each direction (min, lb)	ASTM D4632	120
Apparent elongation, in each direction (min, %)	ASTM D4632	50
UV resistance, retained grab breaking load, 500 hours (min, %)	ASTM D4355	70

**62-1.02F–62-1.02I Reserved**

**62-1.03 CONSTRUCTION**

**62-1.03A General**

Placing filter fabric must comply with section 68-1.03B.

**62-1.03B Permeable Material**

**62-1.03B(1) General**

Before placement, wash permeable material:

1. To remove silt and clay particles
2. With potable water equal to at least 4 times the volume of the material being placed

After placement, wash permeable material:

1. With potable water
2. Until the discharged water has a turbidity reading of:
  - 2.1. 30 NTU or less for a project within the Tahoe Hydrologic Unit
  - 2.2. 200 NTU or less for a project outside the Tahoe Hydrologic Unit

Capture the wash water. Handle the wash water by any of the following means:

1. Dispose of
2. Use as dust control
3. Disperse onsite in an authorized location other than the BMP

**62-1.03B(2) Class 5 Permeable Material**

Place Class 5 permeable material:

1. In a way that does not damage or displace the filter fabric
2. Using methods that produce a finished surface as shown

**62-1.03C–62-1.03H Reserved**

**62-1.04 Payment**

Not Used

**62-2 DESIGN POLLUTION PREVENTION INFILTRATION AREA**

Reserved

**62-3 INFILTRATION TRENCH**

Reserved

**62-4 INFILTRATION BASIN**

Reserved

**62-5 INFILTRATION GALLERY**

Reserved

**62-6 RESERVED  
62-7 BIORETENTION**

Reserved

**62-8 DETENTION BASIN**

Reserved

**62-9 AUSTIN EARTH BERM**

Reserved

**62-10 AUSTIN VAULT SAND FILTER**

Reserved

**62-11 DELAWARE SAND FILTER**

Reserved

**62-12 GROSS SOLIDS REMOVAL DEVICE**

Reserved

**62-13 MULTI-CHAMBER TREATMENT TRAIN**

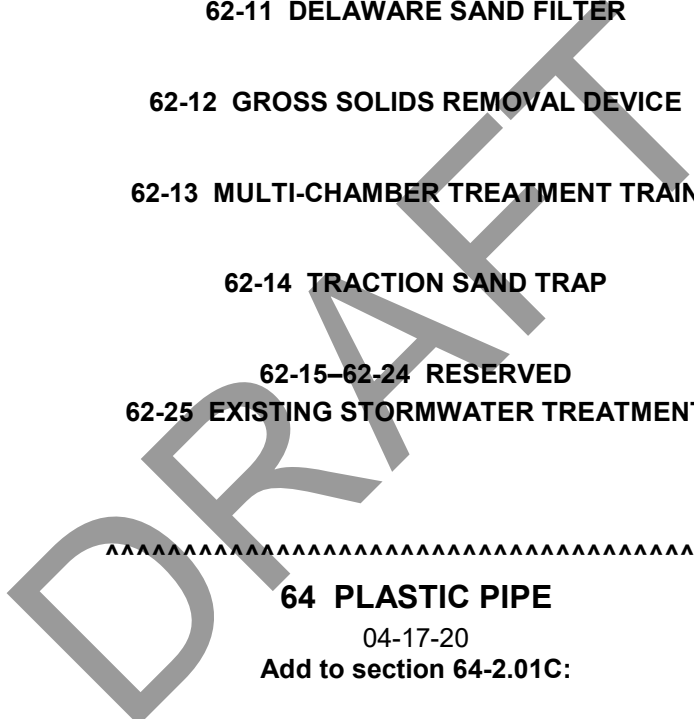
Reserved

**62-14 TRACTION SAND TRAP**

Reserved

**62-15-62-24 RESERVED  
62-25 EXISTING STORMWATER TREATMENT**

Reserved



\*\*\*\*\*

**64 PLASTIC PIPE**

04-17-20

**Add to section 64-2.01C:**

04-17-20

If recycled resin is used for corrugated polyethylene pipe, submit the percent of recycled resin.

**Replace the 2nd and 3rd paragraphs of section 64-2.02C with:**

04-17-20

Type C and Type S corrugated polyethylene pipe must comply with AASHTO M 294.

HDPE compounds used in the manufacture of corrugated polyethylene pipe and fittings must comply with AASHTO M 294 except the mix must contain from 2 to 4 percent well-dispersed carbon black and at least 49 percent virgin resin.

\*\*\*\*\*

## 66 CORRUGATED METAL PIPE

10-19-18

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

10-19-18

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:

10-19-18

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:

10-19-18

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.

AA

## 71 EXISTING DRAINAGE FACILITIES

04-17-20

Replace section 71-3.01A(4)(b) with:

04-17-20

### 71-3.01A(4)(b) Preconstruction Meetings

#### 71-3.01A(4)(b)(i) General

Reserved

#### 71-3.01A(4)(b)(ii) Prerehabilitation Meeting

Before starting cleaning and preparation work, you must schedule and attend a prerehabilitation meeting with the Engineer. Include any subcontractors, manufacturers and other parties involved in the culvert work. Provide a meeting facility that is within 5 miles of the job site or at another location accepted by the Engineer.

#### 71-3.01A(4)(b)(iii) Pregrouting Meeting

Before starting grouting work, you must schedule and conduct a grouting meeting with the Engineer and your personnel involved in the grouting work, including your:

1. Project superintendent
2. Supervisory personnel
3. Grouting foreman
4. Grouting subcontractors

Provide a meeting facility that is within 5 miles of the job site or at another location accepted by the Engineer.

Replace section 71-3.01A(4)(c) with:

04-17-20

**71-3.01A(4)(c) Quality Control**

**71-3.01A(4)(c)(i) General**

Reserved

**71-3.01A(4)(c)(ii) Annular Space Grouting**

The grout cast density at the point of placement must be from 53 to 68 lb/cu ft and the minimum compressive strength must be 300 psi at 28 days.

Test the grout for compressive strength under ASTM C495 except that specimens must be moist cured before the 28-day compressive strength test and not be oven dried. If the grouting plan shows multiple stages, the grouting plan must include test results that verify that the grout stiffness is adequate for placement of multiple lifts.

For each batch of grout, perform density and viscosity tests under ASTM C138 and ASTM C939 in the presence of the Engineer. Grout density must be within 3 lb/cu ft of the density in the authorized grout plan with mix design. The time of efflux (outflow) must not exceed 20 seconds as specified in ASTM C939 unless otherwise authorized.

For pipeliners with a stiffness of less than 29 psi, the grout pump's pressure measured at the point of injection must not exceed either of the following:

1. 5 psi
2. Manufacturer's instruction

For pipeliners with a stiffness of at least 29 psi, the grout pump's pressure measured at the point of injection must not exceed 7.25 psi.

The pipeliner must be able to withstand a static head of grout that is 6 inches above the highest crown elevation. The maximum grout pressure for a static grout head must not exceed the grout pump's maximum allowable pressure.

Install a grout pressure gauge and recorder immediately adjacent to each injection port. Continuously record on paper with ink the actual grouting pressure versus time. Record grout pressure to an accuracy of  $\pm 0.5$  psi. Attach a gauge to a saddle-type diaphragm seal to prevent clogging with grout.

**71-3.01A(4)(c)(iii) CCTV Recording**

CCTV recordings must be made and submitted in high quality electronic media such as CD or DVD.

The CCTV equipment must include:

1. CCTV camera with articulating head
2. Transporter adapted for conditions of the culvert
3. Television monitor
4. Lighting
5. Cables and power sources

CCTV equipment must:

1. Be specifically designed and constructed for pipe inspection
2. Have camera lighting for minimizing reflective glare
3. Have an adjustable focal-distance range from 6 inches to infinity
4. Produce a minimum resolution of 356 lines per inch for both the camera and monitor
5. Have a remote-reading meter counter accurate to 1 percent over the length of the particular section being inspected

Verify the accuracy of the distance meter in the CCTV with a walking meter, roll-a-tape, or other authorized device.

Where human entry is possible for the entire length of the culvert, you may use a handheld video camera with lighting as an alternative to CCTV. Video and audio content must comply with the requirements for CCTV. Inspect at a rate that is not more than 30 feet per minute.

**71-3.01A(4)(c)(iv) Photographs**

Use a digital camera and lighting. Lighting and photo quality must be suitable to provide clear and focused photographs of the entire culvert surface under all conditions.

**71-3.01A(4)(c)(v) Monitoring of Annular Space Grouting**

Wherever a pipeliner with annular space grouting is described, monitor the grouting and record pressures throughout the grouting process. Verify compliance with the manufacturer's instructions for each phase of the grouting process. Gauges must comply with ANSI B40, Grade 2A. The pressure gauges, recorder, and field equipment must be calibrated by an independent testing agency.

**71-3.01A(4)(c)(vi) Pipeliners**

Pipeliners must be continuous over the entire length of the culvert and must have no visual defect such as foreign inclusions, concentrated ridges, discoloration, pitting, pin holes, cracking or other deformities. The pipeliner must not be over-deflected. There must not be segregation or voids in the grout.

**71-3.01A(4)(c)(vii) Deflection Testing of Pipeliners**

If a pipeliner with annular space grouting is described, test the pipeliner for deflection. Test after grouting and in the presence of the Engineer.

For pipeliners with a nominal inside diameter of 36 inches or less, either pull a mandrel through the pipeliner by hand or use another authorized method. The mandrel must be:

1. Rigid and nonadjustable
2. Comprised of at least 9 legs and have an odd number of total legs
3. Longer than it is wide
4. Made of steel
5. Fitted with pulling rings at each end
6. Stamped or engraved on some segment other than a runner indicating pipeliner material specification, nominal size, and mandrel outside diameter (e.g., HDPE F 714-SDR 26- 36" – 31.569")
7. Furnished in a suitable carrying case labeled with the same data as stamped on the mandrel
8. Authorized before use

For pipeliners with a nominal inside diameter greater than 36 inches, determine the deflection using a 1-inch diameter, rigid, nonadjustable metal bar; a minimum-radius rigid template; or other authorized method.

The pipeliner must not be over-deflected. For pipeliners 36 inches or less in nominal diameter, the mandrel must pass through the entire pipeliner. For pipeliners greater than 36 inches in nominal diameter, the deflection must be the lesser of either of the following:

1. 5 percent greater than the actual dimension of the pipeliner in place. This actual dimension includes the pipe joint system.
2. 6-1/2 percent of the nominal pipeliner dimension.

If more than 8 percent of the nominal pipeliner dimension is over-deflected, the pipeliner is rejected. If 8 percent or less of the nominal pipeliner dimension is over-deflected, the pipeliner may remain in place and the Department deducts 20 percent of the bid amount for that pipeliner.

**Replace item 2 in the list in the first paragraph of section 71-3.01B(2) with:**

2. Not less than 590 lb of cementitious material per cubic yard







Replace section 78-4.04 with:

04-19-19

**78-4.04 STAINING CONCRETE AND SHOTCRETE**

**78-4.04A General**

**78-4.04A(1) Summary**

Section 78-4.04 includes specifications for preparing and staining concrete and shotcrete surfaces.

**78-4.04A(2) Definitions**

**acid stain:** non-tintable, transparent stain that contains dilute acid.

**water-based stain:** semi-transparent or solid water-based coating in an acrylic emulsion vehicle, that can be tinted to match an AMS-STD-595 color.

**78-4.04A(3) Submittals**

**78-4.04A(3)(a) General**

Submit the stain and sealer manufacturer's product data and application instructions at least 7 days before starting staining activities.

**78-4.04A(3)(b) Contractor Qualifications**

Submit the following documentation at least 10 days before the prestaining meeting:

1. Summary of the staining contractor's experience that demonstrates compliance with section 78-4.04A(4)(c).
2. List of at least 3 projects completed in the last 5 years that demonstrate the staining contractor's ability to stain surfaces similar to the surfaces for this project. For each project include:
  - 2.1. Project description
  - 2.2. Name and phone number of the owner
  - 2.3. Staining completion date
  - 2.4. Color photos of the completed stained surface

**78-4.04A(3)(c) Staining Quality Work Plan**

Submit a staining quality work plan at least 10 days before the prestaining meeting. The work plan must include details for preparing and staining the surfaces to achieve the required color, and for sealing the surfaces, including:

1. Number of applications that will be used to apply the stain
2. For each application of the stain, a description of:
  - 2.1. Manufacturer, color, finish, and percentage strength mixture of the stain that will be applied
  - 2.2. Proposed methods and tools for applying the stain
3. Proposed methods for protecting adjacent surfaces during staining
4. Proposed methods and tools for applying the sealer

For acid stains, the work plan must also include a rinse water collection plan for containing all liquid, effluent, and residue resulting from preparing and staining the surfaces.

**78-4.04A(4) Quality Assurance**

**78-4.04A(4)(a) General**

Reserved

**78-4.04A(4)(b) Test Panels**

Stain the authorized test panel complying with section 51-1.01D(2)(c) or section 53-3.01D(3).

The test panel must be:

1. Stained using the same personnel, materials, equipment, and methods to be used in the work
2. Accessible for viewing
3. Displayed in an upright position near the work

4. Authorized for staining before starting the staining work

If ordered, construct additional test panels until a satisfactory color is attained. The preparing and staining of additional test panels is change order work.

The Engineer uses the authorized stained test panel to determine the acceptability of the stained surface.

Dispose of the test panels after the staining work is complete and authorized. Notify the Engineer before disposing of the test panels.

**78-4.04A(4)(c) Contractor Qualifications**

The staining contractor must have experience staining surfaces to simulate the appearance of natural rock formations or stone masonry, and must have completed at least 3 projects in the past 5 years involving staining of surfaces similar to the surfaces for this project.

**78-4.04A(4)(d) Prestaining Meeting**

Before starting staining activities, conduct a meeting to discuss the staining quality work plan. Meeting attendees must include the Engineer and all staining contractors.

**78-4.04B Materials**

**78-4.04B(1) General**

Reserved

**78-4.04B(2) Stain**

**78-4.04B(2)(a) General**

The stain must be:

1. Commercially available product designed specifically for exterior applications
2. Specifically manufactured for staining concrete surfaces

**78-4.04B(2)(b) Acid Stain**

Acid stain must:

1. Contain dilute acid that penetrates and etches the surfaces
2. Be a water-based solution of inorganic metallic salts
3. Produce abrasion-resistant color deposits

**78-4.04B(2)(c) Water-based Stain**

Water-based stain must be:

1. Acrylic emulsion
2. Non-fading and UV resistant
3. Capable of producing irregular, mottled tones

**78-4.04B(3) Sealer**

The sealer must be as recommended by the stain manufacturer, clear and colorless, and have a matte finish when dry.

**78-4.04B(4) Joint Sealing Compound**

Reserved

**78-4.04C Construction**

**78-4.04C(1) General**

At locations where there is exposed metal adjacent to the surfaces to be stained, seal the joint between the surfaces to be stained and the exposed metal with a joint sealing compound before applying the stain.

#### **78-4.04C(2) Surface Preparation**

Test surfaces for acceptance of the stain before applying the stain. Clean surfaces that resist accepting the stain and retest until passing.

Before staining, the surfaces must be:

1. At least 28 days old
2. Prepared under SSPC-SP 13/NACE no. 6
3. Thoroughly dry

#### **78-4.04C(3) Application**

##### **78-4.04C(3)(a) General**

Apply the stain under the manufacturer's instructions. Protect adjacent surfaces during staining. Drips, puddles, or other irregularities must be worked into the surface.

Apply the sealer under the manufacturer's instructions.

##### **78-4.04C(3)(b) Acid Stain**

Work the acid stain into the concrete using a nylon bristle brush in a circular motion.

After the last coat of stain has dried, rinse the stained surfaces with water and wet scrub them with a stiff-bristle nylon brush until the rinse water runs clear. Collect all rinse water.

#### **78-4.04D Payment**

Not Used

Replace section 78-23 with:

04-17-20

### **78-23 ADJUST UTILITY FRAMES, COVERS, AND MANHOLES**

#### **78-23.01 GENERAL**

Section 78-23 includes specifications for adjusting utility access box frames, covers, and manholes.

Work performed on existing utility frames, covers, grates and manholes must comply with section 15.

#### **78-23.02 MATERIALS**

Not Used

#### **78-23.03 CONSTRUCTION**

Lower and raise utility frames, covers, grates and manholes by lowering before cold planing and raising after paving or surfacing. Before opening the lane to traffic, either (1) complete permanent paving or surfacing or (2) temporarily fill any depressions with HMA.

Do not adjust to final grade until the adjacent pavement or surfacing is complete.

For a structure that is to be raised, remove the cover or frame and trim the top of the structure to provide a suitable foundation for the new material.

Instead of using new materials similar in character to those in the existing structure, you may use raising devices to adjust a manhole to grade. Before starting paving work, measure and fabricate raising devices. Raising devices must:

1. Comply with the specifications for section 75 except that galvanizing is not required
2. Have a shape and size that matches the existing frame
3. Be match marked by painting identification numbers on the device and corresponding structure
4. Result in an installation that is equal to or better than the existing one in stability, support, and nonrocking characteristics
5. Be fastened securely to the existing frame without projections above the surface of the road or into the clear opening

Where manholes are to be lowered, remove the top portion to 3.5 feet below finished grade or to an authorized depth. Adjust the manhole using the taper needed to match the finished grade.

If a manhole cover is unstable or noisy under traffic, place a coil of asphalt-saturated rope, a plastic washer, or asphaltic compound on the cover seat. Before placement, obtain authorization for use of the material.

**78-23.04 PAYMENT**

Not Used

^^

**80 FENCES**

10-18-19

**Replace the 1st paragraph of section 80-2.02B with:**

10-18-19

Line posts must comply with ASTM A702 except packaging of posts is not required. You may omit the anchor plate if the post is set in a concrete footing with a minimum cross-sectional dimension of 6 inches and a depth equal to the full penetration of the post.

**Replace item 3 in the list in the 1st paragraph of section 80-2.02D with:**

10-18-19

- 3. Be one of the following:
  - 3.1. 12-1/2 gauge, Class 3
  - 3.2. 13-1/2 gauge, Class 3
  - 3.3. 14 gauge, Class 3
  - 3.4. 15-1/2 gauge, Class 3

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

10-19-18

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:**

10-19-18

- 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:**

10-19-18

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:**

10-19-18

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

^^

**DIVISION IX TRAFFIC CONTROL DEVICES  
82 SIGNS AND MARKERS**

04-17-20

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

04-19-19

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

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

04-17-20

**82-2.02C Retroreflective Sheeting**

Retroreflective sheeting used for the background and legend must comply with ASTM D4956-13 and must be on the Authorized Material List for signing and delineation materials.

Retroreflective sheeting must be Type XI, except for white background signs, it must be Type VIII or IX.

Warning sign plaques and panels must be retroreflective fluorescent orange or fluorescent yellow background.

Type VIII, IX, and XI retroreflective sheeting must have Class 1, 3, or 4 adhesive backing. Adhesive backing must be pressure sensitive and fungus resistant.

Retroreflective sheeting must be applied to sign panels at the fabrication plant under the retroreflective sheeting manufacturer's instructions without appreciable stretching, tearing, or other damage.

Orientation of the legend must comply with the retroreflective sheeting manufacturer's instructions.

Retroreflective sheeting on a sign panel with a minor dimension of 48 inches or less must be a single, contiguous sheet without splices except for the splices produced during the manufacture of the retroreflective sheeting. Sign panel with a minor dimension greater than 48 inches may have 1 horizontal splice in the retroreflective sheeting other than the splices produced during the manufacture of the retroreflective sheeting.

Unless the retroreflective sheeting manufacturer's instructions require a different method, splices in the retroreflective sheeting must overlap by at least 1 inch. The retroreflective sheeting on either side of a splice must not exhibit a color difference under incident and reflected light.

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

04-19-19

**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 the 2nd paragraph of section 82-3.01A with:**

Roadside signs include ground-mounted signs and Type N (CA), Type P (CA), and Type R (CA) marker panels. 04-17-20

**Add to section 82-3.01B:**

**ground-mounted sign:** Roadside sign or signs with a wide-flange metal post. 04-17-20

**Add to section 82-3.02B:**

Mounting for a ground-mounted sign must be a wide-flange metal post fabricated from structural steel complying with ASTM A36/A36M. Nuts, bolts, and washers for the breakaway connections of a wide-flange steel post must comply with ASTM A325. 04-17-20

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

Section 82-5 includes specifications for fabricating and installing markers, including milepost markers. 10-19-18

**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. 10-19-18

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

**82-5.02H Milepost Markers** 10-19-18

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. 10-19-18

**Add to the end of section 82-9.03:**

04-17-20

**82-9.03F Installation of Sign Panels on Existing Posts**

Install roadside sign panels on existing posts with fastening hardware under section 82-2.03A.

**Replace the 1st paragraph of section 82-9.04 with:**

04-17-20

Payment for furnishing sign panels of any type is not included in the payment for install sign panel on existing frame and post.

Payment for removing existing sign panel is included in the payment for install roadside sign panel on existing post.

^^

**83 RAILINGS AND BARRIERS**

04-19-19

**Replace section 83-2.01A(3) with:**

04-19-19

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:**

04-19-19

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:**

04-19-19

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**

10-18-19

**Replace section 84-2 with:**

10-19-18

**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

10-18-19

**pavement marking:** Transverse marking which includes shoulder or gore marking, traffic island marking, word or numeral or symbol marking, arrow, limit line, stop line, yield line, crosswalk marking, speed measurement marking, speed reduction marking, speed hump marking, parking space marking, and route shield marking.

10-19-18

**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 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

Reserved

##### 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 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:

**Traffic Stripe Testing Frequency**

Quality characteristic	Test method	Minimum sampling and testing frequency
Initial retroreflectivity (min, $\text{mcd}\cdot\text{m}^{-2}\cdot\text{lx}^{-1}$ ) White Yellow	ASTM E1710	ASTM D7585 <sup>a</sup>

<sup>a</sup>Use the referee evaluation protocol for project length less than 10 miles. For project lengths greater than or equal to 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) Department 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**

Reserved

**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.

04-19-19

White tape must have an initial retroreflectivity of a minimum 700 mcd/m<sup>2</sup>.

Yellow tape must have an initial retroreflectivity of a minimum 500 mcd/m<sup>2</sup>.

10-19-18

When contrast is required for traffic striping 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 2 inches wide. The width of the tape must be at least 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:

Paint Specifications		
Paint type	Color	Specification
Waterborne traffic line	White, yellow, and black	State Specification PTWB-01R2
Waterborne traffic line for the international symbol of accessibility and other curb markings	Blue, red, and green	Federal Specification TT-P-1952E

**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 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:

Material	Requirement	
	Depth (mils)	Depth (in)
Thermoplastic	375	3/8
Two component traffic paint	250	1/4
Methyl methacrylate traffic paint	250	1/4

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:

**Retroreflectivity Requirements**

Traffic stripe material	White (min, mcd·m <sup>-2</sup> ·lx <sup>-1</sup> )	Yellow (min, mcd·m <sup>-2</sup> ·lx <sup>-1</sup> )
Paint	250	125
Thermoplastic	250	125
Thermoplastic with wet night enhanced visibility	700	500
Two component	250	125
Methyl methacrylate	500	300
Tape	700	500

**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 6 months old
2. At a minimum rate of 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 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 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 6 lb of glass beads per 100 sq ft of stripe or marking. Apply Type 2, glass beads at a rate of at least 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:

Type of pavement	Stripe thickness (min, inch)	Application rate (min, sq ft/gal)
HMA open graded/chip seal	0.025	64
HMA dense graded	0.020	80
Concrete	0.020	80

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 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 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 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**

04-19-19

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

10-19-18

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.

04-19-19

#### **84-2.03B(8)–84-2.03B(10) Reserved**

10-19-18

#### **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 2 traffic stripes except for painted traffic stripes and sprayable thermoplastic traffic stripes.

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

A double painted traffic stripe consisting of two 6-inch-wide yellow stripes separated by a 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:**

10-19-18

**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**

Reserved

04-19-19

**84-9.01C Submittals**

10-19-18

Submit your proposed method for removing traffic stripes and pavement markings at least 7 days before starting the removal work. Allow 2 business days for the review.

**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

04-19-19

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.

10-19-18

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**

Reserved

**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





**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).**

10-19-18

**Replace section 86-1.01C(3) with:**

10-19-18

**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:**

10-19-18

**86-1.01C(4) Reserved**

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

04-19-19

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:**

10-19-18

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  $59.6187 \text{ lb/ft}^3 \pm 0.3121 \text{ lb/ft}^3$  under ASTM D1505

04-19-19

**Replace the 9th paragraph of section 86-1.02B(1) with:**

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.

04-19-19

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

10-18-19

**86-1.02C Pull Boxes**

**86-1.02C(1) General**

A pull box cover must have a marking on the top that is:

1. Clearly defined
2. Uniform in depth
3. Parallel to the longer side
4. From 1 to 3 inches in height

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

1. *SERVICE* for service circuits from a service equipment enclosure to a subpanel
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

The cover marking must not include *CALTRANS*, only the following:

1. *ELECTRICAL SERVICE* for circuits from an electrical utility to a service equipment enclosure
2. *TELEPHONE SERVICE* for circuits from a telephone utility to a telephone demarcation cabinet

A metal pull box cover must include a fitting for a bonding conductor.

The hardware must be stainless steel containing 18 percent chromium and 8 percent nickel.

**86-1.02C(2) Roadway Pull Boxes**

**86-1.02C(2)(a) General**

A pull box cover must have a nonskid surface.

The pull boxes and covers must not have exposed fibers or reinforcement on the finish surfaces that are exposed.

The load rating must be:

1. Stenciled or stamped on the inside and outside of the pull box
2. Stamped on the outside of the cover

If a transformer or other device is to be placed in the pull box, include recesses for a hanger.

Hold-down bolts must:

1. Be a Penta Head 1/2-13UNC
2. Have a thread lock material
3. Withstand a torque from 55 to 60 ft-lb
4. Withstand a minimum pull-out strength of 750 lb

The opening in which the cover sets must have length and width dimensions 1/8 inch greater than the cover.

#### **86-1.02C(2)(b) Nontraffic Pull Boxes**

A nontraffic pull box and cover must comply with ANSI/SCTE 77, "Specification for Underground Enclosure Integrity," for Tier 22 load rating and must be gray or brown.

An extended pull box must be a minimum 22 inches deep and may be a single box or a box with an extension made of the same material as the pull box. The extension may be another pull box if the bottom edge of the pull box fits into the opening for the cover.

The hold down bolts, nuts, and washers must be a captive design.

The pull box must have a 1/2-13 coarse-thread insert with drainage hole, to secure the hold down bolts.

The cover must have a 1/2 inches by 4 inches pull slot with a 3/16-inch center pin.

The cover markings must be cast in the mold of the cover or be engraved on a metal or UV resistant ABS plate secured to the cover with stainless steel screws.

#### **86-1.02C(2)(c) Traffic Pull Boxes**

A traffic pull box and cover must comply with AASHTO HS20-44 and load tested under AASHTO M 306.

A traffic pull box must be reinforced with a galvanized steel Z bar welded frame. The frame must be anchored to the box with 2-1/4-inch-long concrete anchors with a 1/4-inch diameter. The pull box must have 4 concrete anchors, one in each corner, and two near the middle one on each of the longer sides, except for a no. 3-1/2(T) pull box.

The frame must have nuts fabricated with the frame or spot welded to the underside of the frame, to secure the hold down bolts.

The nuts must be zinc-plated carbon steel, vibration-resistant, and have a wedge ramp at the root of the thread.

The cover must:

1. Be steel, reinforced and galvanized post fabrication.
2. Be countersunk approximately 1/4 inch to accommodate the bolt head. When tightened, the hold down bolt head must be no more than 1/8 inch above the top of the cover.
3. Have a 1/2-inch by 2-inch pull slot with a guard under the cover to prevent entry of more than 3 inches below the bottom surface of the cover without deflection.

Before galvanizing a steel cover, the manufacturer must apply the cover marking by one of the following methods:

1. Use a cast iron strip at least 1/4-inch thick with letters raised a minimum of 1/16 inch. Fasten the strip to the cover with 1/4-inch, flathead, stainless steel machine bolts and nuts. Peen the bolts after tightening.

2. Use a sheet steel strip at least 0.027-inch thick with letters raised a minimum of 1/16 inch. Fasten the strip to the cover by spot welding, tack welding, or brazing with 1/4-inch stainless steel rivets or 1/4-inch, roundhead, stainless steel machine bolts and nuts. Peen the bolts after tightening.
3. Bead weld the letters on the cover such that the letters are raised a minimum of 3/32 inch.

#### **86-1.02C(2)(d) Tamper Resistant Pull Boxes**

##### **86-1.02C(2)(d)(i) General**

Not Used

##### **86-1.02C(2)(d)(ii) Tamper-Resistant Nontraffic Pull Box**

###### **86-1.02C(2)(d)(ii)(A) 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(2)(d)(ii)(B) Anchored Cover**

The anchored cover must:

1. Be of 1/2-inch-thick mild steel, hot dip galvanized, post fabrication.
2. Have 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(2)(d)(ii)(C) 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. Department's standards for pull box covers as shown if the lockable cover is secured to the inside lip of the pull box.
  - 4.2. Department's 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(2)(d)(ii)(D) 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 Department's standards for the length and width as shown for pull box covers

##### **86-1.02C(2)(d)(iii) Tamper Resistant Traffic Pull Box**

A tamper resistant traffic pull box must include a pull box with an anchored cover.

#### **86-1.02C(3) Structure Pull Boxes**

A no. 7 pull box must:

- 1 Be 12 by 12 by 12 inches.
- 2 Be manufactured with 0.075-inch sheet steel.
- 3, Have 3/4-inch flanges on the top and bottom.
4. Have one 1-inch and one 1-1/2-inch knockouts on each side, except for the covers
5. Have drilled and taped holes on the top and the bottom flanges for the cover screws. The hole pattern and spacing must be the same on the top and bottom.
6. Have covers that secure to the box with eight 1/4-inch diameter, 20NC brass machine screws.

A no. 8 pull box must:

- 1 Be 12 by 12 by 12 inches.
2. Be manufactured with 0.135-inch sheet steel.
3. Mount to the structure with three 3/8-inch diameter machine screws per side.
4. Have 1-1/2-inch knockouts on each side, except the cover.
5. Have drilled and taped holes on the sides and the bottom for the cover screws. The holes must be reinforced with a 1-by-1-by-0.135-inch bar inside the box.
6. Have a cover with 3/4-inch flanges on the sides and bottom with the corners welded at the bottom. The cover must secure to the box with, three 1/4-inch diameter by 1/2-inch long cadmium plated brass or stainless steel, machine screws.

A no. 9 pull box must:

- 1 Be 24 by 9-1/2 by 6-1/4 inches.
2. Be manufactured with 0.075-inch sheet steel.
3. Have a rain tight hood.
- 4, Have a 1-1/2-by-4-1/2-by-0.135-inch strap welded to the back of the box at each corner, parallel to the long side. The strap must have a 1/4-inch hole on the exposed end.
5. Have a 1-inch lip around the opening.
6. Have drilled and taped holes with a minimum 1/4-inch thread length, on the ends of the bottom lip for the cover screws.
7. Have a 3-inch knockout on each side at the bottom and at the center of the bottom.
8. Have a 2-inch knockout on each side at the top and at both ends of the bottom.
9. Have an L 5/8-by-7/8-by-0.075-inch formed angle spot welded to the inside of the top on both sides and on the bottom.
10. Have a cover manufactured with 0.125-inch steel, that secures to the box with two 3/8-inch diameter by 3/4-inch long stainless-steel flathead screws with 11/16-inch diameter countersink holes. The cover must include a 1/16-inch neoprene gasket.

A no. 9A pull box must:

- 1 Be 20 by 8 by 8-1/2 inches.
2. Be manufactured with 0.075-inch sheet steel.
3. Have 3/4-inch flanges on the top.
- 4, Have drilled holes on the short sides for the cover screws. The holes must have a stainless-steel hex nut or a 1/4-by-5/8-by-8-inch bar spot welded to the bottom of the flange.
5. Have a 3-inch knockout on each side at the top and at the center of the bottom.
6. Have a 2-inch knockout on each side at the bottom and at both ends of the bottom.
7. Have a cover manufactured with 0.105-inch steel, that secures to the box with four 3/8-inch diameter stainless steel hex head cap screws, two on each short side. The cover must have a rain tight hood and include a 1/16-inch neoprene gasket.

Pull box corner joints must be lapped and spot welded or riveted.

Concentric and eccentric multiple size knockouts are not be allowed.

**Replace section 86-1.02D(3) with:**

10-19-18

**86-1.02D(3) Warning Tape**

Warning tape must be orange color polyolefin film, minimum elongation of 500 percent before breakage, water and corrosion resistant, and comply with requirements shown in the following table:

**Warning Tape Requirements**

Quality characteristic	Requirement
Thickness (min, mil)	4
Width (in)	4
Tensile strength of material (min, psi)	2800
Message spacing intervals (ft)	3

The warning tape must have a printed message that reads: CAUTION: CALTRANS FACILITIES BELOW.

The printed text height and color must be 1 inch, black color text over bright orange background.

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

10-19-18

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  $\pm$  20 percent for a wheel load of 400 lb at 55 mph and 70 degrees F
8. Have an insulation resistance greater than 500 M $\Omega$
9. Have a life cycle of a minimum 25 million equivalent single axle loadings

**Replace section 86-1.02F(1) with:**

10-19-18

**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:

10-19-18

Conductors must be identified as shown in the following table:

**Conductor Identification**

04-17-20

Circuit	Signal phase or function	Identification		Band symbols	Copper size
		Insulation color			
		Base	Stripe <sup>a</sup>		

DRAFT



Signals (vehicle) <sup>a,b</sup>	2, 6	Red, yellow, brown	Black	2, 6	14
	4, 8	Red, yellow, brown	Orange	4, 8	14
	1, 5	Red, yellow, brown	None	1, 5	14
	3, 7	Red, yellow, brown	Purple	3, 7	14
	Ramp meter 1	Red, yellow, brown	None	No band required	14
	Ramp meter 2	Red, yellow, brown	Black	No band required	14
Pedestrian signals	2p, 6p	Red, brown	Black	2p, 6p	14
	4p, 8p	Red, brown	Orange	4p, 8p	14
	1p, 5p	Red, brown	None	1p, 5p	14
	3p, 7p	Red, brown	Purple	3p, 7p	14
Push button assembly or accessible pedestrian signal	2p, 6p	Blue	Black	P-2, P-6	14
	4p, 8p	Blue	Orange	P-4, P-8	14
	1p, 5p	Blue	None	P-1, P-5	14
	3p, 7p	Blue	Purple	P-3, P-7	14
Traffic signal controller cabinet	Ungrounded circuit conductor	Black	None	CON-1	6
	Grounded circuit conductor	White	None	CON-2	6
Highway lighting pull box to luminaire	Ungrounded - line 1	Black	None	No band required	14
	Ungrounded - line 2	Red	None	No band required	14
	Grounded	White	None	No band required	14
Multiple highway lighting	Ungrounded - line 1	Black	None	ML1	10
	Ungrounded - line 2	Red	None	ML2	10
	Ungrounded - line 3	White	None	ML3	10
Lighting control	Ungrounded - Photoelectric unit	Black	None	C1	14
	Switching leg from Photoelectric unit or SM transformer	Red	None	C2	14
Service	Ungrounded - line 1 (signals)	Black	None	No band required	6
	Ungrounded - line 2 (lighting)	Red	None	No band required	8
Sign lighting	Ungrounded - line 1	Black	None	SL-1	10
	Ungrounded - line 2	Red	None	SL-2	10
Flashing beacons	Ungrounded between flasher and beacons	Red or yellow	None	FB-Location. <sup>c</sup>	14
Grounded circuit conductor	Push button assembly or accessible pedestrian signal	White	Black	No band required	14
	Signals and multiple lighting	White	None	No band required	10
	Flashing beacons and sign lighting	White	None	No band required	12
	Lighting control	White	None	C-3	14
	Service	White	None	No band	14

		Black	None	required No band required	14
Spares					

Notes:

<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).**

10-19-18

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

An equipment grounding conductor must be insulated.

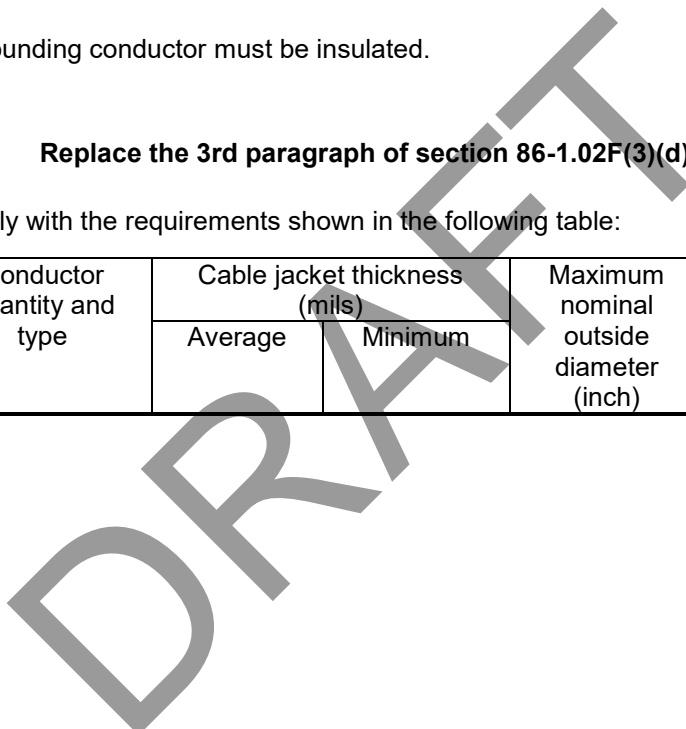
10-19-18

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

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

10-19-18

Cable type	Conductor quantity and type	Cable jacket thickness (mils)		Maximum nominal outside diameter (inch)	Conductor color code
		Average	Minimum		



3CSC	3 no. 14	44	36	0.40	Blue/black stripe, blue/orange stripe, white/black stripe
5CSC	5 no. 14	44	36	0.50	Red, yellow, brown, black, white
9CSC	1 no. 12 8 no. 14	60	48	0.65	No. 12 - white, No. 14 - red, yellow, brown, black, red/black stripe, yellow/black stripe, brown/black stripe, white/black stripe
12CSC	1 no. 12 11 no. 14	60	48	0.80	No. 12 - white No. 14 - red, yellow, brown, black, red/black stripe, yellow/black stripe, brown/black stripe, black/red stripe, black/white stripe, red/white stripe, brown/white stripe
28CSC	1 no. 10 27 no. 14	80	64	0.90	No. 10 - white No. 14 - red/black stripe, yellow/black stripe, brown/black stripe, red/orange stripe, yellow/orange stripe, brown/orange stripe, red/silver stripe, yellow/silver stripe, brown/silver stripe, red/purple stripe, yellow/purple stripe, brown/purple stripe, red/2 black stripes, brown/2 black stripes, red/2 orange stripes, brown/2 orange stripes, red/2 silver stripes, brown/2 silver stripes, red/2 purple stripes, brown/2 purple stripes, blue/black stripe, blue/orange stripe, blue/silver stripe, blue/purple stripe, white/black stripe, black/red stripe, black

Replace section 86-1.02F(3)(d)(iv) with:

04-17-20

**86-1.02F(3)(d)(iv) Railroad Preemption Cables**

A railroad preemption cable must be a 19-conductor cable having a polyvinyl chloride or polyethylene jacket. The cable jacket must be rated for 600 V(ac) and 75 degrees C.

The railroad preemption cable color code must be as shown in the following table:

**Railroad Preemption Cable Color Code**

Conductor no.	Color Code
1	Black
2	White
3	Red
4	Green
5	Orange
6	Blue
7	White/black stripe
8	Red/black stripe
9	Green/black stripe
10	Orange/black stripe
11	Blue/black stripe
12	Black/white stripe
13	Red/white stripe
14	Green/white stripe
15	Blue/white stripe
16	Black/red stripe
17	White/red stripe
18	Orange/red stripe
19	Blue/red stripe

The individual conductors in the cable must:

1. Be stranded and comply with ASTM B286
2. Have Type THW insulation
3. Be 16 AWG

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

10-19-18

The self-adhesive reflective labels must:

1. Be from 3 to 5 mils thick
2. Have all black capital characters on a white background
3. Extend beyond the character by a minimum of 1/4 inch

Replace the 4th paragraph of section 86-1.02H with:

10-19-18

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

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

04-17-20

**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 60529 rating of at least IP65.
4. Weigh less than 35 lb.
5. Have a minimum 60,000 hours L70 rating under LM-80 and TM-21 at an ambient temperature of 25 degrees C.
6. Operate over a temperature range from -40 to 130 degrees F.
7. Be operationally compatible with photoelectric controls.
8. Have a nominal correlated color temperature of 3000 K under ANSI C78.377 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 ANSI C136.31.
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. Test voltage will be at 120 V(ac), 240 V(ac), or 480 V(ac).
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 and passed testing for addition to the AML.

A luminaire must include a surge protection device to withstand high-repetition noise transients caused by utility line switching, 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 voltage range:

1. From 95 to 277 V(ac) for luminaires rated 120, 240, or 277 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 luminaire's housing, external bolts, screws, hinges, hinge pins, and door closure devices must withstand a 1008 hour cyclic salt fog spray/UV test under ASTM D5894 and an evaluation under ASTM D714 with a blister rating of 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.

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 ANSI/IEC 60529 rating of IP66. The power supply enclosure must be protected to at least an ANSI/IEC 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.

