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| MANUAL CHANGE TRANSMITTAL | | NO. 21-4 |
| TITLE: Department of Transportation <i>Construction Manual</i> | APPROVED BY:  Ramon Hopkins, Chief Division of Construction | DATE ISSUED: 5-24-2021 |
| SUBJECT AREA Section 4-82 | ISSUING UNIT Division of Construction | |
| SUPERSEDES Section 4-82 of July 2019 | DISTRIBUTION All Requested Manual Holders | |

The purpose of this manual change transmittal is to announce updates and corrections to the Caltrans *Construction Manual*. Please note the updates, and print new sections for your manual as needed. Updated sections are published on <http://www.dot.ca.gov/hq/construc/constmanual/> and are indicated by the date listed in the right-hand column on that page. Content changes, not including edits for clarity, are enumerated:

Section 4-82, “Signs and Markers”

The Division of Safety Programs developed a *Sign Inspection Guide* and made it available on its Onramp website for Construction field staff to use for training purposes in providing quality assurance of signs installed on projects.

Section 82 Signs and Markers

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Section 82 Signs and Markers

4-8201 General

This section describes the work for providing and installing sign panels, roadside signs, sign overlays and markers; and it describes work on existing roadside signs and markers at the locations shown on the plans or as directed by the resident engineer. Markers, except highway postmile markers, are used to mark obstructions within or adjacent to the roadbed, including paved shoulders.

4-8202 Before Work Begins

Before work begins, take the following steps:

- Verify that Form CEM-3101, "Notice of Materials to Be Used," includes markers, sign panels, roadside sign posts, and sign overlays. Retroreflective sheeting, including reflectors for markers, and fiberglass-reinforced plastic panel and markers listed on Form CEM-3101 must be on the Authorized Material List for signing and delineation materials found on the Division of Engineering Services (DES) website. Refer to Section 6-202, "Responsibilities for Acceptance of Manufactured or Fabricated Materials and Products," of this manual for additional information.
- Review the contract for any requirements for materials furnished by Caltrans. Ensure furnished markers and sign materials have been ordered and will be ready for timely delivery. Inspect and inventory all Department-furnished materials to confirm they are delivered in good condition. Compile a list of deficiencies, if any, and report it to the resident engineer. After delivery, the contractor is responsible for any damage to Department-furnished materials.

4-8202A Sign Panels

Request a certificate of compliance for:

- Aluminum sheeting
- Retroreflective sheeting
- Color imaging methods and film
- Protective-overlay film

Obtain and review as-built drawings for the structures requiring modified sign panels.

Inspect signs at the fabrication plant or as they are delivered to the job site. Reject formed panel signs with holes that are slanted or incorrectly spaced. Reject damaged signs, defective signs, and signs with spelling errors before or after installation. Ensure the reflective sheeting is not damaged or compromised during the delivery and installation.

4-8202B Roadside Signs

Review the plans and specifications to determine the types, quantity, and location of signs to be installed and any special requirements included in the contract.

4-8202C Markers

Review the marker list shown on the plans, and inform the contractor of any changes, preferably before material is ordered or information is stenciled on the markers. Part 3, "Markings," of the *California Manual on Uniform Traffic Control Devices*, provides design details for markers.

Request a certificate of compliance for:

- Metal target plates
- Enamel coating
- Retroreflective sheeting

Examine markers and retroreflective sheeting to ensure they meet specification. Verify that they match the materials shown on Form CEM-3101.

If postmile values are not shown on the plans, provide the contractor with a list of postmile values to be stenciled on highway post markers.

4-8202D Existing Roadside Signs and Markers

Review Section 15, "Existing Facilities," of the *Standard Specifications*.

Inspect existing roadside signs that are to be reset or relocated. If their condition has deteriorated sufficiently to prevent planned use, write a change order to provide for new materials. Inspect existing frames where new sign panels are to be installed.

Document existing conditions with photographs or video, and file them in the project records.

4-8203 During the Course of Work

4-8203A Sign Panels

Ensure through observation that sign panels and fastening hardware comply with specifications. Verify that exposed portions of fastening hardware on the panel faces have been finished as specified.

Inspect sign panels for compliance with specified work quality. Make sure sign panels are not chipped or bent.

Inspect signs after placement and notify the contractor to immediately replace sign panels exhibiting damage or flaws, including sheeting splices or a significant color difference between daytime and nighttime.

Check that sign panels over lanes and lane arrows are correctly centered over the appropriate lanes.

4-8203B Roadside Signs

Review the location of postholes to verify that the signs have the correct horizontal clearance and will not be obstructed by other objects or protrude into pedestrian facilities. Verify holes are excavated to the full depth and backfilled as specified.

Ensure the minimum vertical clearances to the bottom of the sign panels are as required by the *Standard Plans*.

Verify that wood posts have breakaway saw cuts and holes.

If posts are cut or drilled in the field, ensure the contractor treats the exposed areas with a preservative.

Verify the contractor treats wood block spacers and any cuts to the wood posts with a preservative.

Ensure signs are attached to the posts according to the specifications.

Contact the district Traffic Unit for assistance with field review of sign staking and day and night observation of completed signage. Document any assistance received and changes made in the daily report. Inspect the signs during the hours of darkness to ensure proper reflectivity.

4-8203C Markers

Inspect posts for damage during placement.

Ensure target plates and markers are installed after posts are set in place.

Verify letters and numerals on highway post markers are according to the specifications.

Inspect finished metal target plates for dents or defects. The maximum edge-to-edge surface deviation from a horizontal plane must not exceed 1/8 inch. Ensure all exposed areas are clean, and areas where the paint is damaged are spot painted.

4-8203D Existing Roadside Signs and Markers

Ensure the contractor protects all existing facilities that are to remain in place, temporarily or permanently, whether described in the contract or not. When existing facilities are damaged as a result of the contractor's operations, the contractor is responsible for repair or replacement. Caltrans is responsible for repair or replacement of existing facilities that are damaged by public traffic.

Ensure existing signs are not removed until the replacement signs are installed or when the existing signs are no longer needed. If an existing sign needs to be covered, ensure the signs are completely covered without damaging the sign.

4-8204 Level of Inspection

Suggested levels of inspection for signs and markers are:

- Benchmark inspection of damaged or defective sign panels and markers when delivered to the job site and after installation

- Intermittent inspection of installation of sign panels, roadside signs, and markers
- Intermittent inspection of sign and marker posts

Refer to the resources available under “Manuals and Guides” on the Division of Safety Programs intranet page for additional sign inspection guidance.

4-8205 Quality Control

- Obtain the contractor’s quality control plan for fabricating signs that details the materials and methods that the sign manufacturer will use to ensure the quality of the work. Coordinate with METS for review of the quality control plan and the requirement for test samples.

4-8206 Payment

For details of measurement and payment, review contract specifications. Make any necessary measurements and counts.

Refer to Section 6-2.01E, “Material Source Inspection and Testing,” of the *Standard Specifications*, for information about standard deductions taken for Caltrans doing inspection or testing at material sources.