



California Traffic Control Devices Committee Agenda Item Report



Meeting Date: November 03, 2022	From: John Bamfield, PE, Caltrans
Item Number: 21-06	
Sponsored By: Yue Wang, PE, Caltrans	Presented By: John Bamfield, PE, Caltrans
Description: Revision to California Manual on Traffic Control Devices (CA MUTCD) Section 3A.06 to include the minimum requirements of 6" wide longitudinal traffic lines for permanent pavement delineation on State Highway System (SHS).	

Recommendation:

Motion by committee to recommend inclusion of the proposed revisions to the CA MUTCD Section 3A.06 to include the minimum requirements of 6" wide longitudinal traffic lines for permanent pavement delineation on State Highway System and clarify the use of 4" width as optional for local agency roadways.

Agency Making Request/Sponsor:

Caltrans.

Background:

Caltrans memorandum dated May 19, 2017 and titled "Implementation of six-inch wide traffic lines and discontinuing use of non-reflective raised pavement markers" implemented the policy and standards of requiring minimum 6" wide for longitudinal traffic lines on the SHS. This was in compliance with the CA MUTCD Section 3A.06, which requires minimum 4" width for longitudinal traffic lines.

The purpose of increasing the width of longitudinal traffic lines was to benefit older drivers and increase visibility of laneline delineation for all road users by providing improved roadway guidance, especially during periods of impaired visibility, such as wet conditions at night (refer to the Federal Highway Administration's (FHWA) "Handbook for Designing Roadways for the Aging Population").

When a state highway intersects with a local road, only mainline state highway longitudinal traffic lines for lanelines, edgelines, and centerlines are required to be 6" wide lines. Caltrans Standard Plans and Standard Specifications were revised to comply with this memorandum's new requirements of 6" wide traffic lanelines. CA MUTCD text and figures containing details showing the width and patterns of longitudinal lines were not revised to comply with Caltrans minimum requirements of the 6" wide traffic lanelines. This discrepancy between the Caltrans Standard Plans and the CA MUTCD has led to confusion amongst local transportation agencies and consultants operating in California.



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The proposed revision includes changes to text and adds figures showing details for the 6" wide traffic lines and their applicability only on the SHS while retaining the 4" minimum width for local agency roadways.

Attachments:

Attachment A – Caltrans memorandum dated May 19, 2017 “Implementation of six-inch wide traffic lines and discontinuing use of non-reflective raised pavement markers”

Attachment B – Proposed Revisions to CA MUTCD Section 3A.06

Attachment C – Proposed Revisions to Figures 3A-101(CA) through 3A-114(CA)



ATTACHMENT A



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Attachment A – Caltrans memorandum dated May 19, 2017 “Implementation of six-inch wide traffic lines and discontinuing use of non-reflective raised pavement markers”.


State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

*Making Conservation
a California Way of Life.*

To:	DISTRICT DIRECTORS DIVISION CHIEFS Engineering Services, Construction, Design, and Maintenance DEPUTY DISTRICT DIRECTORS Traffic Operations, Maintenance, Construction, and Design	Date:	May 19, 2017
		File:	Division of Traffic Operations

From: AMARJEET S. BENIPAL 
Acting Chief
Division of Traffic Operations

Subject: IMPLEMENTATION OF SIX-INCH WIDE TRAFFIC LINES AND DISCONTINUING USE OF NON-REFLECTIVE RAISED PAVEMENT MARKERS

The California Department of Transportation (Caltrans) is discontinuing the use of Type A and Type AY non-reflective raised pavement markers (RPMs) and increasing the width of all four-inch wide longitudinal traffic lines to six-inch wide lines for permanent pavement delineation on state highways. The revisions to the 2015 Standard Plans and Standard Specifications will be posted in July 2017. This Memorandum provides guidance regarding the implementation of the Revised Standard Plans (RSP) and Revised Standard Specifications (RSS).

The increased width of longitudinal traffic lines will benefit older drivers and increase visibility of lane delineation for all road users by providing improved roadway guidance, especially during periods of impaired visibility, such as wet conditions at night (refer to the Federal Highway Administration’s (FHWA) “Handbook for Designing Roadways for the Aging Population”).

Type A and Type AY RPMs are non-reflective and do not comply with “minimum maintained retroreflectivity of pavement markings” per FHWA’s Supplemental Notice of Proposed Amendments (SNPA) to the Manual on Uniform Traffic Control Devices (MUTCD). Discontinuing the use of Type A and Type AY RPMs will allow the use of durable striping material with retroreflectivity and enhanced visibility, reduce highway workers’ exposure to traffic, reduce traffic delays during lane closures, and achieve uniformity with other states.

Non-Reflective RPMs:

Discontinue the use of Type A and Type AY RPMs for permanent pavement delineation on state highways on all new construction contracts and maintenance restriping of existing traffic lines.

Six-inch Longitudinal Traffic Lines:

- All longitudinal traffic lines for lanelines, edgelines, and centerlines must be six inches wide.

“Provide a safe, sustainable, integrated and efficient transportation system to enhance California’s economy and livability”



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DISTRICT DIRECTORS, et al.
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- On maintenance refresher activities (Repair/Replace striping), all longitudinal traffic lines for lanelines, edgelines, and centerlines must be six-inch wide lines except existing four-inch wide double lines with retroreflective pavement markers on both sides of the longitudinal line (Details 16, 19, 22, 29, 32, 34, and 35) and recessed striping shall remain four inches wide.
- When a state highway intersects with a local road, only mainline state highway longitudinal traffic lines for lanelines, edgelines, and centerlines must be six-inch wide lines.

This memorandum rescinds Traffic Operations Program Directive (TOPD) 00-02 "Policy for Optional Laneline Delineation." (attached)

If you have any questions regarding this memorandum, please contact Duper Tong, Chief, Office of Traffic Engineering at (916) 654-5176, or by e-mail at duper.tong@dot.ca.gov.

Attachment:

Traffic Operations Program Directive (TOPD) 00-02

c: Steve Takigawa, Deputy Director, Maintenance and Operations
Karla Sutliff, Deputy Director, Project Delivery

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to enhance California's economy and livability"*



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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
PROGRAM DIRECTIVE
 TR-0011 (New 10/28/1999)

TRAFFIC OPERATIONS PROGRAM DIRECTIVE	NUMBER 00-02	Page 1 of 2 (plus attachments)
KIM NYSTROM, ACTING PROGRAM MANAGER <i>(Signature)</i>	DATE ISSUED	EFFECTIVE DATE
Original signed by Kim Nystrom 2/01/2000	2/01/2000	Immediately upon issue
SUBJECT Policy for Optional Laneline Delineation	DISTRIBUTION <input type="checkbox"/> All District Directors <input checked="" type="checkbox"/> All District Division Chiefs - Traffic Operations <input checked="" type="checkbox"/> All District Division Chiefs - Maintenance <input checked="" type="checkbox"/> All District Division Chiefs - Construction <input checked="" type="checkbox"/> All District Division Chiefs - Project Development <input type="checkbox"/> All District Division Chiefs - Planning <input checked="" type="checkbox"/> Engineering Service Center Director <input checked="" type="checkbox"/> All Headquarters Program Managers (for Maintenance, Construction & Project Development)	
DOES THIS DIRECTIVE SUPERSEDE ANOTHER DOCUMENT? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	IF YES, DESCRIBE	
WILL THIS DIRECTIVE BE INCORPORATED IN THE TRAFFIC MANUAL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	IF YES, DESCRIBE Pages 6-5 & 6-26 will be amended per attachments	

DIRECTIVE

Practice has been to require non-reflective raised pavement markers in conformance with Caltrans' Traffic Manual, Detail 10 for freeway ramps and Detail 13 (Page 6-26), for laneline pattern on freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads. Effective immediately, Districts have the option of using either Detail 9, a 2.14-meter solid white stripe, or Detail 10, three (3) non-reflective white markers for lanelines (between retroreflective markers) for freeway ramps for speed zones 60 km/hr or less. Districts also have the option of using either Detail 12, a 3.66 meter solid white stripe or Detail 13, four (4) non-reflective white markers for lane lines (between retroreflective markers) on freeways and expressways for speed zones 70 km/hr or more. This does not change the pattern for raised retroreflective markers shown in Details 9, 10, 12, 13 and 14. The change in laneline marking guidance is noted in red on the attached pages 6-5 (Section 6-02.2) and 6-26 (Details 9, 12 and 14) of the Caltrans Traffic Manual.