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 unintentional radiators.
2. Have a power supply with:
  - 2.1. 2 leads to accept standard 0-10 V(dc) control.
  - 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. Not be cooled by fans or other mechanical devices.

#### **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. Have an upright rating of "U0" per IES TM-15-11
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  $\pm 5$  degrees from the axis of the tenon in a minimum of 5 steps: +5, +2.5, 0, -2.5, -5
3. Have clamping brackets that:
  - 3.1. Are made of corrosion-resistant materials or treated to prevent galvanic reactions
  - 3.2. Do not bottom out on the housing bosses when adjusted within the designed angular range
  - 3.3. Do not permanently set more than 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 12' 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:**

10-19-18

**86-1.02M Photoelectric Controls**

Photoelectric control types are as shown in the following table:

**Photoelectric Control Types**

Control type	Description
I	Pole-mounted photoelectric unit. Test switch and a 15-A circuit breaker per ungrounded conductor, housed in an enclosure.
II	Pole-mounted photoelectric unit. Contactor, a 15-A circuit breaker per ungrounded conductor, and test switch located in a service equipment enclosure.
III	Pole-mounted photoelectric unit. Contactor, a 15-A circuit breaker per ungrounded conductor, and a test switch housed in an enclosure.
IV	A photoelectric unit that plugs into a NEMA twist-lock receptacle, integral with the luminaire.
V	A photoelectric unit, contactor, a 15-A circuit breaker per ungrounded conductor, and test switch located in a service equipment enclosure.

The pole-mounted adaptor for Type I, II, and III photoelectric controls must include a terminal block and cable supports or clamps to support the wires.

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:**

10-19-18

**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:

Circuit voltage	Fuse voltage rating	Soffit and roadway luminaires
120 V(ac)	250 V(ac)	5 A
240 V(ac)	250 V(ac)	5 A
480 V(ac)	500-600 V(ac)	5 A

Fuse ratings for transformers are shown in the following table:

Circuit voltage	Fuse voltage rating	Fuse current rating for Single phase (two wires) Transformers (primary side)		
		1 kVA	2 kVA	3 kVA
120 V(ac)	250 V(ac)	10 A	20 A	30 A
240 V(ac)	250 V(ac)	6 A	10 A	20 A
480 V(ac)	500-600 V(ac)	3 A	6 A	10 A

**Replace section 86-1.02P(1) with:**

10-19-18

**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:**

04-19-19

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).**

04-19-19

**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.

10-19-18

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:**

04-19-19

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).**

04-19-19

**Delete section 86-1.02P(3).**

10-19-18

**Replace the 1st paragraph of section 86-1.02Q(2) with:**

04-17-20

A Department-furnished controller assembly consists of a controller cabinet with a controller unit and all auxiliary equipment required to operate the system. The Department does not furnish anchor bolts.

**Replace section 86-1.02Q(4)(a) with:**

10-19-18

**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):**

10-19-18

Bracket arms must be long enough to allow proper alignment of signals and backplate installation.

**Add to the end of section 86-1.02R(3):**

04-17-20

Backplates for signal and lighting systems must have a 2-inch retroreflective strip on the face around the perimeter. The strip must be Type XI fluorescent yellow retroreflective sheeting on the Authorized Material List for signing and delineation materials.

**Replace item 2 in the list in the 5th paragraph of section 86-1.02R(4)(a)(iii) with:**

10-19-18

2. Be a black color throughout, including the door, matching color no. 17038, 27038, or 37038 of AMS-STD-595

**Replace section 86-1.02S(3)(c) with:**

04-17-20

**86-1.02S(3)(c) LED Countdown Pedestrian Signal Face Modules**

An LED countdown PSF module must:

1. Comply with ITE publication ST-055-E, Pedestrian Traffic Control Signal Indicators: Light Emitting Diode (LED) Signal Modules.
2. Be manufactured with materials that comply with ASTM D3935.
3. Have circuit boards that comply with TEES, chapter 1, section 6.
4. Have symbols that are at least 9 inches high and 5-1/4 inches wide each. The 2-digit countdown display, *Upraised Hand*, and *Walking Person* indications must be electronically isolated from each other. The 3 indications must not share a power supply or interconnect circuitry.
5. Use ultra-bright-type LED rated for 60,000 hours of continuous operation. Individual LEDs must be wired such that a loss or failure of 1 LED will not result in a loss of more than 5 percent of the module's light output. Failure of an individual LED in a string must not result in a loss of an entire string or other indication.
6. Have a manual control to turn on and off the 2-digit countdown display.
7. Have the lot number, month, and year of manufacture permanently marked on the back.
8. Have prominent and permanent vertical markings for accurate indexing and orientation within the pedestrian signal housing. Markings must be a minimum of 1 inch in height and include an up arrow and the word *up* or *top*.

Upon initial testing at 25 degrees C, the module must have at least the luminance values shown in the following table:

**Luminance Values**

PSF module symbol	Luminance (fL)
Upraised hand and 2-digit countdown timer	1,094
Walking person	1,547

The module must not exceed the power consumption requirements shown in the following table:

**Maximum Power Consumption Requirements**

PSF module display	At 24 °C	At 74 °C
<i>Upraised Hand</i>	10.0 W	12.0 W
<i>Walking Person</i>	9.0 W	12.0 W
2-digit countdown timer	6.0 W	8.0 W

If the pedestrian change interval is interrupted, then the 2-digit countdown timer and display must reset to the full pedestrian change interval before being initiated the next time. The 2-digit countdown display on the PSF module must go dark within a second after displaying "0".

**Add to the beginning of section 86-1.02T:**

04-19-19

Accessible pedestrian signal must be on the Authorized Material List for Accessible Pedestrian Signals.

**Delete the 2nd paragraph of section 86-1.02T.**

04-17-20

**Replace the 5th and 6th paragraphs of section 86-1.02T with:**

10-19-18

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:**

04-19-19

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:**

10-19-18

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:**

10-19-18

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:**

10-19-18

The cured hot-melt rubberized asphalt sealant must comply with the requirements shown in the following table:

**Cured Hot-Melt Rubberized Asphalt Sealant Requirements**

Quality characteristic	Test method	Requirement
Cone penetration, 25 °C, 150 g, 5 s (max, 1/10 mm)	ASTM D5329	35
Flow, 60 °C, 5 hr (max, mm)		5
Resilience, 25 °C (min, %)		25
Softening point (min, °C)	ASTM D36	82
Ductility, 25 °C, 5 cm/min (min, cm)	ASTM D113	30
Flash point, Cleveland Open Cup (min, °C)	ASTM D92	288
Viscosity, no. 27 spindle, 20 rpm, 190 °C (Pa•s)	ASTM D4402	2.5–3.5

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

10-19-18

A transformer must be a dry type designed for operation on a 60 Hz supply. The transformer must have a decal showing a connection diagram. The diagram must show either color coding or wire tagging with primary (H1, H2) or secondary (X1, X2) markers and the primary and secondary voltage and volt-ampere rating. A transformer must comply with the electrical requirements shown in the following table:

**Transformer Electrical Requirements**

Quality characteristic	Requirement
Rating (V(ac))	120/240, 120/480, 240/120, 240/480, 480/120, or 480/240
Efficiency (%)	> 95
Secondary voltage regulation and tolerance from half load to full load (%)	±3

\*\*\*\*\*

**87 ELECTRICAL SYSTEMS**

04-17-20

**Replace Reserved in section 87-1.01C with:**

10-19-18

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 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 backfill.
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:

10-19-18

4. Luminaires

Replace the 2nd paragraph of section 87-1.01D(2)(a) with:

10-18-19

Submit a sample size as shown in the following table:

**Electrical Material Sampling**

Contract quantity	Test sample size
1–8	1
9–15	2
16–25	3
26–90	5
91–150	8
151–280	13
281–500	20
501–1200	32

Replace section 87-1.01D(2)(d) with:

10-19-18

**87-1.01D(2)(d) Piezoelectric Axle Sensors**

Piezoelectric axle sensors test consists of:

1. Demonstrating for each sensor:
  - 1.1. Capacitance is within 20 percent of the value shown on the sensor's data sheet
  - 1.2. Dissipation factor is less than 0.04 nF when measured in the 20 nF range
  - 1.3. Resistance is greater than 20 Megaohms
2. Collecting a minimum of 100 vehicle records for each lane and demonstrating:
  - 2.1. Volume is within  $\pm 3$  percent accuracy
  - 2.2. Vehicle classification is within 95 percent accuracy by type

Replace the 7th paragraph of section 87-1.03A with:

10-19-18

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:

10-19-18

Collect the geographic information system mapping data.

**Replace the 12th paragraph of section 87-1.03B(1) with:**

10-19-18

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:**

10-19-18

Place a minimum of 2 inches of sand bedding in a trench before installing the conduit and 18 inches of slurry cement over the conduit before placing additional backfill material.

10-18-19

The slurry must be pigmented to match color no. 21105 of AMS-STD-595.

**Replace the 1st sentence in the 6th paragraph of section 87-1.03B(3)(c) with:**

10-19-18

Backfill trench with slurry concrete under section 19-3.02E.

**Replace the 9th paragraph of section 87-1.03B(3)(c) with:**

10-19-18

Install innerducts as one continuous unit between vaults. Innerducts may be interrupted inside pull boxes located between vaults and cabinets.

**Replace section 87-1.03C with:**

10-18-19

**87-1.03C Installation of Pull Boxes**

**87-1.03C(1) General**

Install pull boxes no more than 200 feet apart.

Place the cover on the box when not working in it.

**87-1.03C(2) Roadway Pull Boxes**

**87-1.03C(2)(a) General**

You may install larger pull boxes than specified or shown and additional pull boxes to facilitate the work except in structures.

Install a pull box on a minimum 6-inch deep bed of crushed rock and grout it before installing conductors. The grout must be from 0.5 to 1 inch thick and sloped toward the drain hole. Place a layer of roofing paper between the grout and the crushed rock sump. Make a 1-inch drain hole through the grout at the center of the pull box.

Set the pull box such that the top is 1-1/4 inches above the surrounding grade in unpaved areas and leveled with the finished grade in sidewalks and other paved areas.

Grout around conduits that are installed through the sides of the pull box.

Bond and ground the metallic conduit before installing conductors and cables in the conduit.

Bond metallic conduits in a nonmetallic pull box using bonding bushings and bonding jumpers.

Do not install pull boxes in concrete pads, curb ramps, or driveways.

Reconstruct the sump of a pull box if disturbed by your activities. If the sump was grouted, remove and replace the grout.

### **87-1.03C(2)(b) Nontraffic Pull Boxes**

For a buried nontraffic pull box, install the electronic marker and set the box such that the top is from 6 to 8 inches below the surrounding grade. Place a 20-mil-thick plastic sheet made of HDPE or PVC virgin compounds to prevent water from entering the box.

When a pull box is in a structure, modify the base as required.

Place mortar between a nontraffic pull box and a pull box extension.

Where a nontraffic pull box is in the vicinity of a curb in an unpaved area, place the box adjacent to the back of the curb if practical.

Where a nontraffic pull box is adjacent to a post or standard, place the box within 5 feet downstream from traffic if practical.

If you replace the cover on a nontraffic pull box, anchor it to the box.

Perform the electronic marker test.

### **87-1.03C(2)(c) Traffic Pull Boxes**

Place minor concrete around and under a traffic pull box as shown.

Bolt the steel cover to the box when not working in it.

Bond the steel cover to the conduit with a minimum 3-foot-long jumper and bolt it down after installing the conductors and cables.

### **87-1.03C(2)(d) Tamper-Resistant Pull Boxes**

Install the tamper-resistant pull boxes under the manufacturer's instructions.

### **87-1.03C(3) Structure Pull Boxes**

Install structure pull boxes parallel to the structure.

After removing the knockouts, flatten the surrounding area.

Bond conduit to a structure pull box using locknuts on the inside and outside of the box.

Cover pull boxes with a 1/4-inch plywood during pouring of PCC. For a no. 9 pull box, the upper edge of the plywood must fit against the lower edge of the rain tight hood.

Install no. 7 pull box with bottom flanges flush with the bottom of the box girder. Place top and bottom covers and seal the pull box during PCC pouring.

For no. 9 and 9A pull boxes:

1. Form a 1:1 chamfer around the cover
2. Use the drain hole in the center if the box is horizontal and the low end drain hole if the box is inclined
3. Mounted in a sloping parapet, drill a 1/2-inch elongated drain hole in the center if the box is horizontal or the low end if the box is inclined

**Replace section 87-1.03D with:**

10-19-18

**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, 4 inches in thickness, and must match the width of the foundation.

In unpaved areas, place the top of the foundation 6 inches above the surrounding grade, 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 2 inches above the surrounding grade in unpaved areas.

In and adjacent to the sidewalk and other paved areas, place the top of the foundation 4 inches above the surrounding grade, 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 7 days before installing any equipment.

**Add between the 3rd and 4th paragraphs of section 87-1.03F(1):**

04-17-20

Provide conductor and cable slack to comply with the requirements shown in the following table:



**Conductor and Cable Slack Requirements**

Location	Slack (feet)
Signal standard	1
Lighting standard	1
Signal and lighting standard	1
Pull box	3
Splice	3
Controller cabinet	6
Standards with slip base	0

**Replace the last paragraph of section 87-1.03F(1) with:**

Install a tracer wire.

04-19-19

**Replace section 87-1.03F(2) with:**

04-17-20

**87-1.03F(2) Cables**

**87-1.03F(2)(a) General**

Reserved

**87-1.03F(2)(b) Communication Cables**

**87-1.03F(2)(b)(i) General**

Terminate the ends of the communication cables as shown.

**87-1.03F(2)(b)(ii) Category 5E and 6 Cables**

Do not splice category 5E and 6 cables.

**87-1.03F(2)(b)(iii) Telephone Cables**

Do not splice telephone cables between the telephone demarcation point and the controller cabinet.

**87-1.03F(2)(c) Copper Cables**

**87-1.03F(2)(c)(i) General**

Reserved

**87-1.03F(2)(c)(ii) Detector Lead-in Cables**

Install a Type B or C detector lead-in cable in conduit.

Seal the ends of the lead-in cable before installing it in the conduit to prevent moisture from entering the cable.

Splice loop conductors for each direction of travel for the same phase, terminating in the same pull box, to a separate lead-in cable running from the pull box adjacent to the loop detector to a sensor unit mounted in the controller cabinet. Install the lead-in cable without splices except at the pull box when connecting to loop wire.

Verify in the presence of the Engineer that the loops are operational before making the final splices between loop conductors and the lead-in cable.

Identify and tag each lead-in cable with the detector designation at the cabinet and pull box adjacent to the loops.

**87-1.03F(2)(c)(iii) Conductors Signal Cables**

Do not splice signal cables except for a 28-conductor cable.

Provide identification at the ends of terminated conductors in a cable as shown.

Provide identification for each cable in each pull box showing the signal standard to which it is connected except for the 28-conductor cable.

Connect conductors in a 12-conductor cable as shown in the following table:

**12CSC Color Code and Functional Connection**

Color code	Termination	Phase
Red	Red signal	2, 4, 6, or 8
Yellow	Yellow signal	2, 4, 6, or 8
Brown	Green signal	2, 4, 6, or 8
Red/black stripe	Red signal	1, 3, 5, or 7
Yellow/black stripe	Yellow signal	1, 3, 5, or 7
Brown/black stripe	Green signal	1, 3, 5, or 7
Black/red stripe	Spare or as required for red or <i>DONT WALK</i>	--
Black/white stripe	Spare or as required for yellow	--
Black	Spare or as required for green or <i>WALK</i>	--
Red/white stripe	Pedestrian signal <i>DONT WALK</i>	--
Brown/white stripe	Pedestrian signal <i>WALK</i>	--
White	Terminal block	Neutral

Provide identification for each 28-conductor cable C1 or C2 in each pull box. The cable labeled C1 must be used for signal phases 1, 2, 3, and 4. The cable labeled C2 must be used for signal phases 5, 6, 7, and 8.

Connect conductors in a 28-conductor cable as shown in the following table:

DRAFT

**28CSC Color Code and Functional Connection**

Color code	Termination	Phase
Red/black stripe	Red signal	2 or 6
Yellow/black stripe	Yellow signal	2 or 6
Brown/black stripe	Green signal	2 or 6
Red/orange stripe	Red signal	4 or 8
Yellow/orange stripe	Yellow signal	4 or 8
Brown/orange stripe	Green signal	4 or 8
Red/silver stripe	Red signal	1 or 5
Yellow/silver stripe	Yellow signal	1 or 5
Brown/silver stripe	Green signal	1 or 5
Red/purple stripe	Red signal	3 or 7
Yellow/purple stripe	Yellow signal	3 or 7
Brown/purple stripe	Green signal	3 or 7
Red/2 black stripes	Pedestrian signal <i>DONT WALK</i>	2 or 6
Brown/2 black stripes	Pedestrian signal <i>WALK</i>	2 or 6
Red/2 orange stripes	Pedestrian signal <i>DONT WALK</i>	4 or 8
Brown/2 orange stripes	Pedestrian signal <i>WALK</i>	4 or 8
Red/2 silver stripes	Overlap A, C	OLA <sup>a</sup> , OLC <sup>a</sup>
Brown/2 silver stripes	Overlap A, C	OLA <sup>c</sup> , OLC <sup>c</sup>
Red/2 purple stripes	Overlap B, D	OLB <sup>a</sup> , OLD <sup>a</sup>
Brown/2 purple stripes	Overlap B, D	OLB <sup>c</sup> , OLD <sup>c</sup>
Blue/black stripe	Pedestrian push button	2 or 6
Blue/orange stripe	Pedestrian push button	4 or 8
Blue/silver stripe	Overlap A, C	OLA <sup>b</sup> , OLC <sup>b</sup>
Blue/purple stripe	Overlap B, D	OLB <sup>b</sup> , OLD <sup>b</sup>
White/black stripe	Pedestrian push button common	--
Black/red stripe	Spare	--
Black	Spare	--
White	Terminal block	Neutral

OL = Overlap; A, B, C, and D = Overlapping phase designation

<sup>a</sup>For red phase designation

<sup>b</sup>For yellow phase designation

<sup>c</sup>For green phase designation

Use the neutral conductor only with the phases associated with that cable. Do not intermix neutral conductors from different cables except at the signal controller.

**87-1.03F(2)(c)(iv) Signal Interconnect Cable**

Do not splice the cable unless authorized.

If splices are authorized, insulate the conductor splices with heat-shrink tubing and overlap the insulation at least 0.6 inch. Cover the splice area of the cable with heat-shrink tubing and overlap the cable jacket at least 1-1/2 inches. Provide a minimum of 3 feet of slack at each splice.

**87-1.03F(2)(c)(v) Railroad Preemption Cables**

Do not splice railroad preemption cable from controller cabinet to railroad cabinet.

Terminate individual conductors with ferrule connectors in the controller cabinet.

Provide identification on both ends of the cable and connect the cable end in the controller cabinet as shown in the following table:

**Color Code and Functional Connection**

Conductor no.	Color Code	Controller Cabinet Field Terminal Connections	Conductor Identification
1	Black	Not Used	Spare
2	White	Not Used	Spare
3	Red	FT8-A145	Health Status DC+
4	Green	Not Used	Spare
5	Orange	FT7-A134	Simultaneous DC-
6	Blue	FT7-A131	Advance DC-
7	White/black stripe	Not Used	Spare
8	Red/black stripe	FT8-A144	Gate Down/Island
9	Green/black stripe	Feld Terminal FT8-A142	Advance Pedestrian Preemption
10	Orange/black stripe	FT7-A135	Simultaneous Primary
11	Blue/black stripe	FT7-A132	Advance Primary
12	Black/white stripe	Not Used	Spare
13	Red/white stripe	FT8-A143	Gate Down/Island DC-
14	Green/white stripe	FT8-A141	Advance Pedestrian Preemption DC-
15	Blue/white stripe	FT7-A133	Advance Secondary
16	Black/red stripe	Not Used	Spare
17	White/red stripe	FT8-A146	Health Status DC-
18	Orange/red stripe	FT7-A136	Simultaneous Secondary
19	Blue/red stripe	Not Used	Spare

Keep all exposed conductors the same length and individually insulate spare conductors against each other.

Provide a minimum 6 feet of slack in the pull box adjacent to the railroad cabinet.

Connect the cable end in the railroad cabinet as directed by the railroad agency representative.

**Delete the 4th paragraph of 87-1.03F(3)(a).**

04-17-20

**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.

10-19-18

**Delete the last paragraph of section 87-1.03G.**

10-19-18

**Replace the 4th paragraph of section 87-1.03H(2) with:**

Use Method B as follows:

10-19-18

1. Cover the splice area completely with an electrical insulating coating and allow it to dry.
2. Apply 3 layers of half-lapped, PVC electrical tape.
3. Apply 2 layers of butyl-rubber, stretchable tape with liner.
4. Apply 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:**

10-19-18

**87-1.03N Fused Splice Connectors**

Install a fuse splice connector with a fuse in each ungrounded conductor for luminaires, except for overhead sign luminaires. The connector must be located in the pull box adjacent to the luminaires.

If the pull box for the roadway luminaire is tamper resistant, install a fuse splice connector with 10 A fuse in the pull box and an additional fuse splice connector with a 5 A fuse in the handhole.

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:**

10-19-18

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:**

10-19-18

When replacing an existing push button assembly, the housing color must match the color of the existing housing.

**Delete the 9th paragraph for section 87-1.03V(2).**

04-17-20

**Add between the 1st and 2nd paragraphs of section 87-1.03Y:**

04-19-19

Use a submersible type transformer inside pull boxes.

**Replace the 2nd paragraph of section 87-2.03A with:**

10-19-18

Tighten the cap screws of the luminaire's clamping bracket to 10 ft-lb for roadway luminaires.

**Replace section 87-3 with:**

10-19-18

**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**

Reserved

#### **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 with:

### **87-4 SIGNAL AND LIGHTING SYSTEMS**

04-17-20

#### **87-4.01 GENERAL**

Section 87-4 includes specifications for constructing signal and lighting systems.

Signal and lighting system includes:

1. Foundations
2. Pull boxes
3. Conduit
4. Conductors and cables
5. Standards
6. Signal heads
7. Service equipment enclosure
8. Department-furnished controller assembly
9. Detectors
10. Telephone demarcation cabinet
11. Accessible pedestrian signals
12. Push button assemblies
13. Pedestrian signal heads
14. Luminaires
15. Photoelectric control
16. Fuse splice connectors
17. Battery backup system
18. Flashing beacons
19. Flashing beacon control assembly

The components of a signal and lighting system are shown on the project plans.

#### **87-4.02 MATERIALS**

##### **87-4.02A General**

Not used

**87-4.02B Railroad Preemption**

A wire jumper for railroad preemption must be:

1. Stranded
2. 14 AWG
3. White with red stripes

**87-4.03 CONSTRUCTION**

**87-4.03A General**

Set the foundation for a standard such that the mast arm is perpendicular to the centerline of the roadway.

Tighten the cap screws of the roadway luminaire's clamping bracket to 10 ft-lb.

Label the month and year of the installation inside the luminaire housing's door.

Perform the conductor and operational tests for the system.

**87-4.03B Railroad Preemption**

Connect the C16 harness plug to the C16 socket on the Output File no. 2LX in the controller cabinet.

Connect the terminated conductors of the C16 harness to terminal block TB9 on input panel no.1 in the controller cabinet as shown in the following table:

**Input Panel No. 1 Connections**

Pin	Label	TB9
1	J-12D	4
2	J-12J	5
3	J-13D	7
4	J-13J	8
5	J-14D	10
6	J-14J	11

Terminate wire jumpers with spade connectors on both ends.

Connect three wire jumpers approximately 4 feet in length as show in the following table:

**Jumper Connections**

Jumper	Bus	TB9
1	DC-	6
2	DC-	9
3	DC-	12

Connect three wire jumpers approximately 2 inches in length as show in the following table:

**Jumper Connections**

Jumper	Terminal Block	Pin	Pin
1	TB-12	5	7
2	TB-13	5	7
3	TB-14	5	7

**87-4.04 PAYMENT**

Not Used

Replace section 87-7.02 with:

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### 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:

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## 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. Department-furnished 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

Reserved

#### 87-8.01C Submittals

Reserved

#### 87-8.01D Quality Assurance

##### 87-8.01D(1) General

Reserved

##### 87-8.01D(2) Quality Control

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Verify the sequence for the pedestrian hybrid beacon system per California *MUTCD*, Chapter 4F, Figure 4F-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.

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**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

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#### **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:

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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 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 60,000 hours
    - 1.3.2. Maintain a minimum 85 percent of the initial light output after 48 months of continuous use over the temperature range

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2. Be capable of displaying the detected vehicle speed within 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 3 manual dimming modes of different intensities

#### **87-14.02D Radar Units**

Radar unit must:

1. Be able to detect up to 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  $\pm 1$  mph
5. Have a maximum 15 W power consumption

**Add to the list in the 2nd paragraph of section 87-18.01:**

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4. 12 position terminal block

**Replace section 87-18.02 with:**

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#### **87-18.02 MATERIALS**

Terminal block must comply with TEES, chapter 1, section 3.

**Replace the 2nd paragraph of section 87-18.03 with:**

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Install the terminal block on the input panel in the controller cabinet.

Connect the signal interconnect cable to the terminal block as shown on the following table:

**Signal Interconnect Termination**

Terminal Block	Color
1	BLUE
2	BLACK
3	RED
4	BLACK
5	BROWN
6	BLACK
7	GREEN
8	BLACK
9	YELLOW
10	BLACK
11	WHITE
12	BLACK

**Replace 87-19 with:**

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**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**

Reserved

**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 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**

Reserved

#### **87-19.01D(2) Quality Control**

Notify the Engineer 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 singlemode, 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, 8 inches in width, and 8 inches in height
2. Be made of thermoplastic material, weather proof, chemical and UV resistant, and re-sealable

3. Accommodate a minimum of 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  $\mu\text{m}$  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 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  $\mu\text{m}$  tight buffer with a 0.12-inch-outer-diameter PVC jacket
2. Have fiber optic connectors attached on both ends
3. Be at least 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 2 turns.
2. Have means to secure and protect incoming buffer tubes, pigtails, and a minimum of 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 4 inches in diameter, and must have a mounting stem at the center of the disk. The mounting stem must be a minimum 3 inches long and a minimum 0.70 inch in diameter.
3. Non-reflective Class 1, Type F, flexible post delineators for unpaved areas.

### **87-19.021 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 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 2 inches above the surrounding grade in unpaved areas.

Place 6 inches of minor concrete around vaults. In unpaved areas, finish top of concrete at a 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.

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Install tracer wires in the fiber optic conduits and innerducts as shown. Provide a minimum 3 feet of slack tracer wire in each pull box and splice vault from each direction. You may splice tracer wire at intervals of not less than 500 feet and only inside splice vaults or pull boxes.

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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:

DRAFT



**Cable Identification<sup>a</sup>**

Sequence order	Description	Code	Numbers of characters
1	Fiber type	S: Singlemode	1
2	Fiber count	###: Example 048	3
3	Begin point	T: TMC H: Hub V: Video Node D: Data Node C: Cable Node TV: Camera CM: CMS E: Traffic Signal RM: Ramp Meter TM: Traffic Monitoring/ Count Station/Vehicle Count Station (VDS, TMS) HA: Highway Advisory Radio EM: Extinguishable Message Sign RW: Roadway Weather Information System WM: Weigh In Motion WS: Weigh-Station Bypass System SV: Vault SC: Splice Cabinet	1 or 2
4	Begin point county abbreviation	AA or AAA: Examples: Orange (ORA), San Mateo (SM)	2 or 3
5	Begin point route number	###: Examples: 005, 082, 114	3
6	Begin point post mile value	#####: 02470 (example 024.70): Actual PM value to the 1/100	5
7	End Point	In the same way as for Begin Point	1 or 2
8	End point county abbreviation	In the same way as for Begin Point County Abbreviation	2 or 3
9	End point route number	In the same way as Begin Point Route Number	3
10	End point post mile	In the same way as Begin Point Post Mile	5

<sup>a</sup>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 6 inches from a termination and every 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 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 2 feet in the splice tray and expose 1 foot of individual fibers.

Maintain a minimum 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 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:

04-17-20

**87-20 TEMPORARY ELECTRICAL SYSTEMS**

**87-20.01 GENERAL**

Section 87-20 includes specifications for providing, maintaining, and removing temporary electrical systems.

Temporary systems may be mounted on wood posts or trailers.

Obtain the Department's authorization for the type of temporary electrical system and its installation method.

A temporary system must operate on a continuous, 24-hour basis.

A temporary electrical system must have a primary power source and a back-up power source from:

1. Commercial utility company
2. Generator system
3. Photovoltaic system

**87-20.02 MATERIALS**

**87-20.02A General**

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

A trailer must be equipped with devices to level and plumb the temporary system.

**87-20.02B 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 a spark arrester complying with Pub Cont Code § 4442

#### **87-20.02C 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

#### **87-20.02D–87-20.02G Reserved**

#### **87-20.02H Temporary Flashing Beacon Systems**

A temporary flashing beacon system consists of a flashing beacon system, wood pole, and a power source.

The system must comply with the specifications for flashing beacon systems in section 87-7.

#### **87-20.02I 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 lighting systems in section 87-2.

#### **87-20.02J 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 signal and lighting systems in section 87-4, except signal heads may be mounted on a wood pole, mast arm, tether wire, or a trailer.

#### **87-20.02K Temporary Radar Speed Feedback Sign Systems**

A temporary radar speed feedback sign system must comply with the specifications for a radar speed feedback sign system in section 87-14, except, the LED character display must remain blank when no vehicles are detected or when the detected vehicle speed is 10 miles less than the preset speed.

### **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.

Install conduit outside the paved area at a minimum of 12 inches below grade for Type 1 and 2 conduit and at a minimum of 18 inches below grade for Type 3 conduit.

Install direct burial conductors and cables outside the paved area at a minimum depth of 24 inches below grade.

Place the portions of the conductors installed on the face of wood poles in either Type 1, 2, or 3 conduit between the point 10 feet above grade at the pole and the pull box. The conduit between the pole and the pull box must be buried at a depth of at least 18 inches below grade.



## DIVISION XI MATERIALS

### 90 CONCRETE

10-18-19

**Add to section 90-1.01B:**

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**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:

Quality characteristic	Test method
Specific gravity and absorption of coarse aggregate	ASTM C127
Specific gravity and absorption of fine aggregate	ASTM C128
Durability index for fine aggregate	California Test 229
Soundness	California Test 214
Resistance to degradation	ASTM C131
Organic impurities	California Test 213
Chloride concentration of water for washing aggregates and mixing concrete	California Test 422
Sulfate concentration of water for washing aggregates and mixing concrete	California Test 417
Impurities in water for washing aggregates and mixing concrete	ASTM C191 or ASTM C266 and ASTM C109

**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 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 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 the Department 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 Department's 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 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**

Reserved

**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
  - 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 the Department 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 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 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:

**Aggregate QC Tests**

Quality characteristic	Test method	Minimum testing frequency
Aggregate gradation	California Test 202	Once per each day of pour
Sand equivalent	California Test 217	
Cleanness value	California Test 227	
Moisture content of fine aggregate	California Test 226	1–2 times per each day of pour, depending on conditions

**Concrete QC Tests**

Quality characteristic	Test method	Minimum testing frequency
Slump	ASTM C143/C143M	Once per 100 cu yd or each day of pour, whichever is more frequent, and when requested by the Engineer
Uniformity <sup>a</sup>	ASTM C143/C143M, California Test 533, and California Test 529	When ordered by the Engineer
Air content, (freeze-thaw area)	California Test 504 <sup>b</sup>	If concrete is air entrained, once per 30 cu yd or each day of pour, whichever is more frequent
Air content, (non-freeze-thaw area)	California Test 504 <sup>b</sup>	If concrete is air entrained, once per 100 cu yd or each day of pour, whichever is more frequent
Temperature	California Test 557	Once per 100 cu yd or each day of pour, whichever is more frequent
Density	California Test 518	
Compressive strength <sup>c,d</sup>	California Test 521	

<sup>a</sup>As specified in section 90-1.01D(4).

<sup>b</sup>Use ASTM C173/C173M for lightweight concrete.

<sup>c</sup>Mark each cylinder with the Contract number, the date and time of sampling, and the weighmaster certificate number.

<sup>d</sup>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 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) Department Acceptance**

**90-1.01D(11)(a) General**

Reserved

**90-1.01D(11)(b) Cast-In-Place Structural Concrete Members**

The Department accepts concrete incorporated into CIP structural concrete members based on only the Department's test results. QC test results will not be used for Department acceptance.

**Replace the table in the 1st paragraph of section 90-1.02A with:**

10-18-19

Type of work	Maximum length change of laboratory cast specimens at 28 days drying (average of 3) (percent)
Paving and approach slab concrete	0.050
Bridge deck concrete	0.032

**Add to the end of section 90-1.02A:**

10-18-19

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 table in section 90-1.02G(6) with:**

04-19-19

Type of work	Nominal		Maximum	
	Penetration (in)	Slump (in)	Penetration (in)	Slump (in)
Concrete pavement	0-1	--	1.5	--
Nonreinforced concrete members	0-1.5	--	2	--
Reinforced concrete structures with:				
Sections over 12 inches thick	0-1.5	1-3	2.5	5
Sections 12 inches thick or less	0-2	1-4	3	6
Concrete placed under water	--	6-8	--	9
CIP concrete piles	2.5-3.5	5-7	4	8

**Replace the introductory clause of the 6th paragraph of section 90-1.02H with:**

04-19-19

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:**

04-19-19

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 10 percent and 75 percent portland cement.



## 94 ASPHALTIC EMULSIONS

04-17-20

Replace section 94 with:

04-17-20

### 94-1.01 GENERAL

#### 94-1.01A Summary

Section 94 includes specifications for furnishing asphaltic emulsions.

#### 94-1.01B Definitions

Reserved

#### 94-1.01C Submittals

Submit an SDS for each shipment of asphaltic emulsion to the job site.

If you use the asphaltic emulsion before the Department's sampling and testing is complete, submit a certificate of compliance for each shipment to the job site. The certificate of compliance must include:

1. Shipment number and date
2. Source asphalt emulsion plant, consignee, and destination
3. Type and description of material with specific gravity and quantity
4. Contract or purchase order number
5. Signature by the manufacturer of the material
6. Certified test results

If no certificate of compliance is submitted, do not use asphaltic emulsion until authorized.

#### 94-1.01D Quality Assurance

Sample asphaltic emulsion under AASHTO T 40.

Store samples in clean and airtight sealed containers. Samples taken must be placed in wide mouth plastic containers and taken in the presence of the Engineer. Samples must be stored at temperatures from 40 to 120 degrees F until submitted for testing.

### 94-1.02 MATERIALS

#### 94-1.02A General

Asphaltic emulsions must be composed of a bituminous material uniformly emulsified with water and an emulsifying or a stabilizing agent. Polymer-modified asphaltic emulsion must contain a polymer.

Rapid-setting asphaltic emulsions must be tested within 7 days after delivery to job site. All other asphaltic emulsions must be tested within 14 days of delivery to job site. The asphaltic emulsion must be homogeneous after thorough mixing and not separated by freezing. Asphaltic emulsion separated by freezing will not be tested.

#### 94-1.02B Slow-Setting Anionic Asphaltic Emulsions

Slow-setting anionic asphaltic emulsion must comply with the requirements shown in the following table:

**Slow-Setting Anionic Asphaltic Emulsion Requirements**

Quality characteristic	Test method	Requirement	
		Grade SS-1	Grade SS-1h
Saybolt Furol viscosity, at 25 °C (Saybolt Furol seconds)	AASHTO T 59	20–100	
Storage stability test, 1 day (max, %)		1	
Cement mixing test (max, %)		2.0	
Sieve test (max, %)		0.10	
Residue from distillation or evaporation test (min, %) <sup>a</sup>		57	
Tests on residue:			
Penetration, 25 °C (dmm)	AASHTO T 49	100–200	40–90
Ductility, 25 °C (min, mm)	AASHTO T 51	400	400
Solubility in trichloroethylene (min, %)	AASHTO T 44	97.5	97.5

<sup>a</sup>Distillation is the defining test if there is a conflict with evaporation.

**94-1.02C Slow-Setting Cationic Asphaltic Emulsions**

Slow-setting cationic asphaltic emulsion must comply with the requirements shown in the following table:

**Slow-Setting Cationic Asphaltic Emulsion Requirements**

Quality characteristic	Test method	Requirement	
		Grade CSS-1	Grade CSS-1h
Saybolt Furol viscosity, at 25 °C (Saybolt Furol seconds)	AASHTO T 59	20–100	
Storage stability test, 1 day (max, %)		1	
Particle charge <sup>a</sup>		Positive	
Cement mixing test (max, %)		2.0	
Sieve test (max, %)		0.10	
Residue from distillation or evaporation test (min, %) <sup>b</sup>	57		
Tests on residue:			
Penetration, 25 °C (dmm)	AASHTO T 49	100–250	40–90
Ductility, 25 °C (min, mm)	AASHTO T 51	400	400
Solubility in trichloroethylene (min, %)	AASHTO T 44	97.5	97.5

<sup>a</sup>Must comply with a pH requirement of 6.7 maximum under ASTM E70 if the particle charge test result is inconclusive.

<sup>b</sup>Distillation is the defining test if there is a conflict with evaporation.

**94-1.02D Rapid-Setting Cationic Asphaltic Emulsions**

Rapid-setting cationic asphaltic emulsion must comply with the requirements shown in the following table:

**Rapid-Setting Cationic Asphaltic Emulsion Requirements**

Quality characteristic	Test method	Requirement			
		Grade CRS-1	Grade CRS-2	Grade CRS-1h	Grade CRS-2h
Saybolt Furol viscosity, at 50 °C (Saybolt Furol seconds)	AASHTO T 59	20–100	100–400	20–100	100–400
Storage stability test, 1 day (max, %)		1			
Demulsibility (min, %) <sup>a</sup>		40			
Particle charge <sup>b</sup>		Positive			
Sieve test (max, %)		0.10			
Residue from distillation or evaporation test (min, %) <sup>c</sup>		60	65	60	65
Tests on residue:					
Penetration, 25 °C (dmm)	AASHTO T 49	100–250		40–90	
Ductility, 25 °C, 50 mm/minute (min, mm)	AASHTO T 51	400		400	
Solubility in trichloroethylene (min, %)	AASHTO T 44	97.5		97.5	

<sup>a</sup>Use 35 ml of 0.8% sodium dioctyl sulfosuccinate solution.

<sup>b</sup>Must comply with a pH requirement of 6.7 maximum under ASTM E70 if the particle charge test result is inconclusive.

<sup>c</sup>Distillation is the defining test if there is a conflict with evaporation.

**94-1.02E Cationic Emulsified Recycling Agent**

Cationic emulsified recycling agent for cold-in-place recycling must comply with the requirements shown in the following table:

**Cationic Emulsified Asphalt Requirements**

Quality characteristic	Test method	Requirement Emulsified recycling agent
Sieve test (max, %)	AASHTO T 59	0.10
Residue from distillation or evaporation test (min, %) <sup>a</sup>		63
Sieve test (max, %)		Positive
Tests on residue:		
Penetration, 25 °C (dmm)	AASHTO T 49	40–120
Ductility, 25 °C (min, mm)	AASHTO T 51	400
Creep stiffness:	AASHTO T 313	
Test temperature (°C)		-12
S-value (max, MPa)		300
M-value (min)		0.300

<sup>a</sup>Distillation is the defining test if there is a conflict with evaporation.

<sup>b</sup>Must comply with a pH requirement of 6.7 maximum under ASTM E70 if the particle charge test result is inconclusive.

**94-1.02F Rapid-Setting Polymer-Modified Asphaltic Emulsions**

Rapid-setting polymer-modified asphaltic emulsion must comply with the requirements shown in the following table:

**Rapid-Setting Polymer-Modified Asphaltic Emulsion Requirements**

Quality characteristic	Test method	Requirement	
		Grade PMCRS-2	Grade PMCRS-2h
Saybolt Furol viscosity, at 50 °C (Saybolt Furol seconds)	AASHTO T 59 <sup>e</sup>	100–400	
Storage stability test, 1 day (max, %)		1	
Sieve test (max, %)		0.30	
Demulsibility (min, %) <sup>a</sup>		40 <sup>b</sup>	
Particle charge <sup>b</sup>		Positive	
Residue from distillation or evaporation test (min, %) <sup>c</sup>		65	
Tests on residue:			
Penetration, 25 °C (dmm)	AASHTO T 49	100–200	40–90
Ductility, 25 °C (min, mm)	AASHTO T 51	400	400
Torsional recovery (min, %) <sup>d</sup> or Elastic recovery, 25 °C (min, %) <sup>d</sup>	California Test 332	20	20
	AASHTO T 301	65	65
Penetration, 4 °C, 200 g for 60 seconds (min, dmm)	AASHTO T 49	6	6
Ring and Ball Softening Point (min, °C)	AASHTO T 53	57	57

<sup>a</sup>Use 35 ml of 0.8% sodium dioctyl sulfosuccinate solution.

<sup>b</sup>Must comply with a pH requirement of 6.7 maximum under ASTM E70 if the particle charge test result is inconclusive.

<sup>c</sup>Distillation is the defining test if there is a conflict with evaporation.

<sup>d</sup>Elastic recovery is the defining test if there is a conflict with torsional recovery.

<sup>e</sup>Distillation temperature of 350 °F.

