

# CALIFORNIA TRAFFIC CONTROL DEVICES COMMITTEE (CTCDC) AGENDA

February 19<sup>th</sup> from 1 pm to 5 pm and  
February 20<sup>th</sup> from 8:30 am to until Finish, 2014 Meeting  
Main Library (Oak Room)  
55 West 3rd Avenue  
San Mateo, CA 94402

The Meeting is open, and public/local agencies are invited to attend. For further information regarding this meeting, please contact Devinder Singh at (916) 654-4715, or at [Devinder.singh@dot.ca.gov](mailto:Devinder.singh@dot.ca.gov). Electronic copies of this meeting Agenda and minutes of the previous meetings are available at <http://www.dot.ca.gov/hq/traffops/signtech/newtech/index.htm>

## Organization Items

- 1 Introduction
- 2 Membership
- 3 Approval of Minutes of the October 17th, 2013 Meetings
- 4 Public Comments

At this time, members of the public may comment on any item not appearing on the agenda. Matters presented under this item cannot be discussed or acted upon by the Committee at this time. For items appearing on the agenda, the public is invited to make comments at the time the item is considered by the Committee. Any person addressing the Committee will be limited to a maximum of five (5) minutes so that all interested parties have an opportunity to speak. When addressing Committee, please state your name, address, and business or organization you are representing for the record.

## Agenda Items

### 5 Public Hearing

Prior to adopting rules and regulations prescribing uniform standards and specifications for all official traffic control devices placed pursuant to Section 21400 of the California Vehicle Code (CVC), the Department of Transportation is required to consult with local agencies and hold public hearings.

### **The following Item will be heard on February 19<sup>th</sup>, 2014:**

Page #s

14-01	Proposal to adopt "TURN AROUND, DON'T DROWN" signs by amending Sec.2C.35 & 6I.06) -Submitted by Napa Co.	(Introduction) (Marshall) 16-23
14.02	Proposal to adopt "PRESERVE AMERICA" sign by adding a new Section 2D .104(CA) to the CA MUTCD- Submitted by Tuolumne Co)	(Introduction) (Marshall) 24-44
14-03	CA MUTCD Illumination policy change on Overhead Guide Signs (Proposal to amend Section 2D.03 and 2E.6) – Submitted by Caltrans	(Introduction) (Singh) 45-47
14-04	Proposal to amend various Sections of Part 3 of the CA MUTCD - Submitted by Caltrans	(Introduction) (Singh) 48-70
14-06	Proposal to amend Section 7B.15 of the CA MUTCD to define "WHEN CHILDREN ARE PRESENT" sign – Submitted by Caltrans	(Introduction) (Singh) 81-82

**The following Item will be heard on February 20<sup>th</sup>, 2014:**

14-05 Adopt Interim Approval issued by the FHWA for Optional Use of a Bicycle Signal Face (1A-16) – Submitted by Caltrans (Introduction) (Singh) 71-80

13-08 Minimum Yellow Change Interval Timing for signalized Intersections (Recommendations by Subcommittee) (Continued) (Bahadori) 8-15

**6 Request for Experimentation**

13-07 Request to Experiment with Bike Boxes -Submitted by the National City (Introduction) (Greenwood)83-94

**7 Discussion Items:**

14-07 Busway Warning Signs and Photo Enforcement Warning Sign (Singh) 95-98

14-08 Use of Blue Curbs as a Loading Zone in the LA City (Singh) 99-102

**8 Information Items –None**

14-09 Alternatives for the Exit Gore Sign (E5-1 Series) placement (Singh) 103-103

**9 Tabled Items:**

12-20 FHWA's 2009 MUTCD Revisions 1 and 2 –Engineering Judgment & Compliance dates

**10 Next Meeting** - Suggested dates are May 15 or May 22, 2014**11 Adjourn**

ITEM UNDER EXPERIMENTATION

- 09-9 Experiment with Steady Red Stop Line Light (Greenwood)  
Status: LADOT prepared a draft evaluation report which indicated that the Steady Red Stop Lights at two intersections did reduce vehicle/bus and vehicle/train conflicts based on the camera surveillance data. However, the “Control Intersections” (locations where no Steady Red Stop Lights were installed) also showed similar improvements. Further analysis of more data will be conducted in the next twelve months.  
See report on the following website.  
<http://www.dot.ca.gov/hq/traffops/signtech/newtech/status.htm>
- 09-21 Experiment with Separated/Protected Bikeway (Greenwood)  
On the Left Side of Two One-Way Streets in the City of Long Beach (Rte 9-112E)  
Status: **No new update.** See report on the following website.  
<http://www.dot.ca.gov/hq/traffops/signtech/newtech/status.htm>
- 10-3 Experiment with Second Train Warning Sign “Additional Train May Approach” with a Symbol Sign (Submitted by City of Riverside) (Greenwood)  
Status: See report on the following website:  
[http://www.dot.ca.gov/hq/traffops/signtech/newtech/exp/Item10-3\\_AdditionalTrainMayApproachSign.pdf](http://www.dot.ca.gov/hq/traffops/signtech/newtech/exp/Item10-3_AdditionalTrainMayApproachSign.pdf)
- 11-3 Experiment with Buffered Bicycle Lanes on 2<sup>nd</sup> St. between Bayshore & PCH in Naples (Greenwood)  
Status: **No update.**
- 11-12 Experiment with Circular Rapid Flashing Beacon and RRFB (Greenwood)  
Status: **No update.**
- 11-13 Experiment with a Sign “RECKLESS DRIVING PROHIBITED” (Winter)  
Status: **(12-26-13)** The signs were installed on January 30, 2013. Los Angeles County DPW is currently consulting with the CHP and LA County Sheriff to determine if there was a reduction in “reckless driving” citations on Glendora Mountain Road and Glendora Ridge Road and/or if any vehicles were impounded for street racing on these routes during the year of the signs placement. A review of the collision history for the year – compared against records from previous years – will also be performed.
- 11-19 Experiment with 2<sup>nd</sup> advance California Welcome Center Destination Sign (Benton)  
Status: **No update.**

- 12-9 Request to Experiment with Yellow LED Border on Pedestrian Signal (Benton)  
**Status:** (Jan 20)

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

EDMUND G. BROWN JR., Governor

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January 13, 2014

Federal Highway Administration  
 1200 New Jersey Avenue, S.E., HOTO-1  
 Washington, DC 20590

**Status Report No. 4: 4(09)-13 (E) Yellow LED Border on Ped Signal – Caltrans**

Considerable progress has been made on this experiment since the June 10, 2013, Status Report. At that time, the before/after video data had been collected at the first intersection and the prototype pedestrian signal modules had been removed. Furthermore, the study at the second location was underway, with the “before” data collected and the prototype modules just installed. Since then, the data gathering at the second and third intersections was completed, and the “after” video data collection at the final two locations is on track to be completed before the end of January. The table below is a summary of the current experimentation status for all five intersections:

Loc. #	Intersection Name	“Before” Complete	“After” Complete	Data Analysis
1	Hartnell & Churn Cr.	3/19/13	5/22/13	Complete
2	Shasta & Pine	5/9/13	8/16/13	In Progress
3	Eureka & Market	6/28/13	9/17/13	In Progress
4	Shasta & Market	11/22/13	1/14/14	In Progress
5	Tehama & Market	10/11/13	1/21/13	Not Started

Reviewing the video footage requires a significant amount of time due to the large volume of data. The evaluation plan for this experimental device was designed to capture a broad range of conditions, for both vehicles and pedestrians, at the planned study locations. That is why the study period begins at 6 a.m. and continues until 10 p.m. for seven consecutive days (a total of 112 hours). The same time period is reviewed for the video data of the “after” treatment condition. Steady progress is being made in analyzing the data, but it will likely take several more months before all of the video footage has been reviewed and the results compiled into a spreadsheet.

Initial thoughts about the modified pedestrian signals, based on field observations and partial review of the video data, are that they have a marginal effect on driver behavior. This is at least partly due to factors affecting the visibility of the device, like the size of the intersection or the angle of the sun hitting the signal face during part of the day. Another factor is the adjustment period needed to observe the yellow border in operation and recognize its intended purpose. Local motorists can drive through an intersection multiple times a day and never witness the

Federal Highway Administration  
January 13, 2014  
Page 2

device in operation if they do not happen to encounter a pedestrian using the crosswalk that is parallel to their direction of travel. With this in mind, it is possible that a larger deployment of the modified pedestrian signals and/or a longer trial period could yield different results than those recorded in this evaluation.

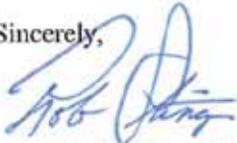
As for the pedestrians using the device, the overall response to the yellow border has been positive. Most of the respondents to the online survey see the benefit of the yellow border to pedestrians, but are skeptical about its impact on driver behavior. It appears that the prototype modules reduce the number of repeated button pushes and pedestrian crossing violations, but to what extent is unknown until all of the data has been reviewed.

At this point in the evaluation, there does not appear to be an obvious downside to yellow LED border. The enhancement is not a distraction to motorists and does not adversely affect driver behavior. The additional feature provides assurance to pedestrians that a call has been made and that the signal will provide a "walk" indication soon. Lastly, the border is most visible to pedestrians and motorists during low light conditions when the potential for conflict is greatest.

As noted in the last status report, our target for delivery of the final report was this coming spring. We are still pushing to meet that timeline, but it could be this summer depending on the time required to finish reviewing the video data and other office workload.

Feel free to contact me if you have any questions. I can be reached at 530-225-3229 or via email at [rob.stinger@dot.ca.gov](mailto:rob.stinger@dot.ca.gov).

Sincerely,



ROB STINGER, P.E.  
Chief, Traffic Engineering & Operations  
District 2

Cc: FHWA California Division Office  
Devinder Singh – CTCDC Executive Secretary  
Ed Lamkin – Caltrans District 2 Maintenance & Operations  
Dennis Agar – Caltrans HQ Traffic Operations

12-18 Request to experiment with Red Colored Transit-only Lanes (SF) (Patterson)  
**Status: (9-13-13)** San Francisco installed red transit-only lanes in March, 2013 on Church Street between 16<sup>th</sup> Street and Duboce Avenue (see attached photo). We are monitoring this durability of the material and effects on transit and traffic. This location

did not have transit-only lanes prior to the red material installation. We are undergoing planning and design work for 3 other proposed experimental installations, but they will likely not be installed until spring 2014 due to the need to make pavement repairs prior to installation.



Dustin White  
Transportation Planner

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- 12-19 Request to Experiment with Highlighted Shared Lane Markings (LA City) (Bahadori)  
**Status: No update**
- 12-21 Request to Experiment with In-Roadway Warning Lights (IRWL) System that would supplement existing traffic signals along the Metro Gold Line (LA Metro) (Winter)

**Status (1-2-14)** • Metro, Los Angeles County DPW and Los Angeles City DOT have each submitted their final comments on the 100% Plans & Specs in December 2013. These plans are expected to be approved in January 2014

- Construction solicitation scheduled for release in February 2014
- Contract award is anticipated in May 2014, pending Metro Board approval.
- Construction to begin in June 2014 and take 3 months to complete.
- Once the illuminated markers are in place, Metro will be preparing bi-annual progress reports to track their performance. This reporting will include a review of their effectiveness at reducing the average monthly number of left-turn violations.