IMPLEMENTATION

When specifying either Detail 9 or 10; or, Detail 12 or 13, Districts should consider: 1) Day and night visibility of lanelines; 2) Exposure of maintenance and contractor personnel to traffic; 3) Traffic delays caused by lane closures; and, 4) Long-term maintenance requirements.



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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
PROGRAM DIRECTIVE
TR-0011 (New 10/28/1999)

Continuation

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IMPLEMENTATION (continued)

If a freeway, expressway, freeway ramp, freeway to freeway connector or collector road has delineation with non-reflective markers as in Details 10 and 13, a District may place a white stripe on the non-reflective markers in accordance with Details 9 and 12 if this is judged to improve visibility of delineation.

For new construction, if a District proposes using a combination of both nonreflective markers and white stripe, District Traffic Operations Liaison should be consulted.

BACKGROUND

District 3 has undertaken three test projects where the non-reflective markers were replaced with thermoplastic lanelines. These were on sections of Interstate Routes 5 and 80 and State Route 51. Before and after accident data were analyzed for periods between 1990 and 1998. The accident data showed no increase in lane change type accidents on any of these routes.

Application of Pavement and Curb Markings 6-02

6-02.1 Centerlines

A yellow centerline separates traffic traveling in opposite directions. It need not be at the geometrical center of the pavement. Centerlines provide important guidance to motorists. On roads where a continuous centerline is not used, short sections may be used to control the position of traffic at specific locations, such as around curves, over hills, and on approaches to intersections, railroad crossings, and bridges.

Centerlines should be used on paved highways or portions thereof under the following conditions:

1. In rural areas on two-lane pavements 4.88 m or greater in width with speed zones of 55 km/h or more.
2. In business or residential districts on through highways, and on other highways where there are significant traffic volumes.
3. On all undivided pavements of four or more lanes.
4. At other locations where an engineering study indicates a need for them.

The centerline on undivided highways where three or more lanes are always available shall be a double solid yellow line.

Centerline patterns shall be selected from those shown in Figure 6-1, CENTERLINES - 2 LANE HIGHWAYS. Raised reflective pavement markers shall be used to supplement the centerline markings on State highways, except in snow areas.

INTERSECTION MARKINGS - CVC 21752 restricts passing (driving on left side of a two-way roadway) when approaching within 30 m (100 feet) of or when traversing any intersection. The patterns and policy are shown in Figure 6-9, INTERSECTION MARKINGS.

6-02.2 Lanelines

White lanelines separate lanes of traffic traveling in the same direction and shall be used on all multilane highways.

A single solid white line may be used as the laneline in critical areas to discourage lane changing. Typical locations for such applications are tunnels or bridges having width restrictions, interchange areas where lane changing disrupts traffic flow and the delineation of separate turn lanes.

It may also be used to separate through traffic lanes from special secondary lanes, such as passing lanes, left or right-turn lanes and transit bus lanes.

Laneline patterns shall be selected from those shown in Figure 6-2, LANELINES - MULTILANE HIGHWAYS. Detail 9 or 10 (60 km/h or less) or Detail 12 or 13 (70 km/h or more) shall be used on State freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads, except in snow areas.

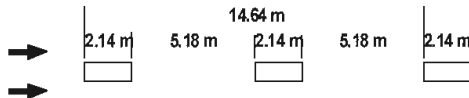
1. LANEDROPS

A. *Freeways* - A 200 mm wide dotted white lane drop line shall be placed in advance of lane drops at exit-ramps. The basic purpose of this line is to provide a "crossable" line to show the edge of the roadway to entering, exiting, and through traffic. If the dropped lane is an auxiliary lane 0.8 km or less in length, the lane drop line should extend throughout the entire length. The lane drop line pattern shall be as shown in Figure 6-11, LANE DROP MARKINGS. Also, see Figure 6-13, LANEDROP SIGNING AND MARKINGS AT EXIT RAMPS, and Figure 6-14, FREEWAY TO FREEWAY CONNECTOR SIGNING AND MARKINGS, for further details of marking and signing on State freeways.

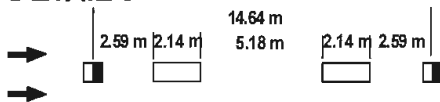
Figure 6-2 LANELINES - MULTILANE HIGHWAYS

FOR SPEED ZONES 60 KM/H OR LESS

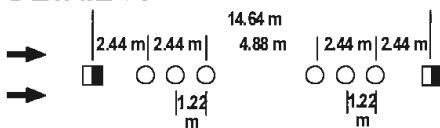
DETAIL 8



DETAIL 9

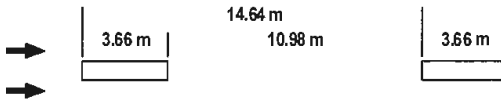


DETAIL 10

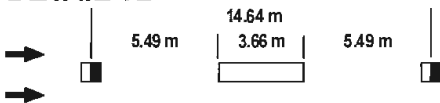


FOR SPEED ZONES 70 KM/H OR MORE

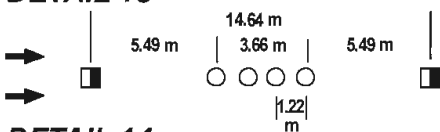
DETAIL 11



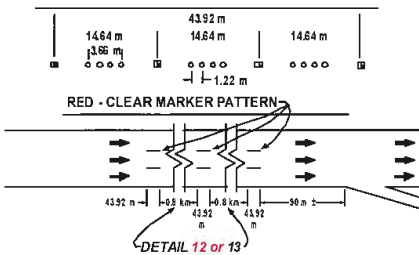
DETAIL 12



DETAIL 13



DETAIL 14



POLICY

Laneline pattern for use on multilane streets and highways (normally used on local streets and highways).

Laneline pattern with pavement markers for use on multilane streets, highways and *freeway ramps*.

Laneline pattern with pavement markers for use on multilane streets, highways and freeway ramps.

Laneline pattern for use on multilane streets and highways (normally used on local streets and highways).

Laneline pattern with pavement markers for use on multilane conventional streets and highways, *State freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads*. See Detail 14.

Laneline pattern with pavement markers for use on State freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads. See Detail 14.

Laneline pattern with red-clear pavement markers shall be use on freeways approaching exit ramps. Used with Detail 12 or 13, in a pattern of four red-clear pavement markers, at intervals as shown.

LEGEND

- 100 mm White
- One-Way Clear Reflective Markers
- Non-Reflective White Markers
- Red-Clear Reflective Markers
- Direction of Travel
- NOT TO SCALE



ATTACHMENT B

Attachment B – Proposed Revisions to CA MUTCD Section 3A.06.

Proposal:

Note:

Black text is unedited National MUTCD text adopted for use in current CA MUTCD. ~~Black strikethrough text~~ is National MUTCD text that is not applicable in California as shown in current CA MUTCD.

Blue text is California text additions adopted for use in current CA MUTCD.

~~Red strikethrough text~~ is text that is proposed to be deleted from the current CA MUTCD by this proposal.

Red text is text that is proposed to be included in the current CA MUTCD by this proposal.

Revise Section 3A.06 as shown:

Section 3A.06 Functions, Widths, and Patterns of Longitudinal Pavement Markings

Standard:

⁰¹ The general functions of longitudinal lines shall be:

- A. A double line indicates maximum or special restrictions,
- B. A solid line discourages or prohibits crossing (depending on the specific application),
- C. A broken line indicates a permissive condition, and
- D. A dotted line provides guidance or warning of a downstream change in lane function.