**94-1.02G Bonded Wearing Course Asphaltic Emulsions**

Bonded wearing course asphaltic emulsion must comply with the requirements shown in the following table:

**Bonded Wearing Course Asphaltic Emulsion Requirements**

Quality characteristic	Test method	Requirement
Saybolt Furol viscosity, at 25 °C (Saybolt Furol seconds)	AASHTO T 59 <sup>c</sup>	20–100
Storage stability test, 1 day (max, %)		1
Sieve test (max, %)		0.05
Particle charge <sup>a</sup>		Positive
Residue from distillation or evaporation test (min, %) <sup>b</sup>		63
Tests on residue:		
Penetration, 25 °C (dmm)	AASHTO T 49	70–150
Torsional recovery (min, %) <sup>d</sup>	California Test 332	40

<sup>a</sup>Must comply with a pH requirement of 6.7 maximum under ASTM E70 if the particle charge test result is inconclusive.

<sup>b</sup>Distillation is the defining test if there is a conflict with evaporation.

<sup>c</sup>Distillation temperature of 350 °F.

<sup>d</sup>Measure the entire arc of recovery at 25 °C.

**94-1.02H Rapid-Setting Polymer-Modified Rejuvenating Asphaltic Emulsions**

Rapid-setting polymer-modified rejuvenating asphaltic emulsion must comply with the requirements shown in the following table:



**Rapid-Setting Polymer-Modified Rejuvenating Asphaltic Emulsion Requirements**

Quality characteristic	Test method	Requirement Grade PMRE
Saybolt Furol viscosity, at 50 °C (Saybolt Furol seconds)	AASHTO T 59 <sup>d</sup>	50–350
Storage stability test, 1 day (max, %)		1
Sieve (max, %)		0.30
Oil distillate (max, %)		0.5
Particle charge <sup>a</sup>		Positive
Demulsibility (min, %) <sup>b</sup>		40
Residue from distillation or evaporation test (min, %) <sup>c</sup>		65
pH	ASTM E70	2.0–5.0
Tests on residue: Viscosity, at 60 °C (max, Pa-s) Penetration, 4 °C (dmm) Elastic recovery, 25 °C (min, %)	AASHTO T 202 <sup>e, f</sup> AASHTO T 49 AASHTO T 301 <sup>g</sup>	5000 40–70 60

<sup>a</sup>Must comply with a pH requirement of 6.7 maximum under ASTM E70 if the particle charge test result is inconclusive.

<sup>b</sup>If the product is to be diluted, demulsibility is waived.

<sup>c</sup>Distillation is the defining test if there is a conflict with evaporation.

<sup>d</sup>Distillation temperature of 350 °F.

<sup>e</sup>If it is suspected that a sample may contain solid material, strain the melted sample into the container through a No. 50 (300-µm) sieve conforming to Specification E 11.

<sup>f</sup>Use an AI- 200 glass capillary tube to run the test. If the viscosity is 4000 or above, use an AI 400 instead.

<sup>g</sup>Elastic recovery, hour glass sides, pull to 20 cm, hold 5 minutes then cut, let sit 1 hour.

Rejuvenating agent for rapid-setting polymer-modified rejuvenating asphaltic emulsion must comply with the requirements shown in the following table:

**Rejuvenating Agent Requirements**

Quality characteristic	Test method	Requirement
Tests on rejuvenating agent: Viscosity, at 60 °C (cSt) Flash point (min, °C) Saturate (max, % by weight) Asphaltenes (max)	AASHTO T 201 AASHTO T 48 ASTM D2007 ASTM D2007	50–175 193 30 1.0
Tests on rejuvenating agent Rolling Thin-Film Oven Test residue: Weight change (max, %) Viscosity ratio (max) <sup>a</sup>	AASHTO T 240	6.5 3

<sup>a</sup>Rolling Thin-Film Oven Test (RTFOT) viscosity divided by the original viscosity.

**94-1.021 Quick-Setting Asphaltic Emulsions**

Quick-setting asphaltic emulsion must comply with the requirements shown in the following table:

**Quick-Setting Asphaltic Emulsion Requirements**

Quality characteristic	Test method	Requirement			
		Anionic		Cationic	
		Grade QS-1	Grade QS-1h	Grade CQS-1	Grade CQS-1h
Saybolt Furol viscosity, at 25 °C (Saybolt Furol seconds)	AASHTO T 59	15–90			
Storage stability test, 1 day (max, %)		1			
Particle charge <sup>a</sup>		--		Positive	
Sieve test (max, %)		0.30			
Residue from distillation or evaporation test (min, %) <sup>b</sup>		57			
Tests on residue:					
Penetration, 25 °C (dmm)	AASHTO T 49	100–200	40–90	100–200	40–90
Ductility, 25 °C (min, mm)	AASHTO T 51	400	400	400	400
Solubility in trichloroethylene (min, %)	AASHTO T 44	97.5	97.5	97.5	97.5

<sup>a</sup>If the result of the particle charge test is inconclusive; the asphaltic emulsion must be tested for pH under ASTM E70. Grade QS-1h asphaltic emulsion must have a minimum pH of 7.3. Grade CQS-1h asphaltic emulsion must have a maximum pH of 6.7.

<sup>b</sup>Distillation is the defining test if there is a conflict with evaporation.

**94-1.02J Quick-Setting Polymer-Modified Cationic Asphaltic Emulsions**

Quick-setting polymer-modified cationic asphaltic emulsion must comply with the requirements shown in the following table:

**Quick-Setting Polymer-Modified Cationic Asphaltic Emulsions**

Quality characteristic	Test method	Requirement Grade PMCQS-1h
Saybolt Furol viscosity, at 25 °C (Saybolt Furol seconds)	AASHTO T 59 <sup>d</sup>	15–90
Storage stability test, 1 day (max, %)		1
Sieve test (max, %)		0.30
Particle charge <sup>a</sup>		Positive
Residue from distillation or evaporation test (min, %) <sup>b</sup>		60
Tests on residue:		
Penetration, 25 °C (dmm)	AASHTO T 49	40–90
Ductility, 25 °C (min, mm)	AASHTO T 51	400
Torsional recovery (min, %) <sup>c</sup> or Elastic recovery, 25 °C (min, %) <sup>c</sup>	California Test 332  AASHTO T 301	18  60

<sup>a</sup>If the result of the particle charge test is inconclusive; the asphaltic emulsion must be tested for pH under ASTM E70.

<sup>b</sup>Distillation is the defining test if there is a conflict with evaporation.

<sup>c</sup>Elastic recovery is the defining test if there is a conflict with torsional recovery.

<sup>d</sup>Distillation temperature of 350 °F.

**94-1.02K Micro Surfacing Emulsions**

Micro surfacing emulsion must comply with the requirements shown in the following table:

**Micro Surfacing Emulsion Requirements**

Quality characteristic	Test method	Requirement Grade MSE
Saybolt Furol viscosity, at 25 °C (Saybolt Furol seconds)	AASHTO T 59 <sup>c</sup>	15–90
Storage stability test, 1 day (max, %)		1
Sieve test (max, %)		0.30
Particle charge <sup>a</sup>		Positive
Residue from distillation or evaporation test (min, %) <sup>b</sup>		62
Tests on residue:		
Penetration, 25 °C (dmm)	AASHTO T 49	40–90
Softening point (min, °C)	AASHTO T 53	57
Torsional recovery (min, %) <sup>d</sup>	California Test 332	20
or		
Elastic recovery, 25 °C (min, %) <sup>d</sup>	AASHTO T 301	65

<sup>a</sup>If the result of the particle charge test is inconclusive; the asphaltic emulsion must be tested for pH under ASTM E70.

<sup>b</sup>Distillation is the defining test if there is a conflict with evaporation.

<sup>c</sup>Distillation temperature of 350 °F.

<sup>d</sup>Elastic recovery is the defining test if there is a conflict with torsional recovery.

**94-1.03 CONSTRUCTION**

Not Used

**94-1.04 PAYMENT**

The quantity of asphaltic emulsion is the weight determined before the addition of any water.

The weight of asphaltic emulsion is determined from volumetric measurements if:

1. Partial loads are used
2. Scale is not available within 20 miles
3. Asphaltic emulsion is delivered in:
  - 3.1. Trucks with each tank calibrated and accompanied by its measuring stick and calibration card
  - 3.2. Trucks equipped with a vehicle tank meter and a calibrated thermometer that determines the asphalt temperature at delivery

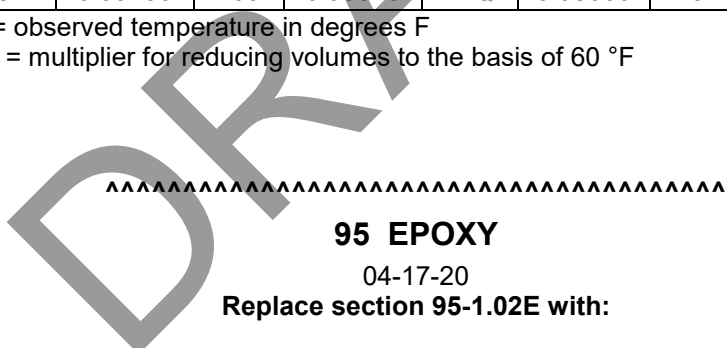
For volumetric measurements, the measured volume of asphaltic emulsion is reduced to the volume the material would occupy at 60 degrees F. One ton of asphaltic emulsion at 60 degrees F equals 240 gal. One gallon of asphaltic emulsion at 60 degrees F equals 8.33 lb.

Convert volume to weight using the factors shown in the following table:

**Conversion Table**

t	M	t	M	t	M	t	M
60	1.00000	83	0.99425	106	0.98850	129	0.98275
61	0.99975	84	0.99400	107	0.98825	130	0.98250
62	0.99950	85	0.99375	108	0.98800	131	0.98225
63	0.99925	86	0.99350	109	0.98775	132	0.98200
64	0.99900	87	0.99325	110	0.98750	133	0.98175
65	0.99875	88	0.99300	111	0.98725	134	0.98150
66	0.99850	89	0.99275	112	0.98700	135	0.98125
67	0.99825	90	0.99250	113	0.98675	136	0.98100
68	0.99800	91	0.99225	114	0.98650	137	0.98075
69	0.99775	92	0.99200	115	0.98625	138	0.98050
70	0.99750	93	0.99175	116	0.98600	139	0.98025
71	0.99725	94	0.99150	117	0.98575	140	0.98000
72	0.99700	95	0.99125	118	0.98550	141	0.97975
73	0.99675	96	0.99100	119	0.98525	142	0.97950
74	0.99650	97	0.99075	120	0.98500	143	0.97925
75	0.99625	98	0.99050	121	0.98475	144	0.97900
76	0.99600	99	0.99025	122	0.98450	145	0.97875
77	0.99575	100	0.99000	123	0.98425	146	0.97850
78	0.99550	101	0.98975	124	0.98400	147	0.97825
79	0.99525	102	0.98950	125	0.98375	148	0.97800
80	0.99500	103	0.98925	126	0.98350	149	0.97775
81	0.99475	104	0.98900	127	0.98325	150	0.97750
82	0.99450	105	0.98875	128	0.98300	151	0.97725

t = observed temperature in degrees F  
M = multiplier for reducing volumes to the basis of 60 °F



AA

**95 EPOXY**

04-17-20

**Replace section 95-1.02E with:**

04-17-20

**95-1.02E Epoxy Adhesive for Pavement Markers**

Epoxy adhesive for bonding pavement markers to concrete and HMA must comply with ASTM C881/C881M, Type IV, Grade 3, Class B or C except the gel time for epoxy adhesive may be less than 30 minutes.

Use Class B whenever the surface temperature is from 40 to 60 degrees F. Use Class C whenever the surface temperature is above 60 degrees F.

**Replace section 95-1.02F with:**

04-17-20

**95-1.02F Reserved**

**Delete the 2nd paragraph of section 95-1.02G.**

04-17-20



Replace the row for *Apparent opening size* in the table in the 3rd paragraph of section 96-1.02I with:

04-17-20

Apparent opening size (min and max, $\mu\text{m}$ (US Sieve))	ASTM D4751	150(100)–212(70)	150(100)–212(70)
---	------------	------------------	------------------

Replace the row for *Apparent opening size* in the table in the 2nd paragraph of section 96-1.02O with:

04-17-20

Apparent opening size (max, $\mu\text{m}$ (US Sieve))	ASTM D4751	300(50)	300(50)	600(30)	300(50)	300(50)
---	------------	---------	---------	---------	---------	---------

Replace the 3rd table in the 3rd paragraph of section 96-1.02R with:

10-19-18

**Cushion Fabric**

Quality characteristic	Test method	Requirement					
		Class 10	Class 12	Class 16	Class 24	Class 32	Class 60
Mass per unit area (oz/sq yd)	ASTM D5261	10	12	16	24	32	60
Grab tensile break strength (min, lb)	ASTM D4632	230	300	370	450	500	630
Grab tensile break elongation (min, %)	ASTM D4632	50					
Puncture strength (min, lb)	ASTM D6241	700	800	900	1100	1700	2400
Trapezoidal tear strength (min, lb)	ASTM D4533	95	115	145	200	215	290
UV resistance (min, %)	ASTM D7238	70					

# CALTRANS STANDARD PLANS

## 2018 EDITION

### STANDARD PLANS LIST

Project Plans shall be supplemented with applicable 2018 Caltrans Standard Plans including updates made by the following Revised Standard Plans (RSPs):

#### **ABBREVIATIONS, LINES, SYMBOLS AND LEGEND**

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

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

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A20A	Pavement Markings and Traffic Lines Typical Details
A24D	Pavement Markings – Word
<b>RSP A24E</b>	<b>Pavement Markings Words, Limit and Yield Lines</b>
T1A	Temporary Crash Cushions, Sand Filled (Unidirectional)
T1B	Temporary Crash Cushions, Sand Filled (Bidirectional)
T2	Temporary Crash Cushions, Sand Filled (Bidirectional)

#### **ROADSIDE SIGNS**

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RS1	Roadside Signs, Typical Installation Details No. 1
RS1	Roadside Signs, Typical Installation Details No. 1
RS2	Roadside Signs – Wood Post, Typical Installation Details No. 2

## PERMITS

- **California Department of Transportation (CALTRANS)**
  - Encroachment Permit

- 
- **City of Tulare**
    - Encroachment Permit

DRAFT



COUNTY OF TULARE  
STATE OF CALIFORNIA

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**BID PROPOSAL (BID) TO THE BOARD OF SUPERVISORS**

**FOR CONSTRUCTING: 2020 ROAD REPAIR AND ACCOUNTABILITY  
ACT (RRAA) PROJECT 2**

Name of Bidder \_\_\_\_\_

Telephone Number \_\_\_\_\_

Business Mailing Address \_\_\_\_\_

Place of Business \_\_\_\_\_

TO THE BOARD OF SUPERVISORS OF THE COUNTY OF TULARE:

The undersigned, as bidder, declares that the only persons or parties interested in this Bid as principals are those named herein, that this Bid is made without collusion with any other person, firm or corporation; that the bidder has carefully examined the location of the proposed work and the annexed proposed form of contract; and the bidder proposes and agrees if this Bid is accepted, that the bidder will contract with the County of Tulare, in the form of the copy of the contract annexed hereto, to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the material specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and the bidder will take in full payment therefore the following unit prices, to wit:

**TULARE COUNTY RESOURCE MANAGEMENT AGENCY**

**2020 ROAD REPAIR AND ACCOUNTABILITY ACT (RRAA) PROJECT 2**

No.	Items with Unit Price Written in Words	Unit	Quantity	Unit Price	Amount
1	Mobilization _____per lump sum	LS	1		
2	Construction Area Signs _____per lump sum	LS	1		
3	Traffic Control System _____per lump sum	LS	1		
4	Lead Compliance _____per lump sum	LS	1		
5	Temporary Pavement Marker _____per lump sum	LS	1		
6	Prepare Water Pollution Control Plan _____per lump sum	LS	1		
7	Finishing Roadway _____per lump sum	LS	1		
8	Cold Plane Asphalt Concrete Pavement _____per square yard	SY	151,005		
9(F)	Shoulder Backing _____per station	STA	1224		
10	Import Borrow (Shoulder Backing) _____per cubic yard	CY	4410		
11	Class 2 Aggregate Base _____per cubic yard	CY	630		
12	Hot Mix Asphalt (Type A) _____per ton	TON	44,169		

No.	Items with Unit Price Written in Words	Unit	Quantity	Unit Price	Amount
13	HMA Dike (Type A) _____per linear foot	LF	4,993		
14(F)	Tack Coat _____per ton	TON	29		
15(F)	Paving Asphalt (Binder to Geosynthetic) _____per ton	TON	175		
16	Geosynthetic Pavement Interlayer (Fabric) _____per square yard	SY	171,332		
17	Thermoplastic Pavement Marking _____per square feet	SQFT	885		
18	Paint Traffic Stripe (2-Coat) _____per linear feet	LF	187,808		
19(F)	Roadway Excavation _____per cubic yard	CY	945		
20	Survey Monuments _____per each	EA	31		
21	Supplemental Work (Payment Adjustment for Oil Price Index Fluctuations) one dollar per dollar	\$	200,000	1	\$200,000

TOTAL (In words and numbers) \_\_\_\_\_

In case of a discrepancy between words and figures, the words shall prevail. In case of a discrepancy between unit prices and total set forth for a unit basis item, the unit price shall prevail, except as provided in (a) or (b), as follows:

- (a) If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount as the entry in the item total column, then the amount set forth in the item total column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price;
- (b) (Decimal Errors) If the product of the entered unit and the estimated quantity is exactly off by a factor of ten, one hundred, etc., or one-tenth, or one-hundredth, etc. from the entered total, the discrepancy will be resolved by using the entered unit price or item total, whichever most closely approximates percentagewise the unit price or item total in the County's estimate of cost.

If both the unit price and the item total are unreadable or otherwise unclear, or are omitted, the bid may be deemed non-responsive. Likewise if the item total for a lump sum item is unreadable or otherwise unclear, or is omitted, the bid may be deemed non-responsive unless the project being bid has only a single item and a clear, readable total bid is provided.

Symbols such as commas and dollar signs will be ignored and have no mathematical significance in establishing any unit price or item total or lump sums. Written unit prices, item totals and lump sums will be interpreted according to the number of digits and, if applicable, decimal placements. Cents symbols also have no significance in establishing any unit price or item total since all such figures are assumed to be expressed in dollars and/or decimal fractions of a dollar. Bids on lump sum items shall be item totals only; if any unit price for a lump sum item is included in a bid and it differs from the item total, the items total shall prevail.

The foregoing provisions for the resolution of specific discrepancies cannot be so comprehensive as to cover every omission, inconsistency, error or other irregularity which may occur in a bid. **Any situation not specifically provided for will be determined in the discretion of the Board of Supervisors, and such discretion will be exercised in the manner deemed by the Board of Supervisors to best carry out its duty to award only to the lowest responsive, responsible bidder. The decision of the Board of Supervisors respecting the amount of a bid, or the existence or treatment of a discrepancy in a bid shall be final.**

If this Bid is accepted and the undersigned is awarded the Contract, given notice of the award and presented with the Contract for signature as provided in the Special Provisions, and shall fail, within the time and manner required under the Special Provisions, to sign and deliver the Contract to the Clerk of the Board of Supervisors, together with all required insurance certificates, bonds, powers of attorney, certificate of authority, insurance rating, financial statements, proofs of licensing, and any other documents required by the Special Provisions to be filed with the signed Contract, then the Board of Supervisors may, in its sole discretion, determine that the bidder has abandoned its bid, whereupon the Board's acceptance of this Bid shall be deemed frustrated, and such bid security as may accompany this Bid shall become due and owing to the County of Tulare as liquidated damages.

Accompanying this Bid is a \_\_\_\_\_ for

\$ \_\_\_\_\_. (Insert the words "Cash", "Cashier's Check", "Certified Check" or "Bidders Bond", as the case may be, and an amount equal to at least ten percent (10%) of the total bid).

The undersigned understands that the Board of Supervisors retains the option to reject any or all bids.

Further, as part of the Bid, the Contractor provides the following information and representations:

## ADDENDA CERTIFICATION STATEMENT

This Bid is submitted with respect to the changes in the contract documents included in Addendum Number(s) \_\_\_\_\_.

Name of Contractor \_\_\_\_\_

Warning. If an addendum or addenda have been issued by the County and not noted as being received by the bidder, then this Bid will be rejected.

The above Addenda Certification Statement is part of the Bid. Signing the Bid on the signature portion thereof shall also constitute signature of this Addenda Certification Statement.

## BIDDER DISQUALIFICATION QUESTIONNAIRE

In accordance with Public Contract Code Section 10162, the Bidder hereby completes, under penalty of perjury, the following questionnaire:

Has the bidder, or any officer of the bidder, or any employee who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes \_\_\_\_\_ No \_\_\_\_\_

If the answer is yes, explain the circumstances in the following space:

Note: The above Questionnaire and Statement are part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature under penalty of perjury of this Questionnaire and Statement.

-----

## PUBLIC CONTRACT CODE SECTION 9204 STATEMENT

AB 626, approved by the Governor of the State of California on September 29, 2016, created a new Public Contract Code section 9204, which specifies new procedural requirements for claims submitted by a contractor on any public works project.

The full text of the current legislation is set forth below:

### **§ 9204. Legislative findings and declarations regarding timely and complete payment of contractors for public works projects; claims process**

(a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

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

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3)(A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) "Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d)(1)(A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2)(A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on their own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2027, and as of that date is repealed, unless a later enacted statute that is enacted before January 1, 2027, deletes or extends that date.



## **BIDDER DISQUALIFICATION ACKNOWLEDGMENT**

In accordance with Public Contract Code section 10232, the Contractor hereby states under penalty of perjury that no more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Questionnaire and Statement are a part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature, under penalty of perjury, of this Questionnaire and Statement.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

## **BIDDER DISQUALIFICATION QUESTIONNAIRE**

In conformance with Public Contract Code section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has \_\_\_ , has not \_\_\_ been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code section 1101, with any public entity, as defined in Public Contract Code section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The bidder must place a check mark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

# NON-COLLUSION AFFIDAVIT

(Title 23 United States Code Section 112 and  
Public Contract Code Section 7106)

## NON-COLLUSION DECLARATION TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

The undersigned declares:

I am the \_\_\_\_\_ of \_\_\_\_\_, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

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

correct and that this declaration is executed on \_\_\_\_\_ [date],

at \_\_\_\_\_ [city], \_\_\_\_\_ [state]

\_\_\_\_\_  
(Signature)

*(THE BIDDER'S EXECUTION ON THE SIGNATURE PORTION OF THIS BID SHALL ALSO CONSTITUTE AN ENDORSEMENT AND EXECUTION OF THOSE CERTIFICATIONS WHICH ARE A PART OF THIS BID)*

## **EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION**

The bidder \_\_\_\_\_, proposed

subcontractor \_\_\_\_\_, hereby certifies that

he has \_\_\_\_\_, has not \_\_\_\_\_, participated in a previous contract or subcontract subject to the equal opportunity clauses, as required by Executive Orders 10925, 11114, or 11246, and that, where required, he has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

**Note:** The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of \$10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

Signing this Bid on the signature portion thereof shall also constitute signing this certificate.

# DEBARMENT AND SUSPENSION CERTIFICATION

TITLE 2, CODE OF FEDERAL REGULATIONS, PART 180

The bidder, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

- is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal agency;
- has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years;
- does not have a proposed debarment pending; and
  - has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Notes: Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Certification.

## SUBCONTRACTOR LIST

In accordance with the provisions of Section 2-1.10 of the Standard Specifications, Public Contract Code section 4104, and Labor Code section 1771 et seq., each bidder shall list below the name and location of place of business of each subcontractor who will perform a portion of the contract work in an amount in excess of one-half of one percent of the total bid or ten thousand dollars (\$10,000), whichever is greater, as well as the subcontractor's Department of Industrial Relations' ("DIR") registration number, and State contractor's license number. In each instance, the nature and extent of the work to be sublet shall be described. On the Subcontractor List (next page), you must submit each subcontracted bid item number and corresponding percentage with your bid. **Failure to submit a properly completed Subcontractor List form may result in a nonresponsive bid.** Note: (1) pursuant to Public Contract Code section 4104(a)(2), an inadvertent error in listing the California contractor license number provided pursuant to this paragraph shall not be grounds for filing a bid protest or grounds for considering the bid non-responsive if the corrected contractor's license number is submitted to the County by the prime contractor within twenty-four (24) hours after the bid opening and provided the corrected contractor's license number corresponds to the submitted name and location for that subcontractor; (2) pursuant to Labor Code Section 1771.1(c), an inadvertent error in listing a subcontractor who is not registered with the DIR in a Bid shall not be grounds for filing a bid protest or grounds for considering the bid non-responsive, provided that any of the following apply:

- (1) The subcontractor is registered prior to the bid opening.
- (2) Within twenty-four (24) hours after the bid opening, the subcontractor is registered and has paid the penalty registration fee specified in subparagraph (E) of paragraph (2) of subdivision (a) of Labor Code section 1725.5.

The General Contractor to whom the contract is awarded will not be permitted, without the written consent of the Tulare County Director of the Resource Management Agency or designee, to substitute any person as subcontractor in place of the subcontractor designated in the original bid, or to permit any subcontract to be assigned or transferred, or to allow it to be performed by anyone other than the original subcontractor. Consent to the substitution of another person as subcontractor shall only be permitted in accordance with Public Contract Code section 4107.

**The failure of the Contractor to specify a subcontractor for any portion of the contract work in excess of one-half of one percent of the total contract price shall be deemed to indicate that the Contractor intends to perform such portion himself.** The subletting or subcontracting of work for which no subcontractor was designated in the original bid and which is in excess of one-half of one percent of the total contract price, will be allowed only in accordance with Public Contract Code section 4109.

<u>Subcontractor Information</u>				<u>Work Portion</u>		
<u>Name</u>	<u>Address</u>	<u>Lic. No.</u>	<u>DIR Registration No.</u>	<u>Bid Item No.</u>	<u>Description</u>	<u>% of Bid Item</u>
				a)		
				b)		
				c)		
				d)		
				a)		
				b)		
				c)		
				d)		
				a)		
				b)		
				c)		
				d)		
				a)		
				b)		
				c)		
				d)		
				a)		
				b)		
				c)		
				d)		
				a)		
				b)		
				c)		
				d)		

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Further, as part of this Bid, the contractor agrees to the terms, and supplies the information required in the attached "Bidders Bond" or other security instruments (if such bond or instrument is required). Such Bond or instrument is considered part of the bid.

The names of all persons interested in the foregoing Bid as principals are as follows:

**IMPORTANT NOTICE**

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

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Licensed in conformance with an act providing for the registration of Contractors,**

License No. \_\_\_\_\_ Classification(s) \_\_\_\_\_

**Federal Employer Identification Number** By my signature on this bid I certify, under penalty of perjury under the laws of the State of California, that the foregoing questionnaire and statements of Public Contract Code sections 10162, 10232 and 10285.1 are true and correct and that the bidder has complied with the requirements of Section 8103 of the Fair Employment and Housing Commission Regulations (Chapter 5, Title 2 of the California Administrative Code). By my signature on this Bid, I further certify, under penalty of perjury under the laws of the State of California and the United States of America, that the Noncollusion Affidavit required by title 23 United States Code section 112 and Public Contract Code section 7106; and the title 2 Code of Federal Regulations part 180 Debarment and Suspension Certification, are true and correct.

Date: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
Signature of bidder

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

Business Address \_\_\_\_\_

Place of Business \_\_\_\_\_

Date: \_\_\_\_\_

COUNTY OF TULARE  
STATE OF CALIFORNIA

**BIDDER'S BOND**

KNOW ALL MEN BY THESE PRESENT:

That we \_\_\_\_\_

\_\_\_\_\_, AS PRINCIPAL, and

\_\_\_\_\_

\_\_\_\_\_ as SURETY,

are held and firmly bound unto the County of Tulare, hereinafter called the Obligee, in the sum of TEN PERCENT (10%) OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the Board of Supervisors, County of Tulare, for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents. In no case shall the liability of the surety hereunder exceed the sum of \$ \_\_\_\_\_

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the above-mentioned bid to the Board of Supervisors, County of Tulare, for certain construction specifically described as follows, for which bids are to be opened at Visalia, California, on \_\_\_\_\_, \_\_\_\_\_, for construction of 2020 ROAD REPAIR AND ACCOUNTABILITY ACT (RRAA) PROJECT 2.

NOW, THEREFORE, if the aforesaid Principal is awarded the Contract, given the required notice of award and presented with the Contract for signature and, within the time and manner required under the Special Provisions, executes and files it with the Clerk of the Board of Supervisors in the prescribed form and in accordance with the bid, together with all insurance certificates, bonds, powers of attorney, certificates of authority and financial statements, proofs of licensing, and any other documents required by the Special Provisions to be filed with the executed Contract, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect.

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

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this \_\_\_\_\_ day of

\_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(SEAL)

Principal

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
(SEAL)

Surety

Note - Signature of those executing for the surety must be properly acknowledged or notarized.



COUNTY OF TULARE  
STATE OF CALIFORNIA

**CONTRACT**

THIS CONTRACT, entered into as of this \_\_\_\_\_ day of \_\_\_\_\_, by and between the COUNTY OF TULARE, a political subdivision of the State of California hereinafter referred to as "County", and \_\_\_\_\_, hereinafter referred to as "Contractor";

WITNESSETH:

WHEREAS, County desires to carry out a project of constructing of 2020 ROAD REPAIR AND ACCOUNTABILITY ACT (RRAA) PROJECT 2, (hereinafter referred to as the "Work") in Tulare County.

WHEREAS, Contractor currently holds a Class A license from the State of California and must maintain the license from contract award through Contract acceptance (Public Contract Code § 20103.5) and is willing and able to perform the Work on the terms and conditions set forth herein.

WHEREAS, County publicly opens and reads bids at the time and place shown on the *Notice to Bidders*.

WHEREAS, County has offered this project through the statutorily prescribed bidding process, and through such process awarded this Contract to the lowest responsible and responsive bidder.

WHEREAS, should bid rigging, bidder collusion, and other fraudulent activities occur, Contractor shall call the U.S. Department of Transportation (DOT) toll-free hotline number (800) 424-9071. The service is available twenty-four (24) hours a day, seven (7) days a week and is confidential and anonymous. The hotline is part of the DOT's effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General.

NOW, THEREFORE, BE IT AGREED as follows:

ARTICLE I. For and in consideration of the terms, conditions and covenants hereinafter contained, Contractor will, at its own cost and expense, do all the work and furnish all the materials, except such work or material, if any, which the terms herein specifically provide will be furnished by County, necessary to construct and complete in good workmanlike and substantial manner and to the satisfaction of County's Assistant Director of Public Works or designee, rehabilitation of multiple segments of existing County roads throughout Tulare County..

Contractor will furnish such work and material in accordance with the terms and conditions set forth in County's Special Provisions (hereinafter referred to as the "Special Provisions") issued for this contract and project, which Special Provisions are incorporated herein by reference as if set out in full. Further, Contractor will furnish such work and material in accordance with the Standard Specifications dated 2018 (hereinafter referred to as the "Standard Specifications") and the Standard Plans dated 2018 (hereinafter referred to as the "Standard Plans"), issued by the Department of Transportation of the State of California, and the project plans described below, which the accepted Bid Proposal (Bid) to the Board of Supervisors by the Contractor, including all statements, bonds, and certificates required to be submitted thereunder, Standard Specifications, Standard Plans, and project plans are incorporated herein by reference as if set out in full.

The project plans for this project were approved August 11, 2020 and are entitled:

STATE OF CALIFORNIA; COUNTY OF TULARE  
PROJECT PLANS FOR CONSTRUCTION OF

2020 ROAD REPAIR AND ACCOUNTABILITY  
ACT (RRAA) PROJECT 2

ARTICLE II. Contractor agrees to receive and accept the following prices as full compensation from County, for furnishing all materials, for doing all the work contemplated and embraced in this Contract, for all costs, losses, or damages arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance by the Board of Supervisors of the County of Tulare, and for all risks of every description connected with the work; also for all expenses incurred by or in consequence of the suspension or discontinuance of work and for well and faithfully completing the work, and the whole thereof in the manner and according to the Contract Documents as defined in Article XI, and the requirements of the Engineer under them, and in accordance with the bid of Contractor, the terms, conditions, and representations of which bid are incorporated herein by reference as if set out in full:

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Item No.	Items with unit price written in words	Unit of Measure	Estimated Quantity	Unit Price	Amount
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(ITEMS IN CONTRACT WILL BE THE SAME AS THOSE IN THE BID)

ARTICLE III. Contractor will be licensed as required by law and will be in compliance with the regulations of the Contractors' State License Board. Contractor will possess a Class  A  license from Contract award through Contract acceptance (Public Contract Code §20103.5). Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, 9835 Goethe Road, Sacramento, California. Mailing Address: P.O. Box 26000, Sacramento, California 95826. Contractor will also comply with the licensing requirements specified in the "Notice to Bidders" which is specifically incorporated herein by this reference as if set out in full.

ARTICLE IV. Contractor agrees to comply with the prevailing wage laws as set forth in Labor Code sections 1770-1780 unless an applicable federal labor law imposes a higher wage or stricter requirement, in which case the higher wage or stricter requirement will apply, and Contractor agrees to be responsible for the compliance by all subcontractors with Labor Code section 1776 in accordance with Public Contract Code section 6109, with respect to subcontractors which are ineligible to perform work on public works projects pursuant to Labor Code section 1777.1 or 1777.7:

1. The Contractor must not allow any such subcontractor to work on this project.
2. Contractor will repay to County any money paid to any such subcontractor allowed to work on this project.
3. Contractor will pay the wages of the workers of any such subcontractor allowed to work on this project.

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

1. From the Department of Industrial Relations' website
2. On file at the Resource Management Agency Permit Center, 5961 South Mooney Boulevard, Visalia, Ca 93277, which shall be made available to any interested person on request.
3. From the County Public Works website (see link in the Notice to Bidder section).

Contractor shall be responsible to post the general prevailing wage rates at a prominent place at each job site in accordance to section 7-1.02K(2) of the Caltrans Standard Specifications and Labor Code section 1773.2.

ARTICLE V. County does hereby engage Contractor as an independent contractor to provide the materials and to do the work according to the terms and conditions herein contained and referred to, for the prices

aforsaid, and hereby contracts to pay the same at the time, in the manner and upon the conditions in the Special Provisions which are a part of this contract.

ARTICLE VI. Contractor will neither sell, assign, transfer, convey or encumber this Contract or any right or interest therein or thereunder, or suffer or permit any such sale, assignment, transfer, conveyance or encumbrance to occur by operation of law, without the prior written consent of County.

ARTICLE VII. This Contract may only be amended or modified, as permitted by the Public Contract Code, by written consent to such amendment or modification by each party.

ARTICLE VIII. The termination provisions of the Standard Specifications are incorporated by reference.

ARTICLE IX. Any and all notices or other matters required or permitted by this Contract or by law to be served on, given to, or delivered to either party hereto shall be in writing and shall be deemed duly served, given or delivered when personally delivered to the party to whom addressed, or in lieu of such personal service, when deposited in the United States mail, certified return receipt requested, addressed as follows:

Engineer:                   Hernan Beltran, P.E.  
                                  Chief Engineer  
                                  Resources Management Agency  
                                  County of Tulare  
                                  5961 South Mooney Boulevard  
                                  Visalia, CA 93277

Contractor:               \_\_\_\_\_

                                  \_\_\_\_\_

                                  \_\_\_\_\_

                                  \_\_\_\_\_

ARTICLE X. Before approval of a Contract by County, Contractor must file with the Clerk of the Board of Supervisors evidence of insurance as set forth in 7-1.06 of the Special Conditions which outlines the minimum scope, specifications, and limits of insurance required under this Contract. Additional insured endorsements required as outlined below cannot be used to reduce limits available to County as an additional insured from Contractor's full policy limits. Insurance policies cannot be used to limit liability or to limit the indemnification provisions and requirements of this Contract or act in any way to reduce the policy coverage and limits available from the insurer(s). If Contractor fails to maintain or renew coverage, or to provide evidence of renewal, then County may consider that failure a material breach of this Contract. County may also withhold any payment otherwise due to Contractor for failure to provide evidence of renewal until Contractor provides such evidence.

ARTICLE XI. The Complete Contract between the parties shall consist of this Contract, Notice to Bidders, the Special Provisions, the 2018 Caltrans Standard Specifications, the project plans, the 2018 Caltrans Standard Plans, the Technical Specifications, all Addenda, and the accepted Bid to the Board of Supervisors by the Contractor, including all statements, bonds, and certificates required to be submitted thereunder. Any prior agreements, promises, negotiations, or representations not expressly set forth in the Complete Contract shall be of no force or effect.

ARTICLE XII. Should there be any conflict between the terms of this Contract and the Bid of the Contractor, then this Contract shall control and nothing herein shall be considered as an acceptance of any conflicting terms.

**ARTICLE XIII. In lieu of the attorney's notice of approval provided for in Section 8-1.04 of the Standard Specifications, the Engineer will deliver a written Notice to Proceed to the Contractor following execution of the Contract on behalf of the Board of Supervisors. Contractor shall begin work within fifteen (15) calendar days from the date the Notice to Proceed is issued, in full compliance with said Section 8-1.04 of the Standard Specifications.**

**Complete all work within seventy five (75) working days beginning on the fifteenth (15<sup>th</sup>) calendar day after the date shown on the Notice to Proceed. Contractor agrees to pay as liquidated damages and not as a penalty, the amount established pursuant to Section 8-1.10A of the Special Provisions,**

**County and Contractor agree that if the Work is not completed within the Contract Time, then County's damages would be extremely difficult or impracticable to determine and that the amount specified is a reasonable estimate of the reasonable sum for such damages. Liquidated damages for all work shall be set to two thousand seven hundred dollars (\$2,700) per day, for each and every calendar days' delay in finishing the work in excess of the number of working days prescribed above. County may deduct any liquidated damages due from Contractor from any amounts otherwise due to Contractor under the Contract Documents. This provision shall not limit any right or remedy of County in the event of any other default of Contractor other than failing to complete the Work within the Contract Time.**

ARTICLE XIV. This Contract reflects the contributions of both parties and accordingly the provisions of Civil Code section 1654 shall not apply to address and interpret any uncertainty.

ARTICLE XV. Unless specifically set forth, the parties to this Contract do not intend to provide any other party with any benefit or enforceable legal or equitable right or remedy.

ARTICLE XVI. This Contract shall be interpreted and governed under the laws of the State of California without reference to California conflicts of law principles. The parties agree that this contract is made in and shall be performed in Tulare County, California.

ARTICLE XVII. The failure of either party to insist on strict compliance with any provision of this Contract shall not be considered a waiver of any right to do so, whether for that breach or any subsequent breach. The acceptance by either party of either performance or payment shall not be considered to be a waiver of any preceding breach of the Contract by the other party.

ARTICLE XVIII. The Recitals and the Exhibits to this Contract are fully incorporated into and are integral parts of this Contract.

ARTICLE XIX. This Contract is subject to all applicable laws and regulations. If any provision of this Contract is found by any court or other legal authority, or is agreed by the parties, to be in conflict with any code or regulation governing its subject, the conflicting provision shall be considered null and void. If the effect of nullifying any conflicting provision is such that a material benefit of the Contract to either party is lost, the Contract may be terminated at the option of the affected party. In all other cases the remainder of the Contract shall continue in full force and effect.

ARTICLE XX. Each party will execute any additional documents and perform any further acts which may be reasonably required to effect the purposes of this Contract.

ARTICLE XXI. If a dispute arises out of or relating to this Contract, or the breach thereof, and if said dispute cannot be settled through negotiation, the parties agree first to try in good faith to settle the dispute by non-binding mediation before resorting to litigation or some other dispute resolution procedure, unless the parties mutually agree otherwise. The mediator shall be mutually selected by the parties, but in case of disagreement, the mediator shall be selected by lot from among two nominations provided by each party. All costs and fees required by the mediator shall be split equally by the parties, otherwise each party shall bear its own costs of mediation. Contractor shall continue with its responsibilities under this Contract during any such dispute.

ARTICLE XXII. Contractor acknowledges that this Contract is subject to filing obligations pursuant to Unemployment Insurance Code section 1088.8. Accordingly, County has an obligation to file a report with the Employment Development Department, which report will include the Contractor's full name, social security number, address, the date this contract was executed, the total amount of the contract, the contract's expiration date or whether it is ongoing. Contractor agrees to cooperate with County to make such information available and to complete DE Form 542. Failure to provide the required information may, at County's option, prevent approval of this Contract, or be grounds for termination by County.

ARTICLE XXIII. This Contract represents the entire Contract between Contractor, and County as to its subject matter and no prior oral or written understanding shall be of any force or effect. No part of this Contract may be modified without the written consent of both parties.

ARTICLE XXIV. Contractor expressly understands and agrees that County is dependent upon certain Federal and/or State and/or local funding to pay the services provided in this Contract. If such Federal and/or State and/or local funding is discontinued and/or reduced, County shall have the right to terminate the Contract. In either event, County shall provide Contractor with at least thirty (30) days prior written notice of such termination.

ARTICLE XXV. Quality Assurance - The County uses a Quality Assurance Program (QAP) to ensure a material is produced to comply with the Contract. Contractor may examine the records and reports of tests the County and/or the Materials Testing Consultant performs, if available.

Schedule work to allow time for QAP review and compliance.

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

BOARD OF SUPERVISORS  
COUNTY OF TULARE  
STATE OF CALIFORNIA

By \_\_\_\_\_  
Chair of the Board  
of Supervisors  
"County"

Attest: Jason T. Britt, County Administrative Officer/  
Clerk of the Board of Supervisors

By \_\_\_\_\_  
Deputy

Pursuant to Corporations Code section 313, County policy requires that contracts with a corporation shall be signed by both (1) the chair of the Board of Directors, the president or any vice-president (or another officer having general, operational responsibilities), and (2) the secretary, any assistant secretary, the chief financial officer, or any assistant treasurer (or another officer having recordkeeping or financial responsibilities), unless the contract is accompanied by a certified copy of a resolution of the corporation's Board of Directors authorizing the execution of the contract. Similarly, pursuant to California Corporations Code section 17703.01, County policy requires that contracts with a Limited Liability Company be signed by at least two managers, unless the contract is accompanied by a certified copy of the articles of organization stating that the LLC is managed by only one manager.