- 12-25 Request for permission to experiment with various Bicycle Treatments (Winter)  
(Santa Monica)

Status: See report on the following website:

[http://www.dot.ca.gov/hq/traffops/signtech/newtech/exp/Item12-25\\_VariousBikeTreatments-SantaMonica.pdf](http://www.dot.ca.gov/hq/traffops/signtech/newtech/exp/Item12-25_VariousBikeTreatments-SantaMonica.pdf)

- 13-01 Request to Experiment with Green & Shared Roadway Bicycle Markings – Proposed by the City of Oakland (Patterson)

Status: (9-11-13) Data collection to document the existing condition was completed during the week of Sunday, April 28, 2013. Stage #1 construction (installation of standard treatments) was completed on July 19, 2013. Data collection for the Stage #1 condition (standard treatments) was completed over the week ending August 20, 2013. Stage #2 construction (installation of the experimental green band) is currently in progress. Data collection for the Stage #2 condition (experimental treatment) is anticipated in October 2013.

**Jason Patton, PhD**

**Bicycle & Pedestrian Program Manager**

Transportation Planning & Funding Division

Department of Engineering & Construction

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- 13-02 Request to Experiment with Bike Boxes and Wide Bike Strip Stripe (Patterson)  
-Proposed by the City of Davis

Status: (9-11-13) The City of Davis just awarded the contract for this project and will be holding the pre-construction meeting this week. Construction will start shortly thereafter, with completion planned for January 2014.

City would like to remind that Wide Bike Strip Stripe is not part of the experiment as City is not precluded from using the 12-inch line under the national CAMUTCD.

Thank you,

**Roxanne Namazi**

**Senior Civil Engineer**

City of Davis Public Works

23 Russell Boulevard, Davis, CA 9561

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**13-08 Minimum Yellow Light Change Interval Timing for signalized Intersections**

**Recommendations:** Caltrans requests that the CTCDC consider Subcommittees report and make recommendations on the policy for determining the minimum yellow change interval timing for the signalized intersections.

**Requesting Agency:** Caltrans

**Sponsor:** Hamid Bahadori, CTCDC Chairman, Automobile Club of Southern CA

**Background:**

**An Evaluation of the Minimum Yellow Change Interval Timing for Traffic Signals  
in California**

**Submitted to: California Traffic Control Devices committee (CTCDC)**

**By: Hamid Bahadori, Chairman CTCDC**

Municipalities in California use the California Manual on Uniform Traffic Control Devices (CA MUTCD) for calculation of the minimum yellow change interval timings at all traffic signals in the state. Table 4D-102 of the CA MUTCD offers values in seconds for minimum yellow timings based on the posted speed limits (or the unspotted prima faces speed limits) of respective approaches to the signalized intersections. However, these are required minimum values and the practitioners are recommended to consider field conditions and site requirements in actually determining the yellow timing values used at each location, and increase these minimum values accordingly as needed.

Recently, the Transportation Research Board (TRB) issued a comprehensive research paper titled: *National Cooperative Highway Research Program 731 (NCHRP 731)* that in detail evaluated the subject of yellow timing and issued specific recommendations for further evaluations of this matter. Furthermore, Assembly Bill 612, legislation introduced by Assemblyman Adrin Nazarian, suggested to increase the value for the minimum yellow change intervals by one second at signalized intersections where automated red-light camera (RLC) enforcement devices are being used in the state. Additionally, data collected through the use of RLCs offered evidence that minor increases in the yellow timings at the observed intersections considerably reduced the number of red-light running violations. Consideration of these concurrent events by the CTCDC in their meeting of July 25, 2013 in Napa, California, led the CTCDC members to believe that a further in-depth evaluation of this issue is warranted.

Therefore, in the said meeting the CTCDC upon discussing this matter decided to form a subcommittee to review this issue, develop recommendations, if possible, and report back to the CTCDC in their first meeting in 2014.

A Subcommittee of 19 members was formed, chaired by Hamid Bahadori, inclusive of a broad spectrum of stakeholders and traffic experts representing all interests in this matter. A list of the "Subcommittee Membership" is attached to this report.

The Subcommittee held 4 conference calls, each 3 hours in durations, engaging in detailed technical discussions evaluating the issue of yellow change interval timing. This report briefly outlines those discussions to further assist the CTCDC in their consideration of this matter.

### **Issues and Recommendations**

The Subcommittee started its discussions trying to first address the following issues:

- I. Is there a need to consider changes to the current minimum yellow change interval timing in California?
- II. Should there be two different methodologies to calculate minimum yellow timings at signalized intersections based on the presence of the automated enforcement devices or lack of?

The Subcommittee, after considerable discussions, concluded that considering the evidence presented, namely NCHRP 713 findings, there is a need to further evaluate the current values offered in the Table 4D-102 of the CA MUTCD. Although the findings of the NCHRP 713 were more heavily considered, consideration was also given to the data collected through yellow time changes at the RLC-equipped intersections, albeit with a smaller sample size.

The Subcommittee also concluded that since the role of the yellow change interval at a signalized intersection is to provide for a safe operation of the intersection through adequately addressing the “dilemma zone” issue for the drivers, and that is based on the speed of vehicles and field conditions and has absolutely no relevance to the presence or lack of an automated red-light enforcement devices at the intersection; therefore, there should not be two different methodologies for calculating minimum values for yellow timings in the state based on the existence or lack of an automated enforcement device at a signalized intersection. However, few members duly and correctly highlighted the fact that shorter yellow times at RLC-equipped intersections will not only compromise traffic safety, but they will also result in higher number of red-light running citations issued that need to be addressed as well.

Upon reaching agreement in answering these two questions, the Subcommittee considered many technical papers, facts and data as part of extensive deliberations trying to address the following issues:

- A. Should posted speed limits or the field-measured critical speeds (the 85<sup>th</sup> percentile speeds) be used for calculations of the minimum yellow timing values?
- B. Should there be required specific adjustments for approach grades for minimum yellow timing values in the Standard section of the CA MUTCD addressing this issue?

- C. Should there be a change in the one second value currently used for the PIEV time (reaction time) in the formula currently used to calculate values offered in the Table 4D-102 of the CA MUTCD?
- D. How should the issue of minimum yellow timing be addressed for exclusive turn pockets, especially where the considerable length of the turn pockets allow the drivers to continue at the prevailing through movement speeds as they enter these pockets on their approach to the signalized intersections?

The Subcommittee spent more than ten hours discussing these issues in great detail, while considering many facts and data presented in support of different positions and viewpoints on each of these matters.

The Subcommittee could reach unanimous consent on the following recommendations:

1. Municipalities in California should be required to use the actual field-measured critical speeds (the 85<sup>th</sup> percentile speeds of free-flow traffic) rounded to the highest nearest 5-MPH increments when using Table 4D-102 of the CA MUTCD for calculation of the minimum yellow change interval timings. But if the rounded value is still below the posted speed limit (or the unposted prima facie speed limit) then those speeds shall be used.
2. Municipalities, however, should still be allowed to use the posted speed limits (or the unposted prima facie speed limits) if they choose to do so. But, if they choose to use the posted speed limits (or the unposted prima facie speed limits), then they should add 10 MPH to those speeds if they are 25 MPH or under, and add 7 MPH to the speeds that are greater than 25 MPH, and then use Table 4D-102 using the new cumulative speed to calculate the corresponding minimum yellow timing values. Implementation of this recommendation will require changes to the calculations used in the current Table 4D-102.

Majority members of the Subcommittee believed that either of the two aforementioned methodology should be given equal weight and validity in the CA MUTCD with no preference, and the decision about which methodology to be used should be left to local agencies. However, few of the Subcommittee members suggested that the “85<sup>th</sup> percentile methodology” should be considered as the de-facto standard method to be used at all times, and only in the absence of the 85<sup>th</sup> percentile data, then a municipality should use the latter method to calculate the yellow timings.

On the other issues that were reviewed and discussed by the Subcommittee, the members could not reach unanimous consent and the majority members supported the following recommendations, with minority members having the opportunity to present their positions and recommendations directly to the CTCDC for their consideration as part of their discussion of this issue in their meeting of February 20, 2014 in San Mateo, California, either in person or through written communiqué:

- a) Add language to the CA MUTCD text under Options, to further strengthen the language for considering field conditions such as approach grades in the

determination of the minimum yellow value timings. Consider including specific referrals to the ITE, et al documents offering specific methodologies and values for the grade-related adjustments.

- b) Add language to the CA MUTCDC text under Options, to further strengthen language for considering longer yellow timings for exclusive turn movements in locations where the exclusive turn pockets exceed a certain value.
- c) Do not make any adjustments to the PIEV time (reaction time) of one second that is currently used in calculating the values offered in Table 4D-102 of the CA MUTCD.

Minority members of the Subcommittee recommended specific tables and values for inclusion in the CA MUTCD to offer adjustment values for the approach grades and the increased length of turn pockets for exclusive turn movements.

### **Implementation Schedule**

The Subcommittee also recommended that the final changes, as recommended by the CTCDC and approved by the Caltrans Director, be issued in a Policy Directive, requiring municipalities to comply with the new minimum yellow timing standards in a reasonable time. Caltrans staff based on their experience with the recent implementation of similar changes in signal timing parameters suggested that the full implementation time be set at 3 years from the official date of adoption of the revisions. However, strong consideration should be given by the CTCDC to recommending a shorter compliance time requirement for signalized intersection that have automated red-light camera enforcement devices (which are currently estimated to be about 364 intersections in about 50 jurisdictions in California).

### **Future Steps**

This report is being presented to the CTCDC for their consideration as part of their discussions about this issue in their meeting of February 20, 2014 in San Mateo, California. Subsequent to the CTCDC reaching a decision about final recommendations on this matter, the CTCDC's recommendations will be presented to Caltrans Director for his review and approval. Upon the Director's approval, Caltrans staff will revised the pertinent sections of the CA MUTCD addressing and including all the approved recommendations and a copy of the revised sections will be issued through a Policy Directive with the compliance timeline requirement for use by municipalities in California.

### **Suggested Revisions to the CA MUTCD**

Based on the Subcommittee recommendations, Caltrans staff have prepared the following revised the draft changes to the CA MUTCD for the CTCDC's consideration.

However, this is a working draft and will be subject to change pursuant to the discussions and final recommendations of the CTCDC.

The following proposed revisions to the CA MUTCD establish a hierarchical system of first requiring the use of the 85<sup>th</sup> percentile speed and only use the posted speed limit methodology only when the 85<sup>th</sup> percentile speed is not readily available. However, many members of the Subcommittee representing municipalities have asked that both methods be given equal weight with no order of preference. Depending on the CTCDC's final recommendation about this issue, the following proposed text will be modified to reflect the CTCDC's decision.

The current CA MUTCD text is shown in **BLUE** regarding the yellow change interval, and Caltrans recommended changes are shown in **RED**:

Standard: (Current CA MUTCD Text)

14b The minimum yellow change interval shall be in accordance with Table 4D-102(CA). The posted speed limit, or the prima facie speed limit established by the California Vehicle Code (CVC) shall be used for determination of the minimum yellow change interval for the through traffic movement.

**Proposed change to the CA MUTCD:**

Standard:

14b The minimum yellow change interval for the through traffic movement shall be calculated by using the 85<sup>th</sup> percentile speed of free-flow traffic rounded to the highest nearest 5 mile per hour increment. At signalized locations, where posted or prima facie speed limit is higher than the rounded value, use of the posted or prima facie speed limit for determination of the minimum yellow change interval for the through traffic movement. See Table 4D-102A(CA).

If the 85<sup>th</sup> percentile speed data is not available, the minimum yellow change interval for the through traffic movement shall be calculated by adding 7 miles per hour to the posted or prima facie speed limits of 30 mph or higher, and by adding 10 miles per hour to the posted or prima facie speed limits of 25 mph or less. See Table 4D-102B(CA).

Option: (Current language)

14d The minimum yellow change interval for the through movement and the protected left-turn or protected right-turn may be increased based on a field review or by using appropriate judgment. That judgment may be based on numerous factors, including, but not limited to, 85th percentile speed, intersection geometry and field observations of traffic behavior.