⁰² The widths and patterns of longitudinal lines shall be as follows:

- A. Normal line—4 to 6 inches wide.
- B. Wide line—at least twice the width of a normal line.
- C. Double line—two parallel lines separated by a discernible space.
- D. Broken line—normal line segments separated by gaps.
- E. Dotted line—noticeably shorter line segments separated by shorter gaps than used for a broken line.

The width of a dotted line extension shall be at least the same as the width of the line it extends.

All longitudinal traffic lines for lanelines, edgelines, and centerlines on state highways shall be 6 inches wide. All double lines with retroreflective pavement markers on both sides of the longitudinal line (Details 16, 19, 22, 29, 32, 34, and 35) and recessed striping shall be 4 inches wide. When a state highway intersects with a local road, only mainline state highway longitudinal traffic lines for lanelines, edgelines, and centerlines shall be 6 inch wide.

All longitudinal traffic lines on local agency roadways shall be minimum 4 inch wide.

Support:

⁰³ The width of the line indicates the degree of emphasis.

Guidance:

⁰⁴ *Broken lines should consist of 10-foot line segments and 30-foot gaps, or dimensions in a similar ratio of line*

segments to gaps as appropriate for traffic speeds and need for delineation.

Support:

⁰⁵ Patterns for dotted lines depend on the application (see Sections 3B.04 and 3B.08.)

Guidance:



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06 A dotted line for line extensions within an intersection or taper area should consist of 2-foot line segments and 2- to 6-foot gaps. A dotted line used as a lane line should consist of 3-foot line segments and 9-foot gaps.

Standard:

07 The widths and patterns of longitudinal lines shall conform to the details shown in Figures 3A-101(CA) through ~~3A-113(CA)~~ 3A-114(CA).



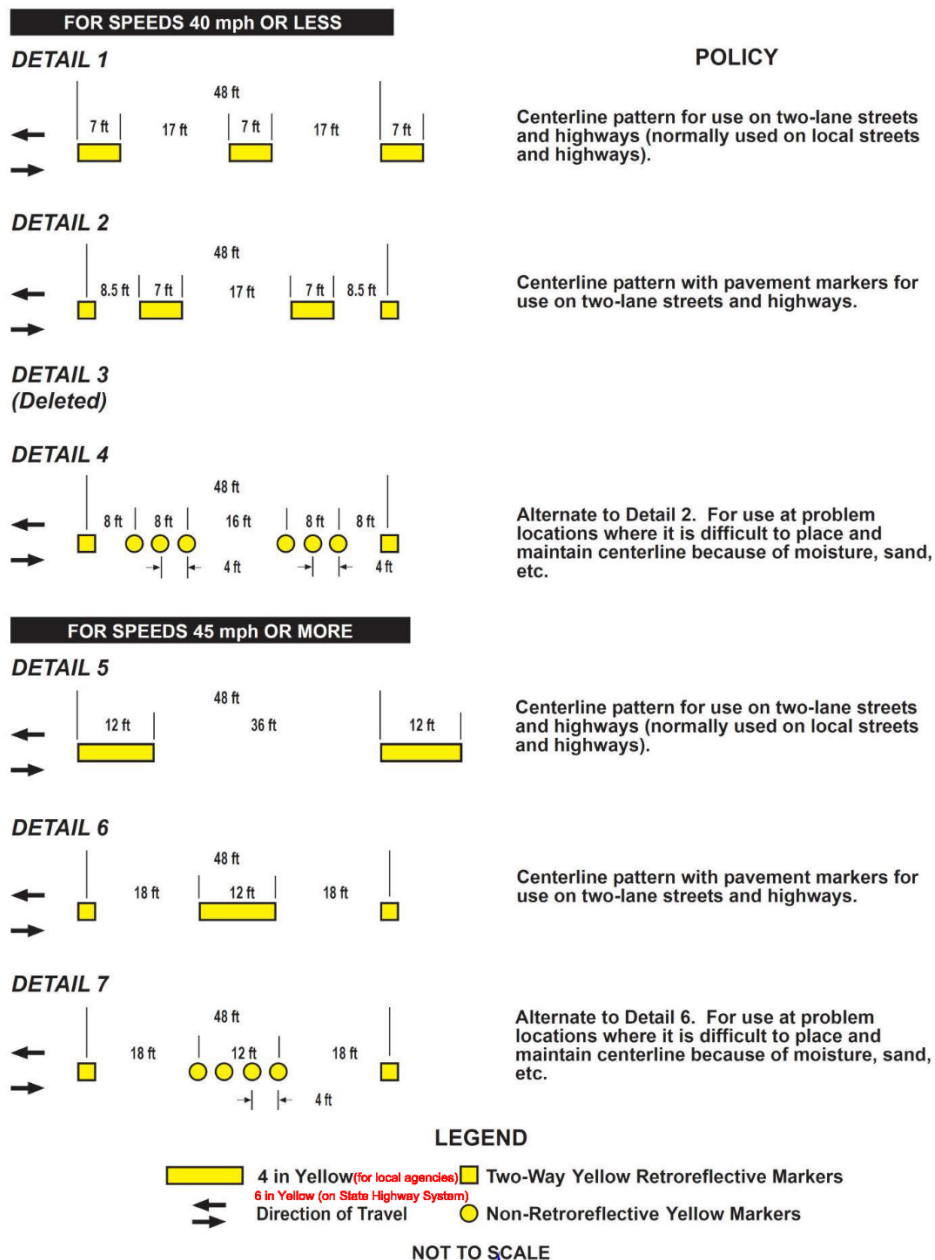
ATTACHMENT C

Attachment C – Proposed Revisions to Figures 3A-101(CA) through 3A-114(CA).

California MUTCD 2014 Edition
(FHWA's MUTCD 2009 Edition, including Revisions 1 & 2, as amended for use in California)

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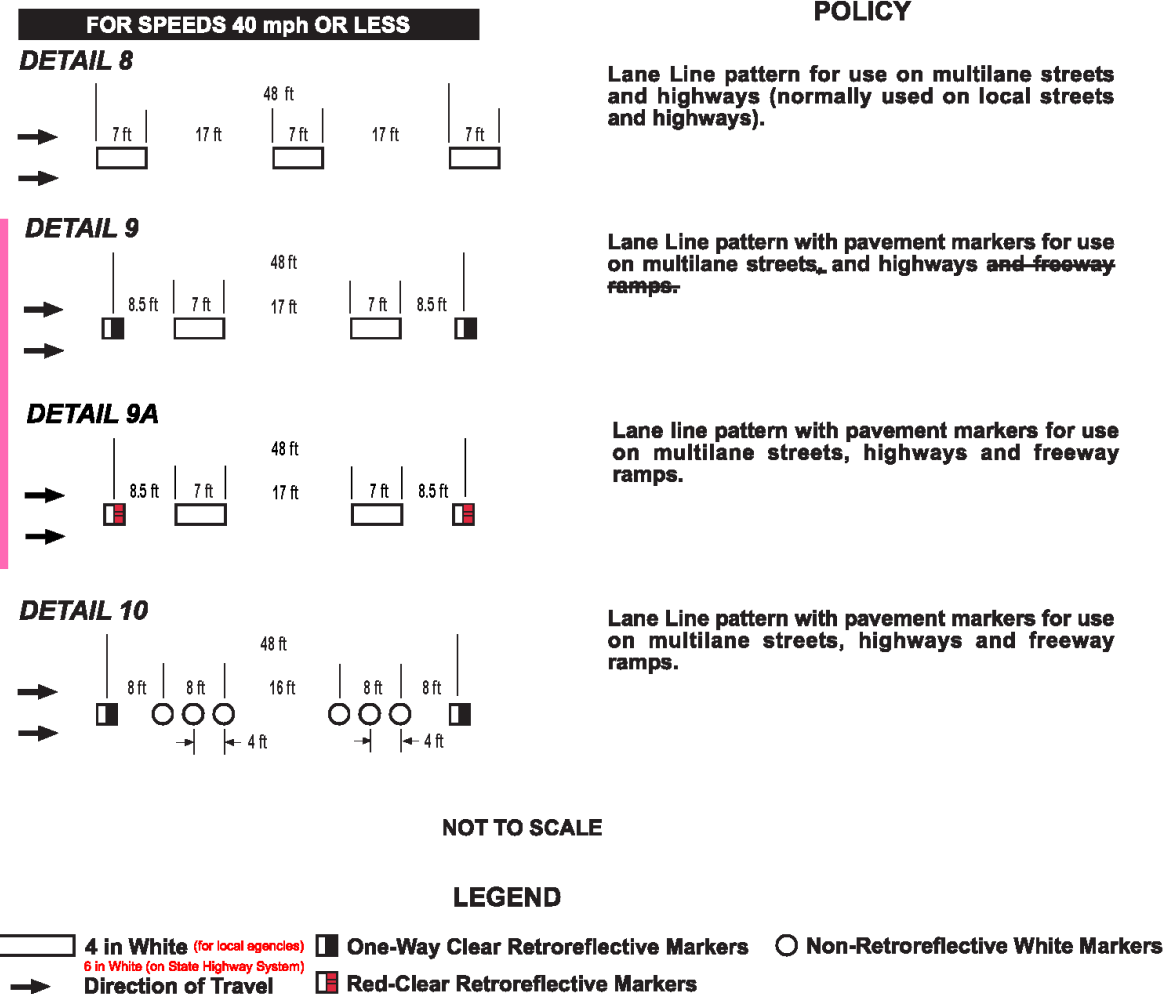
Figure 3A-101 (CA). Centerlines - 2 Lane Highways