"Contractor"

Licensed in accordance with an act  
providing for the registration of contractors.

License No. \_\_\_\_\_

Federal Employer Identification

Number \_\_\_\_\_

Dated: \_\_\_\_\_  
APPROVED AS TO FORM,  
County Counsel

By: \_\_\_\_\_  
Deputy County Counsel

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# STATUTORY PERFORMANCE BOND PURSUANT TO

California Public Contract Code  
Section 20129

## KNOW ALL MEN BY THESE PRESENTS:

That \_\_\_\_\_ (Hereinafter called the Principal), as Principal and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, with its principal office in the City of \_\_\_\_\_, (hereinafter called the Surety), as Surety, are held and firmly bound unto the County of Tulare, (hereinafter called the Obligee) in the amount of \_\_\_\_\_ (\$ \_\_\_\_\_), for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated the \_\_\_th day of \_\_\_\_\_, \_\_\_\_\_ for construction of 2020 ROAD REPAIR AND ACCOUNTABILITY ACT (RRAA) PROJECT 2 which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THE OBLIGATION IS SUCH, that if said Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, and conditions of said Contract during the original term of the Contract and any extension thereof, with or without notice to the Surety, and during the life of any guarantee required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized extensions or modifications of said contract that may hereafter be made, notice of said extensions or modifications to the Surety being hereby waived; then the above obligation shall be void. Otherwise, said obligation shall remain in full force and effect.

Whenever Obligee declares Principal to be in default under the Contract, then the Surety will remedy the default pursuant to the Contract, or will promptly do one of the following, at the Obligee's option:

(1) Undertake through its agents or independent contractors reasonably acceptable to the Obligee, to complete the Project in accordance with all terms and conditions in the Contract, including without limitation, all obligations with respect to payments, warranties, guarantees, and liquidated damages, and with no requirement for a "take-over" or similar agreement"; or

(2) Permit the Obligee to complete the Project in any manner consistent with California law and reimburse the Obligee for all costs it incurs in completing the Project, and in correcting, repairing, or replacing any defects in materials, equipment or workmanship, which do not conform to the Contract.

Surety expressly agrees that the Obligee may reject any contractor or subcontractor that Surety may propose in fulfillment of its obligations in the event of default by the Principal. Surety will not utilize Principal in completing the Project or accept a bid from the Principal for completion of the Work if the Obligee, when declaring the Principal in default, notifies Surety of the Obligee's objection to Principal's further participation in the completion of the Project.

Surety's obligations hereunder are independent of the obligations of any other surety for the performance of the construction work on this Project, and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing the Obligee's rights against the others.

No right of action will accrue on this bond to or for the use of any person or corporation other than the Obligee or its successors or assigns. If Obligee sues upon this bond, then Surety will pay reasonable attorney's fees and costs incurred by the Obligee in such suit, irrespective of the amount of this bond.

Witness our hands this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
Principal Seal

\_\_\_\_\_  
By

\_\_\_\_\_  
Surety Seal

\_\_\_\_\_  
By

\_\_\_\_\_  
Agency of Record

Note: Bond surety must be admitted to transact surety insurance in the State of California.

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# STATUTORY PAYMENT BOND PURSUANT TO

California Civil Code  
Sections 9550 through 9566

## KNOW ALL MEN BY THESE PRESENTS:

That, \_\_\_\_\_.(hereinafter called the Principal), as Principal, and \_\_\_\_\_ a corporation organized and existing under the laws of the State of \_\_\_\_\_, with its principal office in the City of \_\_\_\_\_, (hereinafter called the Surety), as Surety, are held and firmly bound unto the County of Tulare (hereinafter called the Obligee), in the amount of \_\_\_\_\_ (\$\_\_\_\_\_), for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written contract with the Obligee, dated the \_\_th day of \_\_\_\_\_, \_\_\_\_\_ for construction of 2020 ROAD REPAIR AND ACCOUNTABILITY ACT (RRAA) PROJECT 2, to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code section 13020 with respect to work and labor thereon of any kind, then said Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code section 9550 et. seq.

This bond shall inure to the benefit of any person named in California Civil Code section 9100 giving such person or his/her assigns a right of action in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described; nor by any rescission or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Obligee and the Principal or on the part of any obligee named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code section 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

Witness our hands this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
Principal Seal

\_\_\_\_\_  
By

\_\_\_\_\_  
Surety Seal

\_\_\_\_\_  
By

\_\_\_\_\_  
Agency of Record

\_\_\_\_\_  
Agency Address

Note: Bond surety must be admitted to transact surety insurance in the State of California

DRAFT

**CERTIFICATION CONCERNING WORKERS'  
COMPENSATION INSURANCE**

STATE OF CALIFORNIA )  
                                  ) SS  
COUNTY OF TULARE )

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

Date \_\_\_\_\_

\_\_\_\_\_  
CONTRACTOR

DRAFT

# CONSTRUCTION OF 2020 ROAD REPAIR AND ACCOUNTABILITY ACT (RRAA) PROJECT 2

## CONTRACT DOCUMENT CHECKLIST

The Contractor must deliver to the County with the Contract the following items:

1. The signed Contract (six copies). Each copy of the Contract must be signed by both the company president or vice president and the company secretary or treasurer with the Contractors State License Board number and Federal Employer Identification Number.
2. The Statutory Performance Bond Pursuant to California Public Contract Code section 20129 and the Statutory Payment Bond Pursuant to California Civil Code Sections 9550 through 9566 (forms included herein), with either County Clerk's certificates or copies of power of attorney.
3. Certification Concerning Workers' Compensation Insurance.
4. Certificate(s) of Insurance in compliance with the requirements of section 7-1.06 of the Special Provisions including general liability, automobile and workers' compensation (a sample form is included).
5. Evidence that the Contractor possesses a current, valid Contractors State License Board required to perform the work under this Contract. A copy of the Contractor's license is sufficient.

DRAFT

**INDEX OF SHEETS**

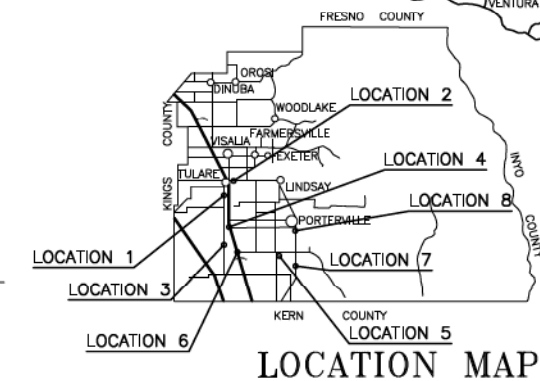
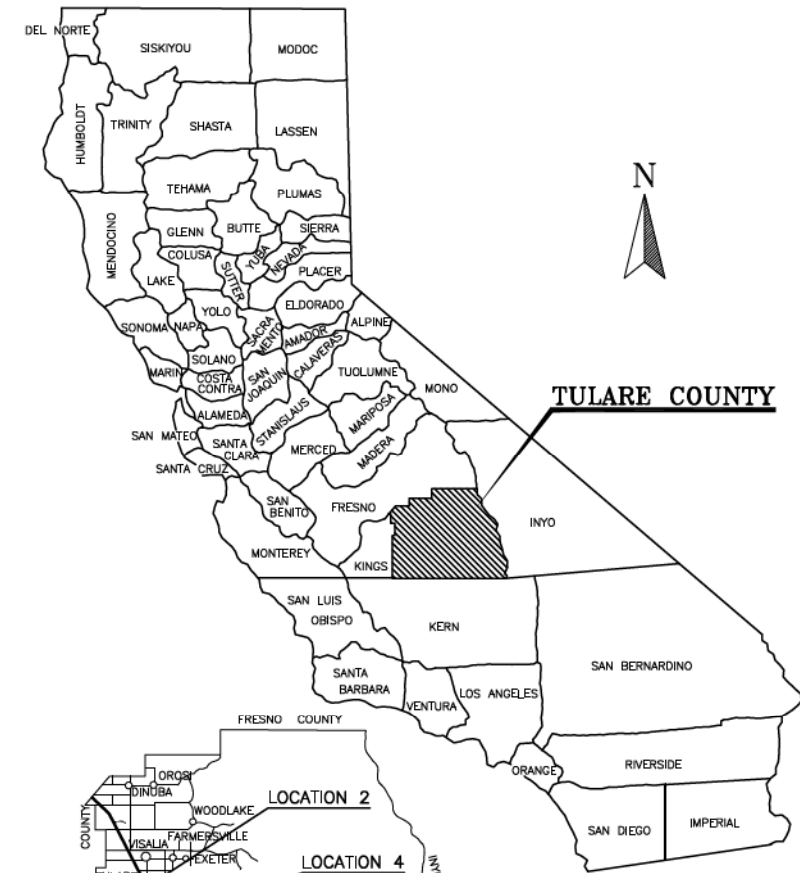
PAGE	SHEET NO.	DESCRIPTION
1	T1	TITLE SHEET
2	C1	CONSTRUCTION DETAILS
3	X1	LOCATION 1: TYPICAL CROSS SECTIONS
4-6	L1-L3	LOCATION 1: PLAN SHEETS
7	PD1	LOCATION 1: SIGNING AND STRIPING TABLE
8	CAS1	LOCATION 1: CONSTRUCTION AREA SIGN PLAN
9	X2	LOCATION 2: TYPICAL CROSS SECTIONS
10-11	L4-L5	LOCATION 2: PLAN SHEETS
12	PD2	LOCATION 2: SIGNING AND STRIPING TABLE
13	CAS2	LOCATION 2: CONSTRUCTION AREA SIGN PLAN
14	X3	LOCATION 3: TYPICAL CROSS SECTIONS
15-16	L6-L7	LOCATION 3: PLAN SHEETS
17	PD3	LOCATION 3: SIGNING AND STRIPING TABLE
18	CAS3	LOCATION 3: CONSTRUCTION AREA SIGN PLAN
19	X4	LOCATION 4: TYPICAL CROSS SECTIONS
20	L8	LOCATION 4: PLAN SHEETS
21	PD4	LOCATION 4: SIGNING AND STRIPING TABLE
22	CAS4	LOCATION 4: CONSTRUCTION AREA SIGN PLAN
23	X5	LOCATION 5: TYPICAL CROSS SECTIONS
24-25	L9-L10	LOCATION 5: PLAN SHEETS
26	PD5	LOCATION 5: SIGNING AND STRIPING TABLE
27	CAS5	LOCATION 5: CONSTRUCTION AREA SIGN PLAN
28	X6	LOCATION 6: TYPICAL CROSS SECTIONS
29	L11	LOCATION 6: PLAN SHEETS
30	PD6	LOCATION 6: SIGNING AND STRIPING TABLE
31	CAS6	LOCATION 6: CONSTRUCTION AREA SIGN PLAN
32	X7	LOCATION 7: TYPICAL CROSS SECTIONS
33	L12	LOCATION 7: PLAN SHEETS
34	PD7	LOCATION 7: SIGNING AND STRIPING TABLE
35	CAS7	LOCATION 7: CONSTRUCTION AREA SIGN PLAN
36	X8	LOCATION 8: TYPICAL CROSS SECTIONS
37	L13	LOCATION 8: PLAN SHEETS
38	PD8	LOCATION 8: SIGNING AND STRIPING TABLE
39	CAS8	LOCATION 8: CONSTRUCTION AREA SIGN PLAN

STATE OF CALIFORNIA  
COUNTY OF TULARE

PROJECT PLANS FOR CONSTRUCTION OF  
2020 ROAD REPAIR AND  
ACCOUNTABILITY ACT (RRAA)  
PROJECT 2

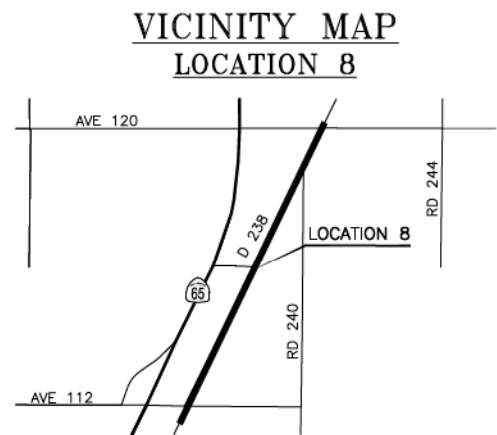
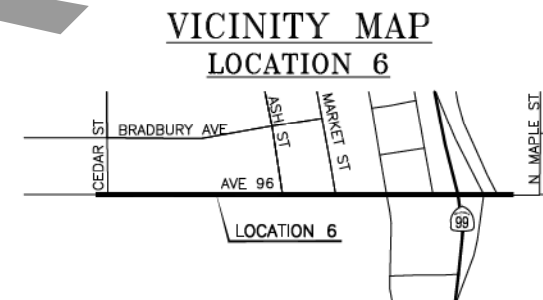
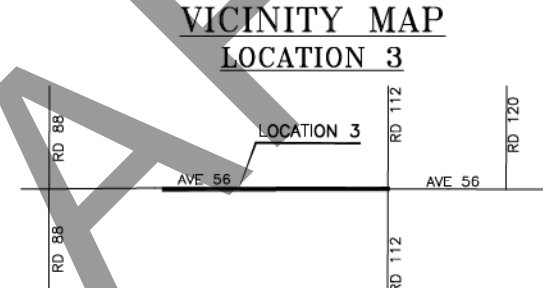
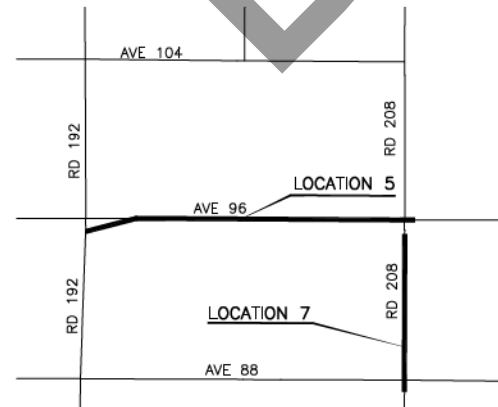
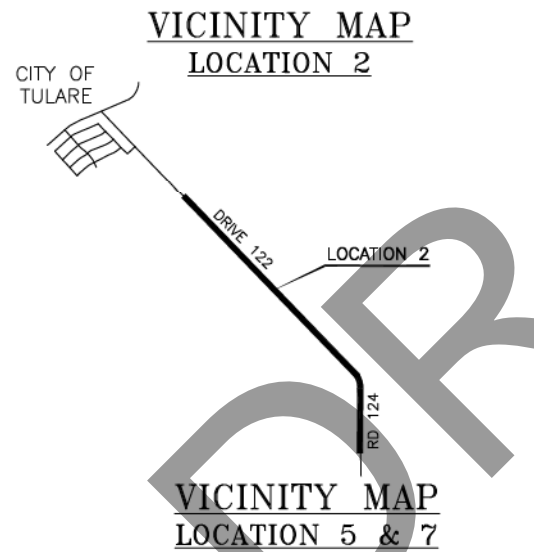
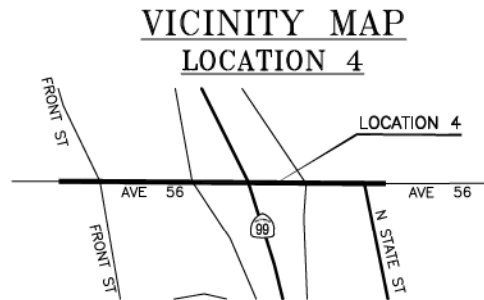
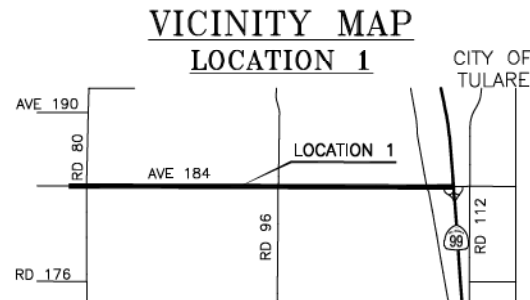
2006 HALF-CENT TRANSPORTATION  
SALES TAX MEASURE (MEASURE R)

TO BE SUPPLEMENTED BY STANDARD PLANS AND STANDARD SPECIFICATIONS OF  
THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION DATED 2018



**ABBREVIATIONS**

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
AP	ANGLE POINT
AVE	AVENUE
CL, C	CENTER LINE
CONC	CONCRETE
CONST	CONSTRUCTION
DI	DROP INLET, DRAINAGE INLET
DIA	DIAMETER
DR	DRIVE
DWY	DRIVEWAY
EC	END OF HORIZONTAL CURVE
EG	EXISTING GROUND
EP	EDGE OF PAVEMENT
EXIST	EXISTING
FL	FLOW LINE
HMA	HOT MIX ASPHALT
LOL	LAYOUT LINE
LT	LEFT
NTS	NOT TO SCALE
MAX	MAXIMUM
MIN	MINIMUM
PE	PROFESSIONAL ENGINEER
PROP	PROPOSED
R	RADIUS
RD	ROAD
RE	RESIDENT ENGINEER
REM	REMOVE
R/W	RIGHT OF WAY
RT	RIGHT
STA	STATION
STD	STANDARD
SW	SIDEWALK



Contractor shall call  
Underground Service Alert at  
811 two working days prior  
to excavation

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
PETE VANDER POEL III, CHAIR  
COUNTY OF TULARE BOARD OF SUPERVISORS

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
REED SCHENKE, P.E., DIRECTOR  
COUNTY OF TULARE RESOURCE MANAGEMENT AGENCY

SIGNED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
GREY TOMPKINS, P.E. PROJECT MANAGER  
COUNTY OF TULARE RESOURCE MANAGEMENT AGENCY



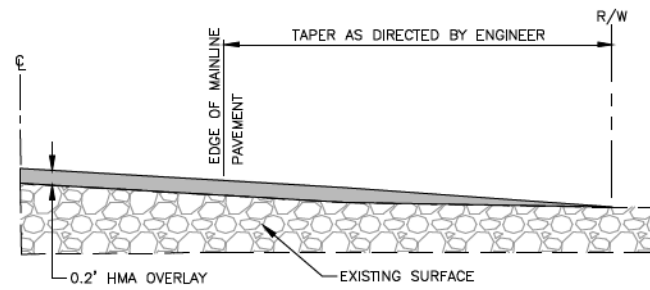
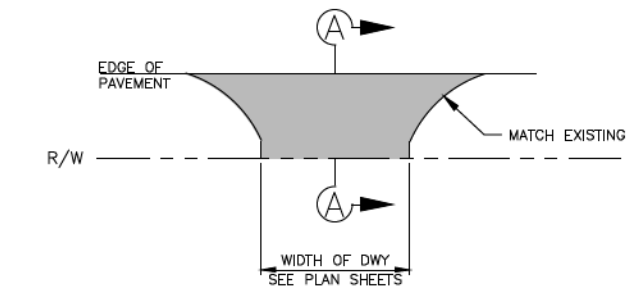
NO.	REVISIONS	DATE	BY

COUNTY OF TULARE  
RESOURCE MANAGEMENT AGENCY  
5961 SOUTH MOONEY BLVD.  
VISALIA, CA 93277  
(559)624-7000  
WWW.TULARECOUNTY.CA.GOV/RMA



TITLE SHEET  
2020 ROAD REPAIR AND ACCOUNTABILITY  
ACT (RRAA) PROJECT 2  
TULARE COUNTY

SCALE	NTS
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-1T001.DWG
DATE	08/11/2020
SHEET No.	T1

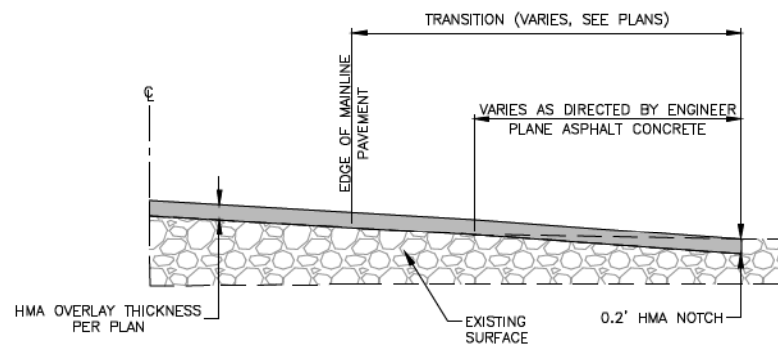


SECTION A-A

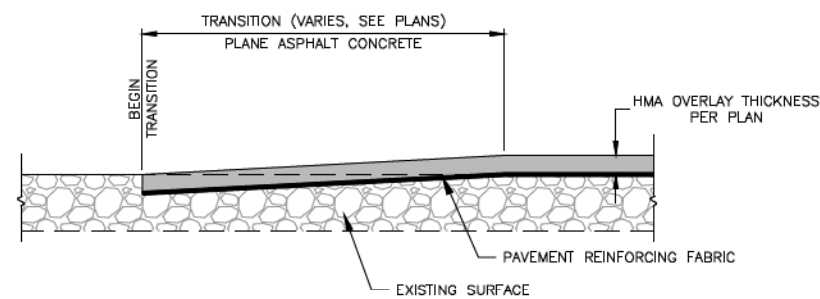
DRIVEWAY TRANSITION  
N.T.S.

CONSTRUCTION NOTES

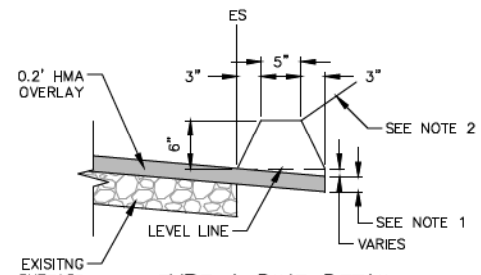
1. RESIDENT ENGINEER SHALL MARK EXACT LOCATIONS OF CONFORM NOTCH GRIND AREAS AND PUBLIC ROAD TRANSITIONS



PUBLIC ROAD TRANSITION  
N.T.S.



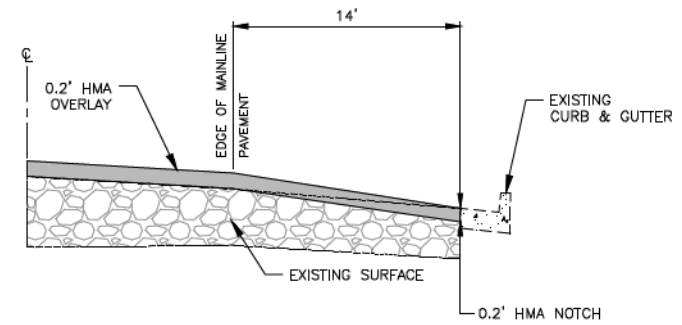
MAINLINE CONFORM  
LONGITUDINAL SECTION AT BEGINNING /END OF HMA OVERLAY



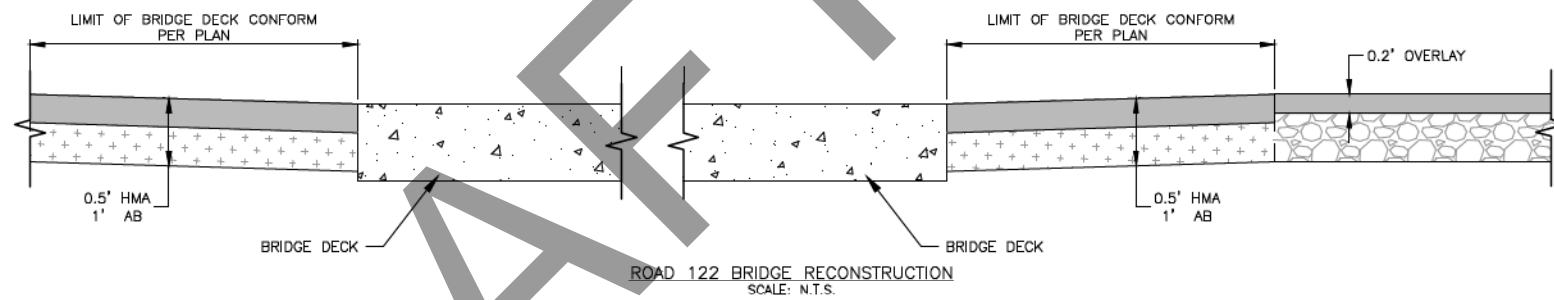
TYPE A DIKE DETAIL  
SCALE: 1"=1'

AC DIKE NOTES

1. FOR AC SHOULDERS ONLY, EXTEND TOP LAYER OF AC PLACED ON THE SHOULDER UNDER DIKE WITH NO JOINT AT THE ES.
2. FILL AND COMPACT WITH EXCAVATED MATERIAL TO TOP OF DIKE.

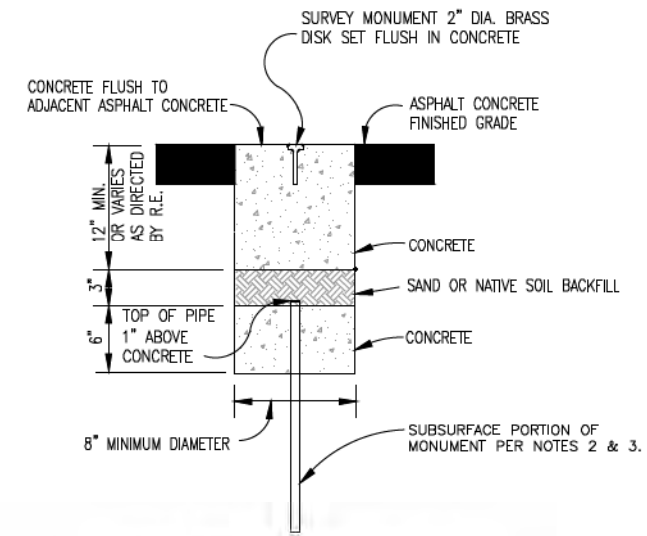


CURB & GUTTER TRANSITION  
LONGITUDINAL SECTION RIGHT SIDE SYMMETRICAL



ROAD 122 BRIDGE RECONSTRUCTION  
SCALE: N.T.S.

DRAFT



SURVEY MONUMENT IN ROADWAY DETAIL  
SCALE: N.T.S.

SURVEY MONUMENT NOTES:

1. ALL MONUMENTS AND REFERENCES SHALL BE PERMANENTLY STAMPED PURSUANT TO BUSINESS AND PROFESSIONS CODE SECTION 8772.
2. THE SUBSURFACE PORTION OF THE MONUMENT SHALL BE A GALVANIZED IRON PIPE 1" IN DIAMETER X 24" IN LENGTH MINIMUM, TAGGED PER NOTE 1.
3. IF A SUBSURFACE MONUMENT IS NOT DISTURBED BY CONSTRUCTION AND IS AT LEAST 15" BELOW FINISHED GRADE IT MAY REMAIN, OTHERWISE REMOVE EXISTING AND SET PER NOTE 2.
4. A CIRCULAR HOLE SHALL BE CLEANLY CUT IN THE ASPHALT CONCRETE FOR PLACEMENT OF THE MONUMENT.



NO.	REVISIONS	DATE	BY

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VISALIA, CA 93277  
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WWW.TULARECOUNTY.CA.GOV/RMA



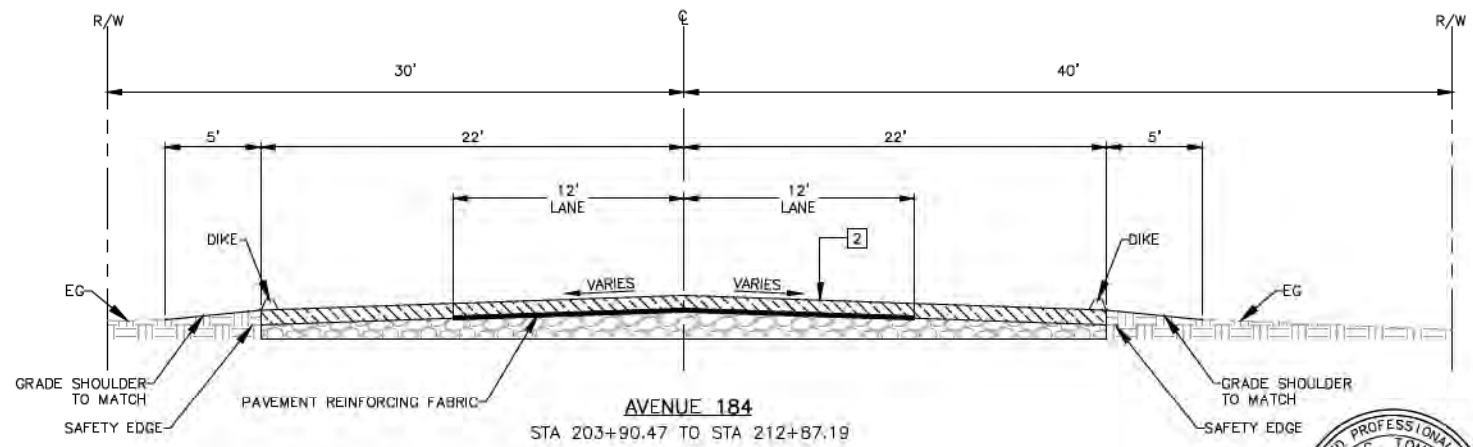
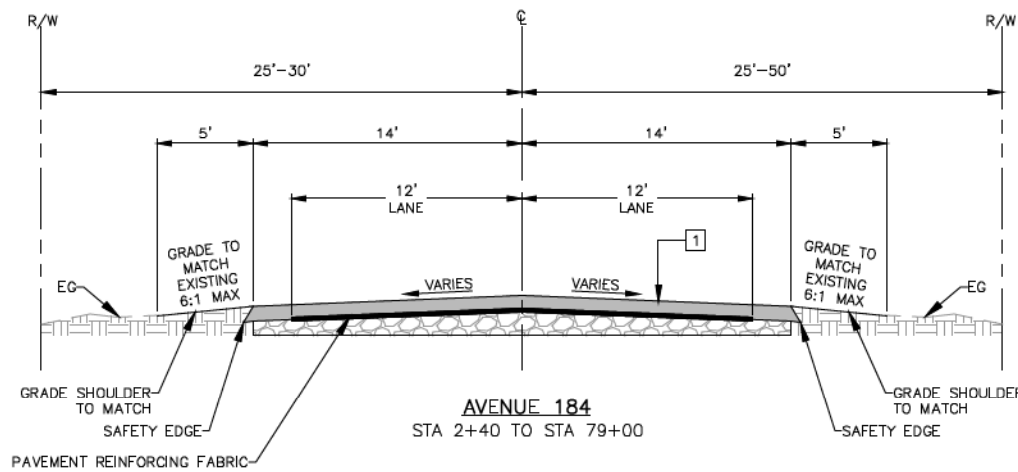
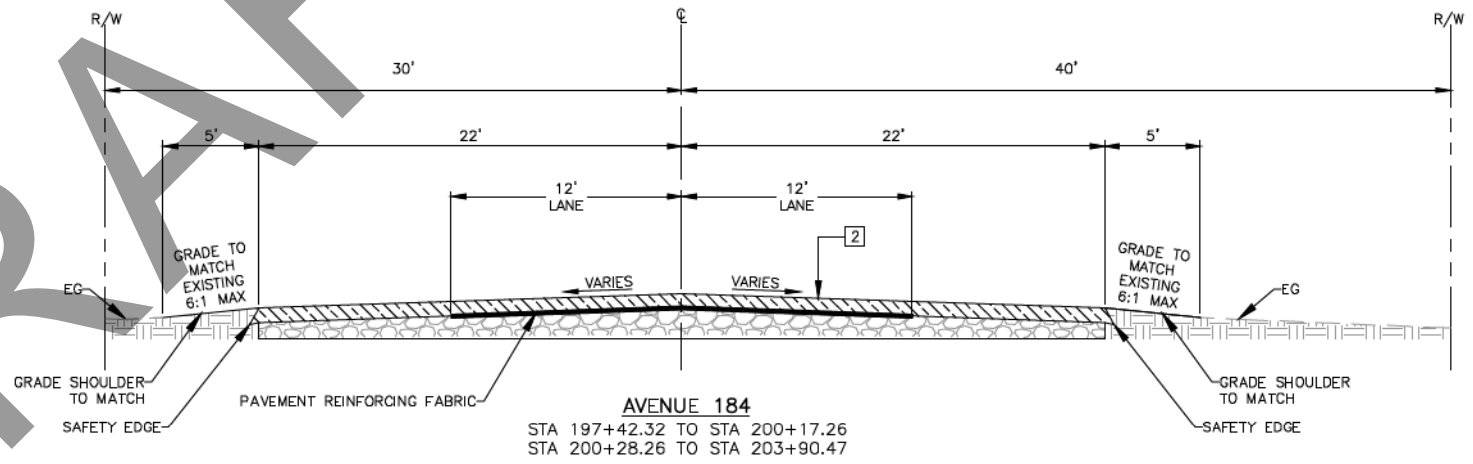
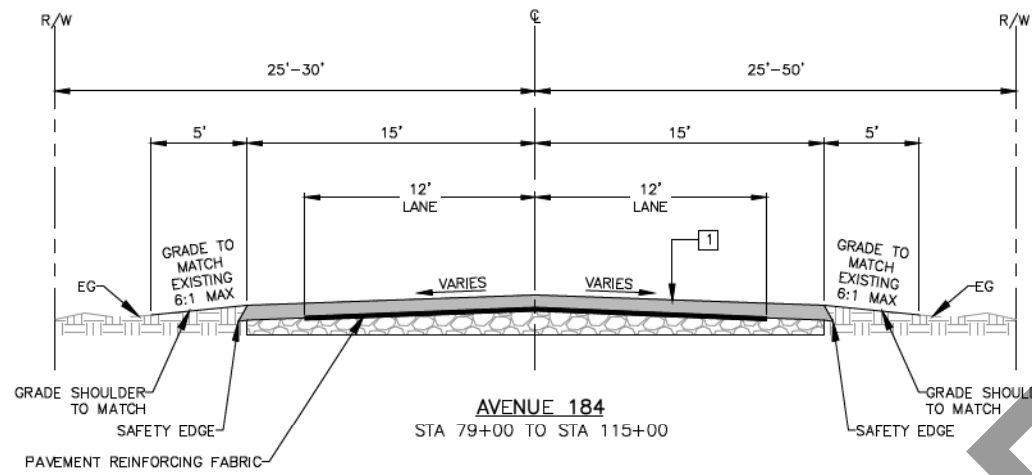
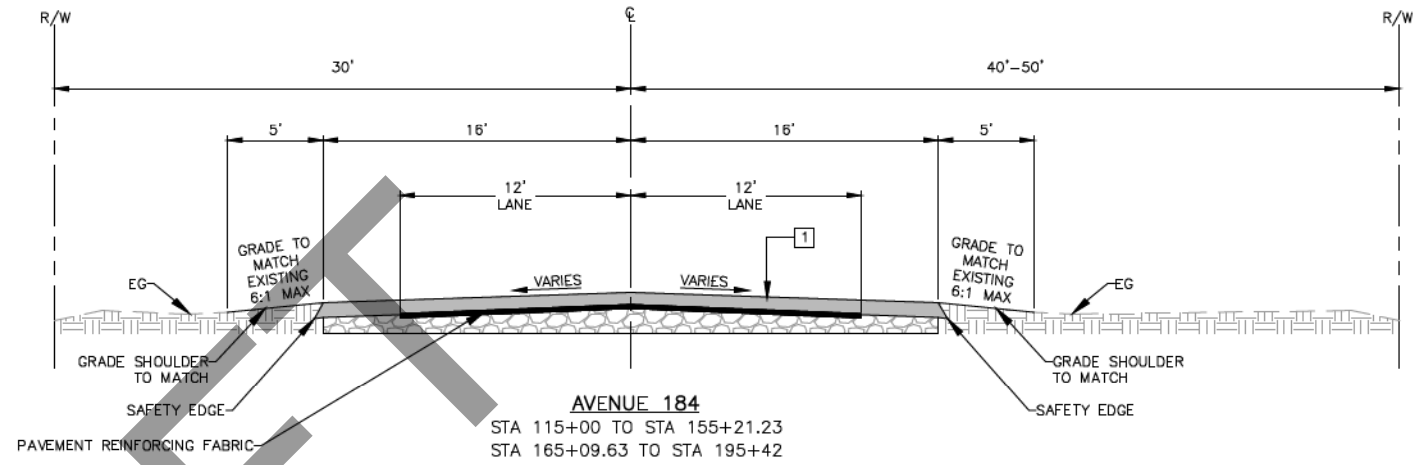
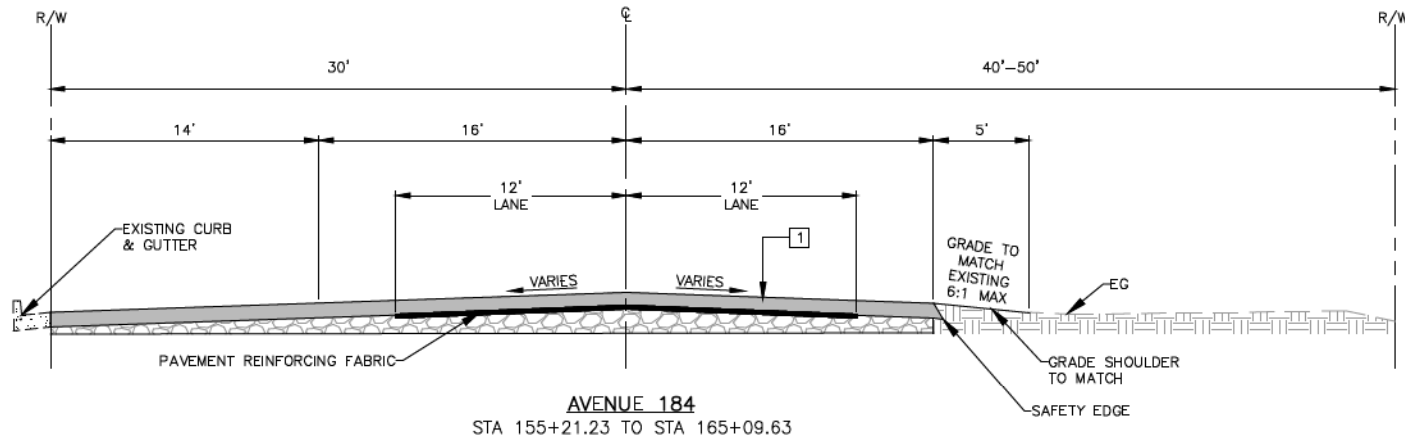
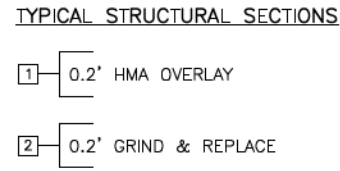
CONSTRUCTION DETAILS  
2020 ROAD REPAIR AND ACCOUNTABILITY  
ACT (RRAA) PROJECT 2  
TULARE COUNTY

SCALE	AS SHOWN
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	POA
FILE	19015-1C001.DWG
DATE	08/11/2020
SHEET No.	C1

**LEGEND**

	HMA OVERLAY
	GRIND & REPLACE
	EXISTING GROUND
	EXISTING ASPHALT/CONCRETE

- NOTES**
1. ALL CONSTRUCTION SHALL BE INSIDE OF COUNTY RIGHT OF WAY AND VERIFIED BY RE.
  2. SHOULDER BACKING SHALL BE COMPLETED AS PART OF SHOULDER BACKING ITEM WORK.
  3. GRADE SHOULDER TO MATCH PAVEMENT, SHALL BE PART OF FINISHING ROADWAY



**REVISIONS**

NO.	DESCRIPTION	DATE	BY

COUNTY OF TULARE  
RESOURCE MANAGEMENT AGENCY  
5961 SOUTH MOONEY BLVD.  
VISALIA, CA 93277  
(559)624-7000  
WWW.TULARECOUNTY.CA.GOV/RMA








TYPICAL CROSS SECTIONS  
LOCATION 1: AVE 184  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
ACT (RRAA) PROJECT 2  
TULARE COUNTY





SCALE H: 1"=5' V: 1"=2.5'

DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-1X001.DWG
DATE	08/11/2020
SHEET No.	