**Proposed change to the CA MUTCD:**

Guidance:

14d Practitioners should consider appropriate engineering judgment for determination of the minimum yellow change interval, to the extent feasible. Judgment should be based on numerous factors including, but not limited to, field observation of traffic behavior, intersection geometrics, downhill grade, perception-reaction time of drivers in the area, and actually driving the protected left-turn or protected right-turn movements to assess the need for longer yellow change intervals.

Option:

14e The minimum yellow change interval for the through movement and the protected left-turn or protected right-turn may be increased based on appropriate engineering judgment.

**Table 4D-102A (CA)**

<b>SPEED</b>  (DETERMINED BY 85 <sup>TH</sup> PERCENTILE SPEED OF FREE-FLOW TRAFFIC ROUNDED TO THE HIGHEST NEAREST 5 MILE PER HOUR INCREMENT; or the POSTED and/or UNPOSTED PRIMA FACIE SPEED LIMITS, IF THOSE ARE HIGHER THAN THE ROUNDED SPEED VALUE)	<b>MINIMUM YELLOW INTERVAL</b>
<b>Mph</b>	<b>Seconds</b>
<b>25 or less</b>	<b>3.0</b>
<b>30</b>	<b>3.2</b>
<b>35</b>	<b>3.6</b>
<b>40</b>	<b>3.9</b>
<b>45</b>	<b>4.3</b>
<b>50</b>	<b>4.7</b>
<b>55</b>	<b>5.0</b>
<b>60</b>	<b>5.4</b>
<b>65</b>	<b>5.8</b>

**Table 4D-102B (CA)**

<b>POSTED SPEED or UNPOSTED PRIMA FACIE SPEED</b>	<b>MINIMUM YELLOW INTERVAL (DETERMINED BY POSTED or UNPOSTED PRIMA FACIE SPEED LIMIT PLUS 7 MILES PER HOUR) *</b>	<b>MINIMUM YELLOW INTERVAL (DETERMINED BY POSTED or UNPOSTED PRIMA FACIE SPEED LIMIT PLUS 10 MILES PER HOUR) *</b>
<b>mph</b>	<b>Seconds</b>	<b>Seconds</b>
15		3.0
20		3.2
25		3.6
30	3.7	
35	4.1	
40	4.4	
45	4.8	
50	5.2	
55	5.5	
60 or higher	5.9	

(\*) The timing values are calculated using the following formula where the speed value is added by 7 MPH for speeds over 25 and by 10 MPH for speeds equal to or lower than 25 MPH.

**T= t+V/2d**

T= the minimum yellow change interval (in seconds)

t= PIEV time (1 second)

V= Speed (in MPH) {for Table 4D-102B (CA), this speed value is already inclusive of the 7 MPH added for speeds over 25 and 10 MPH for speeds equal to or lower than 25 MPH}

d= Deceleration rate (10 feet/second)

**Subcommittee Members:**

No.	Last Name	First Name	Organization	Phone	E-mail
1	Bahadori (Chair)	Hamid	Automobile Club of Southern California (AAA)	(714) 885-2326	<a href="mailto:bahadori.hamid@aaa-calif.com">bahadori.hamid@aaa-calif.com</a>
2	Singh (Secretary)	Devinder	Caltrans	(916) 654-4715	<a href="mailto:devinder.singh@dot.ca.gov">devinder.singh@dot.ca.gov</a>
3	Alvarez	Cynthia	Assemblyman Nazarian's Office	(916) 319-2215	<a href="mailto:Cynthia.Alvarez@asm.ca.gov">Cynthia.Alvarez@asm.ca.gov</a>
4	Beeber	Jay	Safe Streets LA	(505) 500-4790	<a href="mailto:Jay@saferstreetsla.org">Jay@saferstreetsla.org</a>
5	Dornsife	Chad	Best Highway Safety Practices Institute	(503) 223-5447	<a href="mailto:cdornsife@bhspi.org">cdornsife@bhspi.org</a>
6	Miller	Rock	Stantec	(949) 923-6000	<a href="mailto:Rock.Miller@stantec.com">Rock.Miller@stantec.com</a>
7	Mustafa	Zaki	I.T.E.	(213) 972-8436	<a href="mailto:zaki.mustafa@lacity.org">zaki.mustafa@lacity.org</a>
8	Olea	Ricardo	City and County of San Francisco	(415) 701-4561	<a href="mailto:Ricardo.olea@sfmta.com">Ricardo.olea@sfmta.com</a>
9	Parsonson, PhD	Peter	Consultant/Researcher	(404) 966-2244	<a href="mailto:parsonsonp@bellsouth.net">parsonsonp@bellsouth.net</a>
10	Patterson	Larry	City of San Mateo	(650) 522-7303	<a href="mailto:lpatterson@cityofsanmateo.org">lpatterson@cityofsanmateo.org</a>
11	Priebe	Mark	American Traffic Solutions	(480) 596-4628	<a href="mailto:mark.priebe@atsol.com">mark.priebe@atsol.com</a>
12	Rastegarpour	Ahmad	Caltrans	(916) 654-6128	<a href="mailto:Ahmad.rastegarpour@dot.ca.gov">Ahmad.rastegarpour@dot.ca.gov</a>
13	Skehan	Sean	City of Los Angeles DOT	(213) 972-8428	<a href="mailto:sean.skehan@lacity.org">sean.skehan@lacity.org</a>
14	Styer	Martha	Caltrans	(916) 651-9364	<a href="mailto:Martha.styer@dot.ca.gov">Martha.styer@dot.ca.gov</a>
15	Suter	Monica	I.T.E.	(714) 647-5645	<a href="mailto:msuter@santa-ana.org">msuter@santa-ana.org</a>
16	Turner	Michael	LA METRO	(213) 922-2122	<a href="mailto:TurnerM@metro.net">TurnerM@metro.net</a>
17	Whiting	Jennifer	League of California Cities	(916) 658-8249	<a href="mailto:jwhiting@cacities.org">jwhiting@cacities.org</a>
18	Widstrand	Eric	Sam Schwartz Engineering	(213) 943-1377	<a href="mailto:ewidstrand@samschwartz.com">ewidstrand@samschwartz.com</a>
19	Winter	Bill	Los Angeles County Public Works	(626) 458-4018	<a href="mailto:wwinter@dpw.lacounty.gov">wwinter@dpw.lacounty.gov</a>

## 14-01 Proposal to adopt “Turn Around, Don’t Drown” sign (Amend Sec.2C.35 &amp; 6I.06)



A Tradition of Stewardship  
A Commitment to Service

Department of Public Works

1195 Third Street, Suite 101  
Napa, CA 94559-3092  
[www.countyofnapa.org/publicworks](http://www.countyofnapa.org/publicworks)

Main: (707) 253-4351  
Fax: (707) 253-4627

**Steven Lederer**  
Director

December 16, 2013

Devinder Singh, Executive Secretary  
California Traffic Control Devices Committee  
P.O. Box 942874  
Sacramento, CA 94274-0001

Subject: Request for Agenda Item – Turn Around Don’t Drown Signage

Dear Devinder,

This letter serves to request that the subject signage be placed on the next agenda of the California Traffic Control Devices Committee (CTCDC) for approval.

Turn Around Don’t Drown (TADD) is a safety campaign which originated with the National Weather Service (NWS), designed to warn people of the hazards of walking or driving a vehicle through flood waters. Signs have been developed for both permanent installations and incident management applications. The Federal Highway Administration (FHWA) has endorsed the use of these signs in 2005, but has not yet incorporated them into the Manual on Uniform Traffic Control Devices (MUTCD). As the signage proposed consists of word messages only, it is my understanding that the CTCDC can approve them for use by communities in California which are interested, which includes the County of Napa. Both proposed signs would be new to the CA MUTCD, so I have proposed language to be included, and recommended designation codes for each one.

Enclosed are the following materials for consideration by the Committee:

1. Materials taken from the NWS website, providing information about the overall TADD program.
2. Letter of endorsement from FHWA.
3. Sign specifications for both permanent installation and incident management applications.
4. Proposed language for incorporation in the California MUTCD to define usage of these proposed signs.

Please email [Rick.Marshall@countyofnapa.org](mailto:Rick.Marshall@countyofnapa.org) or call (707) 259-8381 if you have questions or need additional information. Thank you for your assistance with this request.

Regards,

*Rick Marshall (e-signature)*

Rick Marshall  
Deputy Director of Public Works  
Road Commissioner & County Surveyor  
Member, CTCDC – Northern Counties’ Representative

**Proposal:** County of Napa requests that the Committee recommend adoption of the two new signs by amending Sections 2C.35 and 6I.06 of the CA MUTCD. The signs are “FLOODING AHEAD TURN AROUND DON’T DROWN”, and “WHEN FLOODING TURN AROUND DON’T DROWN.”

**Agency Making Request:** Napa County

**Sponsor:** Rick Marshall, Voting member, Representing Northern Counties of CA

**Background:**

Turn Around, Don't Drown Resources

Page 1 of 1

http://www.weather.gov



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## Turn Around Don't Drown®

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### What Is Turn Around Don't Drown® (TADD)?

TADD is a NOAA National Weather Service campaign to warn people of the hazards of walking or driving a vehicle through flood waters.

At right is an official sanctioned Department of Transportation, Federal Highway Administration Road sign. Details on producing and using this sign are available [here](#).

**FLOODING AHEAD**  
**TURN AROUND**  
**DON'T DROWN**

### Why is Turn Around Don't Drown® So Important?

Each year, more deaths occur due to flooding than from any other severe weather related hazard. The Centers for Disease Control report that over half of all flood-related drownings occur when a vehicle is driven into hazardous flood water. The next highest percentage of flood-related deaths is due to walking into or ear flood waters. Why? The main reason is people underestimate the force and power of water. Many of the deaths occur in automobiles as they are swept downstream. Of these drownings, many are preventable, but too many people continue to drive around the barriers that warn you the road is flooded.

### What Can I Do to Avoid Getting Caught in This Situation?

Most flood-related deaths and injuries could be avoided if people who come upon areas covered with water followed this simple advice: **Turn Around Don't Drown®**.

The reason that so many people drown during flooding is because few of them realize the incredible power of water. A mere six inches of fast-moving flood water can knock over an adult. It takes only two feet of rushing water to carry away most vehicles. This includes pickups and SUVs.

If you come to an area that is covered with water, you will not know the depth of the water or the condition of the ground under the water. This is especially true at night, when your vision is more limited.

Play it smart, play it safe. Whether driving or walking, any time you come to a flooded road, **Turn Around Don't Drown®**

Follow these safety rules:

- Monitor the NOAA Weather Radio, or your favorite news source for vital weather related information.
- If flooding occurs, get to higher ground. Get out of areas subject to flooding. This includes dips, low spots, canyons, washes etc.
- Avoid areas already flooded, especially if the water is flowing fast. Do not attempt to cross flowing streams. **Turn Around Don't Drown®**
- Road beds may be washed out under flood waters. NEVER drive through flooded roadways. **Turn Around Don't Drown®**
- Do not camp or park your vehicle along streams and washes, particularly during threatening conditions.
- Be especially cautious at night when it is harder to recognize flood dangers.