California MUTCD 2014 Edition
(FHWA's MUTCD 2009 Edition, including Revisions 1 & 2, as amended for use in California)

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Figure 3A-102 (CA). Lane Lines - Multilane Highways (Sheet 1 of 2)



California MUTCD 2014 Edition
(FHWA's MUTCD 2009 Edition, including Revisions 1 & 2, as amended for use in California)

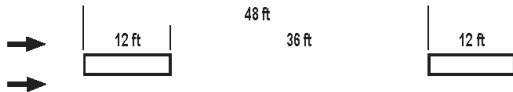
Page 654

**Figure 3A-102 (CA). Lane Lines - Multilane Highways
(Sheet 2 of 2)**

FOR SPEEDS 45 mph OR MORE

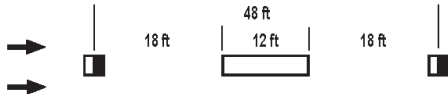
POLICY

DETAIL 11



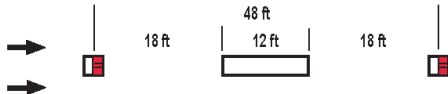
Lane Line pattern for use on multilane streets and highways (normally used on local streets and highways).

DETAIL 12



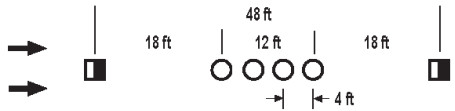
Lane Line pattern with pavement markers for use on multilane conventional streets and highways, ~~State freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads. See Detail 14A.~~

DETAIL 12A



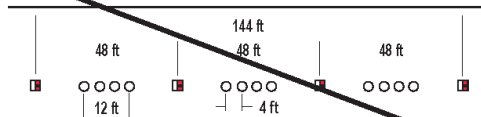
Lane Line pattern with pavement markers for use on multilane conventional streets and highways, freeways, expressways, freeway ramps, and freeway to freeway connectors.

DETAIL 13



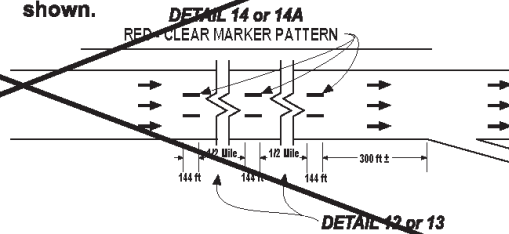
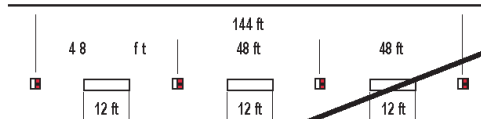
Lane Line pattern with pavement markers for use on ~~State freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads. See Detail 14.~~

DETAIL 14



Lane Line pattern with red-clear pavement markers shall be used on freeways approaching exit ramps. Detail 14 is used with Detail 13 and Detail 14A is used with Detail 12, in a pattern of four red-clear pavement markers, at intervals as shown.

DETAIL 14A



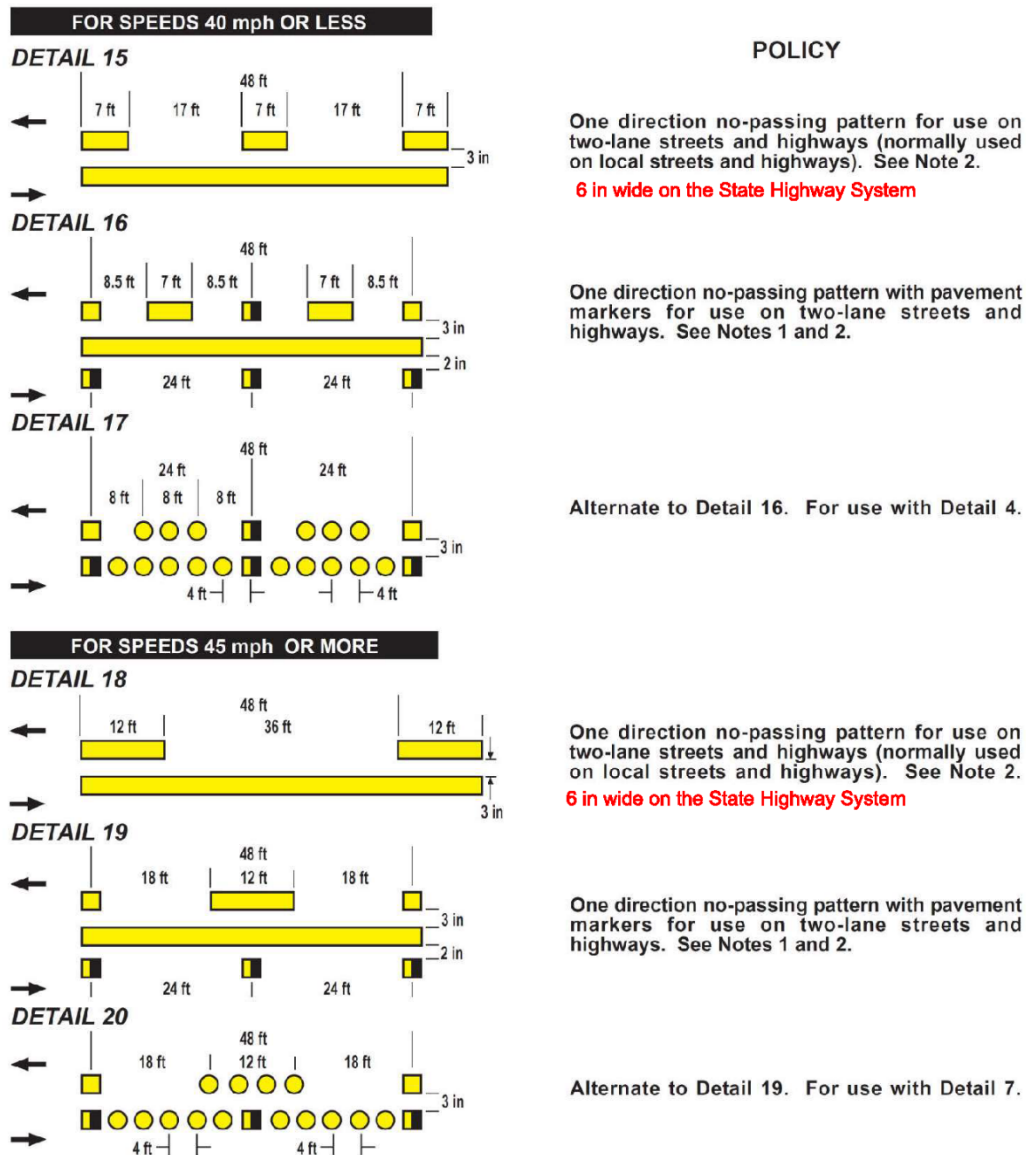
LEGEND

- 4 in White (for local agencies) One-Way Clear Retroreflective Markers Non-Retroreflective White Markers
- 6 in White (on State Highway System) Red-Clear Retroreflective Markers
- Direction of Travel → NOT TO SCALE