**LEGEND**

-  0.2' HMA OVERLAY
-  0.2' MAINLINE CONFORM PER SHEET C1
-  0.2' GRIND & REPLACE
-  DRIVEWAY TRANSITION PER SHEET C1
-  PUBLIC ROAD TRANSITION PER SHEET C1

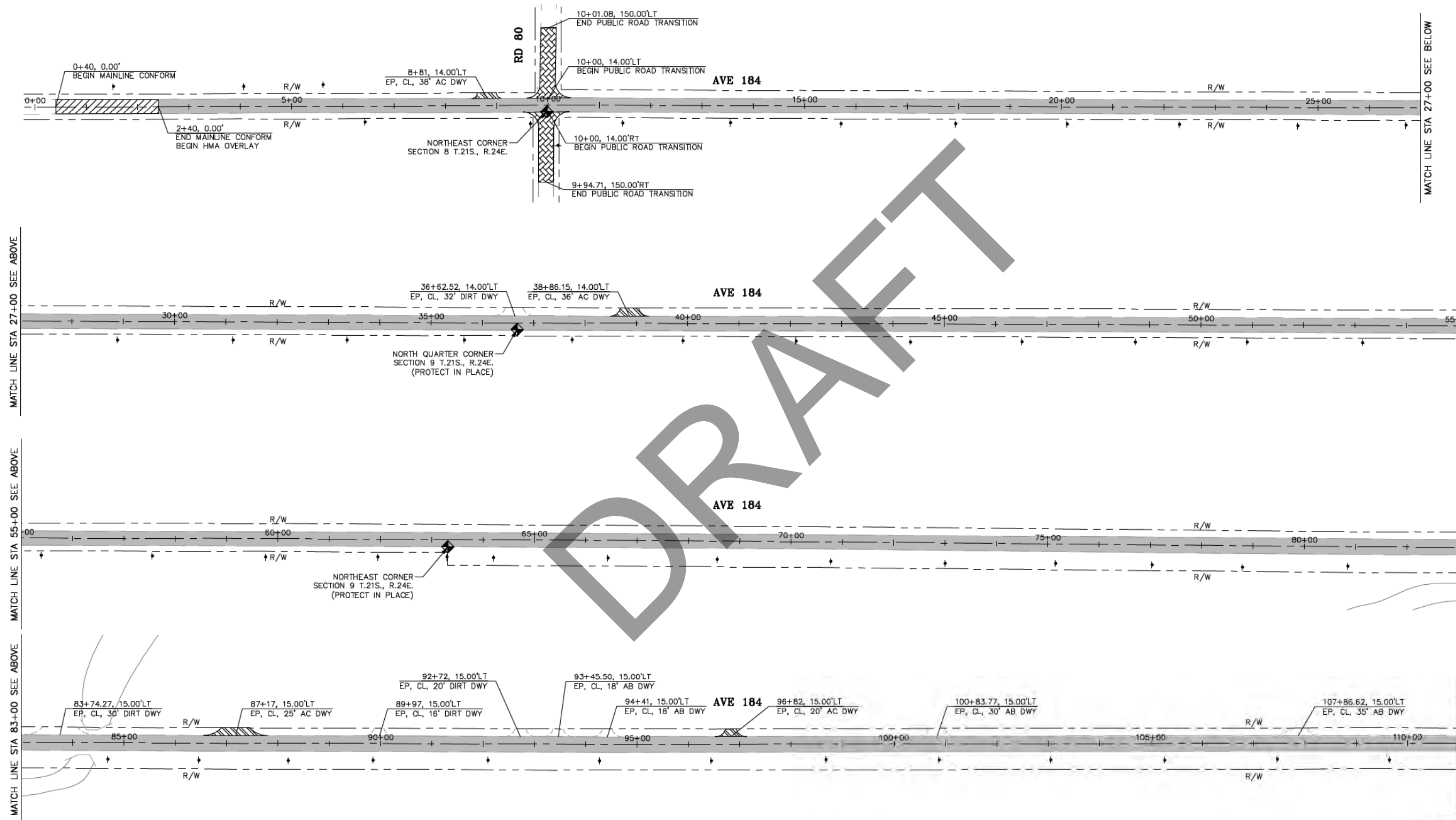
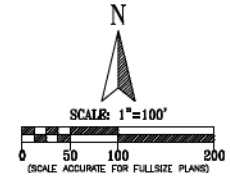
-  CURB & GUTTER TRANSITION PER SHEET C1
-  EXIST SIGN
-  SURVEY MONUMENT ADJUST TO GRADE
-  EXIST GAS VALVE

**CONSTRUCTION NOTES**

- [1] EXIST AC DIKE, REPLACE PER DETAIL ON SHEET C1

**GENERAL NOTES**

- 1. GRADE EXISTING DRIVEWAYS TO MATCH GRADE OF NEW PAVEMENT SURFACE. USE SHOULDER BACKING MATERIAL AND/OR MATCH MATERIAL OF EXISTING DRIVEWAY WHEN NOT SHOWN ON PLANS.



DRAFT

NO.	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559) 624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA

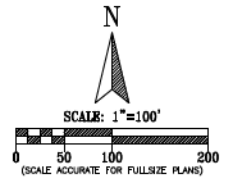


**PLAN SHEET**  
**LOCATION 1: AVE 184**  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-11001.DWG
DATE	08/11/2020
SHEET No.	L1







MATCH LINE STA 111+00 SEE SHEET L1

MATCH LINE STA 139+00 SEE ABOVE

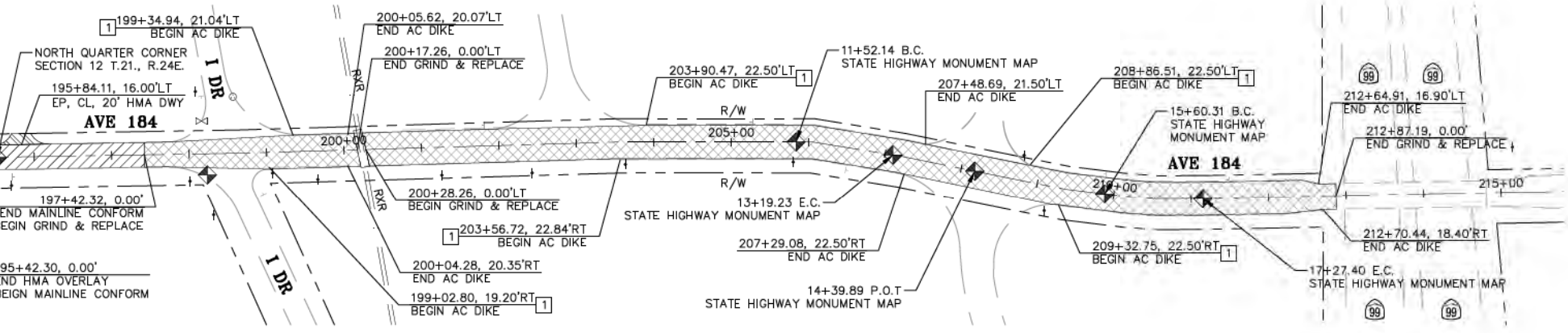
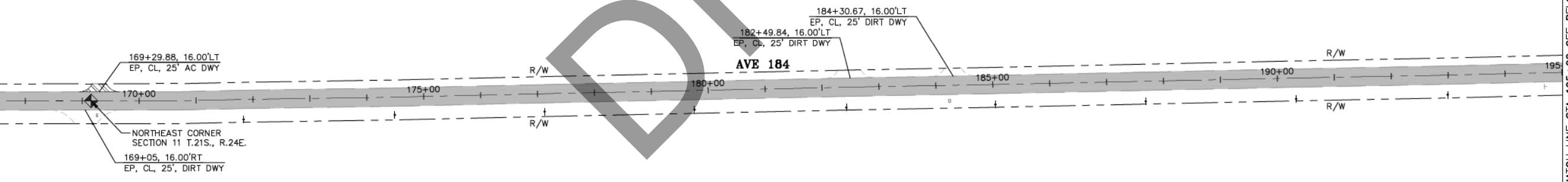
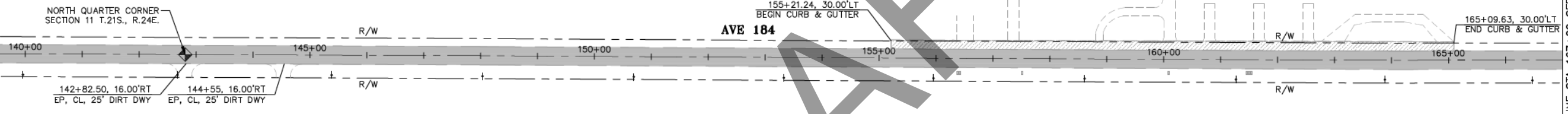
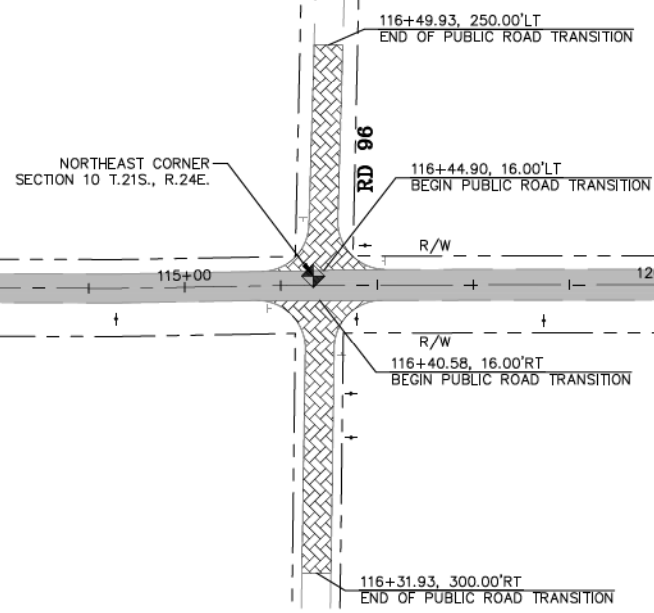
MATCH LINE STA 167+00 SEE ABOVE

MATCH LINE STA 195+00 SEE ABOVE

MATCH LINE STA 139+00 SEE BELOW

MATCH LINE STA 167+00 SEE BELOW

MATCH LINE STA 195+00 SEE BELOW



DRAFT



NO.	REVISIONS	DATE	BY

COUNTY OF TULARE  
RESOURCE MANAGEMENT AGENCY  
5961 SOUTH MOONEY BLVD.  
VISALIA, CA 93277  
(559)624-7000  
WWW.TULARECOUNTY.CA.GOV/RMA



PLAN SHEET  
LOCATION 1: AVE 184  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
ACT (RRAA) PROJECT 2  
TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-11001.DWG
DATE	08/11/2020
SHEET No.	L2

## GRIND TABLE FOR AVE 184

BEGIN STATION	END STATION	LOCATION	DESCRIPTION	LENGTH (ft)	WIDTH (ft)	THICKNESS	AREA SY
02+40	05+80	Right	Lane	340	12	0.2	453.3
03+00	04+00	Left	Lane	100	12	0.2	133.3
05+60	09+90	Left	OWT	430	7	0.2	334.4
05+80	07+80	Right	OWT	200	7	0.2	155.6
07+80	33+20	Right	Lane	2540	12	0.2	3386.7
09+90	13+00	Left	Lane	310	12	0.2	413.3
13+00	13+70	Left	OWT	70	7	0.2	54.4
13+70	17+50	Left	Lane	380	12	0.2	506.7
17+50	18+50	Left	OWT	100	7	0.2	77.8
18+50	22+50	Left	Lane	400	12	0.2	533.3
22+50	24+50	Left	OWT	200	7	0.2	155.6
24+50	33+20	Left	Lane	870	12	0.2	1160.0
33+20	33+60	Right	OWT	40	7	0.2	31.1
33+20	33+60	Left	OWT	40	7	0.2	31.1
33+60	46+50	Right	Lane	1290	12	0.2	1720.0
33+60	34+50	Left	Lane	90	12	0.2	120.0
34+50	35+75	Left	OWT	125	7	0.2	97.2
35+75	37+00	Left	Lane	125	12	0.2	166.7
37+00	37+75	Left	MT	75	7	0.2	58.3
37+75	72+00	Left	Lane	3425	12	0.2	4566.7
46+75	47+00	Right	OWT	25	7	0.2	19.4
47+00	72+00	Right	Lane	2500	12	0.2	3333.3
72+00	73+60	Left	OWT	160	7	0.2	124.4
72+00	77+00	Right	OWT	500	7	0.2	388.9
76+00	78+50	Left	Lane	250	12	0.2	333.3
77+00	118+25	Right	Lane	4125	12	0.2	5500.0
78+50	79+50	Left	OWT	100	7	0.2	77.8
79+50	119+75	Left	Lane	4025	12	0.2	5366.7
119+10	120+15	Right	OWT	105	7	0.2	81.7
119+75	120+15	Left	OWT	40	7	0.2	31.1
120+15	120+80	Right	Lane	65	12	0.2	86.7
120+15	124+80	Left	Lane	465	12	0.2	620.0
120+30	122+00	Right	OWT	170	7	0.2	132.2
122+15	122+55	Right	OWT	40	7	0.2	31.1
122+75	123+10	Right	OWT	35	7	0.2	27.2
123+60	124+80	Right	OWT	120	7	0.2	93.3
124+80	125+00	Left	OWT	20	7	0.2	15.6
125+00	130+25	Left	Lane	525	12	0.2	700.0
125+15	126+30	Right	OWT	115	7	0.2	89.4
126+90	127+80	Right	OWT	90	7	0.2	70.0
127+80	128+75	Right	Lane	95	12	0.2	126.7
129+50	130+25	Right	OWT	75	7	0.2	58.3
130+25	130+80	Right	Lane	55	12	0.2	73.3
130+25	131+00	Left	OWT	75	7	0.2	58.3
130+80	131+50	Right	OWT	70	7	0.2	54.4
131+00	133+80	Left	Lane	280	12	0.2	373.3
131+50	131+80	Right	Lane	30	12	0.2	40.0
131+80	132+00	Right	OWT	20	7	0.2	15.6
132+00	134+00	Right	Lane	200	12	0.2	266.7
133+80	134+20	Left	OWT	40	7	0.2	31.1
134+00	139+50	Right	Lane	550	12	0.2	733.3
134+25	139+50	Left	Lane	525	12	0.2	700.0
139+50	140+75	Right	OWT	125	7	0.2	97.2
139+50	142+15	Left	OWT	265	7	0.2	206.1
140+75	141+25	Right	Lane	50	12	0.2	66.7
141+25	142+15	Right	OWT	90	7	0.2	70.0
142+15	164+00	Right	Lane	2185	12	0.2	2913.3
142+15	144+40	Left	Lane	225	12	0.2	300.0
144+75	146+40	Left	OWT	165	7	0.2	128.3
146+40	147+30	Left	Lane	90	12	0.2	120.0
147+70	148+10	Left	OWT	40	7	0.2	31.1
148+10	150+40	Left	Lane	230	12	0.2	306.7
150+40	151+30	Left	OWT	90	7	0.2	70.0
151+30	153+50	Left	Lane	220	12	0.2	293.3
153+50	155+00	Left	OWT	150	7	0.2	116.7
154+70	165+90	Left	Gutter Grind	1120	7	0.2	871.1
155+50	157+00	Left	OWT	150	7	0.2	116.7
157+00	158+40	Left	Lane	140	12	0.2	186.7
158+50	159+20	Left	Lane	70	12	0.2	93.3

BEGIN STATION	END STATION	LOCATION	DESCRIPTION	LENGTH (ft)	WIDTH (ft)	THICKNESS	AREA SY
159+20	160+75	Left	OWT	155	7	0.2	120.6
160+75	162+60	Left	Lane	185	12	0.2	246.7
162+80	163+00	Left	OWT	20	7	0.2	15.6
163+00	163+75	Left	Lane	75	12	0.2	100.0
164+00	169+00	Right	OWT	500	7	0.2	388.9
168+40	176+50	Left	OWT	810	7	0.2	630.0
170+60	173+00	Right	Lane	240	12	0.2	320.0
173+00	175+00	Right	OWT	200	7	0.2	155.6
175+00	176+50	Right	Lane	150	12	0.2	200.0
176+50	177+10	Right	OWT	60	7	0.2	46.7
177+00	179+80	Left	OWT	280	7	0.2	217.8
177+80	179+80	Right	Lane	200	12	0.2	266.7
179+80	180+75	Left	Lane	95	12	0.2	126.7
180+20	180+75	Right	Lane	55	12	0.2	73.3
180+75	181+40	Left	OWT	65	7	0.2	50.6
180+80	181+20	Right	OWT	40	7	0.2	31.1
181+20	184+50	Right	Lane	330	12	0.2	440.0
182+50	183+25	Left	Lane	75	12	0.2	100.0
183+25	185+40	Left	OWT	215	7	0.2	167.2
184+60	185+50	Right	OWT	90	7	0.2	70.0
186+10	186+40	Right	MT	30	7	0.2	23.3
186+40	187+60	Right	OWT	120	7	0.2	93.3
187+60	188+50	Left	Lane	90	12	0.2	120.0
187+60	188+20	Right	Lane	60	12	0.2	80.0
188+50	193+90	Left	OWT	540	7	0.2	420.0
188+20	190+60	Right	OWT	240	7	0.2	186.7
190+60	192+50	Right	Lane	190	12	0.2	253.3
192+50	193+40	Right	OWT	90	7	0.2	70.0
193+40	194+10	Right	Lane	70	12	0.2	93.3
193+90	194+60	Left	Lane	70	12	0.2	93.3
194+60	196+00	Left	OWT	140	7	0.2	108.9
194+90	196+00	Right	OWT	110	7	0.2	85.6

45191.1

NO.	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



**PLAN SHEET**  
**LOCATION 1: AVE 184**  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
**TULARE COUNTY**

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-1L001.DWG
DATE	08/11/2020
SHEET No.	L3



# TRAFFIC MARKING INSTALLATION AND QUANTITY SUMMARY

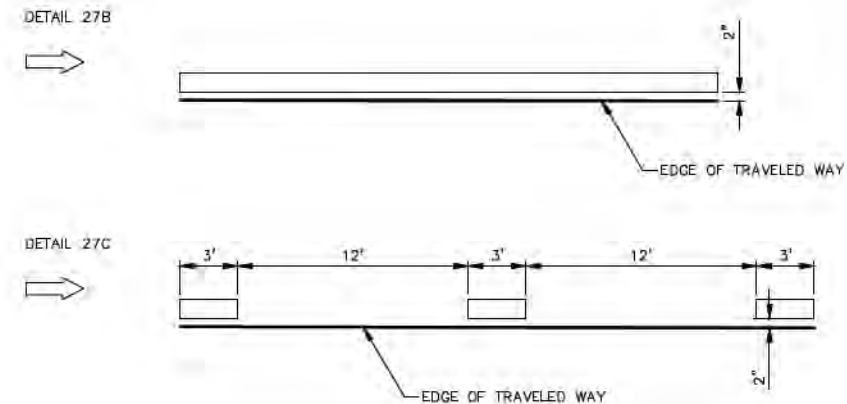
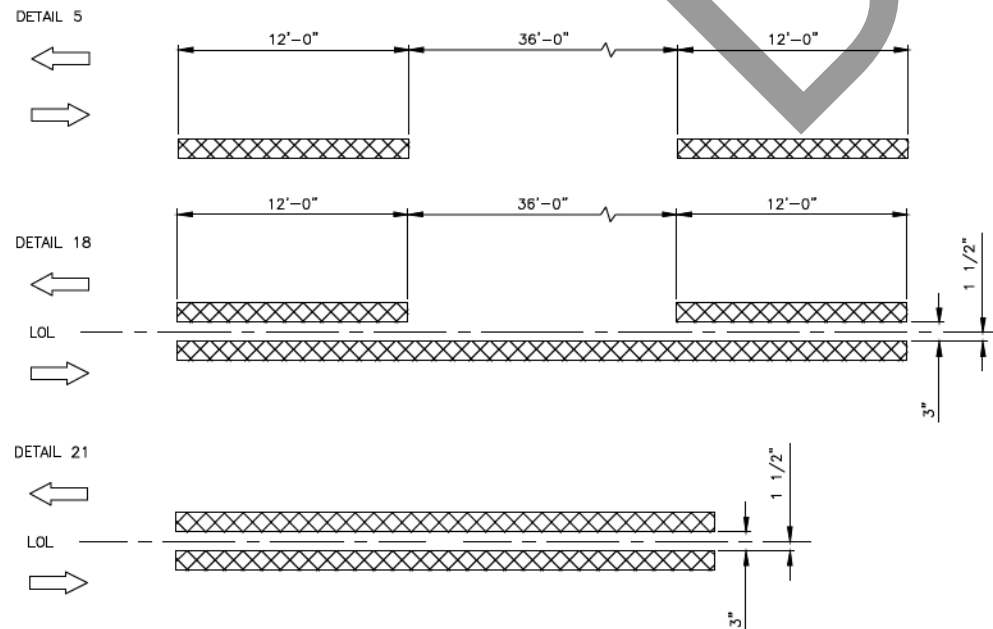
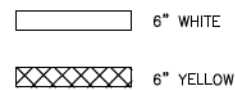
ROADWAY	CENTERLINE & CHANNELIZING					LEFT EDGELINE				RIGHT EDGELINE				PAVEMENT MARKINGS		
	STATIONS		STRIPING DETAIL (ft)			STATIONS		STRIPING DETAIL (ft)		STATIONS		STRIPING DETAIL (ft)		STATIONS	DESCRIPTION	AREA (ft <sup>2</sup> )
	FROM	TO	Detail 5	Detail 18	Detail 21	FROM	TO	No. 27B	No. 27C	FROM	TO	No. 27B	No. 27C			
<b>AVENUE 186</b>	+40	4+20	380.0			+40	9+64	924.0		+40	9+63	923.0		116+04	LIMIT LINE	22.00
	4+20	9+75		555.8		9+64	10+49		85.0	9+63	10+40		77.0	116+75	LIMIT LINE	16.00
	10+31	15+80		549.0		10+49	115+85	10,536.0		10+40	115+80	10,540.0		122+72	AHEAD	31.00
	15+80	116+04	10,024.0			116+89	197+50	8,061.0		116+89	197+53	8,064.0		123+22	STOP	22.00
	116+89	119+56		267.0		197+50	199+41		191.0	197+53	198+96		143.0	194+79	RAILROAD	118.00
	119+56	194+53	7,497.0			199+41	199+94	53.00		198+96	199+99	103.0		198+32	LIMIT LINE	30.00
	194+53	198+21		368.0		200+55	207+14	659.0		200+50	207+23	673.0		199+37	RAILROAD	118.00
	198+21	200+00			124.0	207+14	208+96		182.0	207+23	209+17		194.0	200+00	LIMIT LINE	20.00
	200+00	207+88		734.0		208+96	212+10	314.00		209+17	212+10	293.0		200+54	LIMIT LINE	20.00
	208+96	212+10	351.0											204+29	RAILROAD	118.00
<b>RD 80</b>	NORTH SIDE			150.0										9+92	LIMIT LINE	15.00
	SOUTH SIDE			150.0										10+03	LIMIT LINE	14.00
<b>RD 96</b>	NORTH SIDE			250.0				250.0				250.0		116+38	LIMIT LINE	16.00
	SOUTH SIDE			300.0				300.0				300.0		116+55	LIMIT LINE	20.00
			18,252	3,323	124			21,087	458			21,146	414			580.00

Item	Description	Quantity	Unit
Detail 5	6" Yellow Centerline (Broken 12' on and 36' off)	18,252	ft
Detail 18	6" Yellow Centerline (One direction no-passing)	3,323	ft
Detail 21	6" Yellow Centerline (Both direction no-passing)	124	ft
Detail 27B	6" White Edgeline (Solid)	42,243	ft
Detail 27C	6" White Edgeline (3' Dashed)	872	ft
<b>TOTAL</b>		<b>64,814</b>	<b>ft</b>
Pavement Markings	Various	580.00	ft <sup>2</sup>

### NOTE

All striping shall receive 2 coats of paint.  
 Double Yellow stripes are measured as one Traffic Stripe, as per Caltrans Standard Specifications, 2018  
 Pavement marking shall be thermoplastic.

### LEGEND



NO.	REVISIONS	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
 RESOURCE MANAGEMENT AGENCY  
 5981 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



SIGNING AND STRIPING TABLE  
 LOCATION 1: AVE 186  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
 ACT (RRAA) PROJECT 2  
 TULARE COUNTY

SCALE	NTS
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-1P0001.DWG
DATE	08/11/2020
SHEET No.	

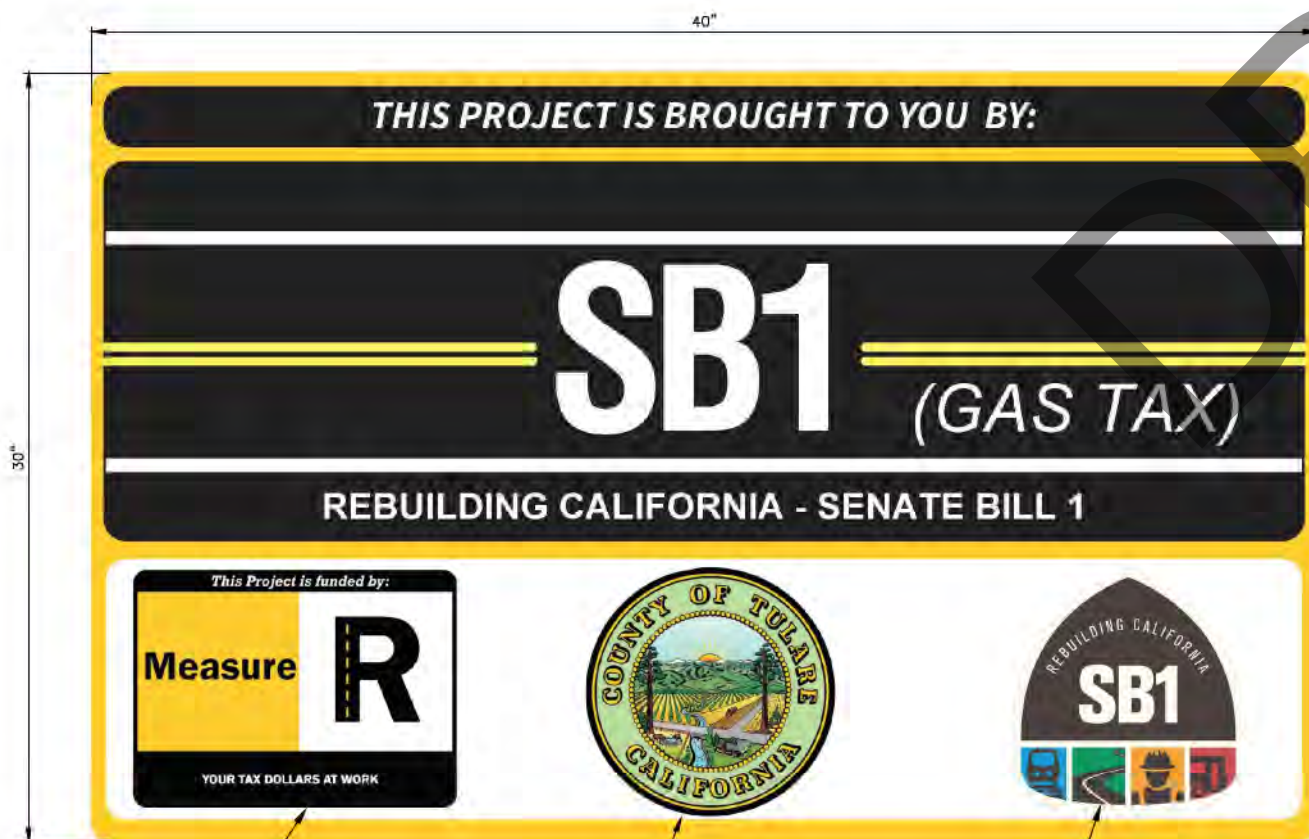
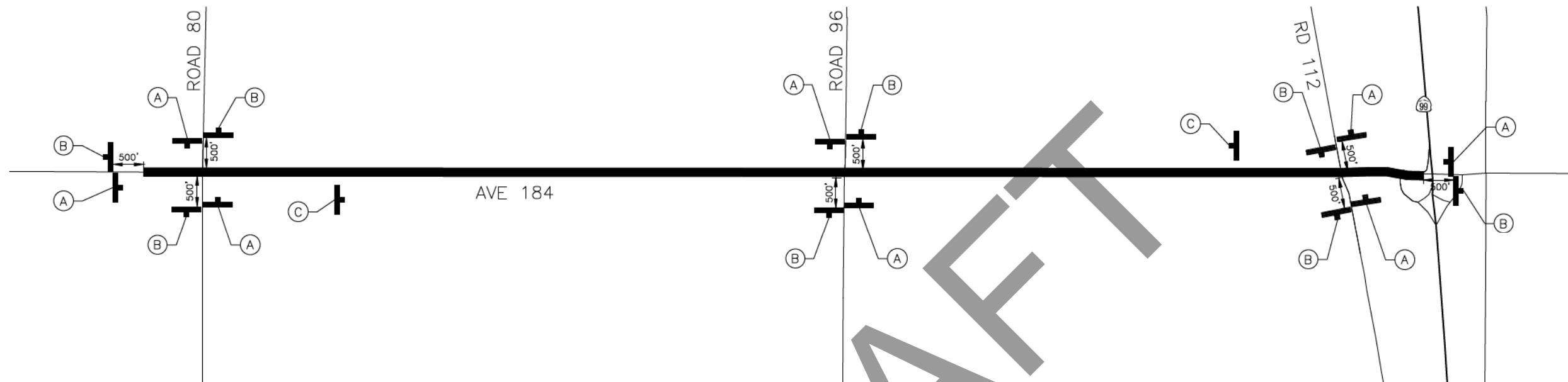
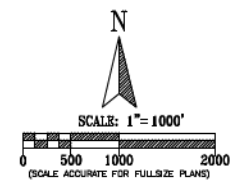


**PD1**  
 7 of 39

CONSTRUCTION AREA SIGNS					
TYPE	CODE	MESSAGE	PANEL SIZE (IN X IN)	POST SIZE (IN X IN)	NO. SIGNS
(A)	C23(CA)	ROAD WORK AHEAD	48 X 48	4 X 4	8
(B)	G20-2	END ROAD WORK	48 X 24	4 X 4	8
(C)	-	PROJECT FUNDING SIGN	40 X 30	4 X 4	2

NOTES:

1. LOCATIONS TO BE APPROVED BY THE ENGINEER.
2. SIGNS SHALL BE FIELD ADJUSTED AS NECESSARY.



MEASURE R FUNDING SEAL  
(JPEG GRAPHIC PROVIDED BY ENGINEER)

COUNTY OF TULARE SEAL  
(JPEG GRAPHIC PROVIDED BY ENGINEER)

CALTRANS SB1 SEAL  
(JPEG GRAPHIC PROVIDED BY ENGINEER)

NOTES:

1. MOUNT SIGN ON 4"x4" POSTS PER CALTRANS STANDARD PLAN RS2.
2. SIGNS SHALL BE FIELD ADJUSTED AS NECESSARY.
3. PROJECT FUNDING SIGNS SHALL REMAIN IN PLACE UPON COMPLETION OF WORK AND SHALL BECOME PROPERTY OF THE COUNTY OF TULARE.
4. PAYMENT FOR PROJECT FUNDING SIGNS SHALL BE INCLUDED AS PART OF CONSTRUCTION AREA SIGNS ITEM WORK.



NO.	REVISIONS	DESCRIPTION	DATE	BY

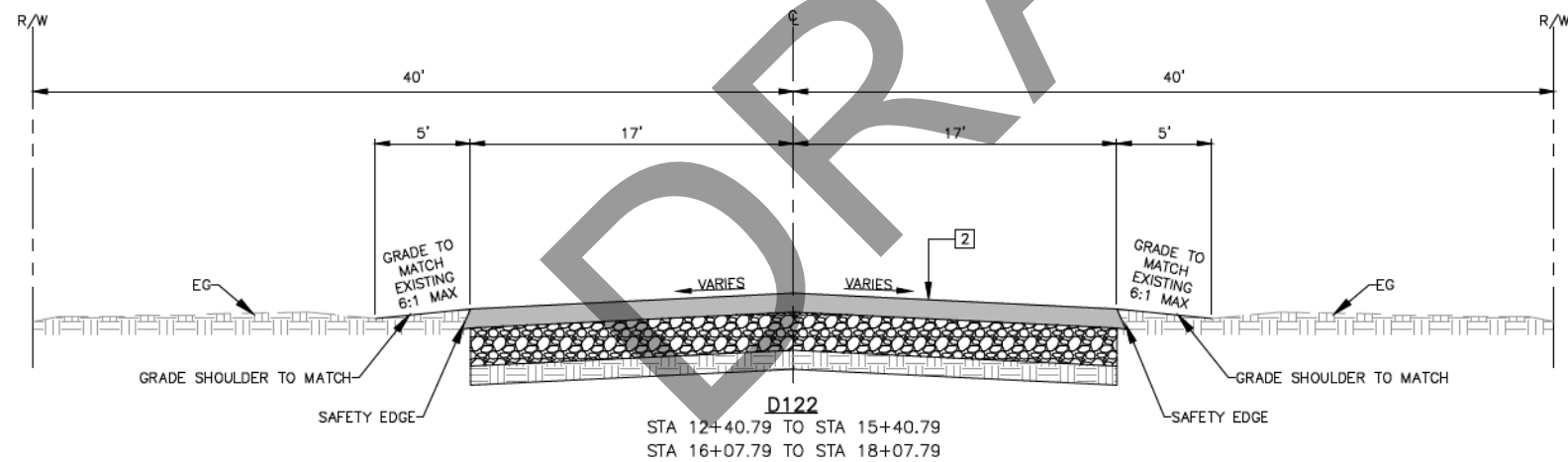
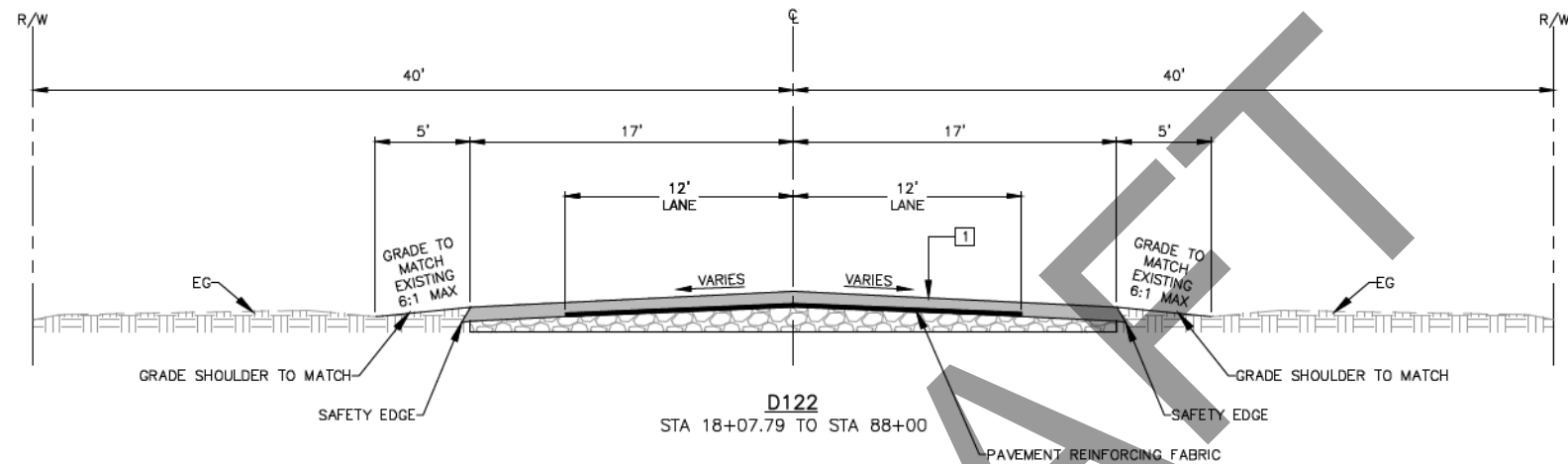
COUNTY OF TULARE  
RESOURCE MANAGEMENT AGENCY  
5961 SOUTH MOONEY BLVD.  
VISALIA, CA 93277  
(559)624-7000  
WWW.TULARECOUNTY.CA.GOV/RMA







CONSTRUCTION AREA SIGN PLAN  
LOCATION 1: AVE 184  
2020 ROAD REPAIR AND ACCOUNTABILITY  
ACT (RRAA) PROJECT 2  
TULARE COUNTY

SCALE	1"=1000'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-1CAS001.DWG
DATE	08/11/2020
SHEET No.	CAS1

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**LEGEND**

-  HMA OVERLAY
-  AGGREGATE BASE
-  EXISTING GROUND
-  EXISTING ASPHALT/CONCRETE

**NOTES**

1. ALL CONSTRUCTION SHALL BE INSIDE OF COUNTY RIGHT OF WAY AND VERIFIED BY RE.
2. SHOULDER BACKING SHALL BE COMPLETED AS PART OF SHOULDER BACKING ITEM WORK.
3. GRADE SHOULDER TO MATCH PAVEMENT, SHALL BE PART OF FINISHING ROADWAY

**TYPICAL STRUCTURAL SECTIONS**

- 1** 0.2' HMA OVERLAY
- 2** 0.5' HMA  
1.0' CLASS 2 AGGREGATE BASE, 95% COMPACTION  
0.5' COMPACTED NATIVE 95% COMPACTION



NO.	REVISIONS DESCRIPTION	DATE	BY

COUNTY OF TULARE  
RESOURCE MANAGEMENT AGENCY  
5961 SOUTH MOONEY BLVD.  
VISALIA, CA 93277  
(559)624-7000  
WWW.TULARECOUNTY.CA.GOV/RMA










TYPICAL CROSS SECTIONS  
LOCATION 2: DRIVE 122  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
ACT (RRAA) PROJECT 2  
TULARE COUNTY

SCALE	H: 1"=5'	V: 1"=2.5'
DIVISION	DESIGN	
JOB NO.	19015-1	
DESIGNED	IG	
DRAWN	IG	
CHECKED	PAO	
FILE	19015-2X001.DWG	
DATE	08/11/2020	
SHEET No.		

X2  
9 of 39

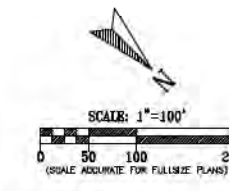
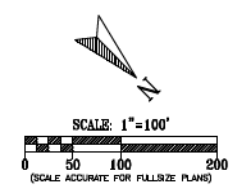
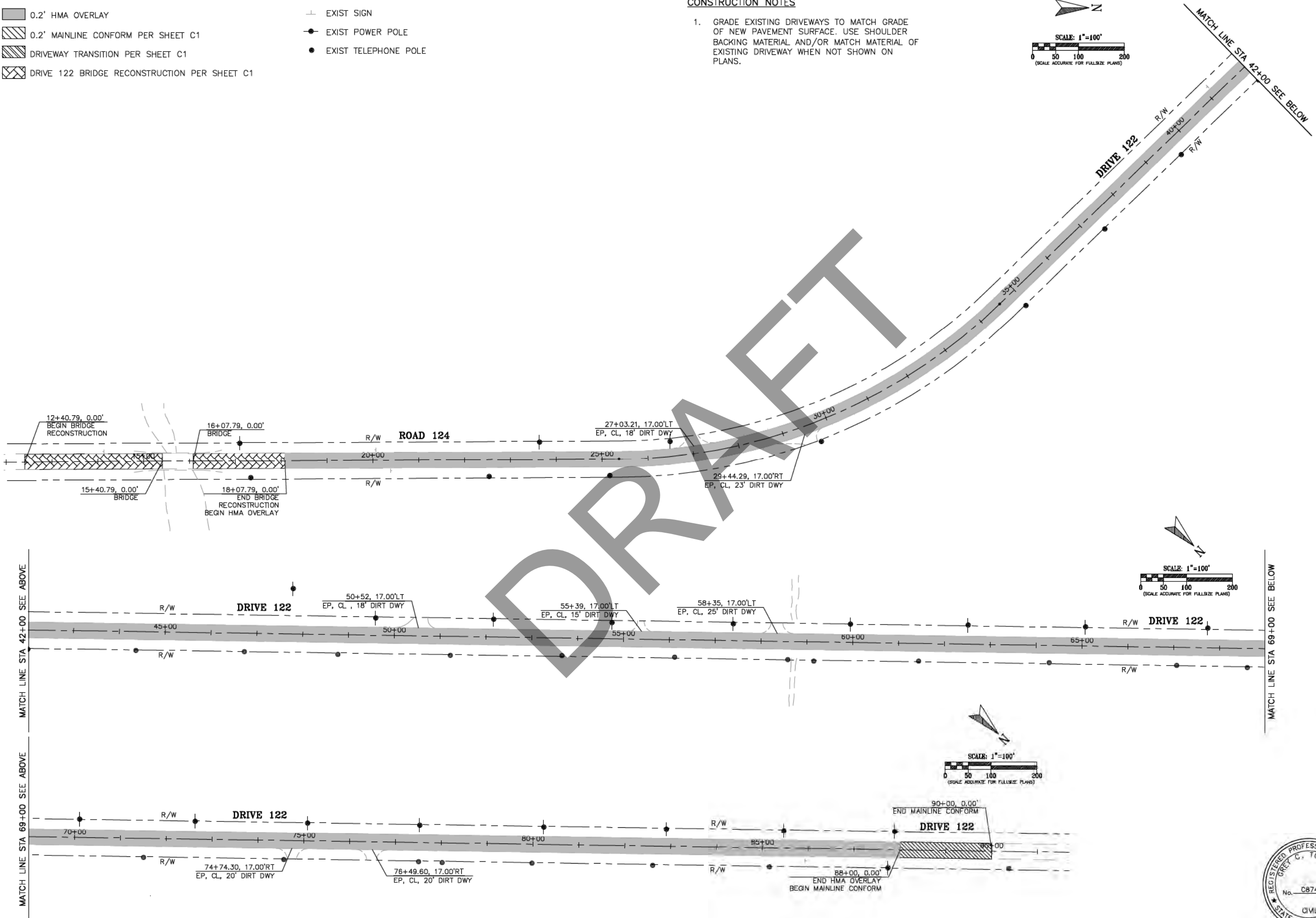
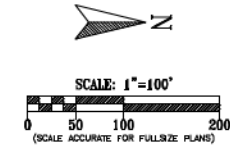
**LEGEND**

-  0.2' HMA OVERLAY
-  0.2' MAINLINE CONFORM PER SHEET C1
-  DRIVEWAY TRANSITION PER SHEET C1
-  DRIVE 122 BRIDGE RECONSTRUCTION PER SHEET C1

-  EXIST SIGN
-  EXIST POWER POLE
-  EXIST TELEPHONE POLE

**CONSTRUCTION NOTES**

- GRADE EXISTING DRIVEWAYS TO MATCH GRADE OF NEW PAVEMENT SURFACE. USE SHOULDER BACKING MATERIAL AND/OR MATCH MATERIAL OF EXISTING DRIVEWAY WHEN NOT SHOWN ON PLANS.