<http://www.weather.gov>



**National Weather Service**

**Office of Climate, Water, and Weather Services**

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TADD : Road Signs

Incident Sign	Warning Sign
 <p>The Federal Highway Administration (FHWA), with its Letter of Support, has encouraged use of the phrase "Flooding Ahead Turn Around Don't Drown" as an official incident management road sign following FHWA specifications. Details on producing this Turn Around Don't Drown® incident sign are available here.</p> <p>Incident management signs are a specific type of Temporary Traffic Control (TTC) sign deployed in response to short-term events which impede the normal flow of traffic such as accidents, natural disasters, hazardous material spills, or other unplanned incidents. The "Flooding Ahead Turn Around Don't Drown®" incident management sign is intended for use at locations where stream waters flooding across a road have made passage dangerous. The location may be a road which dips down to the level of a stream channel or a bridge or culvert which cannot pass high flood flows.</p> <p>Incident management signs are intended for mounting on temporary sign holders such as the one shown above. They should not be mounted on construction barricades.</p> <p>This type of incident sign has a black legend (i.e., lettering and outer border) and a fluorescent pink background (RGB color 255:40:140 or Pantone 232). More detailed guidance on incident signs can be found in Section 6I in Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD).</p>	 <p>This warning sign, "When Flooded, Turn Around Don't Drown®," complies with FHWA standards and is intended for deployment as a permanent road sign. Warning signs alert drivers of a possible danger ahead, such as when it may be necessary to slow down and stop, or a road hazard or special situation may be ahead. Details on producing this Turn Around Don't Drown® warning sign are available here.</p> <p>The "When Flooded, Turn Around Don't Drown®" warning sign should be deployed at locations where the incidence of flooding is high, the onset of flooding is rapid, and/or it is not practical to deploy incident signs in a timely manner.</p> <p>NWS offices are encouraged to work with officials in their local areas in promoting use of this sign to save lives and property.</p> <p>Warning signs have a black legend (i.e., lettering and outer border) and a yellow background (RGB color 255:208:69 or Pantone 116). More detailed guidance on use of warning signs can be found in Chapter 2C of the MUTCD. ®</p>

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[AHPS Toolbox](#), [AHPS Software Development Hydrology Lab](#), [Flood Safety Service Hydrology](#),  
[Turn Around Don't Drown!](#), [High Water Mark Signs](#), [Partners](#), [Contact Us](#)

Office of Climate, Water, and Weather Services  
 NOAA, National Weather Service  
 Questions? Comments?  
[http://www.nws.noaa.gov/ocw/tadd/road\\_signs.shtml](http://www.nws.noaa.gov/ocw/tadd/road_signs.shtml)

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April 7, 2005

Refer to: HOTO-1

Mr. Dennis McCarthy  
Acting Director, Office of Climate  
Water and Weather Services  
National Weather Service, Room 14348  
1325 East-West Highway  
Silver Spring, MD 20910

Dear Mr. McCarthy:

The loss of life on the Nation's roadways due to flooding constitutes a problem that both the transportation and meteorological communities must address. To that end, we applaud your efforts under the "Flood Safety Awareness" program, especially the "Turn Around, Don't Drown" campaign. We also recognize that the National Weather Service (NWS) is the primary source of weather data, forecasts and warnings, and it is clear that such services save lives. However, we also know that getting timely, accurate and relevant information to drivers to avoid flood hazards is a responsibility of the transportation community too. To that end, we encourage State and local agencies to use uniform, consistent signing as an effective way to affect driver behavior.

Within the transportation community, a flooded road is considered an "incident"—an unplanned event that disrupts the normal operations of a roadway. There are two federal documents that provide guidance to State and local agencies regarding the types of signs that should be posted during such incidents as a flooded road—the Manual on Uniform Traffic Control Devices (MUTCD) and the Standard Highway Signs (SHS) book. These documents contain the specifications for incident warning signs, which includes size of the legend, colors, and shape. To that end, we recommend that State and local highway agencies should warn motorists of temporary flooding conditions by using signs that are fluorescent pink (Pantone color 232 or RGB values 255:40:140) with black lettering, as defined for all incident warning signs in MUTCD Chapter 6I and illustrated in Figure 6I-1. Sign legends used should be specific to the roadway condition and clearly communicate the actions expected of the road users. Legends such as "Flooding Ahead" and "Turn Around, Don't Drown" could effectively communicate the desired warning and action. Further guidance contained in the MUTCD and SHS book can be found at: <http://mutcd.fhwa.dot.gov>.

2

In closing, I would again like to praise the work of you and your staff, and look forward to working with you on this important subject.

Sincerely yours,

/s/ Regina McElroy

Regina S. McElroy  
Director, Office of Transportation  
Operations

**Proposal:****Section 2C.35 Weather Condition Signs (W8-18, W8-19, W8-21, and W8-22 and SW34(CA))****Support:**

α The FHWA has encouraged use of the phrase When FLOODING AHEAD TURN AROUND DON'T DROWN as an official warning sign.

**Option:**

α When FLOODING AHEAD TURN AROUND DON'T DROWN (SW34(CA)) signs may be located at lowwater crossings or at bridges or culverts which cannot pass high flood flows.

**Guidance:**

α The "When FLOODING AHEAD TURN AROUND DON'T DROWN" (SW 34(CA)) sign is intended for use at locations where stream waters flooding across a road have made passage dangerous.

**Additional elements of proposal**

1. Add "When Flooded Turn Around Don't Drown" sign, designated SW34(CA), to Figure 2C-6(CA).
  2. Add sign specification sheet for SW34(CA).
- 

**Section 6I.101(CA) FLOODING AHEAD TURN AROUND DON'T DROWN Sign (SW34a(CA))****Support:**

α The FHWA has encouraged use of the phrase FLOODING AHEAD TURN AROUND DON'T DROWN as an official incident management sign.

**Option:**

α FLOODING AHEAD TURN AROUND DON'T DROWN (SW34a(CA)) signs may be located at low-water crossings or at bridges or culverts which cannot pass high flood flows.

**Standard:**

α The FLOODING AHEAD TURN AROUND DON'T DROWN (SW34a(CA)) sign, where used, shall be mounted on temporary sign holders, not on construction barricades.

**Guidance:**

α The " FLOODING AHEAD TURN AROUND DON'T DROWN" (SW 34a(CA)) sign is intended for use at locations where stream waters flooding across a road have made passage dangerous.

**Additional elements of proposal**

3. Add "Flooding Ahead Turn Around Don't Drown" sign, designated SW34a(CA), to Figure 6I-1.
4. Add sign specification sheet for SW34a(CA).



FLOODONG AHEAD TURN AROUND DON'T DROWN

A	B	C	D	E	F	G	H	J	K	L
24.0	30.0	0.50	0.625	5.513	3.0	2.188	13.438	11.406	10.875	1.5

WARNING SIGN COLORS:

- LEGEND – BLACK
- BACKGROUND – PINK (RETROREFLECTIVE)



WHEN FLOODED TURN AROUND DON'T DROWN

A	B	C	D	E	F	G	H	J	K	L	M
30	.5	.75	3.390	2.438	2.062	4.922	7.75	12.625	5.125	6.094	1.875

WARNING SIGN COLORS:

LEGEND            - BLACK  
 BACKGROUND   -YELLOW (RETROREFLECTIVE)

## 14-02 Proposal to adopt "Preserve America" Sign (Amend Sec 2D.56)



A Tradition of Stewardship  
A Commitment to Service

## Department of Public Works

1195 Third Street, Suite 101  
Napa, CA 94559-3092  
[www.countyofnapa.org/publicworks](http://www.countyofnapa.org/publicworks)

Main: (707) 253-4351  
Fax: (707) 253-4627

**Steven Lederer**  
Director

December 16, 2013

Devinder Singh, Executive Secretary  
California Traffic Control Devices Committee  
P.O. Box 942874  
Sacramento, CA 94274-0001

Subject: Request for Agenda Item – Preserve America Community Sign

Dear Devinder,

This letter serves to request that the subject sign be placed on the next agenda of the California Traffic Control Devices Committee (CTCDC) for approval.

Certain communities have been designated by the Federal government as Preserve America communities, including 38 within California. This designation recognizes communities that protect and celebrate their heritage, use their historic assets for economic development and community revitalization, and encourage people to experience and appreciate local historic resources through education and heritage tourism programs. The designation is provided by a coalition of federal agencies, including the Department of Transportation, but the Federal Highway Administration (FHWA) has not yet incorporated the sign indicating this designation into the Manual on Uniform Traffic Control Devices (MUTCD).

The Federal government makes this sign available for designated communities to post at their entrances. I was recently contacted by staff from Tuolumne County, who were interested in doing so at several locations on State routes, and whose application for encroachment permit to do so was denied by Caltrans District 10. The primary cause for denial of their application was that the sign is not incorporated into the CA MUTCD. In her denial letter, the Caltrans District Director referred Tuolumne County to the CTCDC, and they have contacted me as the representative for northern counties.

As the sign proposed consists of a word message and pictograph only, it is my understanding that the CTCDC can approve it for use by communities in California which are interested, which includes the County of Tuolumne. The proposed sign would be new to the CA MUTCD, so I have proposed language to be included, and recommended a designation code for the sign.

Devinder Singh  
December 16, 2013  
Page 2 of 2

Enclosed are the following materials for consideration by the Committee:

1. December 11, 2013 request letter from the County of Tuolumne.
2. June 5, 2009 staff report to Tuolumne County Board of Supervisors.
3. July 23, 2013 Encroachment Permit denial letter from Caltrans District 10.
4. September 16, 2013 appeal letter from Tuolumne County to District 10 Director.
5. September 30, 2013 denial letter from District 10 Director.
6. Materials taken from the Preserve America website, providing information about the overall program.
7. Proposed language for incorporation in the California MUTCD to define usage of this proposed sign.

Please email [Rick.Marshall@countyofnapa.org](mailto:Rick.Marshall@countyofnapa.org) or call (707) 259-8381 if you have questions or need additional information. Thank you for your assistance with this request.

Regards,

*Rick Marshall (e-signature)*

Rick Marshall  
Deputy Director of Public Works  
Road Commissioner & County Surveyor  
Member, CTCDC – Northern Counties' Representative

**Proposal:** Tuolumne County requests that the Committee recommend adoption of the “PRESERVE AMERICA” sign by adding a new Section 2D.104(CA) to the CA MUTCD.

**Agency Making Request:** Tuolumne County

**Sponsor:** Rick Marshall, Voting member, Representing Northern Counties of CA

## Background:



## COMMUNITY RESOURCES AGENCY

BEV SHANE, AICP  
Director

Administration - Building - County Surveyor - Engineering - Environmental Health - Fleet Services - GIS - Housing - Planning - Roads - Solid Waste

December 11, 2013

48 W. Yaney Avenue, Sonoma  
Mailing: 2 S. Green Street  
Sonoma, CA, 95370  
(209) 533-5633  
(209) 536-1622 (Fleet)  
(209) 533-5616 (fax)  
(209) 533-5909 (fax - EHD)  
(209) 588-9064 (fax - Fleet)  
(209) 533-5698 (fax - Roads)  
[www.tuolumnecounty.ca.gov](http://www.tuolumnecounty.ca.gov)

Rick Marshall – CSAC  
Deputy Director of Public Works, Napa County  
1195 3<sup>rd</sup> Street, Room #101  
Napa, CA 94559

Dear Mr. Marshal:

This letter is in reference to the phone conversation my staff had with you on Tuesday, December 10<sup>th</sup>, 2013 in which we talked about the "Preserve America" signs that Tuolumne County would like to place within the Caltrans Road Right of Way along the State highways that enter into Tuolumne County.

In July 2008, the County of Tuolumne was designated as a *Preserve America* community by former First Lady Laura Bush. This designation recognizes communities that protect and celebrate their heritage, use their historic assets for economic development and community revitalization, and encourage people to experience and appreciate local historic resources through education and heritage tourism programs.

Currently the *Preserve America* signage is not recognized in the California Manual on Uniform Traffic Control Devices (MUTCD).

We submitted applications to Caltrans for placement of these signs and received a letter of denial, (attached). At that point we appealed the denial with Caltrans District 10 Director and again received a letter of denial, (attached).

You are receiving this letter in part because the latest denial letter refers to the CTCDC brochure and stated that we would need a CSAC member to sponsor our request. With that in mind, we would like to ask you to sponsor our request to allow for the installation of eight (8) *Preserve America* signs within the Caltrans' Right of Way on several State Highways that enter Tuolumne County.