Chapter 3A – General
Part 3 – Markings

Revised March 30, 2021

Figure 3A-103 (CA). No Passing Zones - One Direction



NOTES: 1. Pavement markers shown off the solid line in Details 16 and 19 may be placed on the line.
2. If the material used for centerline marking is paint, a 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

LEGEND

- | | | |
|---------------------|--|------------------------------------|
| 4 in Yellow | Two-Way Yellow Retroreflective Markers | Non-Retroreflective Yellow Markers |
| Direction of Travel | One-Way Yellow Retroreflective Markers | NOT TO SCALE |

Figure 3A-104 (CA). No Passing Zones - Two Direction

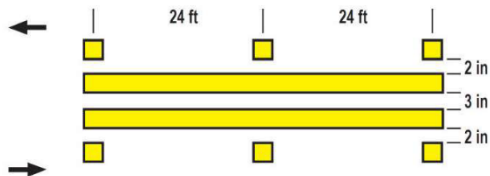
DETAIL 21



POLICY

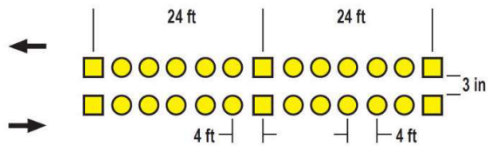
Two-direction no-passing pattern for use on two-lane streets and highways (normally used on local streets and highways). See Note 2.
6 in wide on the State Highway System

DETAIL 22



Two-direction no-passing pattern with pavement markers for use on two-lane streets and highways. See Notes 1 and 2.

DETAIL 23



Alternate to Detail 22. For use with either Detail 4 or Detail 7.

- NOTES:**
1. Pavement markers shown off the solid line in Detail 22 may be placed on the line.
 2. If the material used for centerline marking is paint, a 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

LEGEND

- | | |
|---------------------|--|
| 4 in Yellow | Two-Way Yellow Retroreflective Markers |
| Direction of Travel | Non-Retroreflective Yellow Markers |

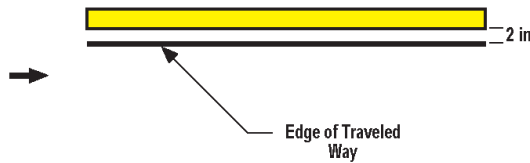
NOT TO SCALE

California MUTCD 2014 Edition
(FHWA's MUTCD 2009 Edition, including Revisions 1 & 2, as amended for use in California)

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Figure 3A-105 (CA). Left Edge Lines for Divided Highways

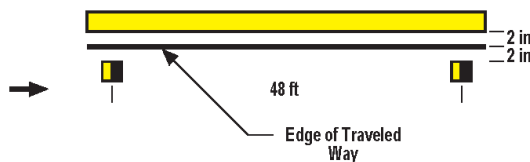
DETAIL 24



POLICY

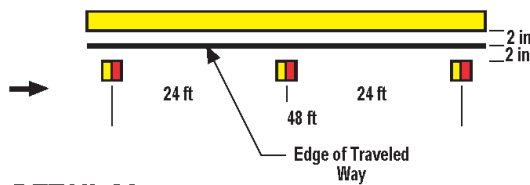
Left Edge Line pattern for use on streets and highways (normally used on local streets and highways).

DETAIL 25



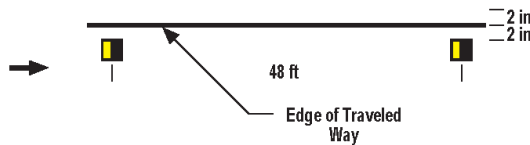
Left Edge Line for use on State highways.

DETAIL 25A



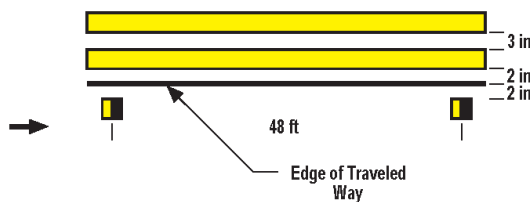
Left Edge Line for use on highways, freeways, freeway ramps and connectors.

DETAIL 26



Alternate to Details 24 and 25 when there is adequate contrast between travelled way and shoulder.

DETAIL 27



Alternate to Detail 25. A double solid yellow line may be used for more emphasis when motorists tend to use the shoulder for a through lane, or where encroachments onto the shoulder occasionally occur. See Note 1.

NOTE: 1. If the material used for centerline marking is paint, a 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

LEGEND

- 4 in Yellow (on local agencies)
6 in Yellow (on State Highway System)
Direction of Travel**
- One-Way Yellow
Retroreflective Markers**
- Red- Yellow
Retroreflective Markers**

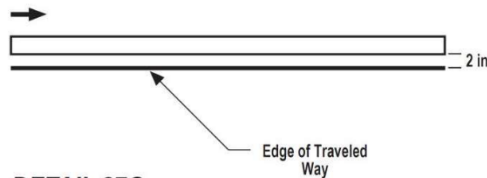
NOT TO SCALE

California MUTCD 2014 Edition
(FHWA's MUTCD 2009 Edition, including Revisions 1 & 2, as amended for use in California)

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Figure 3A-106 (CA). Right Edge Line and Right Edge Line Extension Through Intersections

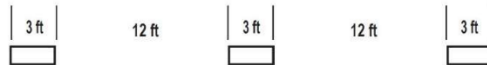
**DETAIL 27B
Right Edge Line**



POLICY

Right Edge Line pattern for use on all State highways may be used on local streets and highways. It is generally dropped at the beginning of the intersection flares on conventional highways. See also Detail 27C. On freeways, it may be flared in advance of the exit ramp as shown in Figure 3B-8 (CA).

**DETAIL 27C
Right Edge Line Extension
Through Intersections**



Right Edge Line Extension Through Intersections pattern for use to extend the right edgeline through an intersection where climatic conditions, such as areas of heavy fog, may require additional guidance.

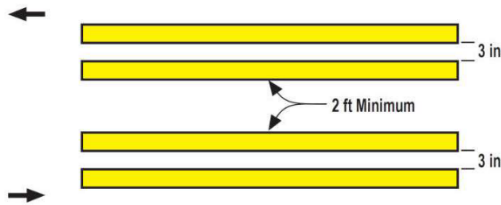
LEGEND



NOT TO SCALE

Figure 3A-107 (CA). Median Islands

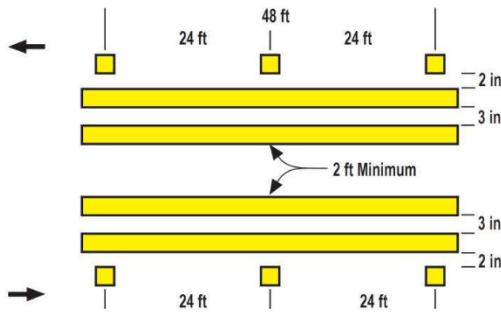
DETAIL 28



POLICY

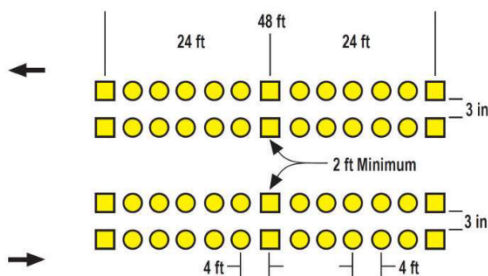
Double Left Edge Line pattern for use on all-paved sections of streets and highways (normally used on local streets and highways). See Note 2.
6 in wide on the State Highway System

DETAIL 29



Double Left Edge Line pattern with pavement markers for use on all-paved sections of streets and highways. See Notes 1 and 2.