NO.	REVISIONS	DATE	BY

COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



PLAN SHEET  
 LOCATION 2: DRIVE 122  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
 ACT (RRAA) PROJECT 2  
 TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-21001.DWG
DATE	08/11/2020
SHEET No.	L4



## GRIND TABLE FOR DRIVE 122

BEGIN STATION	END STATION	LOCATION	DESCRIPTION	LENGTH (ft)	WIDTH (ft)	THICKNESS	AREA SY
18+17	18+55	Left	OWT	38	7	0.2	29.6
18+55	18+90	Left	Lane	35	12	0.2	46.7
18+55	18+65	Right	Lane	10	12	0.2	13.3
18+90	19+80	Left	OWT	90	7	0.2	70.0
19+90	21+35	Right	Lane	145	12	0.2	193.3
19+90	20+20	Left	OWT	30	7	0.2	23.3
20+64	21+70	Left	Lane	106	12	0.2	141.3
21+35	22+00	Right	OWT	65	7	0.2	50.6
22+00	23+70	Right	Lane	170	12	0.2	226.7
22+00	24+00	Left	OWT	200	7	0.2	155.6
25+30	25+70	Right	Lane	40	12	0.2	53.3
26+00	27+30	Left	OWT	130	7	0.2	101.1
26+35	26+90	Right	Lane	55	12	0.2	73.3
27+30	31+40	Left	Lane	410	12	0.2	546.7
27+90	28+40	Right	OWT	50	7	0.2	38.9
28+40	29+60	Right	Lane	120	12	0.2	160.0
31+60	32+90	Left	OWT	130	7	0.2	101.1
32+50	33+20	Right	OWT	70	7	0.2	54.4
32+90	39+75	Left	Lane	685	12	0.2	913.3
33+20	34+60	Right	Lane	140	12	0.2	186.7
35+10	35+70	Right	OWT	60	7	0.2	46.7
35+70	36+15	Right	Lane	45	12	0.2	60.0
36+40	49+20	Right	Lane	1280	12	0.2	1706.7
39+75	40+60	Left	OWT	85	7	0.2	66.1
40+60	41+75	Left	Lane	115	12	0.2	153.3
41+90	42+60	Left	OWT	70	7	0.2	54.4
43+15	43+80	Left	OWT	65	7	0.2	50.6
43+80	47+20	Left	Lane	340	12	0.2	453.3
47+20	48+10	Left	OWT	90	7	0.2	70.0
48+10	52+75	Left	Lane	465	12	0.2	620.0
49+20	49+70	Right	OWT	50	7	0.2	38.9
49+70	52+75	Right	Lane	305	12	0.2	406.7
52+95	53+10	Right	Lane	15	12	0.2	20.0
53+50	54+30	Left	Lane	80	12	0.2	106.7
53+50	54+15	Right	Lane	65	12	0.2	86.7
54+30	54+50	Right	OWT	20	7	0.2	15.6
54+75	59+15	Right	Lane	440	12	0.2	586.7
55+00	55+25	Left	OWT	25	7	0.2	19.4
56+95	57+50	Left	Lane	55	12	0.2	73.3
60+00	60+75	Right	OWT	75	7	0.2	58.3
60+30	60+75	Left	OWT	45	7	0.2	35.0
63+60	63+70	Right	Lane	10	12	0.2	13.3
63+60	63+70	Left	Lane	10	12	0.2	13.3
64+30	65+50	Right	Lane	120	12	0.2	160.0
64+30	65+15	Left	Lane	85	12	0.2	113.3
65+40	65+65	Left	Lane	25	12	0.2	33.3
65+50	67+40	Right	OWT	190	7	0.2	147.8
66+65	67+55	Left	Lane	90	12	0.2	120.0
67+40	68+15	Right	Lane	75	12	0.2	100.0
67+55	68+45	Left	OWT	90	7	0.2	70.0
68+45	69+00	Right	Lane	55	12	0.2	73.3
69+00	69+85	Right	OWT	85	7	0.2	66.1
69+50	69+85	Left	OWT	35	7	0.2	27.2
70+15	70+80	Right	Lane	65	12	0.2	86.7
71+00	71+70	Left	OWT	70	7	0.2	54.4
72+00	72+90	Left	OWT	90	7	0.2	70.0
72+90	73+10	Left	Lane	20	12	0.2	26.7
73+90	75+80	Left	OWT	190	7	0.2	147.8
74+15	75+25	Right	Lane	110	12	0.2	146.7
76+00	77+00	Right	OWT	100	7	0.2	77.8
76+60	77+00	Left	Lane	40	12	0.2	53.3
77+00	78+50	Left	OWT	150	7	0.2	116.7
77+55	77+75	Right	Lane	20	12	0.2	26.7
78+30	78+55	Right	Lane	25	12	0.2	33.3
						0.2	0.0

9685.3



No.	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



**PLAN SHEET**  
**LOCATION 2: DRIVE 122**  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
**TULARE COUNTY**

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-2L001.DWG
DATE	08/11/2020
SHEET No.	L5

## TRAFFIC MARKING INSTALLATION AND QUANTITY SUMMARY

ROADWAY	CENTERLINE & CHANNELIZING					LEFT EDGELINE				RIGHT EDGELINE				PAVEMENT MARKINGS		
	STATIONS		STRIPING DETAIL (ft)			STATIONS		STRIPING DETAIL (ft)		STATIONS		STRIPING DETAIL (ft)		STATIONS	DESCRIPTION	AREA (ft²)
	FROM	TO	Detail 5	Detail 18	Detail 21	FROM	TO	No. 27B	No. 27C	FROM	TO	No. 27B	No. 27C			
DRIVE 122	12+40.79	15+40.79			300.0	12+40.79	15+40.79	300.0		12+40.79	15+40.79	300.0				
	16+07.79	35+76.5			1,968.7	16+07.79	90+00.	7,392.2		16+07.79	90+00.	7,392.2				
	35+76.5	40+51.9		475.4												
	40+51.9	87+04.4	4,652.5													
	87+04.4	90+00.		295.6												
			4,653	771	2,269			7,692				7,692				0.00

Item	Description	Quantity	Unit
Detail 5	6" Yellow Centerline (Broken 12' on and 36' off)	4,653	ft
Detail 18	6" Yellow Centerline (One direction no-passing)	771	ft
Detail 21	6" Yellow Centerline (Both direction no-passing)	2,269	ft
Detail 27B	6" White Edgeline (Solid)	15,384	ft
Detail 27C	6" White Edgeline (3' Dashed)		ft
	<b>TOTAL</b>	<b>23,077</b>	<b>ft</b>
Pavement Markings	Various	0.00	ft²

**NOTE**  
 All striping shall receive 2 coats of paint.  
 Double Yellow stripes are measured as one Traffic Stripe, as per Caltrans Standard Specifications, 2018.  
 Pavement marking shall be thermoplastic.  
 See Sheet PD1 for Striping Details



No.	DESCRIPTION	DATE	BY

COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



SIGNING AND STRIPING TABLE  
 LOCATION 2: DRIVE 122  
**2020 ROAD REPAIR AND ACCOUNTABILITY  
 ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	NTS
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-2PD001.DWG
DATE	08/11/2020
SHEET No.	

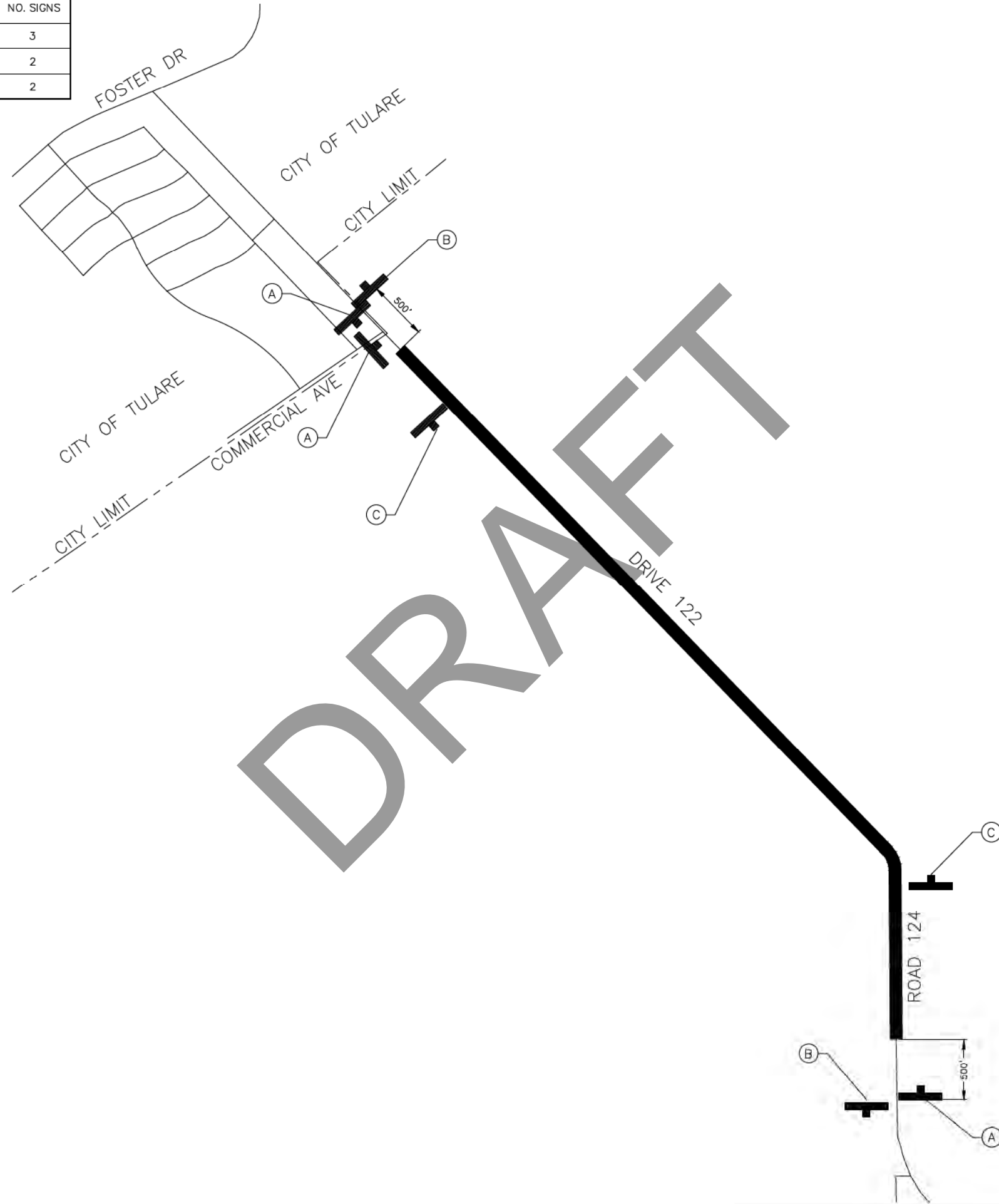
**PD2**  
 12 of 39



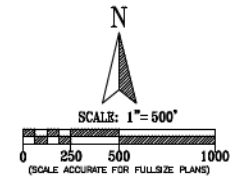
CONSTRUCTION AREA SIGNS					
TYPE	CODE	MESSAGE	PANEL SIZE (IN X IN)	POST SIZE (IN X IN)	NO. SIGNS
(A)	C23(CA)	ROAD WORK AHEAD	48 X 48	4 X 4	3
(B)	G20-2	END ROAD WORK	48 X 24	4 X 4	2
(C)	-	PROJECT FUNDING SIGN	40 X 30	4 X 4	2

NOTES:

1. LOCATIONS TO BE APPROVED BY THE ENGINEER.
2. SIGNS SHALL BE FIELD ADJUSTED AS NECESSARY.
3. SEE SHEET CAS1 FOR PROJECT FUNDING SIGN DETAILS.



DRAFT



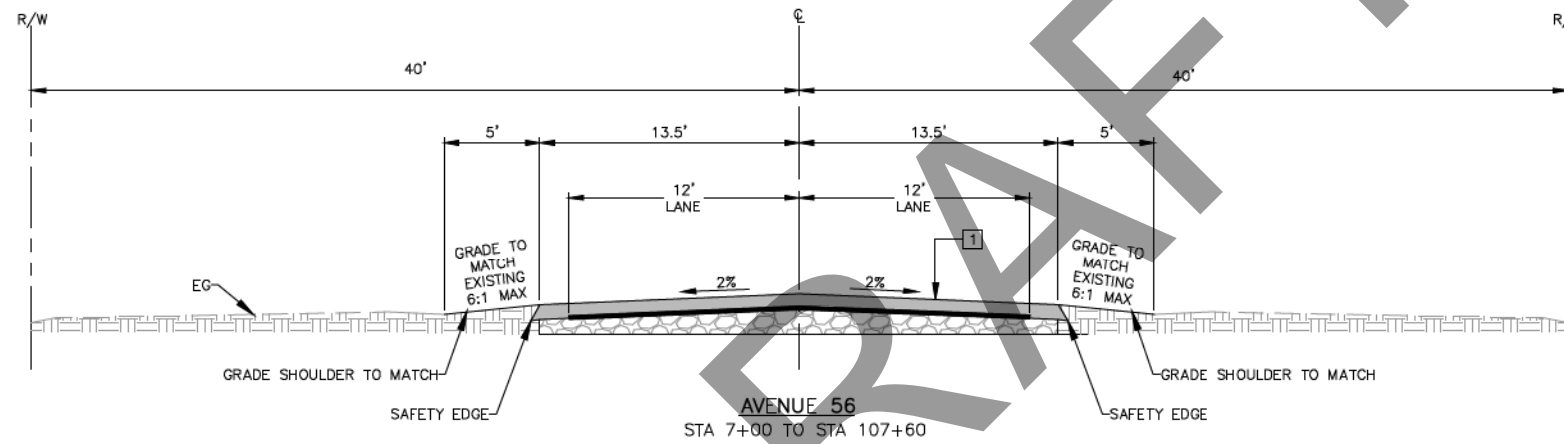
NO.	REVISIONS	DATE	BY

COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA






CONSTRUCTION AREA SIGN PLAN  
 LOCATION 2: DRIVE 122  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1" = 500'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-2CAS001.DWG
DATE	08/11/2020
SHEET No.	CAS2




**LEGEND**

-  HMA OVERLAY
-  EXISTING GROUND
-  EXISTING ASPHALT/CONCRETE

**NOTES**

1. ALL CONSTRUCTION SHALL BE INSIDE OF COUNTY RIGHT OF WAY AND VERIFIED BY RE.
2. SHOULDER BACKING SHALL BE COMPLETED AS PART OF SHOULDER BACKING ITEM WORK.
3. GRADE SHOULDER TO MATCH PAVEMENT, SHALL BE PART OF FINISHING ROADWAY

**TYPICAL STRUCTURAL SECTIONS**

-  0.2' HMA OVERLAY



NO.	REVISIONS DESCRIPTION	DATE	BY

COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA










TYPICAL CROSS SECTIONS  
 LOCATION 3: AVE 56  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	H: 1"=3'	V: 1"=2.5'
DIVISION	DESIGN	
JOB NO.	19015-1	
DESIGNED	IG	
DRAWN	IG	
CHECKED	PAO	
FILE	19015-4X001.DWG	
DATE	08/11/2020	
SHEET No.		

**X3**  
 14 of 39

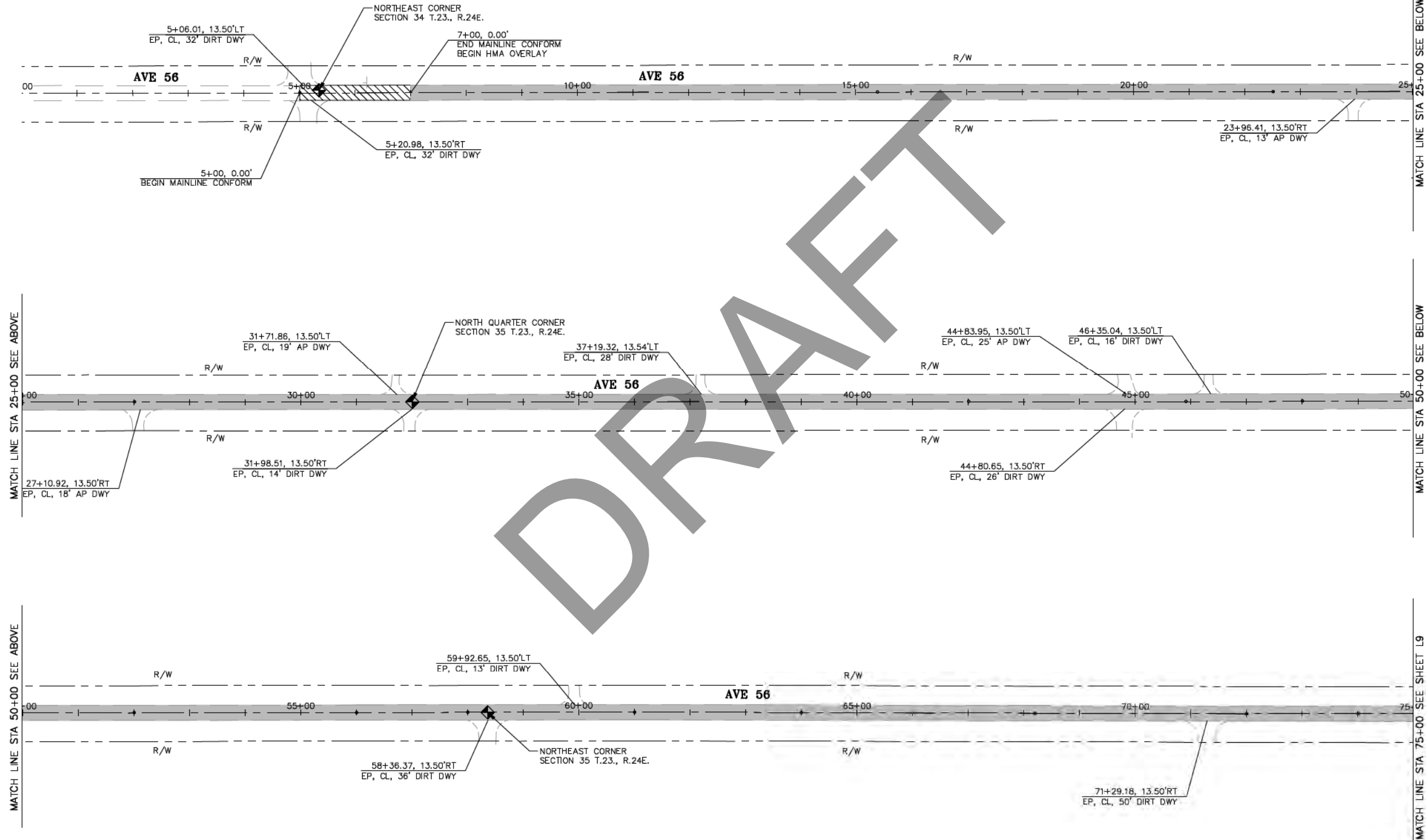
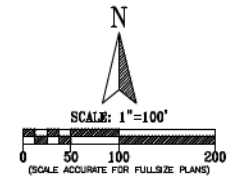
**LEGEND**

-  0.2' HMA OVERLAY
-  0.2' MAINLINE CONFORM PER SHEET C1
-  0.2' PUBLIC ROAD TRANSITION PER SHEET C1
-  DRIVEWAY TRANSITION PER SHEET C1

-  EXIST SIGN
-  SURVEY MONUMENT ADJUST TO GRADE
-  EXIST GAS VALVE PROTECT IN PLACE

**CONSTRUCTION NOTES**

1. GRADE EXISTING DRIVEWAYS TO MATCH GRADE OF NEW PAVEMENT SURFACE. USE SHOULDER BACKING MATERIAL AND/OR MATCH MATERIAL OF EXISTING DRIVEWAY WHEN NOT SHOWN ON PLANS.



DRAFT

No.	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559) 624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



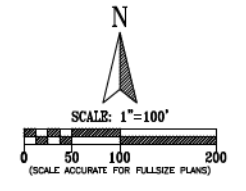
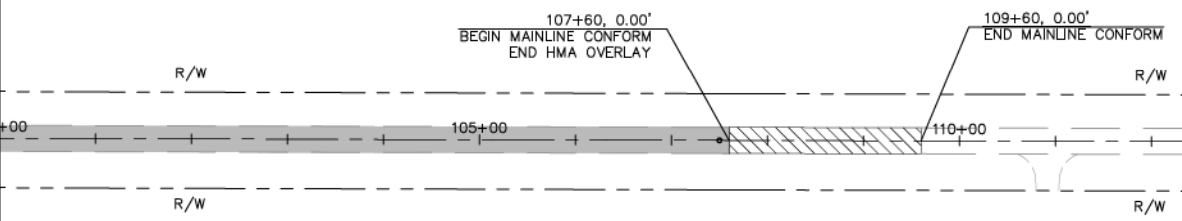
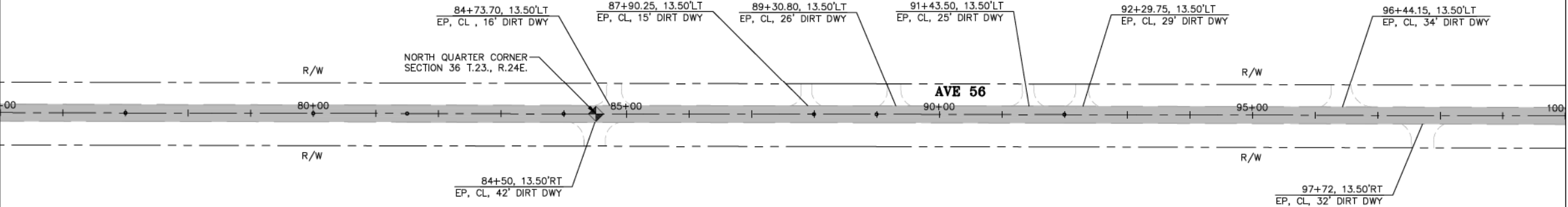
**PLAN SHEET**  
**LOCATION 3: AVE 56**  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-4L001.DWG
DATE	08/11/2020
SHEET No.	L6



MATCH LINE STA 75+00 SEE SHEET L8

MATCH LINE STA 100+00 SEE ABOVE



**GRIND TABLE FOR AVENUE 56**

BEGIN STATION	END STATION	LOCATION	DESCRIPTION	LENGTH (ft)	WIDTH (ft)	THICKNESS	AREA SY
07+00	10+80	L	LANE	380	12	0.2	506.7
07+00	10+38	R	LANE	338	12	0.2	450.7
10+38	10+84	R	MT	46	7	0.2	35.8
10+80	11+25	L	OWT	45	7	0.2	35.0
10+84	11+31	R	LANE	47	12	0.2	62.7
11+25	11+43	L	OWT	18	7	0.2	14.0
11+43	12+10	L	MT	67	7	0.2	52.1
11+43	12+10	R	MT	67	7	0.2	52.1
12+10	12+79	R	OWT	69	7	0.2	53.7
12+50	12+95	L	OWT	45	7	0.2	35.0
13+58	18+30	L	LANE	472	12	0.2	629.3
13+58	14+28	R	OWT	70	7	0.2	54.4
16+13	18+08	R	LANE	195	12	0.2	260.0
18+50	19+08	L	LANE	58	12	0.2	77.3
18+30	19+10	R	MT	80	7	0.2	62.2
19+30	19+81	L	MT	51	7	0.2	39.7
19+60	20+08	R	MT	48	7	0.2	37.3
20+08	21+05	R	OWT	97	7	0.2	75.4
21+05	21+80	R	LANE	75	12	0.2	100.0
21+80	22+71	R	OWT	91	7	0.2	70.8
22+44	22+82	L	OWT	38	7	0.2	29.6
23+20	25+40	R	LANE	220	12	0.2	293.3
23+82	24+83	L	LANE	71	12	0.2	94.7
24+90	25+25	L	LANE	35	12	0.2	46.7
25+40	26+25	R	OWT	85	7	0.2	66.1
25+55	26+25	L	OWT	70	7	0.2	54.4
26+25	41+45	R	LANE	1520	12	0.2	2026.7
26+25	42+09	L	LANE	1584	12	0.2	2112.0
42+53	46+67	R	OWT	414	7	0.2	322.0
42+82	47+50	L	OWT	468	7	0.2	364.0
46+67	47+98	R	LANE	131	12	0.2	174.7
47+50	48+52	L	LANE	102	12	0.2	136.0
48+20	48+55	R	OWT	35	7	0.2	27.2
48+52	49+06	L	OWT	54	7	0.2	42.0
49+38	52+85	R	OWT	347	7	0.2	269.9
50+02	68+26	L	LANE	1824	12	0.2	2432.0
52+85	62+10	R	LANE	925	12	0.2	1233.3
62+10	62+70	R	MT	60	7	0.2	46.7
62+70	65+92	R	LANE	322	12	0.2	429.3
66+22	66+80	R	LANE	58	12	0.2	77.3
67+48	67+91	R	LANE	43	12	0.2	57.3
67+91	68+62	R	OWT	71	7	0.2	55.2
68+26	69+30	L	OWT	104	7	0.2	80.9
68+62	70+75	R	LANE	213	12	0.2	284.0
69+30	70+75	L	LANE	145	12	0.2	193.3
70+75	72+82	L	OWT	207	7	0.2	161.0
71+25	72+04	R	OWT	79	7	0.2	61.4
73+25	73+58	L	OWT	33	7	0.2	25.7
73+55	74+65	R	OWT	110	7	0.2	85.6
73+91	74+65	L	OWT	74	7	0.2	57.6
74+65	84+30	R	LANE	965	12	0.2	1286.7
74+65	83+87	L	LANE	922	12	0.2	1229.3
94+30	95+60	R	MT	130	7	0.2	101.1
95+60	101+41	R	LANE	581	12	0.2	774.7
86+10	107+60	L	LANE	2150	12	0.2	2866.7
101+41	107+60	R	LANE	619	12	0.2	825.9
						0.2	0.0

DRAFT

NO.	REVISIONS	DATE	BY

COUNTY OF TULARE  
RESOURCE MANAGEMENT AGENCY  
5961 SOUTH MOONEY BLVD.  
VISALIA, CA 93277  
(559)624-7000  
WWW.TULARECOUNTY.CA.GOV/RMA



PLAN SHEET  
LOCATION 3: AVE 56  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
ACT (RRAA) PROJECT 2  
TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-ALD01.DWG
DATE	08/11/2020
SHEET No.	L7



## TRAFFIC MARKING INSTALLATION AND QUANTITY SUMMARY

ROADWAY	CENTERLINE & CHANNELIZING					LEFT EDGELINE				RIGHT EDGELINE				PAVEMENT MARKINGS		
	STATIONS		STRIPING DETAIL (ft)			STATIONS		STRIPING DETAIL (ft)		STATIONS		STRIPING DETAIL (ft)		STATIONS	DESCRIPTION	AREA (ft <sup>2</sup> )
	FROM	TO	Detail 5	Detail 18	Detail 21	FROM	TO	No. 27B	No. 27C	FROM	TO	No. 27B	No. 27C			
AVEUNE 56	5+00	109+60	10,460.0			5+00	109+80	10,480.0		5+00	109+80	10,480.0				
10,460			10,480			10,480			0.00							

Item	Description	Quantity	Unit
Detail 5	6" Yellow Centerline (Broken 12' on and 36' off)	10,460	ft
Detail 18	6" Yellow Centerline (One direction no-passing)		ft
Detail 21	6" Yellow Centerline (Both direction no-passing)		ft
Detail 27B	6" White Edgeline (Solid)	20,960	ft
Detail 27C	6" White Edgeline (3' Dashed)		ft
<b>TOTAL</b>		<b>31,420</b>	<b>ft</b>
Pavement Markings	Various	0.00	ft <sup>2</sup>

**NOTE**  
 All striping shall receive 2 coats of paint.  
 Double Yellow stripes are measured as one Traffic Stripe, as per Caltrans Standard Specifications, 2018  
 Pavement marking shall be thermoplastic.  
 See Sheet PD1 for Striping Details

REVISIONS	DESCRIPTION	DATE	BY

COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



SIGNING AND STRIPING TABLE  
 LOCATION 3: AVE 56  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	NTS
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	-
DRAWN	-
CHECKED	-
FILE	19015-4P0001.DWG
DATE	08/11/2020
SHEET No.	

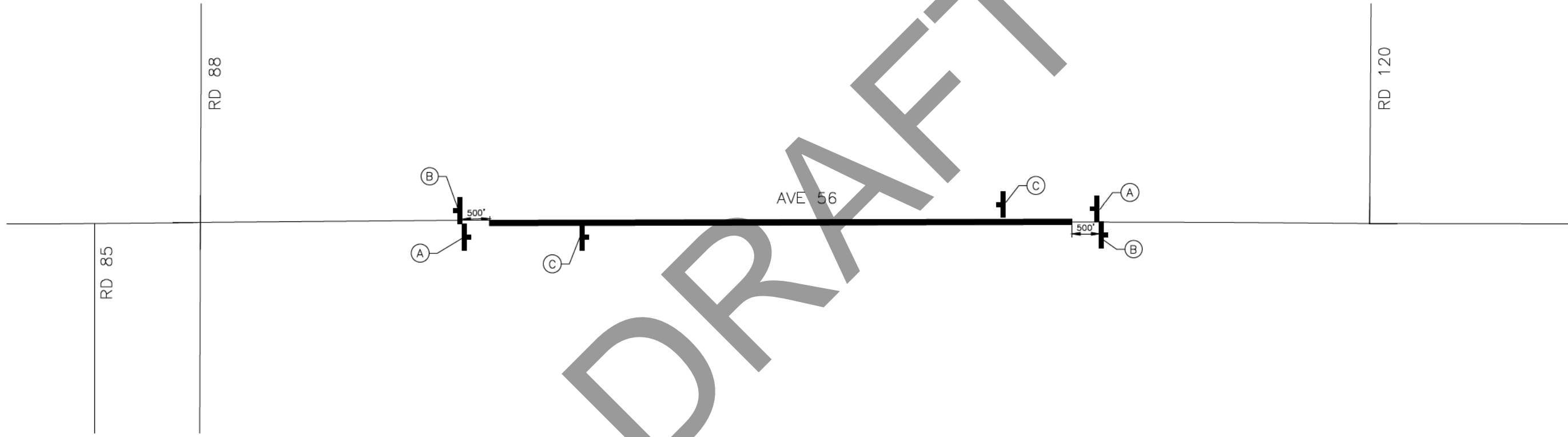
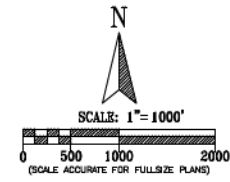


**PD3**  
 17 of 39

CONSTRUCTION AREA SIGNS					
TYPE	CODE	MESSAGE	PANEL SIZE (IN X IN)	POST SIZE (IN X IN)	NO. SIGNS
(A)	C23(CA)	ROAD WORK AHEAD	48 X 48	4 X 4	2
(B)	G20-2	END ROAD WORK	48 X 24	4 X 4	2
(C)	-	PROJECT FUNDING SIGN	40 X 30	4 X 4	2

NOTES:

1. LOCATIONS TO BE APPROVED BY THE ENGINEER.
2. SIGNS SHALL BE FIELD ADJUSTED AS NECESSARY.
3. SEE SHEET CAS1 FOR PROJECT FUNDING SIGN DETAILS.



NO.	REVISIONS	DESCRIPTION	DATE	BY

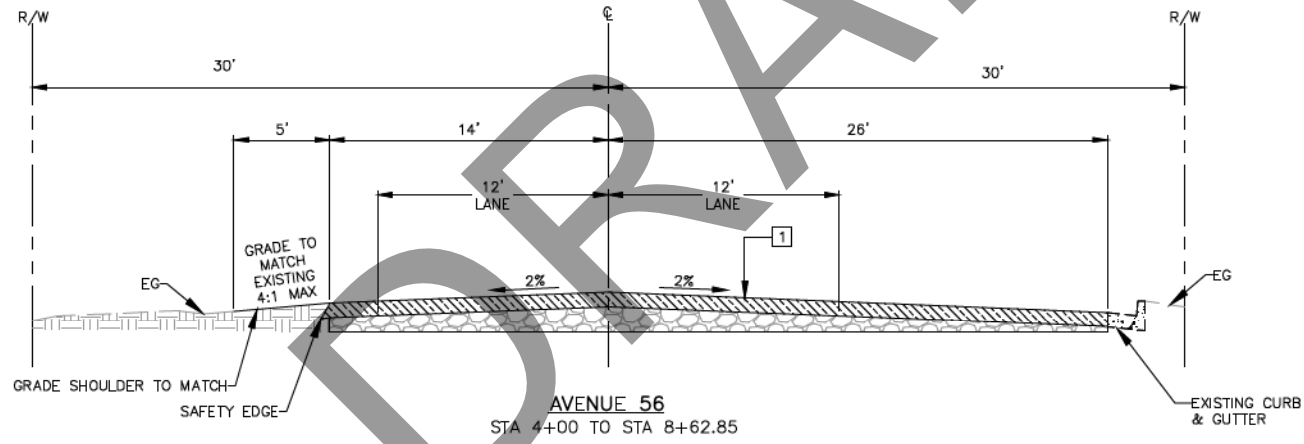
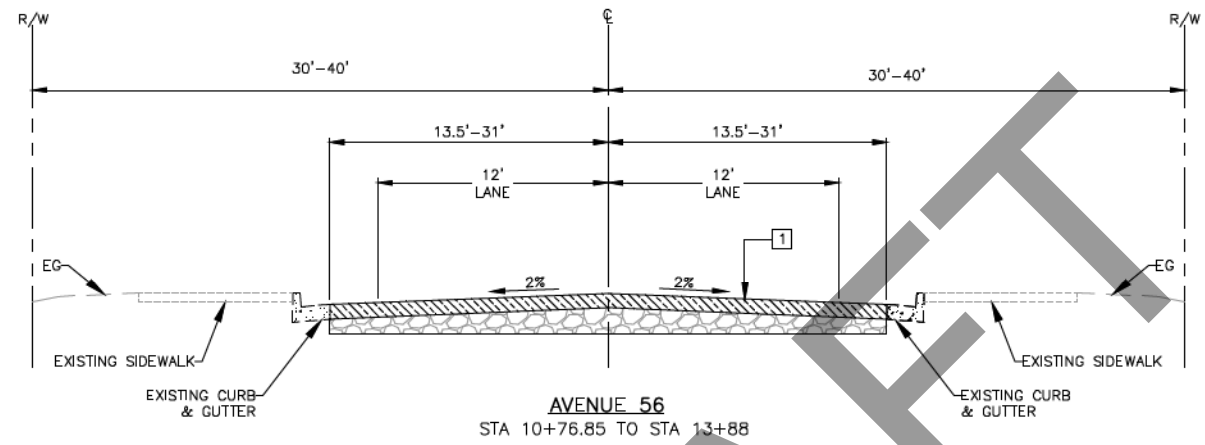
COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



CONSTRUCTION AREA SIGN PLAN  
 LOCATION 3: AVE 56  
**2020 ROAD REPAIR AND ACCOUNTABILITY  
 ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=1000'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	POA
FILE	19015-4CAS001.DWG
DATE	08/11/2020
SHEET No.	CAS3





**LEGEND**

- GRIND & REPLACE
- EXISTING GROUND
- EXISTING ASPHALT/CONCRETE

**NOTES**

1. ALL CONSTRUCTION SHALL BE INSIDE OF COUNTY RIGHT OF WAY AND VERIFIED BY RE.
2. SHOULDER BACKING SHALL BE COMPLETED AS PART OF SHOULDER BACKING ITEM WORK.
3. GRADE SHOULDER TO MATCH PAVEMENT, SHALL BE PART OF FINISHING ROADWAY

**TYPICAL STRUCTURAL SECTIONS**

- 0.25' GRIND & REPLACE

NO.	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
5961 SOUTH MOONEY BLVD.  
VISALIA, CA 93277  
(559)624-7000  
WWW.TULARECOUNTY.CA.GOV/RMA






**TYPICAL CROSS SECTIONS**  
**LOCATION 4: AVE 56**  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
TULARE COUNTY

SCALE	H: 1"=5' V: 1"=2.5'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-SX001.DWG
DATE	08/11/2020
SHEET No.	



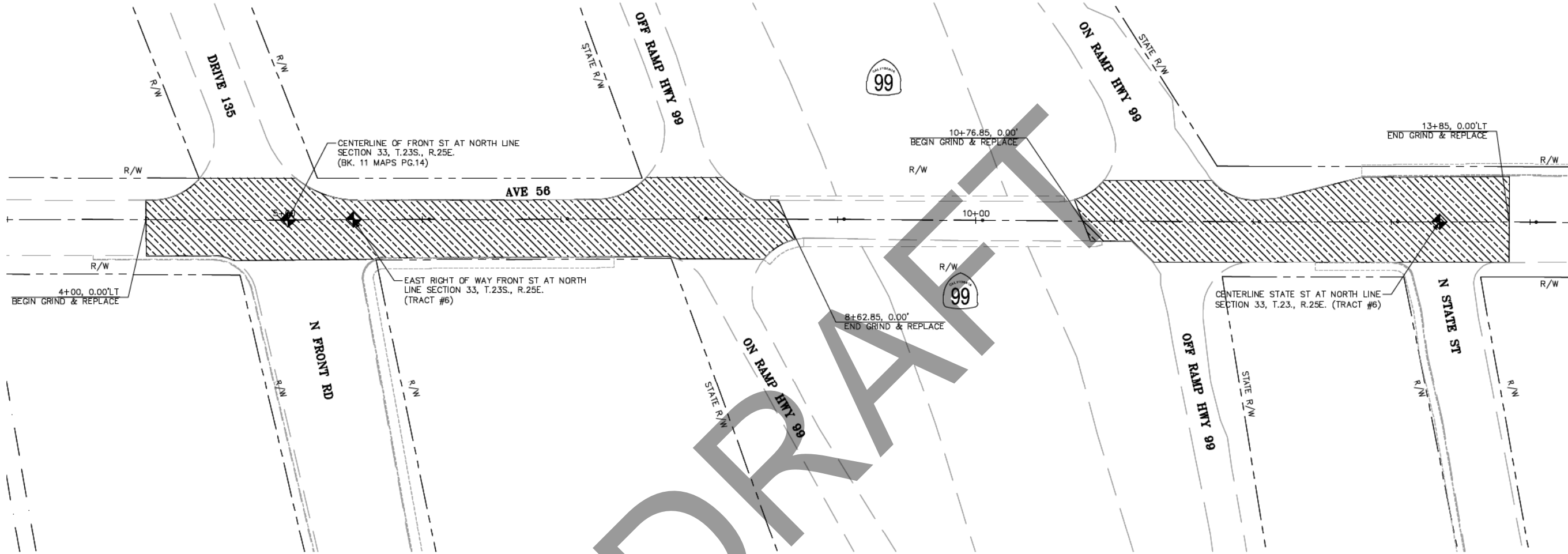
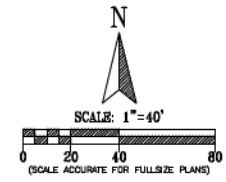
**X4**  
**19 of 39**

**LEGEND**

-  0.25' GRIND & REPLACE
-  EXIST SIGN
-  SURVEY MONUMENT ADJUST TO GRADE

**CONSTRUCTION NOTES**

1. GRADE EXISTING DRIVEWAYS TO MATCH GRADE OF NEW PAVEMENT SURFACE. USE SHOULDER BACKING MATERIAL AND/OR MATCH MATERIAL OF EXISTING DRIVEWAY WHEN NOT SHOWN ON PLANS.



NO.	REVISIONS	DATE	BY

COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559) 624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



PLAN SHEET  
 LOCATION 4: AVE 56  
**2020 ROAD REPAIR AND ACCOUNTABILITY  
 ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=40'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-SLOD1.DWG
DATE	08/11/2020
SHEET No.	L8





## TRAFFIC MARKING INSTALLATION AND QUANTITY SUMMARY

ROADWAY	CENTERLINE & CHANNELIZING					LEFT EDGELINE				RIGHT EDGELINE				PAVEMENT MARKINGS		
	STATIONS		STRIPING DETAIL (ft)			STATIONS		STRIPING DETAIL (ft)		STATIONS		STRIPING DETAIL (ft)		STATIONS	DESCRIPTION	AREA (ft <sup>2</sup> )
	FROM	TO	Detail 5	Detail 18	Detail 21	FROM	TO	No. 27B	No. 27C	FROM	TO	No. 27B	No. 27C			
<b>AVEUNE 56</b>	4+00	4+50			50.0	5+53	7+32		179.0	8+66	11+12		246.0	4+50	LIMIT LINE	26.00
	5+37	8+00			263.0	8+32	10+77		245.0					5+36	LIMIT LINE	12.00
	11+68	13+85			217.0											
					530				424				246			38.00

Item	Description	Quantity	Unit
Detail 5	6" Yellow Centerline (Broken 12' on and 36' off)		ft
Detail 18	6" Yellow Centerline (One direction no-passing)		ft
Detail 21	6" Yellow Centerline (Both direction no-passing)	530	ft
Detail 27B	6" White Edgeline (Solid)		ft
Detail 27C	6" White Edgeline (3' Dashed)	670	ft
	<b>TOTAL</b>	<b>1,200</b>	<b>ft</b>
Pavement Markings	Various	38.00	ft <sup>2</sup>

**NOTE**

All striping shall receive 2 coats of paint.