Also I have attached the sign locations, and pertinent installation information regarding their placement and a copy of each application with required attachments.

Thank you in advance for your time and consideration on this matter and please don't hesitate to contact me @ (209) 533-5953 or Brian Eaton (209) 533-6640 email: [beaton@co.tuolumne.ca.us](mailto:beaton@co.tuolumne.ca.us) with any questions or comments you may have regarding this issue.

Sincerely,

Richard S. York, RCE  
Deputy Director Community Resources Agency  
Roads Division  
[dyork@co.tuolumne.ca.us](mailto:dyork@co.tuolumne.ca.us)

c.c. Bev Shane

C:\Documents and Settings\beaton\My Documents\Preserve America Signs\Caltrans appeal.doc

June 5, 2009

TO: Honorable Board of Supervisors

FROM: Bev Shane, Community Development Director  
Peter Rei, Public Works Director

RE: Preserve America Community Road Signs

### PROJECT

Consideration of: (1) authorizing the installation of eleven (11) Preserve America Community road signs at entrances to Tuolumne County; (2) seeking funds from the Tuolumne County Transportation Council (TCTC) for the cost of the signs and installation of them; and (3) directing the Public Works Director to submit a request for funding from TCTC and to order and install the signs.

### GENERAL INFORMATION

1. In July 2008, the County of Tuolumne was designated as a *Preserve America* community by former First Lady Laura Bush. This designation recognizes communities that protect and celebrate their heritage, use their historic assets for economic development and community revitalization, and encourage people to experience and appreciate local historic resources through education and heritage tourism programs.
2. The benefits of the designation include:
  - White House recognition;
  - a certificate of recognition;
  - a Preserve America Community road sign;
  - eligibility for Preserve America grants;
  - authorization to use the Preserve America logo on signs, flags, banners, and promotional materials;
  - listing in a Web-based Preserve America Community directory;
  - national and regional press releases; and
  - enhanced community visibility and pride.

3. After receiving its designation, the Clerk of the Board of Supervisors received one (1) road sign that states, "Welcome to Tuolumne County, A Preserve America Community." The sign received by the County is 24" x 30" in size.
4. Additional signs may be obtained from the company that produced the complimentary sign in a variety of sizes.
5. The largest sign that is available is 36" x 48". The cost of the largest sign is approximately \$500 which includes shipping.
6. The Public Works Director and Community Development Director are proposing that Preserve America Community road signs be placed at the primary entrances to Tuolumne County. The recommended locations are listed below and are shown on the diagram on page 4:



#### County Roads

- ✓ O'Byrnes Ferry Road Bridge – Calaveras County line
- ✓ Parrotts Ferry Road Bridge – Calaveras County line
- ✓ J59/La Grange Road – Stanislaus County line

#### State Highways

- ✓ Highway 108/120 – Stanislaus County line (Knights Ferry)
- ✓ Highway 108 – Mono County line (Sonora Pass)
- ✓ Highway 120 – Mono County line (Tioga Pass)
- ✓ Highway 120 – Mariposa County line (Buck Meadows) (east bound)
- ✓ Highway 120 – Mariposa County line (Buck Meadows) (west bound)
- ✓ Highway 49 – Mariposa County line (Coulterville area)
- ✓ Highway 49 – Calaveras County line (Stevenot Bridge)
- ✓ Highway 132 – Stanislaus County line (Lake Don Pedro)

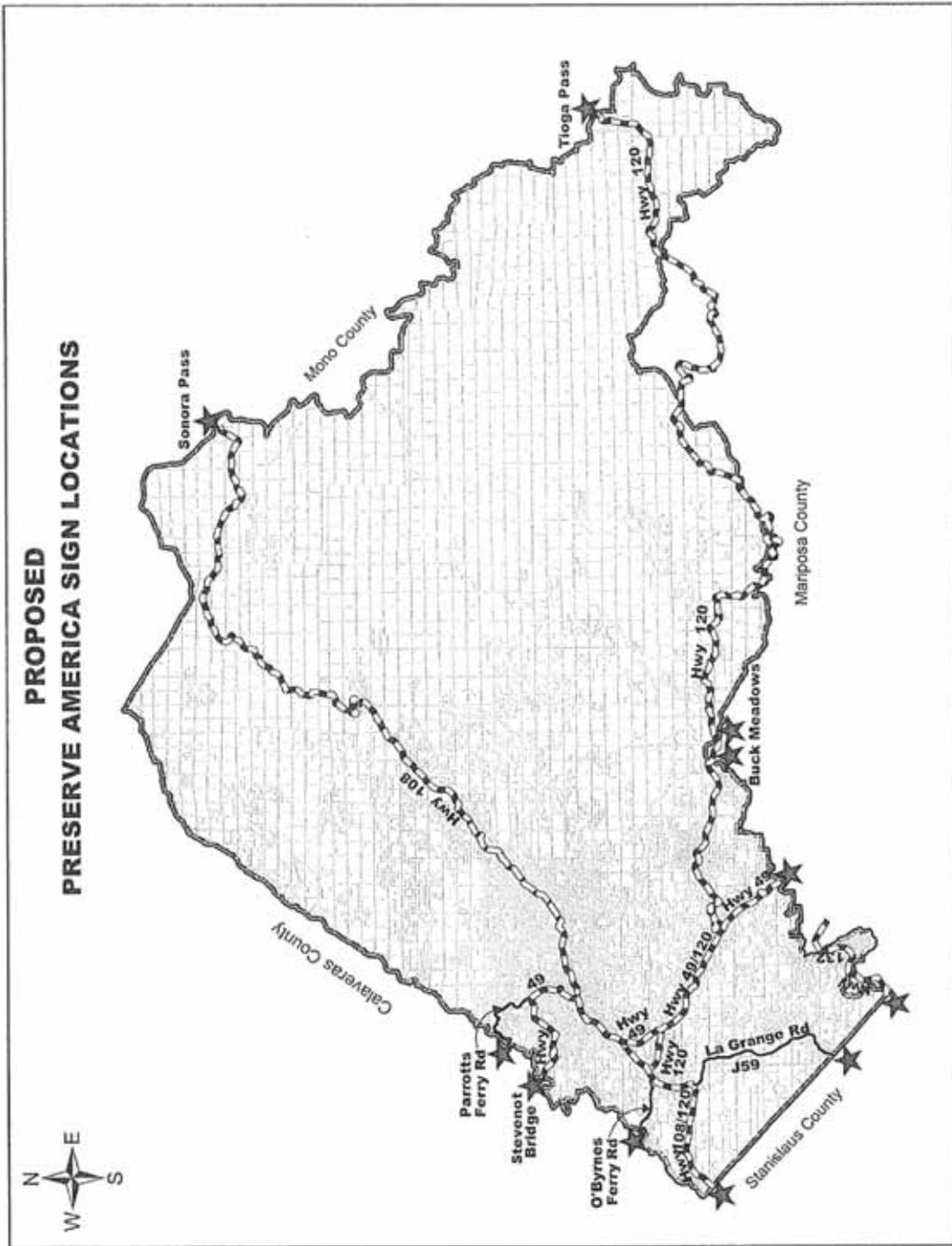
7. Under this proposal, a total of eleven (11) Preserve America Community road signs would be installed. The 24" x 30" complimentary sign is proposed to be placed at the O'Byrnes Ferry Bridge. Because the traffic on that bridge is generally slow, the small size would be legible. The other ten (10) signs are proposed to be 36" x 48", the largest available size.
8. The estimated cost of this proposal is \$5,000 for ten signs plus the cost incurred by the Department of Public Works for installation. The installation cost is still anticipated to be minimal.
9. The Executive Director of the Tuolumne County Transportation Council (TCTC) has advised that the proposed project would qualify for funds from that agency. As such, it is

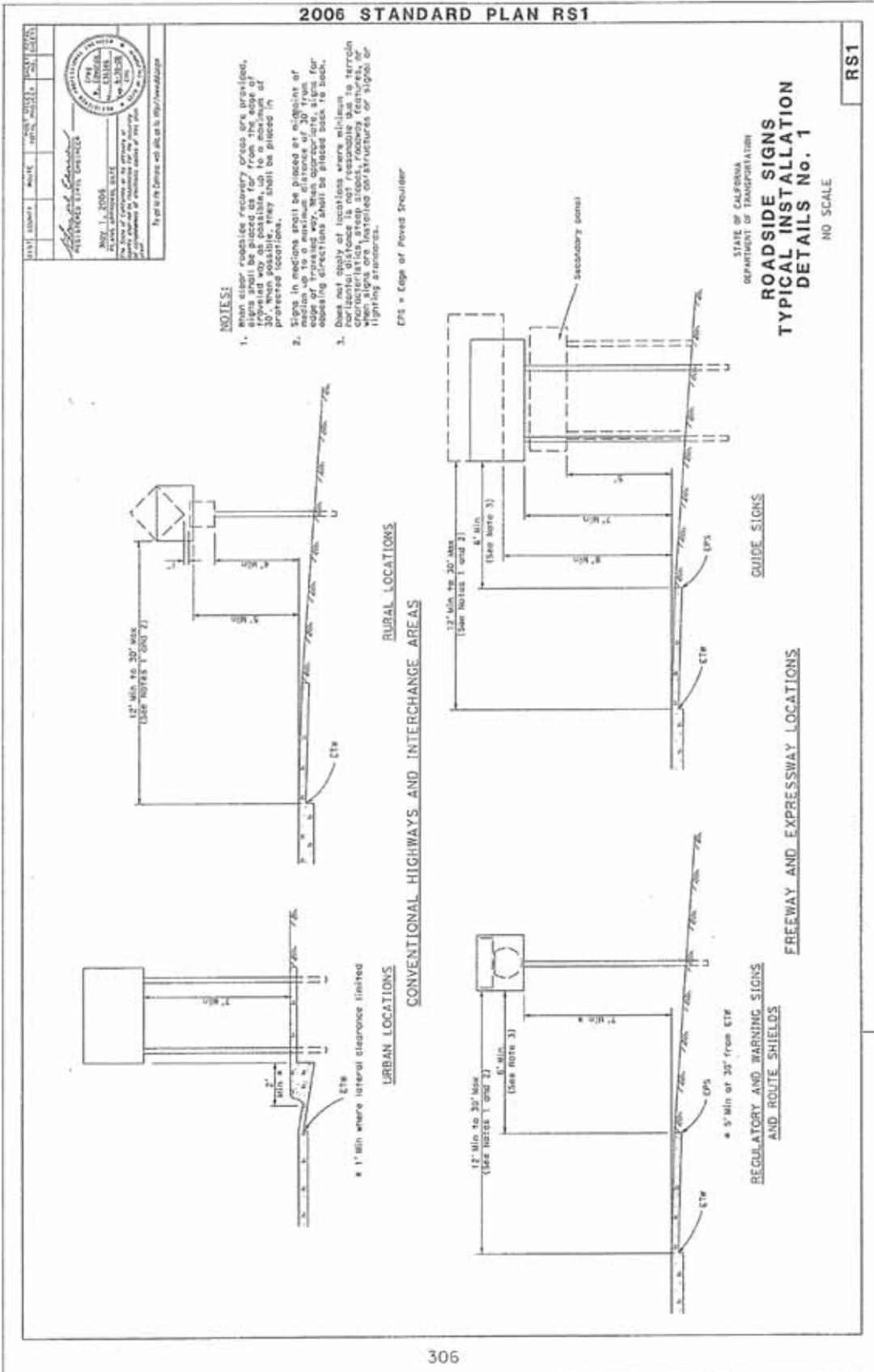
recommended that your Board direct staff to seek funds from the TCTC for the purchase and installation of the Preserve America Community Road signs.