DETAIL 30



Alternate to Detail 29. For use at problem locations where it is difficult to place and maintain lines because of moisture, sand, etc.

- NOTES:**
1. Pavement markers shown off the solid line in Detail 29 may be placed on the line.
 2. If the material used for centerline marking is paint, a 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

LEGEND

- 4 in Yellow
- Two-Way Yellow Retroreflective Markers
- Direction of Travel
- Non-Retroreflective Yellow Markers

NOT TO SCALE

Figure 3A-108 (CA). Two-Way Left-Turn Lanes

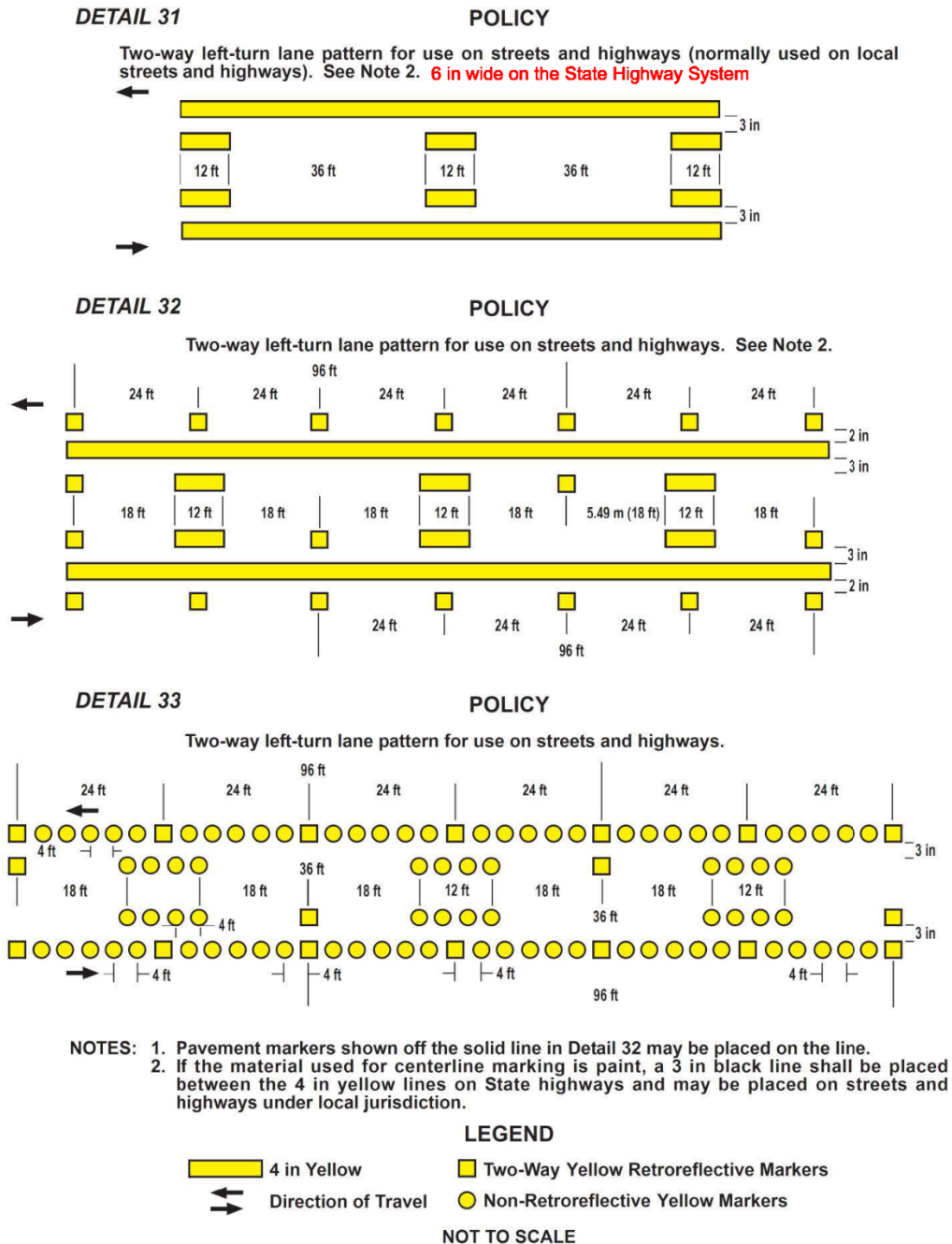
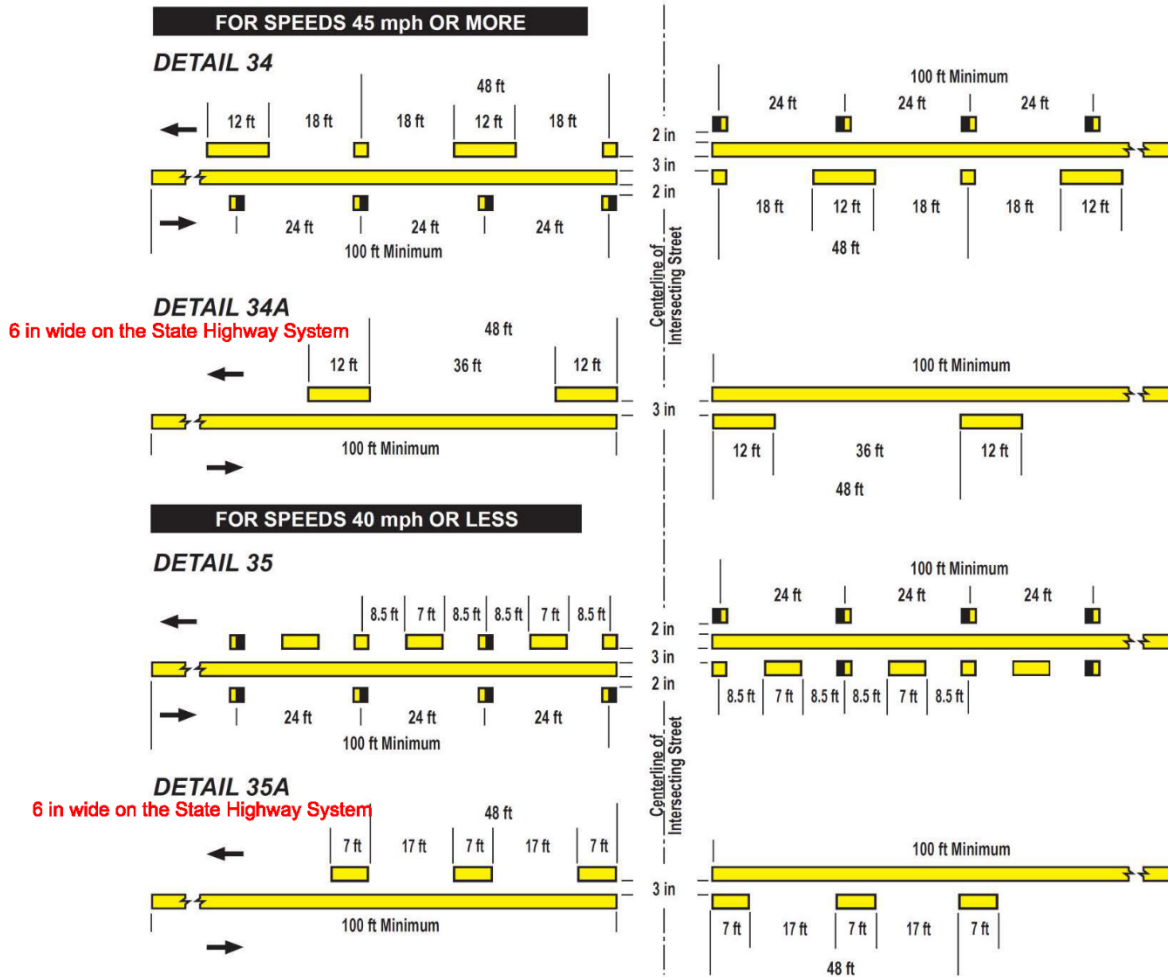