Double Yellow stripes are measured as one Traffic Stripe, as per Caltrans Standard Specifications, 2018

Pavement marking shall be thermoplastic.

See Sheet PD1 for Striping Details

REVISIONS	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559) 624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



SIGNING AND STRIPING TABLE  
 LOCATION 4: AVE 56  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	NTS
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	-
DRAWN	-
CHECKED	-
FILE	19015-SP0001.DWG
DATE	08/11/2020
SHEET No.	

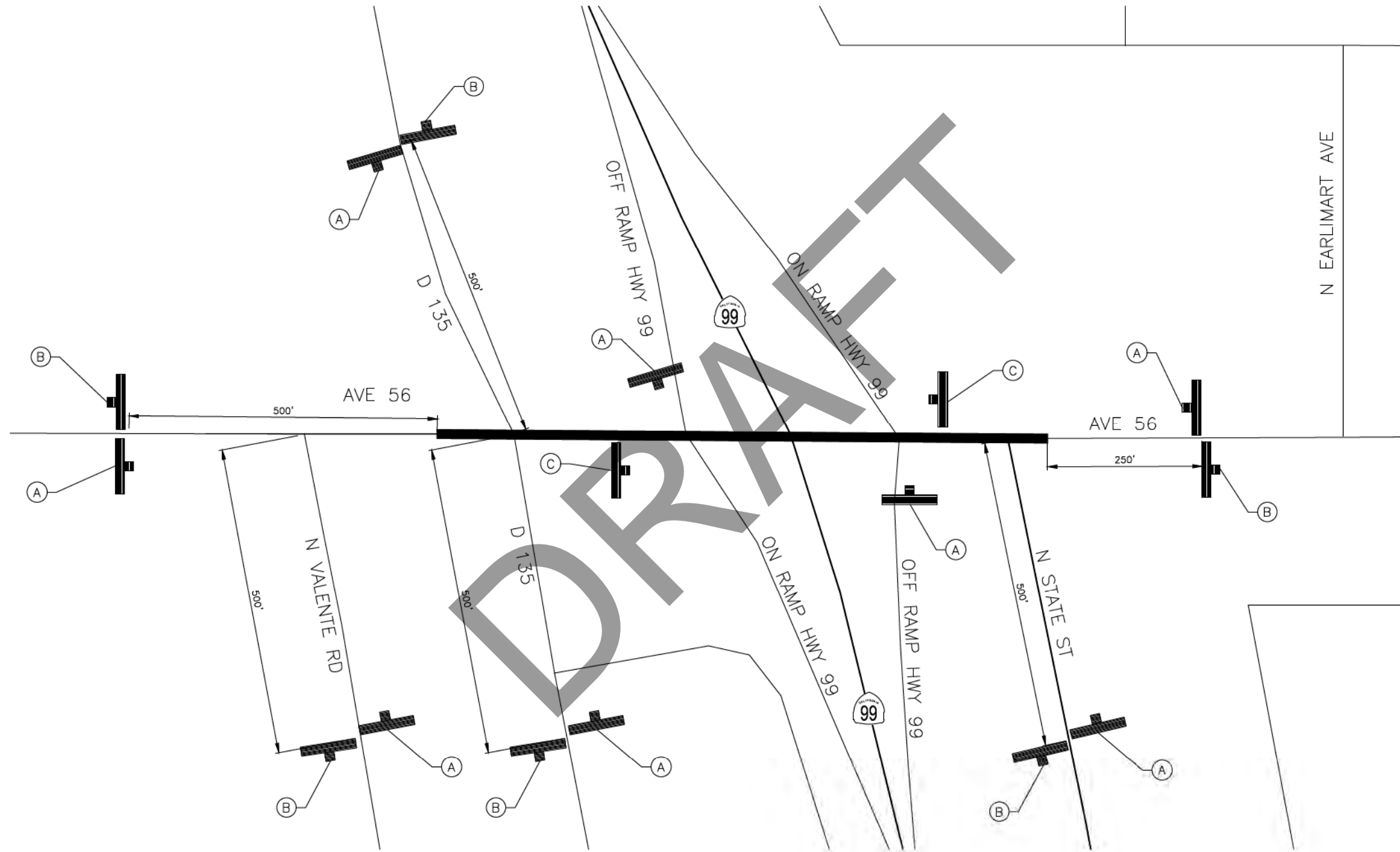
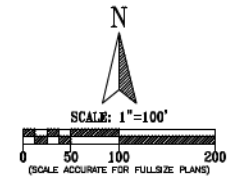


**PD4**  
 21 of 39

CONSTRUCTION AREA SIGNS					
TYPE	CODE	MESSAGE	PANEL SIZE (IN X IN)	POST SIZE (IN X IN)	NO. SIGNS
(A)	C23(CA)	ROAD WORK AHEAD	48 X 48	4 X 4	8
(B)	G20-2	END ROAD WORK	48 X 24	4 X 4	6
(C)	-	PROJECT FUNDING SIGN	40 X 30	4 X 4	2

NOTES:

1. LOCATIONS TO BE APPROVED BY THE ENGINEER.
2. SIGNS SHALL BE FIELD ADJUSTED AS NECESSARY.
3. SEE SHEET CAS1 FOR PROJECT FUNDING SIGN DETAILS.



NO.	REVISIONS	DATE	BY

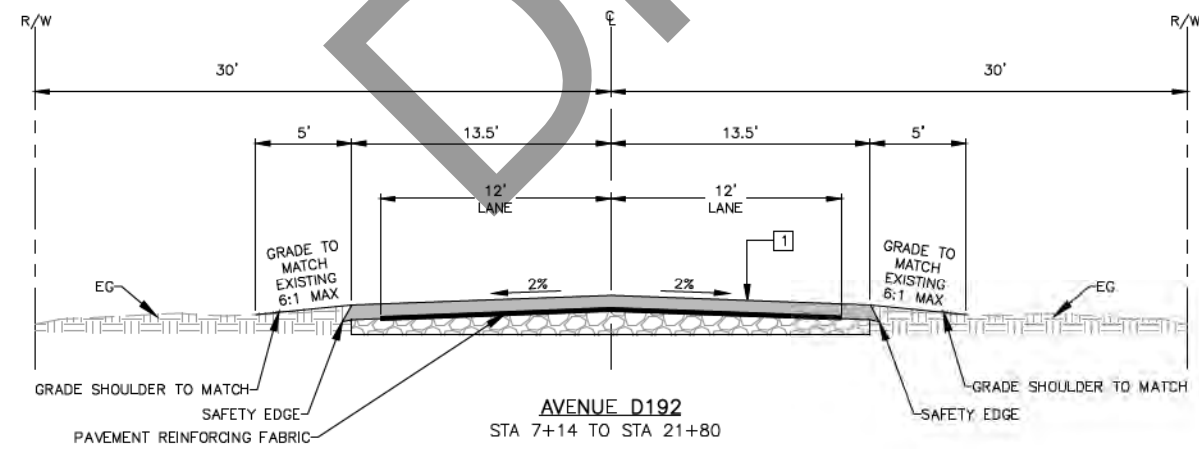
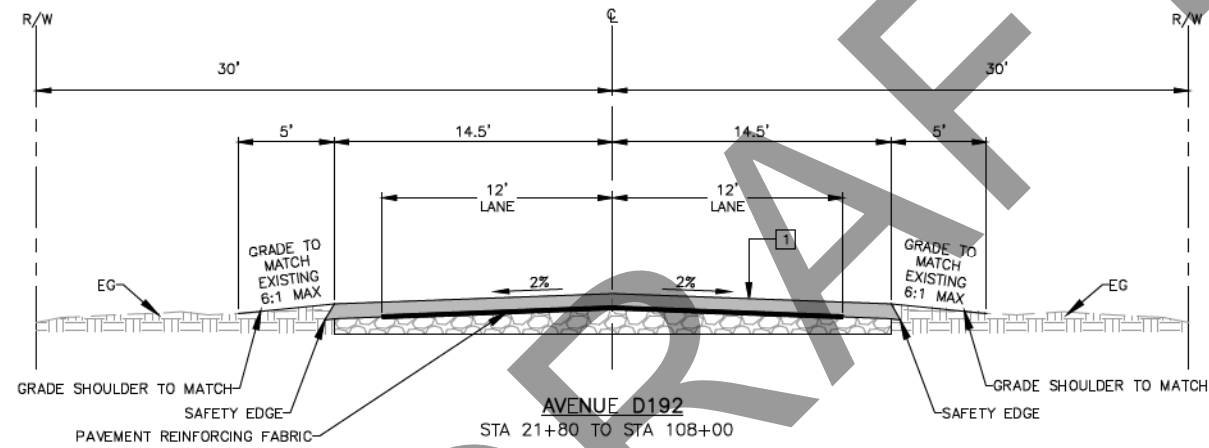
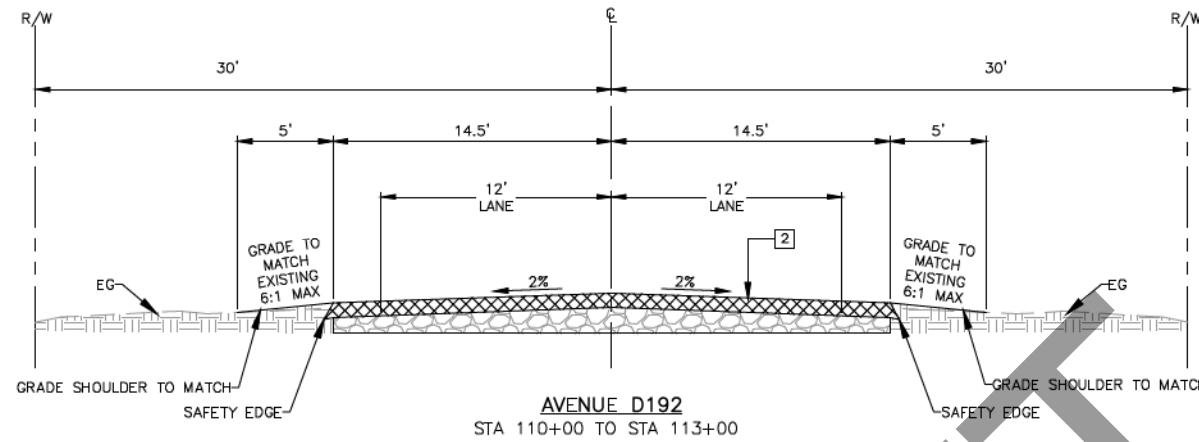
COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA







CONSTRUCTION AREA SIGN PLAN  
 LOCATION 4: AVE 56  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	POA
FILE	19015-SCAS001.DWG
DATE	08/11/2020
SHEET No.	CAS4







**LEGEND**

-  HMA OVERLAY
-  GRIND & REPLACE
-  EXISTING GROUND
-  EXISTING ASPHALT/CONCRETE

**NOTES**

1. ALL CONSTRUCTION SHALL BE INSIDE OF COUNTY RIGHT OF WAY AND VERIFIED BY RE.
2. SHOULDER BACKING SHALL BE COMPLETED AS PART OF SHOULDER BACKING ITEM WORK.
3. GRADE SHOULDER TO MATCH PAVEMENT, SHALL BE PART OF FINISHING ROADWAY

**TYPICAL STRUCTURAL SECTIONS**

-  0.2' HMA OVERLAY
-  0.2' GRIND & REPLACE



NO.	REVISIONS	DESCRIPTION	DATE	BY





COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559) 624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



TYPICAL CROSS SECTIONS  
 LOCATION 5: AVE 96 & D192  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

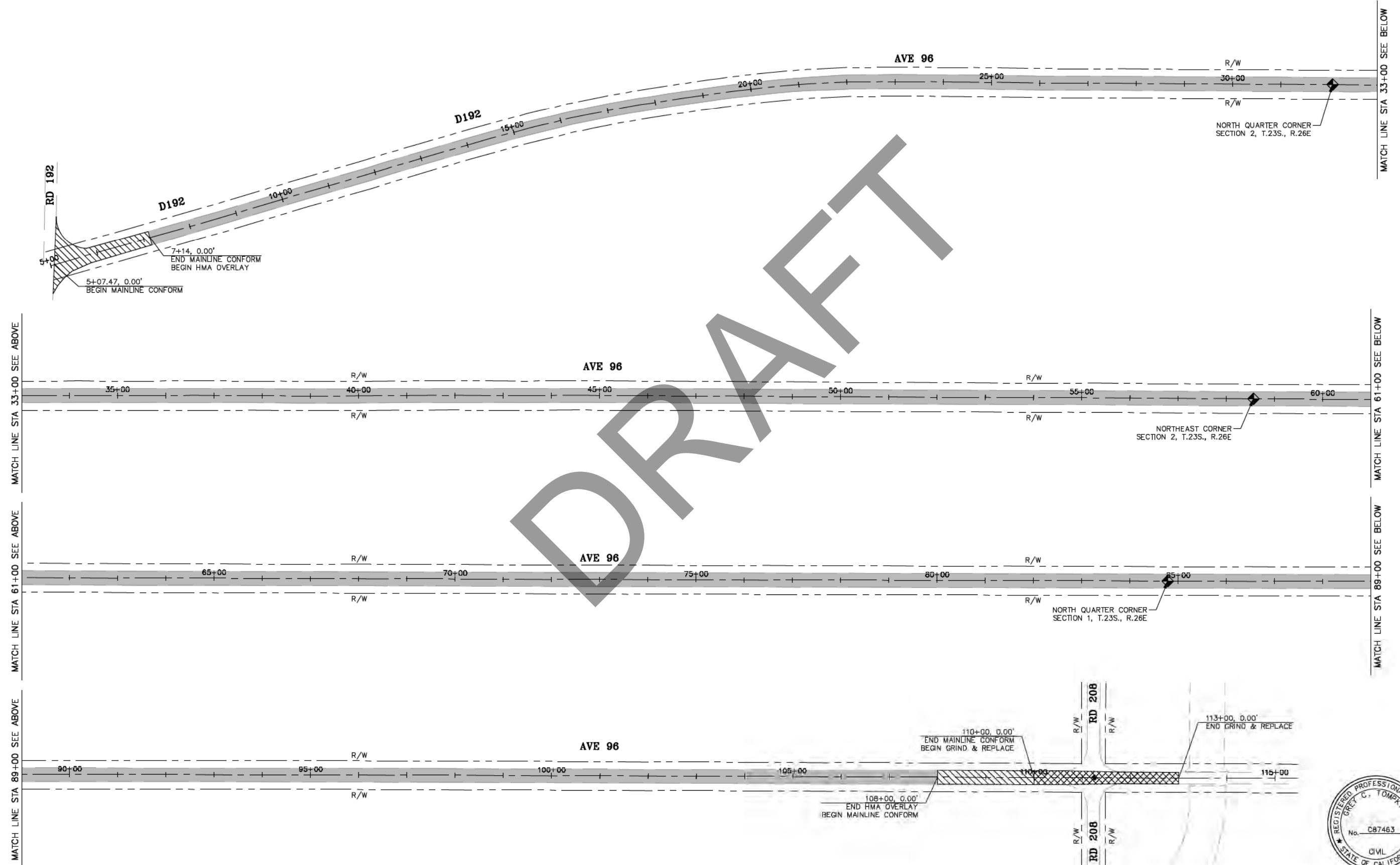
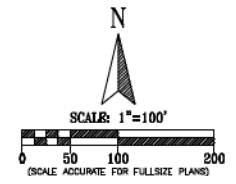
SCALE	H: 1"=5' V: 1"=2.5'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-6X001.DWG
DATE	08/11/2020
SHEET No.	X5

**LEGEND**

-  0.2' HMA OVERLAY
-  0.2' MAINLINE CONFORM PER SHEET C1
-  0.2' GRIND & REPLACE
-  SURVEY MONUMENT ADJUST TO GRADE

**CONSTRUCTION NOTES**

1. GRADE EXISTING DRIVEWAYS TO MATCH GRADE OF NEW PAVEMENT SURFACE. USE SHOULDER BACKING MATERIAL AND/OR MATCH MATERIAL OF EXISTING DRIVEWAY WHEN NOT SHOWN ON PLANS.



DRAFT

No.	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559) 624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



**PLAN SHEET**  
**LOCATION 5: AVE 96 & D192**  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-6L001.DWG
DATE	08/11/2020
SHEET No.	L9



**GRIND TABLE FOR D192 FROM RD 192 TO AVE 96**

BEGIN STATION	END STATION	LOCATION	DESCRIPTION	LENGTH (ft)	WIDTH (ft)	THICKNESS	AREA SY
07+14	07+60	Left	OWT	46	7	0.2	35.8
08+30	10+00	Right	IMT	170	7	0.2	132.2
11+75	13+25	Left	OWT	150	7	0.2	116.7
11+75	13+25	Right	IMT	150	7	0.2	116.7
13+25	14+09	Left	Lane	84	12	0.2	112.0
13+25	14+80	Right	Lane	155	12	0.2	206.7
15+50	15+80	Left	OWT	30	7	0.2	23.3
16+15	17+00	Right	IMT	85	7	0.2	66.1
16+30	17+00	Left	Lane	70	12	0.2	93.3
17+00	17+85	Right	Lane	85	12	0.2	113.3
17+30	18+50	Left	IMT	120	7	0.2	93.3
18+50	58+50	Right	Lane	4000	12	0.2	5333.3
18+59	58+50	Left	Lane	3991	12	0.2	5321.3
58+50	59+60	Right	OWT	110	7	0.2	85.6
63+50	66+50	Right	OWT	300	7	0.2	233.3
64+75	66+50	Left	OWT	175	7	0.2	136.1
67+50	71+00	Right	OWT	350	7	0.2	272.2
72+30	75+25	Right	OWT	295	7	0.2	229.4
81+00	81+50	Right	OWT	50	7	0.2	38.9
81+00	81+50	Left	OWT	50	7	0.2	38.9
83+50	84+00	Right	OWT	50	7	0.2	38.9
86+70	92+70	Right	OWT	600	7	0.2	466.7
90+00	91+00	Left	OWT	100	7	0.2	77.8
93+90	94+05	Right	OWT	15	7	0.2	11.7
94+50	95+25	Left	OWT	75	7	0.2	58.3
94+50	95+25	Right	OWT	75	7	0.2	58.3
95+70	97+75	Left	OWT	205	7	0.2	159.4
95+70	96+25	Right	OWT	55	7	0.2	42.8
99+30	99+75	Right	OWT	45	7	0.2	35.0
101+30	102+00	Left	OWT	70	7	0.2	54.4
101+30	102+00	Right	OWT	70	7	0.2	54.4
102+60	103+75	Left	Lane	115	12	0.2	153.3
102+60	103+75	Right	Lane	115	12	0.2	153.3
104+00	104+80	Right	IMT	80	7	0.2	62.2
104+00	104+80	Left	IMT	80	7	0.2	62.2

14287.4



NO.	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



**PLAN SHEET**  
**LOCATION 5: AVE 96 & D192**  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-6L001.DWG
DATE	08/11/2020
SHEET No.	L10

**L10**  
**25 OF 39**

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TRAFFIC MARKING INSTALLATION AND QUANTITY SUMMARY																	
ROADWAY	CENTERLINE & CHANNELIZING					LEFT EDGELINE				RIGHT EDGELINE				PAVEMENT MARKINGS			
	STATIONS		STRIPING DETAIL (ft)			STATIONS		STRIPING DETAIL (ft)		STATIONS		STRIPING DETAIL (ft)		STATIONS	DESCRIPTION	AREA (ft <sup>2</sup> )	
	FROM	TO	Detail 5	Detail 18	Detail 21	FROM	TO	No. 27B	No. 27C	FROM	TO	No. 27B	No. 27C				
AVEUNE 96	5+29	24+32			1,903.0	5+50	108+00	10,250.0		5+36	108+00	10,264.0		2+59	LIMIT LINE	20.00	
	24+32	27+90		368.0										9+62	AHEAD	31.00	
	27+90	105+35	7,745.0											10+20	STOP	22.00	
	105+35	108+00		265.0													
			7,745	623	1,903			10,250				10,264				73.00	

Item	Description	Quantity	Unit
Detail 5	6" Yellow Centerline (Broken 12' on and 36' off)	7,745	ft
Detail 18	6" Yellow Centerline (One direction no-passing)	623	ft
Detail 21	6" Yellow Centerline (Both direction no-passing)	1,903	ft
Detail 27B	6" White Edgeline (Solid)	20,514	ft
Detail 27C	6" White Edgeline (3' Dashed)		ft
	<b>TOTAL</b>	<b>30,785</b>	<b>ft</b>
Pavement Markings	Various	73.00	ft <sup>2</sup>

**NOTE**  
All striping shall receive 2 coats of paint.  
Double Yellow stripes are measured as one Traffic Stripe, as per Caltrans Standard Specifications, 2018.  
Pavement marking shall be thermoplastic.  
See Sheet PD1 for Striping Details

No.	DESCRIPTION	DATE	BY

COUNTY OF TULARE  
RESOURCE MANAGEMENT AGENCY  
5961 SOUTH MOONEY BLVD.  
VISALIA, CA 93277  
(559)624-7000  
WWW.TULARECOUNTY.CA.GOV/RMA



SIGNING AND STRIPING TABLE  
LOCATION 5: AVE 96 & D192  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
TULARE COUNTY

SCALE	NTS
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	-
DRAWN	-
CHECKED	-
FILE	19015-6P0001.DWG
DATE	08/11/2020
SHEET No.	

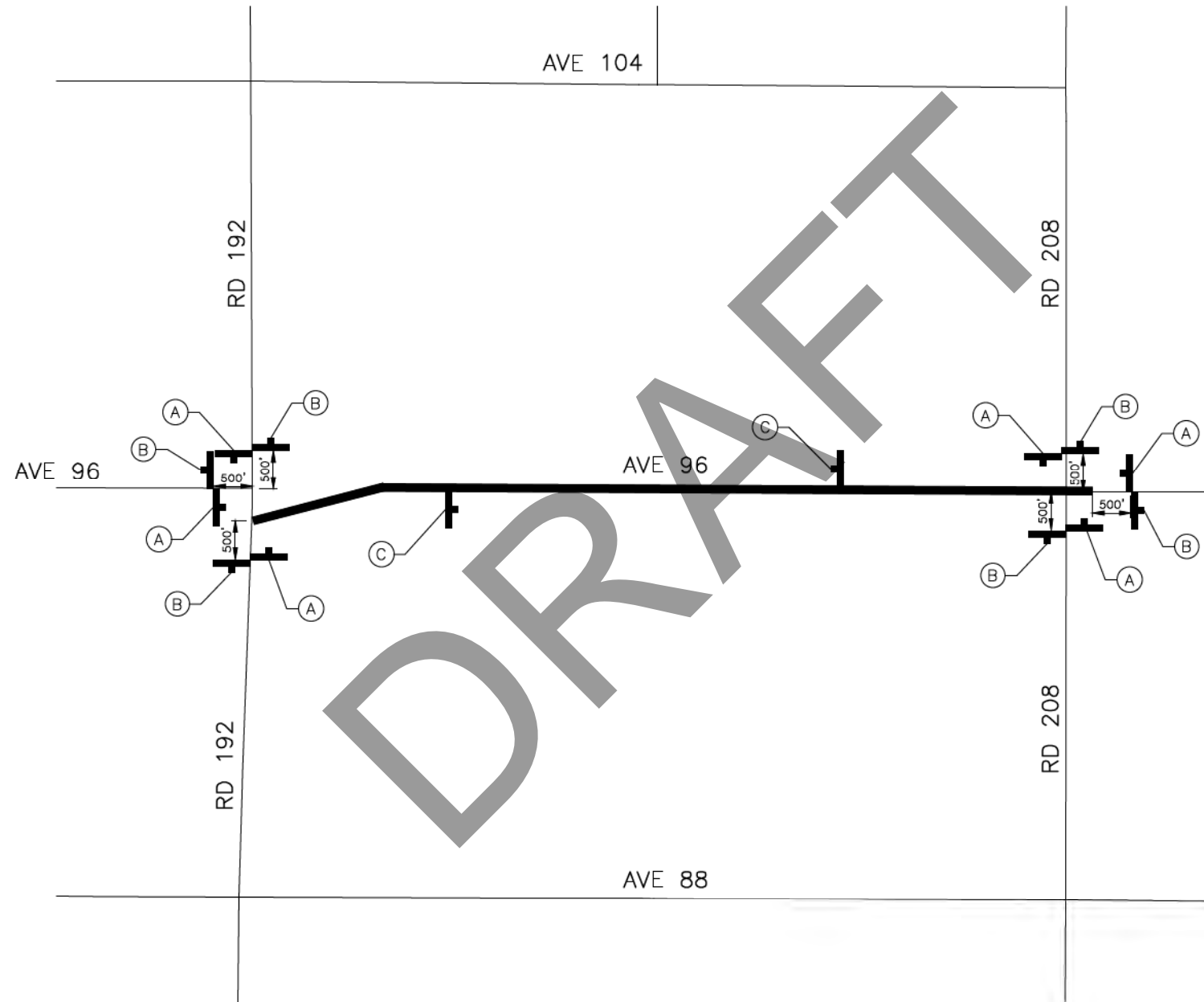
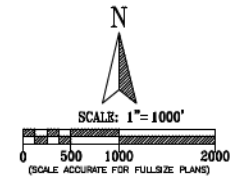


**PD5**  
26 of 39

CONSTRUCTION AREA SIGNS					
TYPE	CODE	MESSAGE	PANEL SIZE (IN X IN)	POST SIZE (IN X IN)	NO. SIGNS
(A)	C23(CA)	ROAD WORK AHEAD	48 X 48	4 X 4	6
(B)	G20-2	END ROAD WORK	48 X 24	4 X 4	6
(C)	-	PROJECT FUNDING SIGN	40 X 30	4 X 4	2

NOTES:

1. LOCATIONS TO BE APPROVED BY THE ENGINEER.
2. SIGNS SHALL BE FIELD ADJUSTED AS NECESSARY.
3. SEE SHEET CAS1 FOR PROJECT FUNDING SIGN DETAILS.



NO.	REVISIONS	DESCRIPTION	DATE	BY

COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



CONSTRUCTION AREA SIGN PLAN  
 LOCATION 5: AVE 96 & D192  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=1000'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	POA
FILE	19015-RCAS001.DWG
DATE	08/11/2020
SHEET No.	CAS5

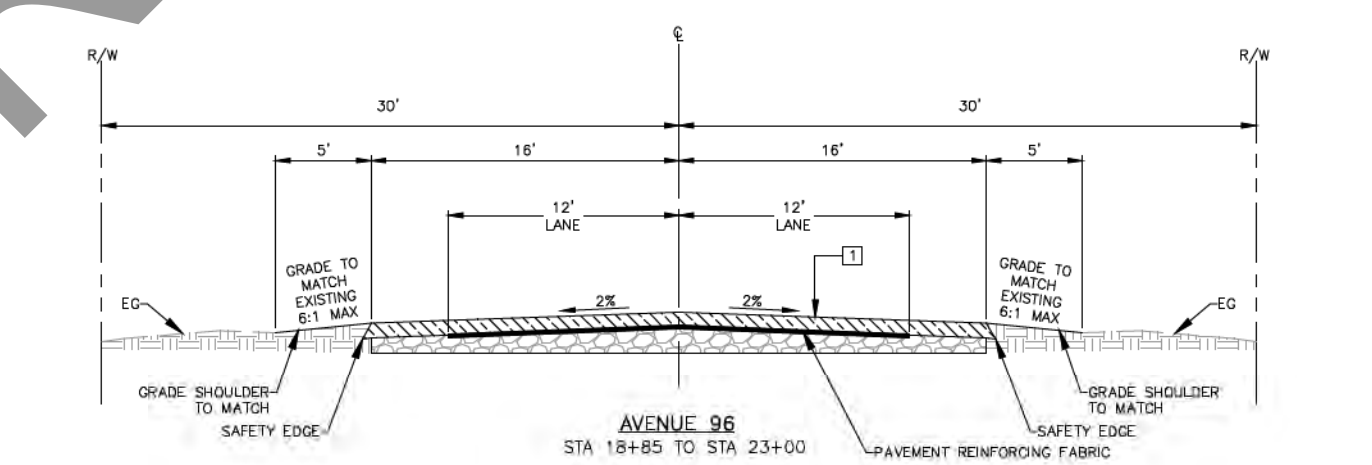
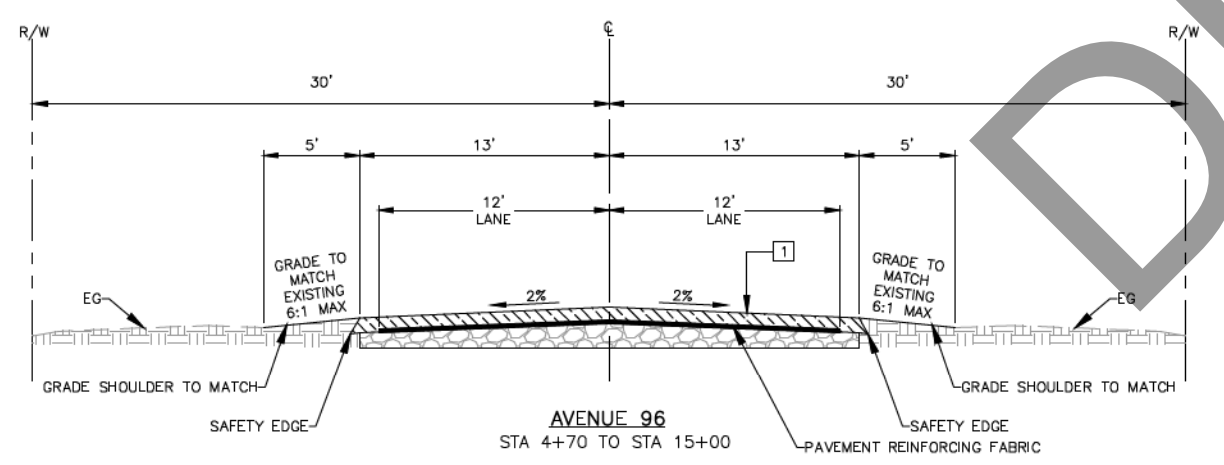
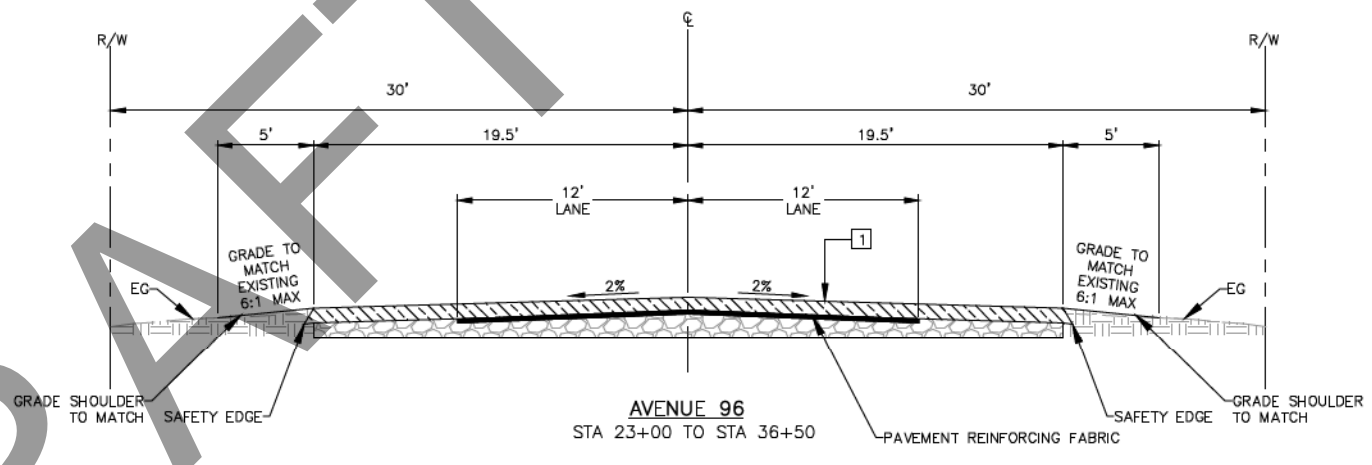
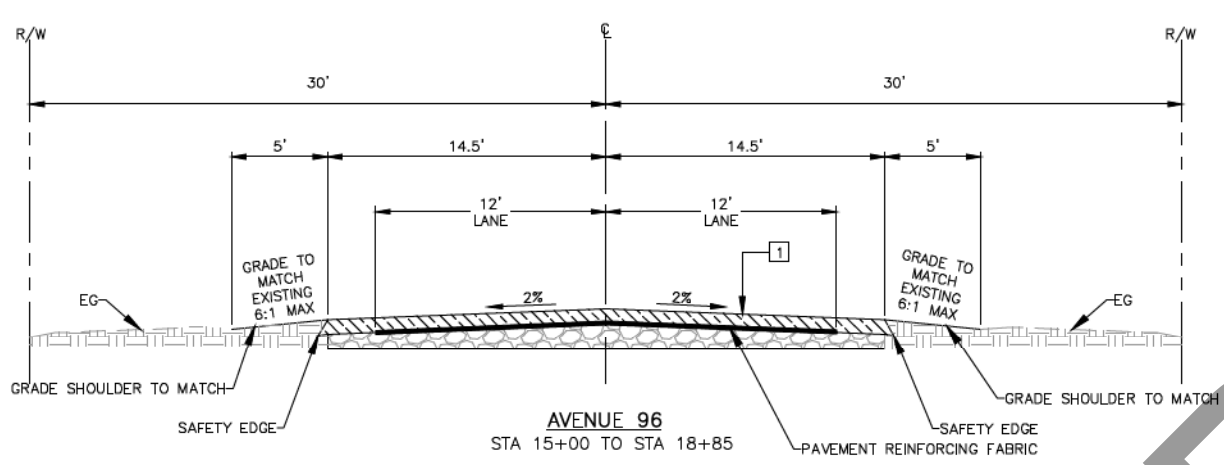


**LEGEND**

	GRIND & REPLACE
	EXISTING GROUND
	EXISTING ASPHALT/CONCRETE

- NOTES**
1. ALL CONSTRUCTION SHALL BE INSIDE OF COUNTY RIGHT OF WAY AND VERIFIED BY RE.
  2. SHOULDER BACKING SHALL BE COMPLETED AS PART OF SHOULDER BACKING ITEM WORK.
  3. GRADE SHOULDER TO MATCH PAVEMENT, SHALL BE PART OF FINISHING ROADWAY

**TYPICAL STRUCTURAL SECTIONS**



**REVISIONS**

No.	DESCRIPTION	DATE	BY

COUNTY OF TULARE  
RESOURCE MANAGEMENT AGENCY  
5961 SOUTH MOONEY BLVD.  
VISALIA, CA 93277  
(559)624-7000  
WWW.TULARECOUNTY.CA.GOV/RMA









TYPICAL CROSS SECTIONS  
LOCATION 6: AVE 96  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
ACT (RRAA) PROJECT 2  
TULARE COUNTY

SCALE	H: 1"=5' V: 1"=3.5'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-7X001.DWG
DATE	08/11/2020
SHEET No.	



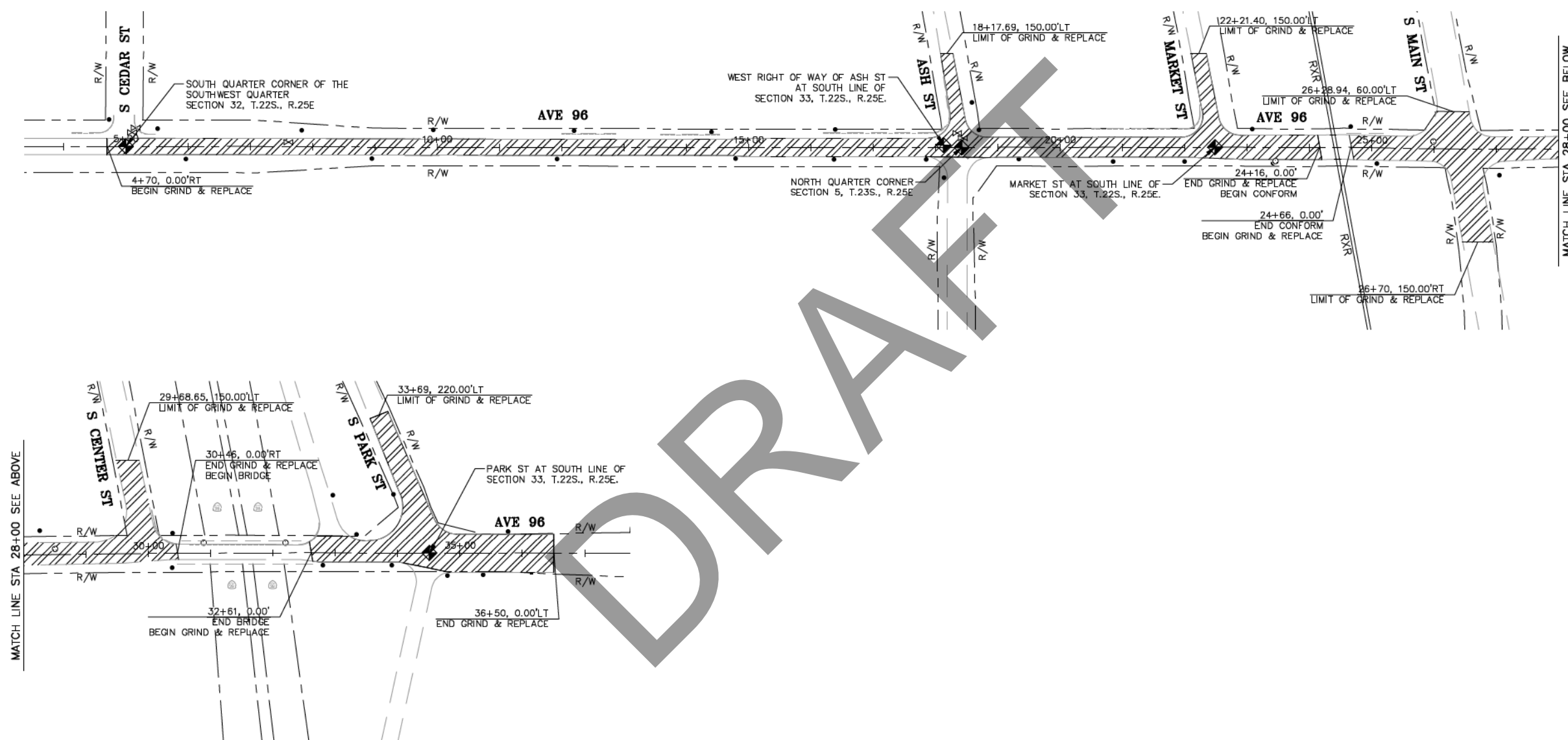
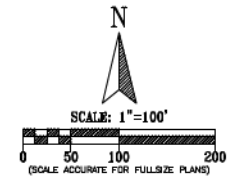


**LEGEND**

-  0.25' GRIND & REPLACE
-  EXIST SIGN
-  SURVEY MONUMENT ADJUST TO GRADE
-  EXIST GAS VALVE PROTECT IN PLACE
-  EXIST WATER VALVE PROTECT IN PLACE
-  EXIST MANHOLE PROTECT IN PLACE

**CONSTRUCTION NOTES**

1. GRADE EXISTING DRIVEWAYS TO MATCH GRADE OF NEW PAVEMENT SURFACE. USE SHOULDER BACKING MATERIAL AND/OR MATCH MATERIAL OF EXISTING DRIVEWAY WHEN NOT SHOWN ON PLANS.



DRAFT

No.	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559) 624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



**PLAN SHEET**  
**LOCATION 6: AVE 96**  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	PAO
FILE	19015-7L001.DWG
DATE	08/11/2020
SHEET No.	L11



## TRAFFIC MARKING INSTALLATION AND QUANTITY SUMMARY

ROADWAY	CENTERLINE & CHANNELIZING					LEFT EDGELINE				RIGHT EDGELINE				PAVEMENT MARKINGS		
	STATIONS		STRIPING DETAIL (ft)			STATIONS		STRIPING DETAIL (ft)		STATIONS		STRIPING DETAIL (ft)		STATIONS	DESCRIPTION	AREA (ft <sup>2</sup> )
	FROM	TO	Detail 5	Detail 18	Detail 21	FROM	TO	No. 27B	No. 27C	FROM	TO	No. 27B	No. 27C			
<b>AVEUNE 186</b>	5+30	18+07			1,277.0									19+39	RAILROAD	70.00
	18+75	21+76			301.0									20+53	RAILROAD	70.00
	22+85	24+19			134.0									21+78	STOP	22.00
	24+67	26+06			139.0									22+26	AHEAD	31.00
	26+78	29+56			278.0									24+19	LIMIT LINE	20.00
	30+27	32+70			243.0									24+67	LIMIT LINE	20.00
	33+32	34+06			74.0									24+93	RAILROAD	70.00
	34+92	36+50			158.0									25+80	LIMIT LINE	20.00
														28+90	LIMIT LINE	20.00
														30+28	AHEAD	31.00
														30+84	STOP	22.00
	<b>ASH ST.</b>	NORTH SIDE													18+27	LIMIT LINE
<b>MARKET ST.</b>	NORTH SIDE													22+37	LIMIT LINE	24.00
<b>MAIN ST.</b>	SOUTH SIDE													26+61	LIMIT LINE	19.00
<b>CENTE R ST.</b>	NORTH SIDE													29+75	LIMIT LINE	27.00
<b>PARK ST.</b>	NORTH SIDE													34+27	LIMIT LINE	50.00
					3,204											540.00

Item	Description	Quantity	Unit
Detail 5	6" Yellow Centerline (Broken 12' on and 38' off)		ft
Detail 18	6" Yellow Centerline (One direction no-passing)		ft
Detail 21	6" Yellow Centerline (Both direction no-passing)	3,204	ft
Detail 27B	6" White Edgeline (Solid)		ft
Detail 27C	6" White Edgeline (3' Dashed)		ft
	<b>TOTAL</b>	3,204	ft
Pavement Markings	Various	540.00	ft <sup>2</sup>

**NOTE**  
 All striping shall receive 2 coats of paint.  
 Double Yellow stripes are measured as one Traffic Stripe, as per Caltrans Standard Specifications, 2018  
 Pavement marking shall be thermoplastic.