10. This proposal for the installation of Preserve America Community road signs has been reviewed and endorsed by the Historic Preservation Review Commission and the Board of Supervisors Transportation Committee.

#### **RECOMMENDATION**

It is recommended that your Board (1) authorize the installation of eleven (11) Preserve America road signs at entrances to Tuolumne County; (2) seek funds from the Tuolumne County Transportation Council (TCTC) for the cost of the signs and installation of them; and (3) direct the Public Works Director to submit a request for funding from TCTC and to install the signs in the locations shown on the following diagram.





**2006 STANDARD PLAN RS2**

DATE: \_\_\_\_\_

REVISION: \_\_\_\_\_

PROJECT: \_\_\_\_\_

POST: \_\_\_\_\_

POST SPACING: \_\_\_\_\_

POST: \_\_\_\_\_

POST SPACING: \_\_\_\_\_

**ROADSIDE SIGNS-WOOD POST  
TYPICAL INSTALLATION  
DETAILS No. 2**

NO SCALE

RS2

**SECTION D-D**

Max diamond sign 4'-0" x 4'-0" for single post installation

1'-6" or more sign depth

**SECTION C-C**

Max length rectangular sign 4'-0"

**SECTION B-B**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION A-A**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION E-E**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION F-F**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION G-G**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION H-H**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION I-I**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION J-J**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION K-K**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION L-L**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION M-M**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION N-N**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION O-O**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION P-P**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION Q-Q**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION R-R**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION S-S**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION T-T**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION U-U**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION V-V**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION W-W**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION X-X**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION Y-Y**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION Z-Z**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION AA-AA**

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**SECTION BB-BB**

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**SECTION CC-CC**

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**SECTION FF-FF**

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**SECTION GG-GG**

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**SECTION HH-HH**

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**SECTION II-II**

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**SECTION JJ-JJ**

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**SECTION KK-KK**

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**SECTION LL-LL**

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**SECTION MM-MM**

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**SECTION OO-OO**

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**SECTION PP-PP**

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**SECTION QQ-QQ**

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**SECTION RR-RR**

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**SECTION SS-SS**

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**SECTION TT-TT**

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**SECTION UU-UU**

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**SECTION VV-VV**

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**SECTION WW-WW**

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**SECTION XX-XX**

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**SECTION ZZ-ZZ**

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**SECTION AAA-AAA**

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**SECTION BBB- BBB**

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**SECTION CCC- CCC**

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**SECTION DDD- DDD**

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**SECTION EEE- EEE**

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**SECTION FFF- FFF**

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**SECTION GGG- GGG**

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**SECTION HHH- HHH**

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**SECTION JJJ- JJJ**

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**SECTION KKK- KKK**

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**SECTION MMM- MMM**

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**SECTION NNN- NNN**

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**SECTION OOO- OOO**

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**SECTION PPP- PPP**

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**SECTION QQQ- QQQ**

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**SECTION RRR- RRR**

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**SECTION SSS- SSS**

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**SECTION TTT- TTT**

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**SECTION UUU- UUU**

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**SECTION VVV- VVV**

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**SECTION WWW- WWW**

3/4" hole for post with 1/2" flat washer, fiber washer, lock washer, and nut

**SECTION XXX- XXX**

## DEPARTMENT OF TRANSPORTATION

DISTRICT 10  
P.O. BOX 2048, STOCKTON, CA 95201  
(1976 E. DR. MARTIN LUTHER KING JR. BOULEVARD  
STOCKTON, CA. 95205)  
PHONE (209) 948-3819  
FAX (209) 948-7232  
TTY 711  
www.dot.ca.gov



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Be energy efficient!*

July 23, 2013

10-TUO-49/108/120/132-VAR  
1013-NMC-0350 - 1013-NMC-0357

Tuolumne County Community Resources Agency  
Richard S. York  
2 South Green Street  
Sonora, CA 95370

Dear Mr. York:

This letter is written as a result of your encroachment permit application submitted on June 18, 2013. At this time, your permit application requesting to install eleven (11) Preserve America Community road signs at the entrances to Tuolumne county within State Highway right of ways were denied by the Caltrans Office of Traffic Engineering, Division of Traffic Operations, for the following reason:

The Preserve America Sign is not recognized at this time in the California Manual on Uniform Traffic Control Devices (MUTCD).

Caltrans can provide an opportunity for you to request reconsideration of this Encroachment Permit denial. A reconsideration request letter can be submitted to the District 10 Director, Carrie Bowen at 1976 E. Dr. Martin Luther King Jr. Blvd, Stockton, CA 95205. Contents of that request are covering in Section 304.1 of the Encroachment Permit Manual accessible at: [www.dot.ca.gov/hq/traffops/developserv/permits](http://www.dot.ca.gov/hq/traffops/developserv/permits).

Written request for reconsideration should include the following:

- (a) The reconsideration request letter to the District Director. The letter must contain a detailed explanation of reasons for the reconsideration request.
- (b) Encroachment permits denial signed by the District Permit Engineer.
- (c) Applicant or the applicant's agent's name, company or organization, telephone number and address.
- (d) Project's location, including district, county, route and post mile.
- (e) Project description, including any pertinent plans or drawings (minimum 3 copies each).
- (f) Applicant's reasons why the proposed project or activity should be permitted.

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JUL 24 2013

COUNTY OF TUOLUMNE  
Community Resources Agency

Richard S. York  
July 23, 2013  
Page 2

- (g) Applicant's explanation why the denial by the District Permit Engineer is being challenged.

Should you have any questions, please do not hesitate to reply in writing or call me at (209) 948-3819 or Betty Tamae, Permit Engineer, (209) 948-7945.

Sincerely,



NELSON MAGSAYO  
District Permit Engineer



## COMMUNITY RESOURCES AGENCY

BEV SHANE, AICP  
Director

Administration - Building - County Surveyor - Engineering - Environmental Health - Fleet Services - GIS - Housing - Planning - Roads - Solid Waste

September 16, 2013

48 W. Yancy Avenue, Sonora  
Mailing: 2 S. Green Street  
Sonora, CA 95370  
(209) 533-5633  
(209) 536-1622 (Fleet)  
(209) 533-5616 (fax)  
(209) 533-5909 (fax - EHD)  
(209) 588-9064 (fax - Fleet)  
(209) 533-5698 (fax - Roads)  
[www.tuolumnecounty.ca.gov](http://www.tuolumnecounty.ca.gov)

Ms. Carrie Bowen  
District 10 Director  
1976 E. Martin Luther King Jr. Blvd.  
Stockton, CA 95205

Dear Director Bowen:

This letter is written as a request for reconsideration of the denial of the permit applications for the installation of eight (8) Preserve America Community road signs at the entrances to Tuolumne County within State Highway right of ways.

The reason for denial was that the Preserve America sign is not recognized at this time in the California Manual on Uniform Traffic Control Devices (MUTCD)

We would like to provide you with some back ground on this matter and ask for your reconsideration of the approval of this project. In July 2008, the County of Tuolumne was designated as a *Preserve America Community* by former First Lady Laura Bush. This designation recognizes communities that protect and celebrate their heritage, use their historic assets for economic development and community revitalization, and encourage people to experience and appreciate local historic resources through education and heritage tourism programs.

The benefits of the designation include:

- White House recognition
- A certificate of recognition
- Preserve America Community road signs
- Eligibility for Preserve America grants
- Authorization to use the Preserve America logo on signs, flags, banners and promotional materials
- Listing in a Web-based Preserve America Community directory
- National and Regional press releases; and
- Enhanced community visibility and pride.

As you can see these signs are a benefit for the entire community and can help bring awareness and improve community morale and even increase revenues county wide and therefore we think this is a good reason to allow this project to go forward by the approval of these permits.

In closing we are challenging this denial due to the fact that even though these signs are not currently recognized in the MUTCD, this is a special designation and a privilege to be a part of something of this nature and magnitude.

Should you have any questions, please do not hesitate to contact me at (209) 533-5953 /  
E-mail [dyork@co.tuolumne.ca.us](mailto:dyork@co.tuolumne.ca.us) or Brian Eaton, Engineering Assistant, (209) 533-6640 /  
E-mail [beaton@co.tuolumne.ca.us](mailto:beaton@co.tuolumne.ca.us)

Sincerely,

A handwritten signature in black ink, appearing to read "Richard S. York". The signature is fluid and cursive, with a prominent initial "R" and "S".

Richard S. York, RCE  
Deputy Director Community Resources Agency  
Roads Division

**DEPARTMENT OF TRANSPORTATION**

DISTRICT 10 DIRECTOR  
P.O. BOX 2048, STOCKTON, CA 95201  
(1976 E. CHARTER WAY/1976 E. DR. MARTIN  
LUTHER KING JR. BLVD. 95205)  
PHONE (209) 948-7943  
FAX (209) 948-3670  
TTY: 711



*Flex your power!  
Be energy efficient!*

September 30, 2013

Mr. Richard S. York, Deputy Director  
Tuolumne County Resources Agency  
2 S. Green Street  
Sonora, CA 95370.

Dear Mr. York:

This letter is written in response to your September 16, 2013, letter to Director Bowen, and your request for reconsideration of the denial by our encroachment permit office to install eight (8) Preserve America signs within the California State Highway Right of Way.

In this case, neither the District Permit office, nor I, has the authority per California Vehicle Code (CVC) Section 21400 to approve installing signs in State right of way, if sign is not recognized in the California Manual on Uniform Traffic Control Devices (MUTCD). The CVC only allows placement of signs that conform to a uniform standard promulgated by the Department. The County has the opportunity to submit a formal request to the California Traffic Control Devices Committee (CTCDC) to consider this sign type. Enclosed is a CTCDC brochure indicating that one of the committee members would have to sponsor your request as a member of the California State Association of Counties. This would either be Mr. William Winter with Los Angeles County Public Works, or Mr. Rick Marshall with Napa County Public Works. Their contact information is on the brochure.

A new sign submittal package would require complete sign specifications from the sign's manufacturer. Those specific details shall include, but not be limited to sign size, letter size, background sheets material, weight and thickness and colors used. Please note that the color red is exclusively reserved for the Stop Sign. Please reconsider a different base color and resubmit your new sign package with this new information to a CTCDC member. Should you have any questions, please contact the Executive Secretary of the CTCDC at (916) 654-4715.

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COUNTY OF TUOLUMNE  
Community Resources Agency

Mr. Richard York  
September 30, 2013  
Page 2

The County may also want to consider locations outside the State right of way and work with the Department's Outdoor Advertising (ODA) program to obtain an ODA permit for a qualifying location.

Sincerely,

  
AMARJEET S. BENIPAL  
Acting District 10 Director

Enclosure



KETCHIKAN, AK (ALASKA STOCK, LLC / ALAMY)

### THE PRESERVE AMERICA PROGRAM

Preserve America is a federal program that encourages and supports community efforts to preserve and enjoy our priceless cultural and natural heritage. Goals of the program include a greater shared knowledge about the nation's past, strengthened regional identities and local pride, increased local participation in preserving our heritage assets, and support for the economic vitality of our communities. Since the program's inception in 2003, the First Lady of the United States has been involved in supporting and promoting Preserve America. Permanent authorizing legislation for the program was passed by Congress and signed by President Obama in March 2009. The program includes community and volunteer recognition, grants, and awards, as well as policy direction to federal agencies.

### PRESERVE AMERICA COMMUNITIES

This program recognizes and designates communities, including municipalities, counties, neighborhoods in large cities, and tribal communities, which protect and celebrate their heritage. These communities use their historic assets for economic development and community revitalization, and encourage people to experience and appreciate local historic resources through education and heritage tourism programs.