Figure 3A-109 (CA). Intersection Markings



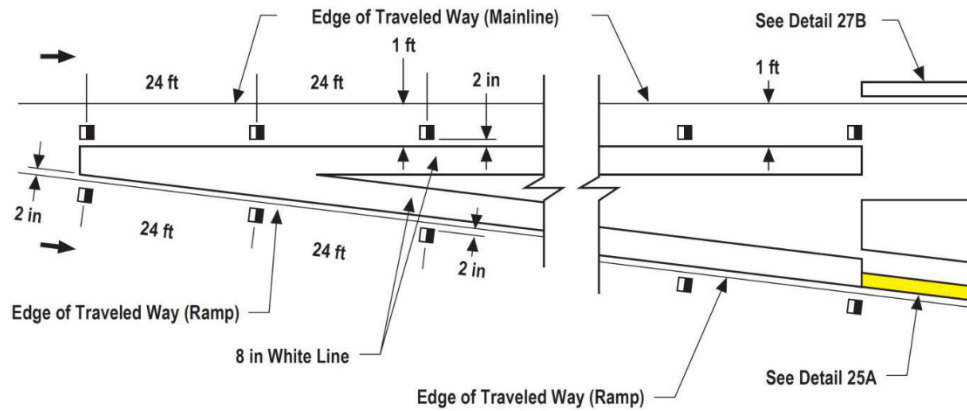
- NOTES:**
1. Raised Pavement Markers are optional on non-state highways.
 2. Raised Pavement Markers shown off the solid line may be placed on the line.
 3. If the material used for centerline marking is paint, a 3 in black line shall be placed between the 4 in yellow lines on State highways and may be placed on streets and highways under local jurisdiction.

LEGEND

- | | | |
|---------------------|--|--------------|
| 4 in Yellow | Two-Way Yellow Retroreflective Markers | NOT TO SCALE |
| Direction of Travel | One-Way Yellow Retroreflective Markers | |

**Figure 3A-110 (CA). Freeway Exit and Entrance Ramp Channelizing Line
(Sheet 1 of 2)**

**DETAIL 36 - Exit Ramp Neutral Area (Gore) Channelizing Lines
(See Figure 3B-8 (CA), Sheet 2 of 2)**



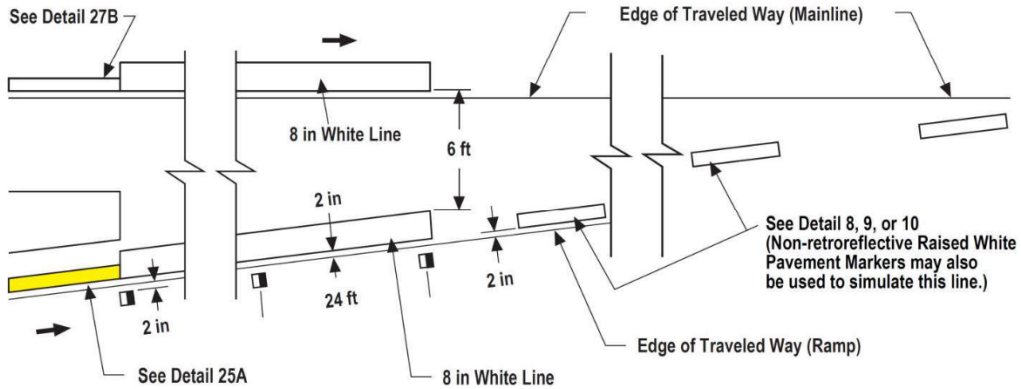
LEGEND

- 4 in White (for local agencies) One-Way Clear Retroreflective Markers
- 6 in White (on State Highway System)
- 4 in Yellow (for local agencies) ➔ Direction of Travel
- 6 in Yellow (on State Highway System)

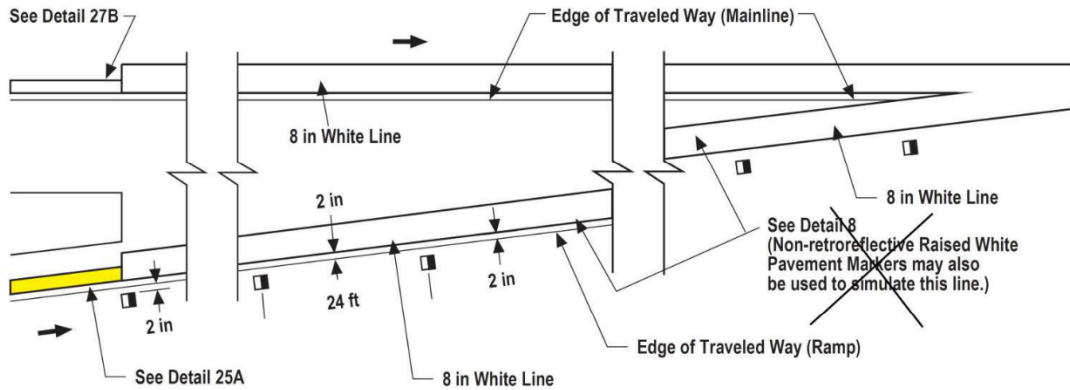
NOT TO SCALE

**Figure 3A-110 (CA). Freeway Exit and Entrance Ramp Channelizing Lines
(Sheet 2 of 2)**

**DETAIL 36A - Entrance Ramp Neutral Area (Merge) Channelizing Lines
(See Figure 3B-9 (CA), Sheet 1 of 2)**



**DETAIL 36B - Entrance Ramp Neutral Area (Acceleration Lane) Channelizing Lines
(See Figure 3B-8 (CA), Sheet 3 of 3)**



LEGEND

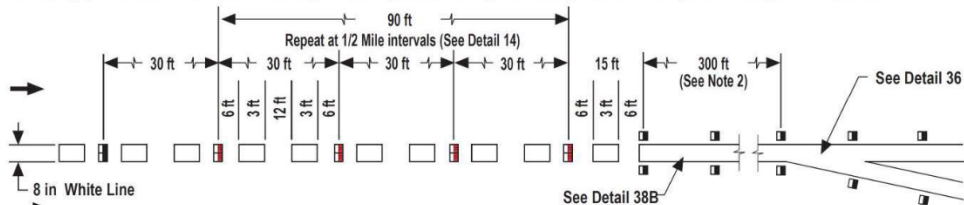
- 4 in White ■ One-Way Clear Retroreflective Markers
- 6 in White (on State Highway System)
- 4 in Yellow → Direction of Travel
- 6 in Yellow (on State Highway System)

NOT TO SCALE

Figure 3A-111 (CA). Lane Drop Markings

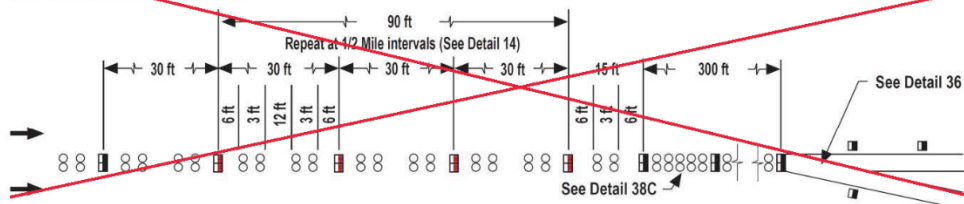
DETAIL 37 - Lane Drop Markings at Exit Ramps

Marking pattern for use on mandatory lane drops at freeway exit ramps and freeway to freeway connectors.



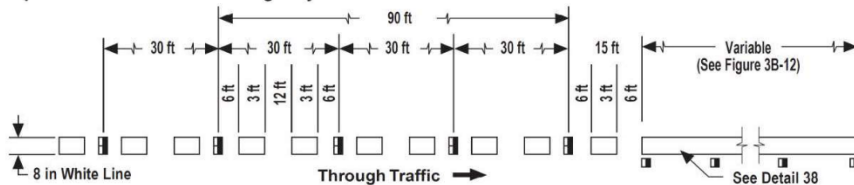
DETAIL 37A - Alternate to Detail 37

For use with Detail 10 and 13.