(M:\Btj\ets\19015-7\19015-7-P0001.dwg)Traffic Marking Qty

REVISIONS	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



SIGNING AND STRIPING TABLE  
 LOCATION 6: AVE 96  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	NTS
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-7P0001.DWG
DATE	08/11/2020
SHEET No.	



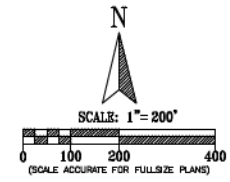
PD6

30 of 39

CONSTRUCTION AREA SIGNS					
TYPE	CODE	MESSAGE	PANEL SIZE (IN X IN)	POST SIZE (IN X IN)	NO. SIGNS
(A)	C23(CA)	ROAD WORK AHEAD	36 X 36	4 X 4	11
(B)	G20-2	END ROAD WORK	48 X 24	4 X 4	10
(C)	-	PROJECT FUNDING SIGN	40 X 30	4 X 4	1

NOTES:

1. LOCATIONS TO BE APPROVED BY THE ENGINEER.
2. SIGNS SHALL BE FIELD ADJUSTED AS NECESSARY.
3. SEE SHEET CAS1 FOR PROJECT FUNDING SIGN DETAILS.



NO.	REVISIONS	DESCRIPTION	DATE	BY

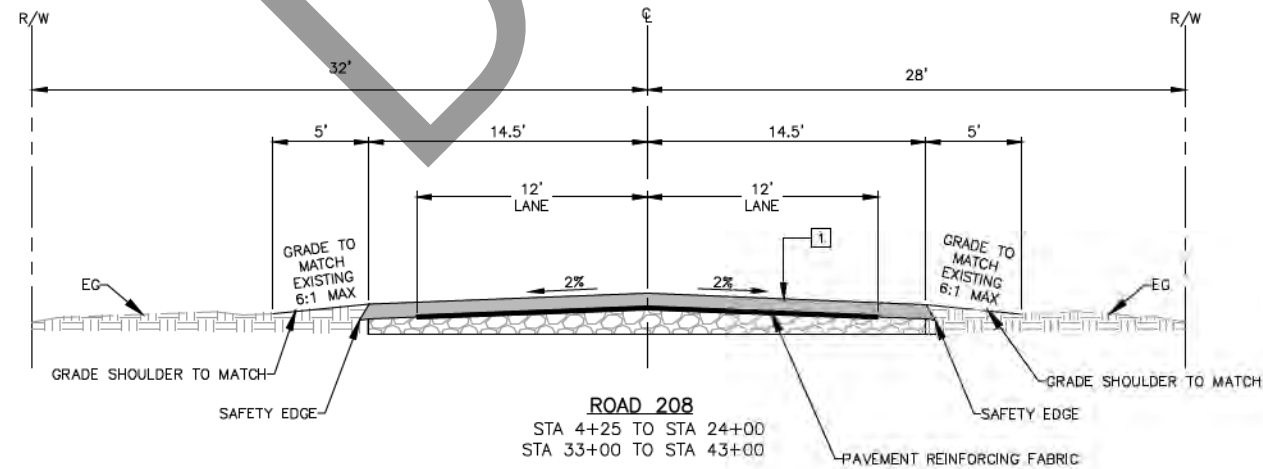
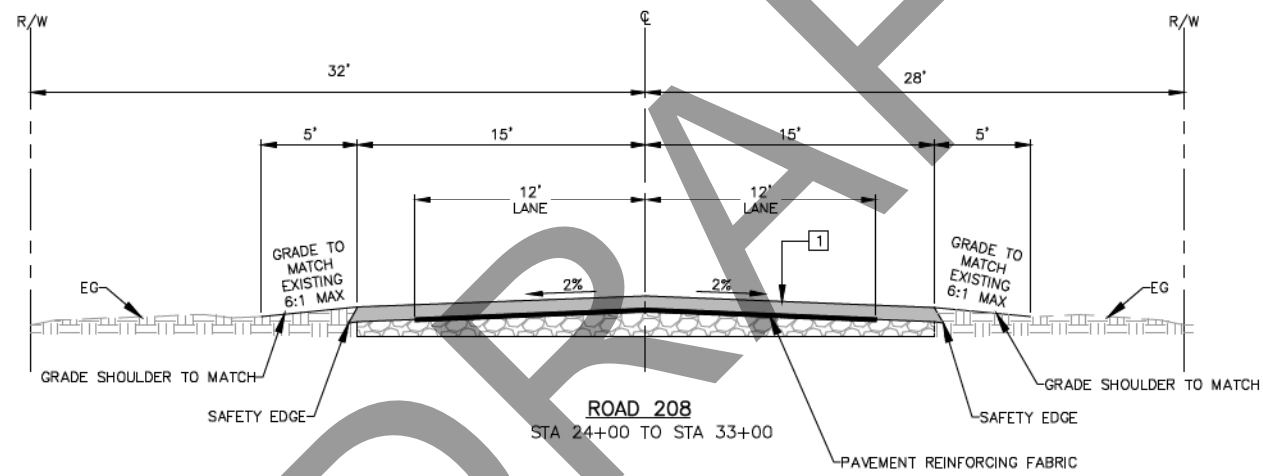
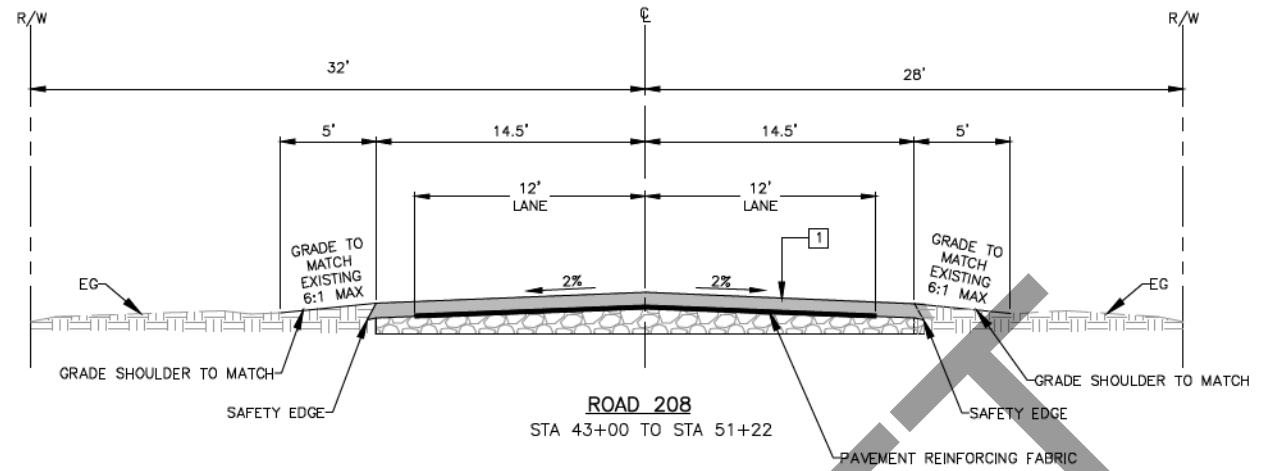
COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA






CONSTRUCTION AREA SIGN PLAN  
 LOCATION 6: AVE 96  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=200'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	POA
FILE	19015-7CAS001.DWG
DATE	08/11/2020
SHEET No.	CAS6






**LEGEND**

-  HMA OVERLAY
-  EXISTING GROUND
-  EXISTING ASPHALT/CONCRETE

**NOTES**

1. ALL CONSTRUCTION SHALL BE INSIDE OF COUNTY RIGHT OF WAY AND VERIFIED BY RE.
2. SHOULDER BACKING SHALL BE COMPLETED AS PART OF SHOULDER BACKING ITEM WORK.
3. GRADE SHOULDER TO MATCH PAVEMENT, SHALL BE PART OF FINISHING ROADWAY

**TYPICAL STRUCTURAL SECTIONS**

-  0.2' HMA OVERLAY



NO.	REVISIONS	DATE	BY






COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559) 624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



TYPICAL CROSS SECTIONS  
 LOCATION 7: ROAD 208  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

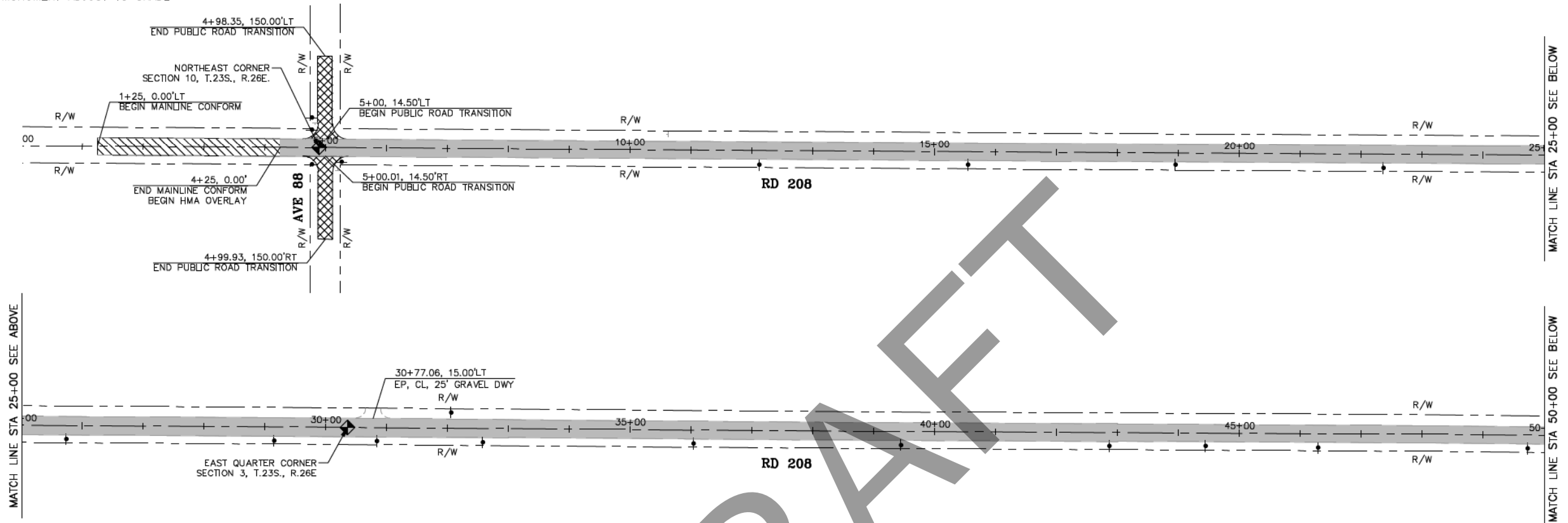
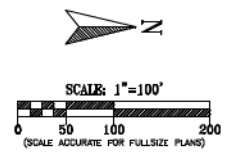
SCALE	H: 1"=5' v: 1"=2.5'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-BX001.DWG
DATE	08/11/2020
SHEET No.	X7

**LEGEND**

-  0.2' HMA OVERLAY
-  0.2' MAINLINE CONFORM PER SHEET C1
-  0.2' PUBLIC ROAD TRANSITION PER SHEET C1
-  EXIST SIGN
-  SURVEY MONUMENT ADJUST TO GRADE

**CONSTRUCTION NOTES**

1. GRADE EXISTING DRIVEWAYS TO MATCH GRADE OF NEW PAVEMENT SURFACE. USE SHOULDER BACKING MATERIAL AND/OR MATCH MATERIAL OF EXISTING DRIVEWAY WHEN NOT SHOWN ON PLANS.



**GRIND TABLE FOR ROAD 208**

BEGIN STATION	END STATION	LOCATION	DESCRIPTION	LENGTH (ft)	WIDTH (ft)	THICKNESS	AREA SY
05+60	06+55	Left	Lane	95	12	0.2	126.7
05+60	06+55	Right	Lane	95	12	0.2	126.7
09+80	10+00	Left	Lane	20	12	0.2	26.7
09+80	10+00	Right	Lane	20	12	0.2	26.7
10+30	11+05	Right	MT	75	7	0.2	58.3
11+50	12+70	Right	MT	120	7	0.2	93.3
13+20	14+00	Right	Lane	80	12	0.2	106.7
13+20	14+50	Left	MT	130	7	0.2	101.1
15+00	17+00	Right	Lane	200	12	0.2	266.7
16+00	16+50	Left	Lane	50	12	0.2	66.7
16+90	17+15	Left	OWT	25	7	0.2	19.4
17+15	18+15	Left	Lane	100	12	0.2	133.3
17+00	17+50	Right	MT	50	7	0.2	38.9
18+50	20+40	Left	Lane	190	12	0.2	253.3
18+75	20+40	Right	MT	165	7	0.2	128.3
20+40	47+70	Right	Lane	2730	12	0.2	3640.0
20+20	51+90	Left	Lane	3170	12	0.2	4226.7
49+00	49+50	Right	Lane	50	12	0.2	66.7
50+00	50+80	Right	MT	80	7	0.2	62.2
54+28	56+93	Left	Grind and Replace	265	14	0.2	412.2

9980.5



NO.	DESCRIPTION	DATE	BY

COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559) 624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



PLAN SHEET  
 LOCATION 7: ROAD 208  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE 1"=100'  
 DIVISION DESIGN  
 JOB NO. 19015-1  
 DESIGNED ARS  
 DRAWN ARS  
 CHECKED PAO  
 FILE 19015-BL001.DWG  
 DATE 08/11/2020  
 SHEET No.

**L12**  
 33 of 39

## TRAFFIC MARKING INSTALLATION AND QUANTITY SUMMARY

ROADWAY	CENTERLINE & CHANNELIZING					LEFT EDGELINE				RIGHT EDGELINE				PAVEMENT MARKINGS		
	STATIONS		STRIPING DETAIL (ft)			STATIONS		STRIPING DETAIL (ft)		STATIONS		STRIPING DETAIL (ft)		STATIONS	DESCRIPTION	AREA (ft <sup>2</sup> )
	FROM	TO	Detail 5	Detail 18	Detail 21	FROM	TO	No. 27B	No. 27C	FROM	TO	No. 27B	No. 27C			
ROAD 208	1 + 25	4 + 70		345.0		5 + 29	53 + 22	4,793.0		5 + 29	53 + 22	4,793.0	52 + 90	STOP	22.00	
	5 + 29	10 + 66		537.0												
	10 + 66	48 + 15	3,749.0													
	48 + 15	49 + 54		139.0												
	49 + 54	53 + 22			368.0											
AVE 88	EAST SIDE			150.0									4 + 93	LIMITLINE	12.00	
	WEST SIDE			150.0									5 + 06	LIMITLINE	12.00	
			3,749	1,321	368				4,793				4,793			46.00

Item	Description	Quantity	Unit
Detail 5	6" Yellow Centerline (Broken 12' on and 36' off)	3,749	ft
Detail 18	6" Yellow Centerline (One direction no-passing)	1,321	ft
Detail 21	6" Yellow Centerline (Both direction no-passing)	368	ft
Detail 27B	6" White Edgeline (Solid)	9,586	ft
Detail 27C	6" White Edgeline (3' Dashed)		ft
<b>TOTAL</b>		<b>15,024</b>	<b>ft</b>
Pavement Markings	Various	46.00	ft <sup>2</sup>

**NOTE**  
 All striping shall receive 2 coats of paint.  
 Double Yellow stripes are measured as one Traffic Stripe, as per Caltrans Standard Specifications, 2018  
 Pavement marking shall be thermoplastic.

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No.	DESCRIPTION	DATE	BY

**COUNTY OF TULARE**  
**RESOURCE MANAGEMENT AGENCY**  
 5961 SOUTH MOONEY BLVD.  
 VISALIA, CA 93277  
 (559)624-7000  
 WWW.TULARECOUNTY.CA.GOV/RMA



SIGNING AND STRIPING TABLE  
 LOCATION 7: ROAD 208  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	NTS
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-8-ED001.DWG
DATE	08/11/2020
SHEET No.	



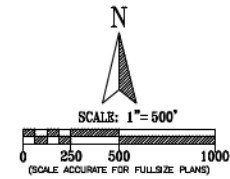
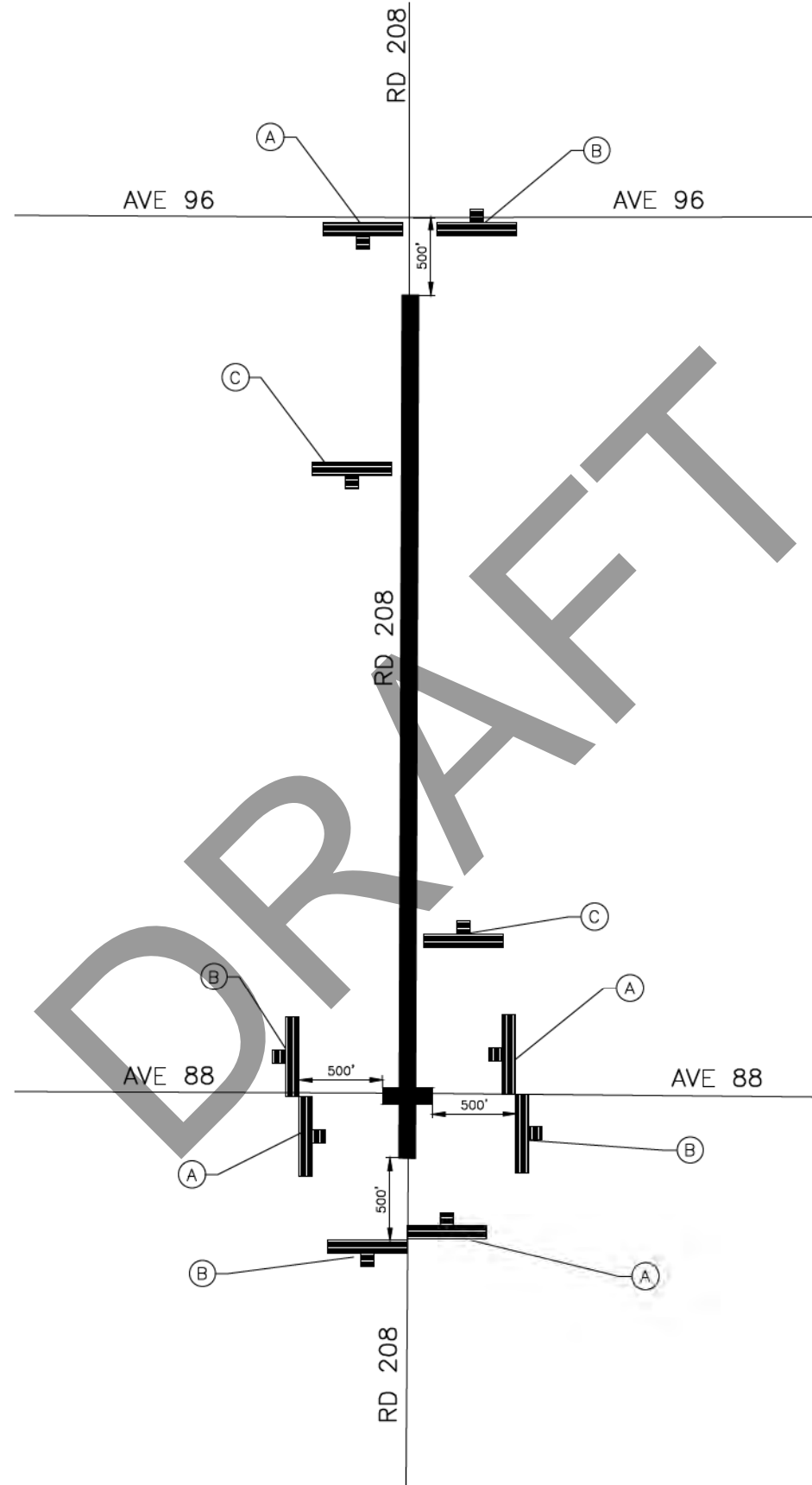
PD7

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CONSTRUCTION AREA SIGNS					
TYPE	CODE	MESSAGE	PANEL SIZE (IN X IN)	POST SIZE (IN X IN)	NO. SIGNS
(A)	C23(CA)	ROAD WORK AHEAD	48 X 48	4 X 4	4
(B)	G20-2	END ROAD WORK	48 X 24	4 X 4	4
(C)	-	PROJECT FUNDING SIGN	40 X 30	4 X 4	2

NOTES:

1. LOCATIONS TO BE APPROVED BY THE ENGINEER.
2. SIGNS SHALL BE FIELD ADJUSTED AS NECESSARY.
3. SEE SHEET CAS1 FOR PROJECT FUNDING SIGN DETAILS.



DRAFT

NO.	REVISIONS	DATE	BY

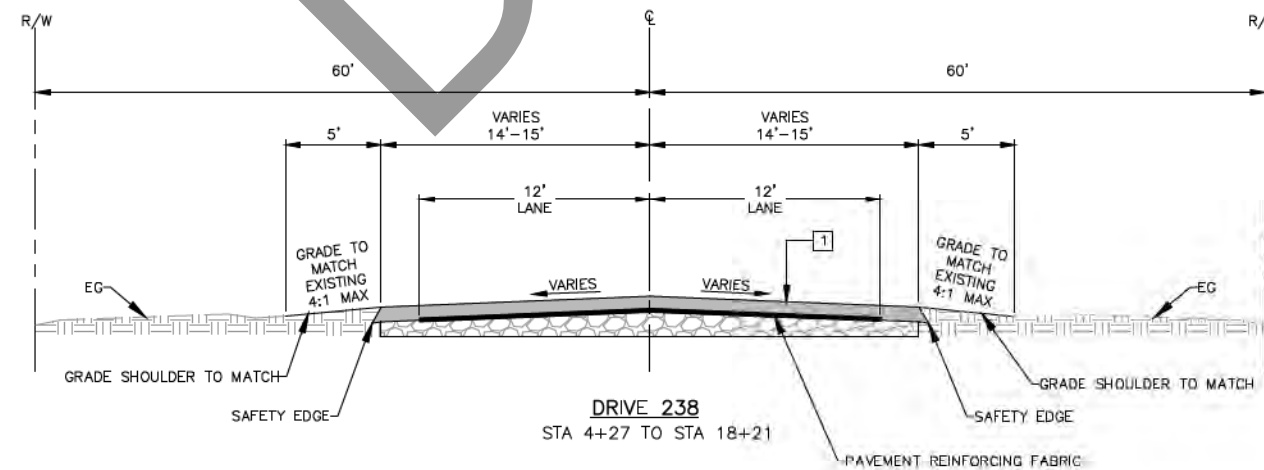
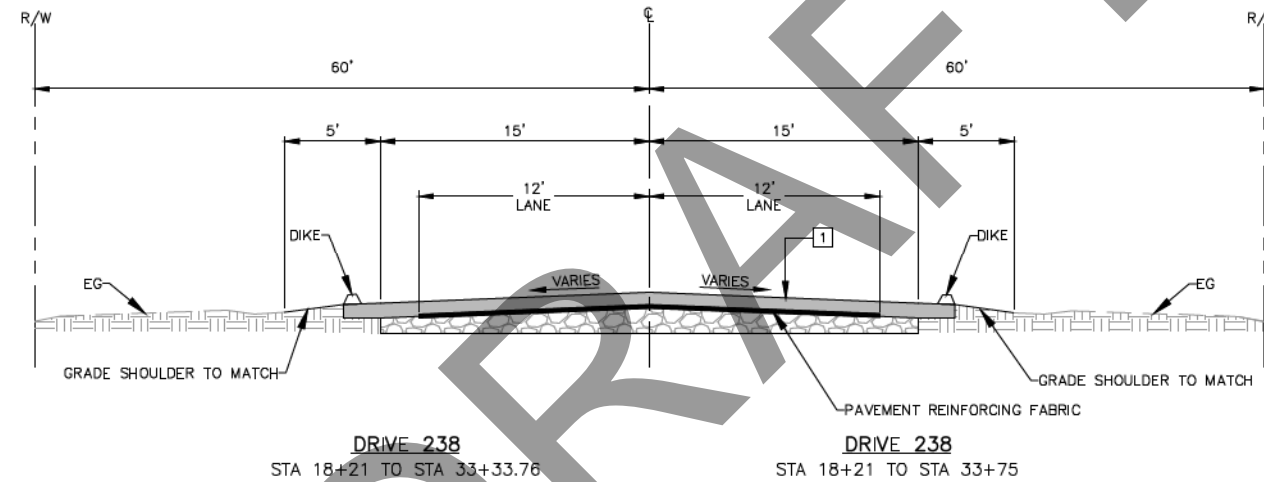
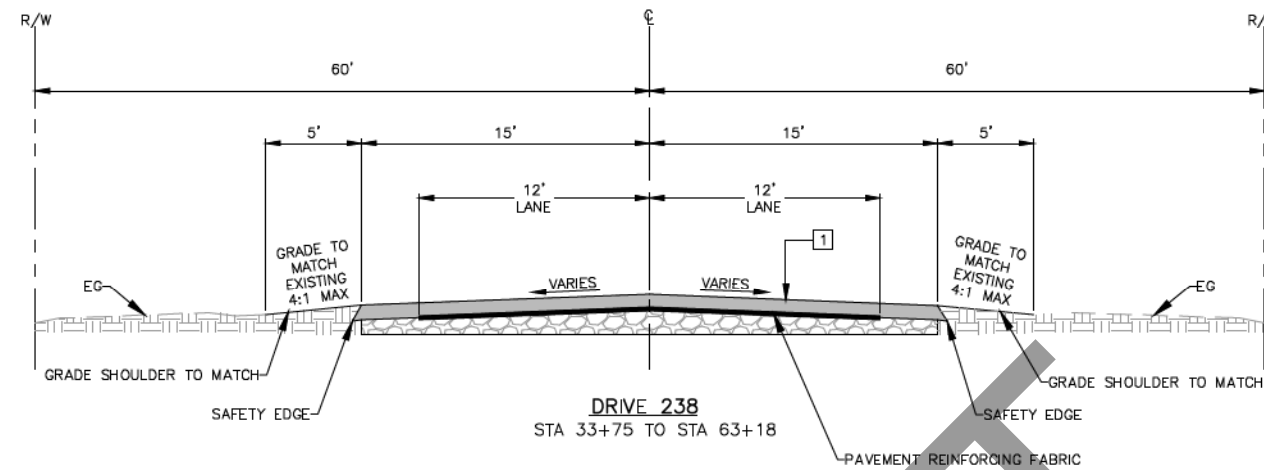
COUNTY OF TULARE  
 RESOURCE MANAGEMENT AGENCY  
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CONSTRUCTION AREA SIGN PLAN  
 LOCATION 7: ROAD 208  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	1"=500'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	POA
FILE	19015-RCAS001.DWG
DATE	08/11/2020
SHEET No.	CAS7





**LEGEND**

- HMA OVERLAY
- EXISTING GROUND
- EXISTING ASPHALT/CONCRETE

**NOTES**

1. ALL CONSTRUCTION SHALL BE INSIDE OF COUNTY RIGHT OF WAY AND VERIFIED BY RE.
2. SHOULDER BACKING SHALL BE COMPLETED AS PART OF SHOULDER BACKING ITEM WORK.
3. GRADE SHOULDER TO MATCH PAVEMENT, SHALL BE PART OF FINISHING ROADWAY

**TYPICAL STRUCTURAL SECTIONS**

- 0.2' HMA OVERLAY



NO.	DESCRIPTION	DATE	BY

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TYPICAL CROSS SECTIONS  
 LOCATION 8: DRIVE 238  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
**ACT (RRAA) PROJECT 2**  
 TULARE COUNTY

SCALE	H: 1"=5'	V: 1"=2.5'
DIVISION	DESIGN	
JOB NO.	19015-1	
DESIGNED	IG	
DRAWN	IG	
CHECKED	PAO	
FILE	19015-9X001.DWG	
DATE	08/11/2020	
SHEET No.		

**X8**  
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**LEGEND**

- 0.2' HMA OVERLAY
- 0.2' MAINLINE CONFORM PER SHEET C1
- 0.2' PUBLIC ROAD TRANSITION PER SHEET C1
- DRIVEWAY TRANSITION PER SHEET C1

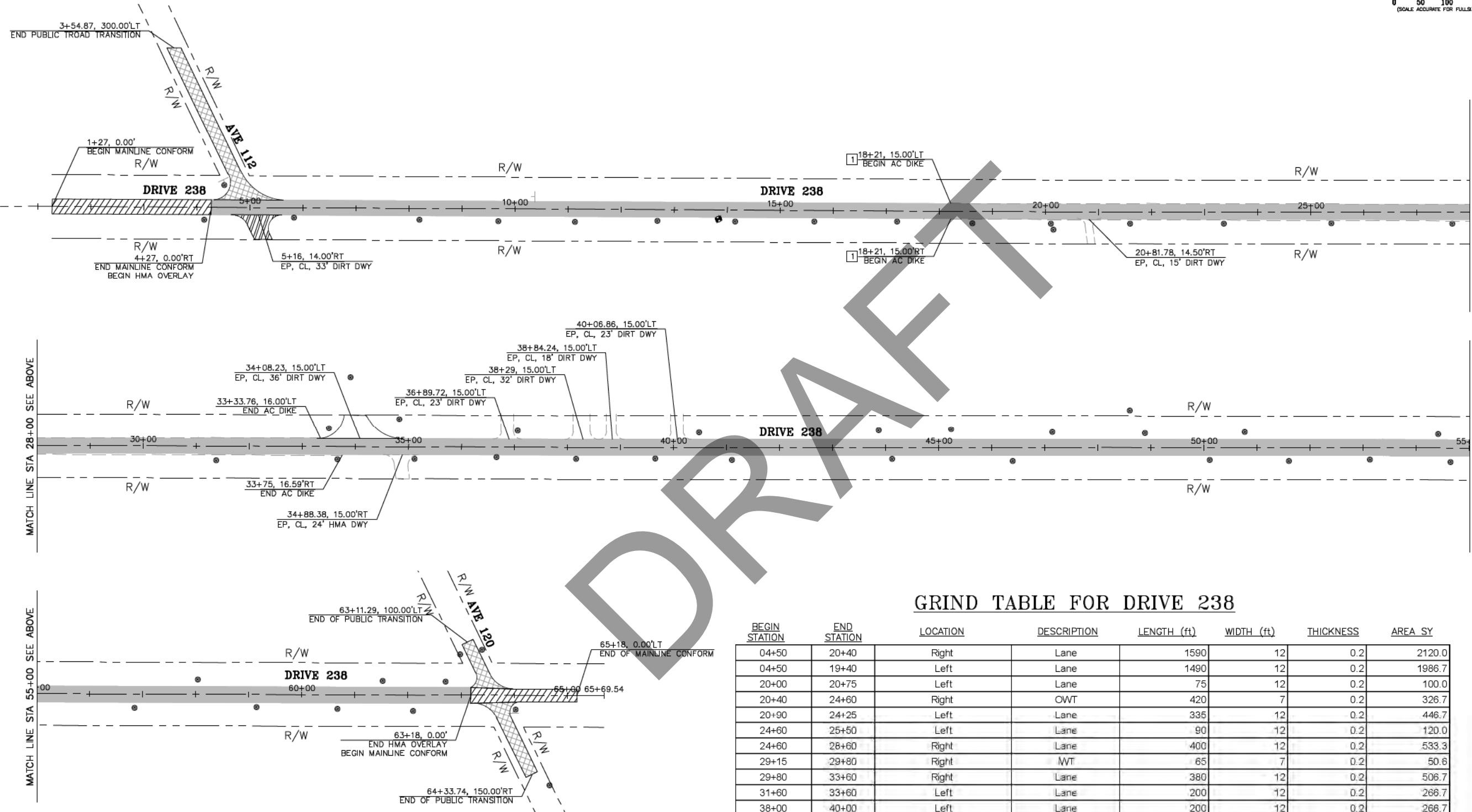
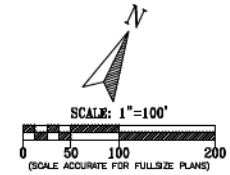
- EXIST SIGN
- SURVEY MONUMENT ADJUST TO GRADE
- EXIST GAS VALVE
- EXIST UTILITY POLE

**CONSTRUCTION NOTES**

- [1] EXIST AC DIKE, REPLACE PER DETAIL ON SHEET C1

**GENERAL NOTES**

- 1. GRADE EXISTING DRIVEWAYS TO MATCH GRADE OF NEW PAVEMENT SURFACE. USE SHOULDER BACKING MATERIAL AND/OR MATCH MATERIAL OF EXISTING DRIVEWAY WHEN NOT SHOWN ON PLANS.



**GRIND TABLE FOR DRIVE 238**

BEGIN STATION	END STATION	LOCATION	DESCRIPTION	LENGTH (ft)	WIDTH (ft)	THICKNESS	AREA SY
04+50	20+40	Right	Lane	1590	12	0.2	2120.0
04+50	19+40	Left	Lane	1490	12	0.2	1986.7
20+00	20+75	Left	Lane	75	12	0.2	100.0
20+40	24+60	Right	OWT	420	7	0.2	326.7
20+90	24+25	Left	Lane	335	12	0.2	446.7
24+60	25+50	Left	Lane	90	12	0.2	120.0
24+60	28+60	Right	Lane	400	12	0.2	533.3
29+15	29+80	Right	OWT	65	7	0.2	50.6
29+80	33+60	Right	Lane	380	12	0.2	506.7
31+60	33+60	Left	Lane	200	12	0.2	266.7
38+00	40+00	Left	Lane	200	12	0.2	266.7
39+50	41+75	Right	OWT	225	7	0.2	175.0
44+00	47+75	Left	OWT	375	7	0.2	291.7
53+00	60+00	Left	OWT	700	7	0.2	544.4
						0.2	0.0
						0.2	0.0
						0.2	0.0
						0.2	0.0

7735.0



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PLAN SHEET  
 LOCATION 8: DRIVE 238  
**2020 ROAD REPAIR AND ACCOUNTABILITY**  
 ACT (RRAA) PROJECT 2  
 TULARE COUNTY

SCALE	1"=100'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-9L001.DWG
DATE	08/11/2020
SHEET No.	L13

## TRAFFIC MARKING INSTALLATION AND QUANTITY SUMMARY

ROADWAY	CENTERLINE & CHANNELIZING					LEFT EDGELINE				RIGHT EDGELINE				PAVEMENT MARKINGS		
	STATIONS		STRIPING DETAIL (ft)			STATIONS		STRIPING DETAIL (ft)		STATIONS		STRIPING DETAIL (ft)		STATIONS	DESCRIPTION	AREA (ft <sup>2</sup> )
	FROM	TO	Detail 5	Detail 18	Detail 21	FROM	TO	No. 27B	No. 27C	FROM	TO	No. 27B	No. 27C			
ROAD 238	1+27	4+58			331.0	1+27	4+15	288.0		1+27	63+16	6,189.0				
	5+25	8+75		350.0		4+15	5+53		138.0	63+16	64+12		96.0			
	8+75	59+51	5,076.0			5+53	62+97	5,744.0		64+12	65+18	106.0				
	59+51	63+53		402.0		62+97	63+75		78.0							
	63+75	65+18		143.0		63+75	65+18	143.0								
AVE 112	EAST SIDE												4+60	LIMIT LINE	24.00	
					300.0											
AVE 120													63+25	LIMIT LINE (NORTH BOUND)	24.00	
	WEST SIDE												63+72	LIMIT LINE (SOUTH BOUND)	24.00	
			5,076	1,045	631			6,175	216			6,295	96		72.00	

Item	Description	Quantity	Unit
Detail 5	6" Yellow Centerline (Broken 12' on and 36' off)	5,076	ft
Detail 18	6" Yellow Centerline (One direction no-passing)	1,045	ft
Detail 21	6" Yellow Centerline (Both direction no-passing)	631	ft
Detail 27B	6" White Edgeline (Solid)	12,470	ft
Detail 27C	6" White Edgeline (3' Dashed)	312	ft
	<b>TOTAL</b>	<b>19,534</b>	<b>ft</b>
Pavement Markings	Various	72.00	ft <sup>2</sup>

**NOTE**  
 All striping shall receive 2 coats of paint.  
 Double Yellow stripes are measured as one Traffic Stripe, as per Caltrans Standard Specifications, 2018  
 Pavement marking shall be thermoplastic.

M:\Projects\19015-9\19015-9\_F001.dwg Traffic Marking Qty



REVISIONS	DESCRIPTION	DATE	BY

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SIGNING AND STRIPING TABLE  
 LOCATION 8: DRIVE 238  
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 TULARE COUNTY

SCALE	NTS
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	IG
DRAWN	IG
CHECKED	PAO
FILE	19015-9R0001.DWG
DATE	08/11/2020
SHEET No.	

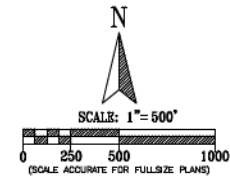
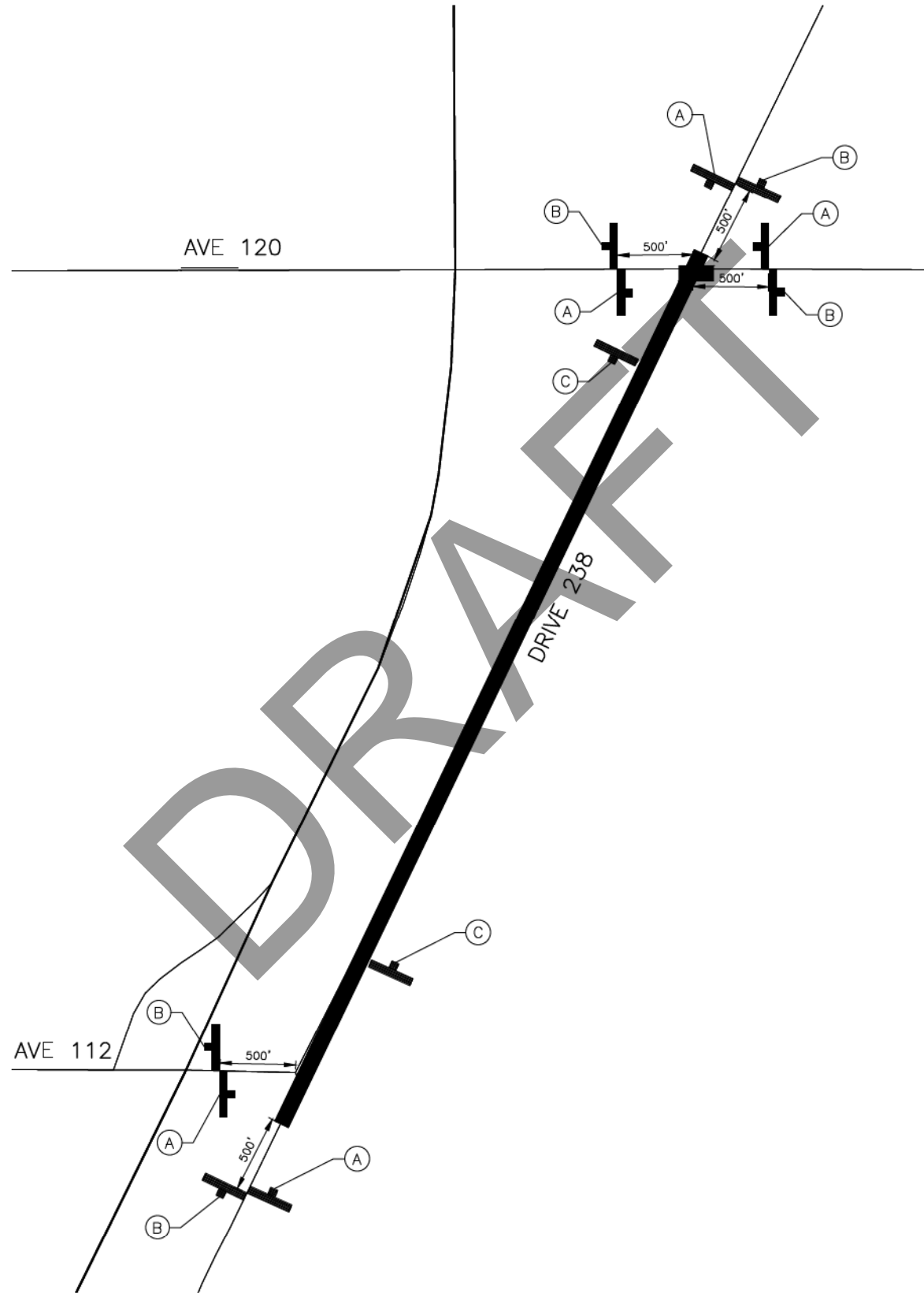
PD8

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CONSTRUCTION AREA SIGNS					
TYPE	CODE	MESSAGE	PANEL SIZE (IN X IN)	POST SIZE (IN X IN)	NO. SIGNS
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NO.	REVISIONS	DATE	BY

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CONSTRUCTION AREA SIGN PLAN  
 LOCATION 8: DRIVE 238  
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 ACT (RRAA) PROJECT 2  
 TULARE COUNTY

SCALE	1"=500'
DIVISION	DESIGN
JOB NO.	19015-1
DESIGNED	ARS
DRAWN	ARS
CHECKED	POA
FILE	19015-RCAS001.DWG
DATE	08/11/2020



SHEET No.  
**CAS8**  
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