More than 760 communities, including Indian tribes and urban neighborhoods, have been designated in 50 states and one U.S. territory. Along with promotional benefits and technical assistance, communities are eligible to apply for Preserve America matching grants. Preserve America Communities are featured in National Register Travel Itineraries and in "Teaching with Historic Places" curricular material created by the National Park Service. They are also given priority attention for some other related federal assistance programs and inter-governmental partnerships.

### PRESERVE AMERICA GRANTS

More than \$17 million in matching grants has been awarded to more than 225 projects in 47 states since 2006 to support community efforts to demonstrate sustainable uses of historic and cultural sites. These grants focus on economic and educational opportunities related to heritage tourism. Grant amounts range from \$20,000 to \$250,000, and must be matched 1:1. A 2009 report to Congress assessed the effectiveness of the grants program in meeting national heritage tourism needs.

The Preserve America Grants program complements other federal funding, such as Save America's Treasures, by helping local communities develop resource management strategies

CONTINUED >>>



"The Preserve America initiative is an inspiring and proactive approach to preserving our nation's history. It would be a privilege for any city in this nation to achieve the title "Preserve America Community."

—Santa Monica, California



ADVISORY COUNCIL ON HISTORIC PRESERVATION  
PRESERVING AMERICA'S HERITAGE

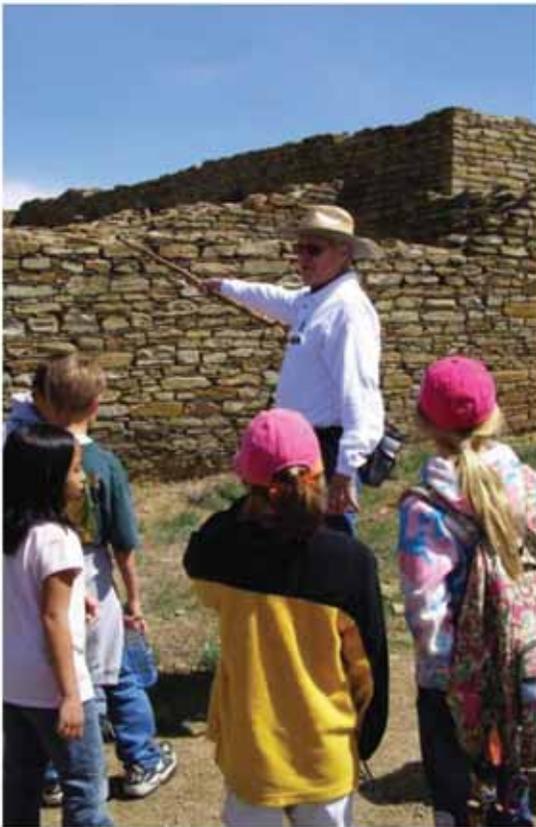


“Preserve America funding was incredibly helpful for moving forward heritage tourism projects. The scope of the funding allows small communities to think big—big partnerships, big leverage, big (complex) projects. There was no other funding available to our community aimed at this type of development for the wonderful sustainable industry of heritage tourism.”

—Natchitoches, Louisiana

and sound business practices for the continued preservation and use of heritage assets. Funding is available in five activity categories: research and documentation; planning; interpretation and education; promotion; and training. In addition to designated Preserve America Communities, eligible grant applicants include State Historic Preservation Offices, Tribal Historic Preservation Offices, and Certified Local Governments that have applied for Preserve America Community designation.

CHIMNEY ROCK INTERPRETIVE ASSOCIATION, CO



## PRESERVE AMERICA PRESIDENTIAL AWARDS

Awards have been given annually to organizations, businesses, and government entities for exemplary accomplishments in the preservation of cultural or natural heritage assets; demonstrated commitment to the protection and interpretation of America's heritage assets; and integration of these assets into contemporary community life, combining innovative, creative, and responsible approaches to showcasing historic local resources. Awards have gone to two national initiatives as well as regional, statewide, and local programs in 19 states.

## PRESERVE AMERICA STEWARDS

The Preserve America Stewards honor exemplary volunteer efforts at historic resources around the country. Honorees are recognized for stewardship programs that have demonstrated successful use of volunteer time and commitment in order to help care for our cultural heritage. The resources cared for include publicly and privately owned and managed resources. Stewards care for such diverse resources as individual archaeological sites to entire complexes of structures, as well as outstanding examples of the historic built environment. Government entities (federal, tribal, state, or local), non-profit organizations, and businesses are eligible to apply to have their programs recognized.

## PRESERVE AMERICA HISTORY TEACHER OF THE YEAR AWARD

Since 2004, outstanding history teachers at the K-12 level have been recognized in each state, the District of Columbia, and U.S. territories, followed by selection of the Preserve America History Teacher of the Year from among the state winners. State winners each receive \$1,000 and a core archive of history materials for their school libraries. The Gilder Lehrman Institute of American History facilitates this award program and hosts its national recognition event each fall.



MIDLOTHIAN MINES, CHESTERFIELD, VA

**EXECUTIVE ORDER 13287:  
"PRESERVE AMERICA"**

The Preserve America Executive Order (2003) emphasizes federal policy for the protection, enhancement, and contemporary use of historic properties owned by the federal government. The order encourages agencies to seek partnerships with state, tribal, and local governments and the private sector to make more informed use of these resources for local economic development and other recognized public benefits. It also directs agencies to support state, tribal, and local heritage tourism with existing authorities and resources. As required by the order, the Advisory Council on Historic Preservation reviews agency stewardship and partnership efforts and provides a status report to the President every three

years. The first two reports were compiled and issued in 2006 and 2009, based on reporting from individual federal agencies with land- and property-management responsibilities.

**EDUCATIONAL OUTREACH**

Preserve America has worked with The History Channel's "Save Our History" initiative, which has created a teacher's manual with lesson plans and volunteer ideas that involve students in preserving historic sites in their communities. Save Our History annual grants of \$10,000 are available to help local non-profit organizations and school districts work together on educational projects focusing on cultural heritage. The History Channel is also working on related educational programs, such as service-learning models, with the ACHP and other partners.

TASTE OF NEWTON, NEWTON, NJ





CHINATOWN, LOS ANGELES, CA  
(STEPHEN BAY / BAYIMAGES)

EXPLORE AND ENJOY OUR HERITAGE  
FOR MORE INFORMATION  
ABOUT PRESERVE AMERICA:  
[WWW.PRESERVEAMERICA.GOV](http://WWW.PRESERVEAMERICA.GOV)  
[WWW.ACHP.GOV](http://WWW.ACHP.GOV)

## PRESERVE AMERICA SUMMIT AND THE FUTURE OF PRESERVATION

In recognition of the 40th anniversary of the National Historic Preservation Act, a Preserve America Summit was convened in 2006 with 450 participants to consider the future of the national preservation program. A Youth Summit met in conjunction with the larger conference and has provided a model for subsequent youth projects, including promotion of historic preservation service-learning as an educational tool. Key recommendations emerging from the Summit to improve the effectiveness of historic preservation efforts nationally through better resource identification, stewardship, community support, education, and leadership were adopted by the Advisory Council on Historic Preservation and are now being implemented by federal agencies and non-federal partners.

## PROGRAM OPERATION

A Web site ([www.preserveamerica.gov](http://www.preserveamerica.gov)) provides details and updates on Preserve America, including information on how to get involved and other resources, with links to many other related programs. The program is administered jointly by the Advisory Council on Historic Preservation and the Department of the Interior, in cooperation with an interagency steering committee that also includes representatives from the White House and the Executive Office of the President; the Departments of Agriculture, Commerce, Defense, Education, Housing and Urban Development, and Transportation; the General Services Administration; the Institute of Museum and Library Services; the National Endowment for the Humanities; and the President's Committee on the Arts and the Humanities.

The Advisory Council on Historic Preservation, an independent federal agency, promotes the preservation, enhancement, and productive use of the nation's historic resources and advises the President and Congress on national historic preservation policy.



### ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 803 Washington DC 20004  
Phone: 202-606-8503 • Fax: 202-606-8647 • [achp@achp.gov](mailto:achp@achp.gov) • [www.achp.gov](http://www.achp.gov)

**Proposal:****Section 2D.56 Preserve America Community Signs (G31(CA))****Support:**

<sup>01</sup> Certain communities have been designated by the Federal government as Preserve America communities. This designation recognizes communities that protect and celebrate their heritage, use their historic assets for economic development and community revitalization, and encourage people to experience and appreciate local historic resources through education and heritage tourism programs.

**Option:**

<sup>02</sup> State and local highway agencies may install the Preserve America Community (G31(CA)) signs at entrance points to communities that have received this designation.

**Standard:**

<sup>03</sup> **The Preserve America Community (G31(CA)) sign, where used, shall be installed on the right at entrances to the community.**

**Guidance:**

<sup>04</sup> *Preserve America Community (G31(CA)) signs should be installed on highways which serve as major entrances to communities which have received this designation.*

**Additional elements of proposal**

1. Add "Preserve America Community" sign, designated G31(CA), to Figure 2D-101(CA).

For members information the following sign is installed by the City of Sacramento:



**14-03 CA MUTCD policy change on Overhead Guide Sign Illumination Policy (Proposed to amend Section 2D.03 and 2E.6).****Recommendation:**

Caltrans requests that the CTCDC recommend adopting Sections 2D.03 and 2E.06 as amended under the proposal. Policy changes for Chapter 2D and will impact Chapter 2E for Freeways and Expressway overhead signs, which Section 2E.06 will refer back to Section 2D.03.

**Agency Making Request/Sponsor:** Caltrans

**Background:**

High performance retroreflective sheeting (Type VIII, IX, and XI) provides high nighttime legibility and eliminates the needs for fixed lighting illumination for overhead guide signs. Eliminating fixed lighting illumination on overhead signs saves electrical energy and, this policy update reduces greenhouse gases emitted into the environment. It saves electrical power and maintenance costs, and mitigates copper wire theft. Also, without fixed catwalks attached to overhead sign structures, graffiti vandalism to overhead signs will be mitigated, as well.

Per Governor Brown's Executive Order B-18-2012, dated April 25, 2012, found at:

<http://gov.ca.gov/news.php?id=17506> State agencies, departments, and other entities under governor's direct executive authority (State agencies) take action to reduce entity-wide greenhouse gas emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline.

**Proposal:****Section 2D.03 Color, Retroreflection and Illumination****Overhead Guide Sign Illumination Policy***Guidance:*

*07 ~~Fixed lighting should be used to illuminate signs unless~~ Where retroreflective luminance from headlights provides effective nighttime legibility ~~no fixed lighting should be used to illuminate signs.~~ ~~The~~ If needed, the type of fixed-lighting chosen should provide effective and reasonably uniform illumination of the sign face and message.*

**Standard:**

*08 In conjunction with the requirement for retroreflective backgrounds, the Overhead Guide Sign Illumination policy shall apply to all existing and new overhead guide signs.*

**Support:**

*09 In all applications of the policy, engineering judgment must be exercised. The purpose of the policy is to provide for uniform application of signs statewide. The intent is to make signs conspicuous (target value) and legible to motorists. The policy is consistent with federal requirements.*

**Existing Overhead Signs***Guidance:*

*10 Currently lighted signs with opaque backgrounds should remain lighted.*

**Option:**

*11 Currently unlighted opaque signs may be lighted. Retrofit-walkways for fixed -lighting systems need to be checked for proper clearance to the roadway.*

**Standard:**

*12 Signs with opaque backgrounds shall be replaced with new signs with retroreflective backgrounds, legends and borders when the old signs have reached the end of their useful life or are replaced for other reasons.*

Guidance:

~~13 Fixed lighting should be used to illuminate signs~~ Signs with retroreflective backgrounds, legends and borders *should not be illuminated by fixed lighting unless retroreflective luminance from headlights do not provide effective nighttime legibility.*

### New Overhead Signs

Standard:

14 Signs shall have retroreflective backgrounds, legends and borders **made of high performance retroreflective sheeting of Type VIII or greater.**

Guidance:

15 *Signs should be installed so that retroreflective luminance provides effective nighttime legibility. Fixed-lighting should be used to illuminate signs where ~~unless~~ retroreflective luminance from headlights does not provide-effective nighttime legibility.*

Standard:

16 Basic components **including electrical conduit, pull boxes** for fixed-lighting systems shall be provided even if lights are not planned initially.