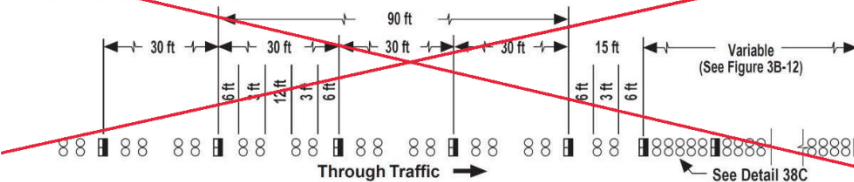
DETAIL 37B - Lane Drop Markings at Conventional Highway Intersections

Marking pattern for use on mandatory turn lanes at intersections. Pavement markers shown are optional on local streets and highways.



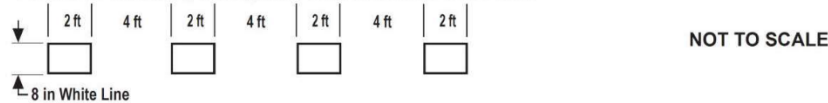
DETAIL 37C - Alternate to Detail 37B

For use with Detail 10 and 13.



DETAIL 37D - Lane Drop Line For Two-Lane Roundabouts

For use on mandatory exiting lanes from two-lane roundabouts.



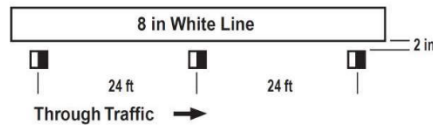
- NOTES: 1. Pavement markers shown off the solid line in Detail 37 may be placed on the line.
2. The Solid Channelizing Line shown in Detail 37 and 37A may be omitted on short auxiliary lanes where weaving length is critical.

LEGEND

- 88 Non-Retroreflective White Markers
- ➔ Direction of Travel
- ▬ One-Way Clear Retroreflective Markers
- ▬ Red-Clear Retroreflective Markers

Figure 3A-112 (CA). Channelizing Line and Lane Line/Centerline Extensions

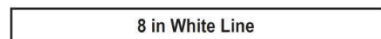
DETAIL 38 - Channelizing Line



POLICY

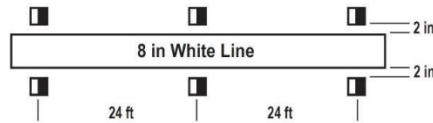
Typical channelizing line for use on Left-Turn or Right-Turn lanes on State highways. Pavement Markers when used should be placed on the through traffic side only.

DETAIL 38A - Channelizing Line



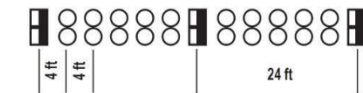
Typical channelizing line for use on Left-Turn or Right-Turn lanes on local streets and highways and freeway off-ramp terminals.

DETAIL 38B - Channelizing Line at Exit Ramps



Typical channelizing line for use on Exit Ramps. Pavement Markers as shown may also be placed on the line.

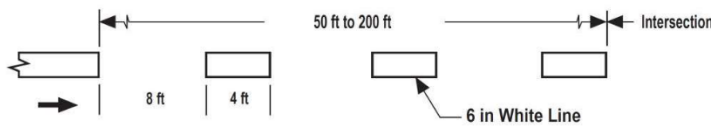
DETAIL 38C - Alternate to Detail 38 and 38B



DETAIL 39 - Bike Lane Line



DETAIL 39A - Bike Lane Intersection Line



DETAIL 40 - Lane Line Extension Through Intersections



The Lane Line Extension Through Intersections line is used to extend the lane line through an intersection that might otherwise be confusing to the motorist.

DETAIL 40A - Alternate to Detail 40



DETAIL 41 - Centerline Extension Through Intersections



The Centerline Extension Through Intersections line is used to extend the centerline through an intersection that might otherwise be confusing to the motorist.

DETAIL 41A - Alternate to Detail 41



NOT TO SCALE

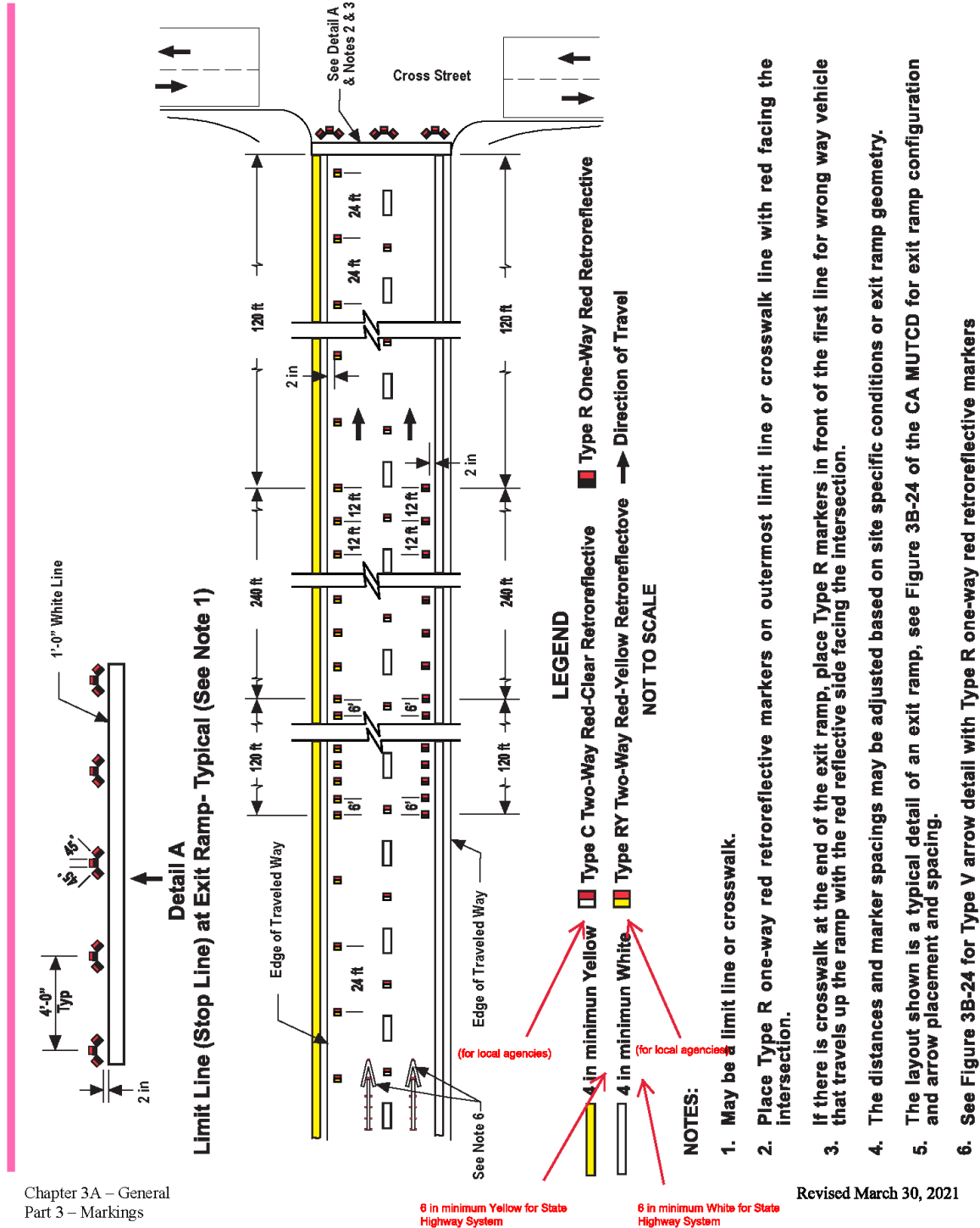
LEGEND

White Line	Non-Retroreflective White Markers	Direction of Travel
Yellow Line	Non-Retroreflective Yellow Markers	One-Way Clear Retroreflective Markers

California MUTCD 2014 Edition
(FHWA's MUTCD 2009 Edition, including Revisions 1 & 2, as amended for use in California)

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Figure 3A-114 (CA). Exit Ramp with Enhanced Pavement Markers for Wrong Way Details



Chapter 3A – General
Part 3 – Markings

Revised March 30, 2021