Option: *Guidance:*

17 Signs ~~may should~~ be designed and mounted as if lights were installed, **as if** it could be necessary to provide fixed-lighting for the sign at some future date.

### Fixed-lighting Systems

Guidance:

18 ~~Where fixed lighting is necessary~~ *Energy conservation systems should be considered for fixed-lighting.*

### Engineering Considerations

Guidance:

19 *The following criteria should be considered in determining which signs should be lighted:*

- A. *Signs skewed or otherwise positioned relative to traffic so as to render retroreflective luminance from headlights ineffective.*
- B. *Signs that for some other reason are not legible when illuminated by vehicle headlights.*
- C. *Signs adjacent to other signs requiring or having fixed-lighting.*
- D. *Signs in advance of ramps in urban areas with heavy traffic during the evening peak period.*

### Energy Conservation Measures for Guide Signs

Guidance:

20 *All non-action guide sign lighting (Interchange Sequence (G23(CA) Series) signs) should be turned off, except in special situations where motorist safety could be affected.*

21 *Following are some situations where engineering judgment should be used to determine if illumination should be maintained:*

- A. *Locations prone to heavy fog or poor visibility.*
- B. *Signs in work zones or in the proximity of work zones.*
- C. *Non-action guide signs adjacent to other signs that must be lighted.*

~~22 All G21(CA) Series, G24(CA) Series, G83(CA) Series, G85(CA) Series and G86(CA) Series and other action guide signs should remain lighted on highways.~~

~~22-23~~ *When illuminated, lights should be replaced with energy efficient fixtures on highways.*

Standard:

23-24 **New overhead guide sign structure designs shall include appropriate conduit, pull boxes, and fixture attachment points for the future installation of sign lighting, if and when needed.**

**Section 2E.06 Retroreflection or Illumination****Standard:**

**<sup>01</sup> Letters, numerals, symbols, arrows, and borders of all guide signs shall be retroreflectorized. The background of all guide signs that are not independently illuminated shall be retroreflective.**

**Support:**

<sup>02</sup> Where there is no serious interference from extraneous light sources, retroreflectorized post-mounted signs usually provide adequate nighttime visibility.

<sup>03</sup> On freeways and expressways where much driving at night is done with low-beam headlights, the amount of headlight illumination incident to an overhead sign display is relatively small.

***Guidance:***

~~<sup>04</sup> Overhead sign installations should be illuminated unless an engineering study shows that retroreflectorization alone will perform effectively. The type of illumination chosen should provide effective and reasonably uniform illumination of the sign face and message.~~

**Support:**

<sup>05</sup> See Section 2D.03 for Overhead Guide Sign Illumination Policy.

**14-04 Amendments to various Sections of Part 3 of the CA MUTCD 2012**

**Recommendation:** Caltrans requests that the CTCDC make recommendations for the adoption of the Part 3 Sections as amended under the proposal.

**Requesting and Sponsoring Agency:** Caltrans

**Background:** Proposed amendments are based on the comments made by individuals during the CA MUTCD 2012 adoption process. These comments were reviewed and discussed in the CTCDC Workshops. Only those Sections have amended which were agreed by the Workshop technical committee.

**Proposal:**

CA MUTCD Part 3 Proposed Amendments from 2011 Draft Public Comments and CTCDC Workshop Resolution

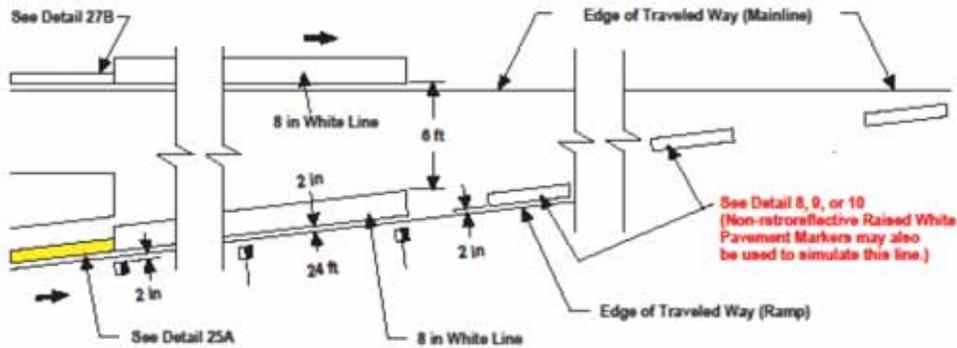
#	CA MUTCD Section	CA MUTCD Page #	Public Comment	Commenter	CTCDC Workshop Resolution
1	Figure 3A-110 (CA) Figure 3A-110 (CA)	671	In Figure 3A-110(CA) (page 684), for Detail 36A, change the label for the dashed white line from "See Detail 8 (Non-retroreflective Raised White Pavement Markers may also be used to simulate this line)" to "See Details 8,9 or 10" to match Caltrans Standard Plans Sheet A20C. For Detail 36B, delete the label "See Detail 8 (Non-retroreflective Raised White Pavement Markers may also be used to simulate this line)" as the lines are also (correctly) labeled "8 in White Line."	John Keber (Dist. 3)	Agree.
2	3B.03 Last Para.	678-679	There could be cases where multiple 8" lines and/or a hatched area should be placed between the LT lane and the adjacent thru lane.	Steve Pyburn (FHWA)	Agree. Text will be revised accordingly.
3	3B.04	679-680	Page 695, Paragraph 05: Change "Standard" to "Guidance." Reason for Recommendation: This would allow the use of solid single white line through curved sections of roadway where lane changes are discouraged. This should be combined with the Standard on Page 696, Paragraph 20.	Laura R. Wells (DDT City of San Jose)	Agree, add reference to paragraph #5 for paragraph #20.
4	3B.04	681	In Section 3B.04 (page 697), the last paragraph (in blue) states that lane line patterns Detail 12 or 13 shall be used "except when used in snow areas, the raised pavement markers will be recessed." In District 3, Detail 11 (recessed thermoplastic on new construction projects) is used in the higher elevations of the Sierra because recessed pavement markers are not feasible due to severe weather, tire chains, etc. Change "in snow areas, the raised pavement markers will be recessed" to "in snow areas, the raised pavement markers, if used, shall be recessed; otherwise, use Detail 8 or 11."	John Keber (Dist. 3)	Agree.
5	3B.16	690	There seems to be a discrepancy in Chapter 3. Section 3B.16 says in black as a standard that "if used, stop lines..." then later in the section in blue as a standard says "A limit line shall be placed in conjunction with STOP (R1-1) signs on paved approaches, except here.	Jim Brunner	Agree, paragraph #21 will be deleted. Section 3B.16, Paragraph #21 needs to be verified in accordance with CVC. Paragraphs #1 & #2 should suffice.
6	3B.16	690	At the bottom of page 705 the Standard states, "A limit line shall be placed in conjunction with STOP (R1-1) signs on paved approaches, except where marked crosswalk exists." In Santa Rosa and other local jurisdictions there are many intersections of two local streets or tee intersections. Often one of those streets will be stop controlled due to limited sight distance or to establish right of way. These streets generally have low volumes and serve only local vehicles. Engineering judgment has been used to not install the limit lines or crosswalks to save on initial installation and continuing maintenance costs. Although this is not a new addition to the CA MUTCD, it is an additional restriction that the Federal MUTCD does not require. It would be more appropriate if the standard was changed to guidance, to allow engineering judgment to dictate whether to install limit lines on all roads.	Robert M. Sprinkle (City Traffic Engineer, Santa Rosa)	Agree, paragraph #21 will be deleted. Section 3B.16, Paragraph #21 needs to be verified in accordance with CVC. Paragraphs #1 & #2 should suffice.
7	3B.16	689-690	Paragraph 01: Change to read "Stop lines, if used, shall be used to..." Reason for Recommendation: Clarifies that this is always what stop lines are for, when they are used. Paragraph 13 and 14: Remove "(stop)" references to be consistent with California law.	Laura R. Wells (DDT City of San Jose)	Section 3B.16, Paragraphs #1, #13 & #14 comments: Agree, add reference to paragraph #5 for paragraph #20.
8	3B.16	689-690	In Section 3B.16 (pages 704-706), "Stop and Yield Lines," and/or Section 3B.18 (pages 706-708), "Crosswalks Markings," guidance is needed for "international" crosswalks (i.e., longitudinal lines only) at controlled (whether by stop signs or traffic signals) intersections and whether a limit line is required in advance of the international crosswalk. In the "Crosswalks.docx" attachment, examples are shown of international crosswalks without a limit line and international crosswalks with a limit line. I recommend specifying that a limit line be required when an international crosswalk is used at a controlled intersection.	John Keber (Dist. 3)	Agree on the need for edits. Limit line is not required with the international crosswalk.

#	CA MUTCD Section	CA MUTCD Page #	Public Comment	Commenter	CTCDC Workshop Resolution
9	3B.20	695	Paragraph 02: Add TRAIL XING to the list of markings. Reason for Recommendation: This verbiage will be more easily understood for trail crossings than the currently shown <Bike Symbol> XING, which fails to denote pedestrians could be crossing and conflicts with the TRAIL XING plaque and <Bike Symbol>-<Ped Symbol> sign that would be used adjacent to the markings.	Laura R. Wells (DDT City of San Jose)	Agree, add option of TRAIL XING.
10	3B.21	699	The meaning of "equation" is not clear in this context.	Steve Pyburn (FHWA)	Agree. Add brief text explaining the "equation".
11	3B.23	701	The purpose of deleting paragraphs is not clear. The section referenced in support do not address pavement markings for raised median. Retain as guidance.	Steve Pyburn (FHWA)	Agree. Paragraphs #68 & #09 will be "undeleted". These paragraphs recommendations are current practice.
12	Figure 3B-7 and Figure 3B-7 (CA)	711-712	Make dimension between 2-way left turn arrows consistent with the dimension shown in Figure 3B-7 (CA). Reason for Recommendation: One shows "B = 16 ft" while the other shows "The distance between Two-Way Arrows is generally equal to the arrow size."	Laura R. Wells (DDT City of San Jose)	Agree, but rather than editing National MUTCD Fig. 3B-7, it will be deleted. In addition, Fig. 3B-7(CA) pavement arrows needs to be revised as they are high speed arrows.
13	Figure 3B-16 (CA)	739-740	Clarify whether 12 ft. dimension is from centerline or from where. In addition, if the roadway is narrower (or wider), are less (more) triangles allowed? If so, show examples.	Laura R. Wells (DDT City of San Jose)	Fig. 3B-16(CA) less or more triangles: Delete Fig. 3B-16(CA) and revert back to National Fig. 3B-16 which allows more flexibility with the size and spacing of triangles. The 12-foot dimension is the lane line markings, centerline marking or edge line markings, as applicable.
14	Figure 3B-19	742	Add ladder-style crosswalk striping on left leg of Figure. Reason for Recommendation: This striping is common and would serve as a good example in the Figure.	Laura R. Wells (DDT City of San Jose)	Agree, figure needs to be revised for the ladder issue per ADA.
15	Figure 3B-19	742	This figure should include the "Triple-Four" crosswalk marking as used by the City of Sacramento. This and the other recommendations of the Caltrans Crosswalk Committee that involve traffic control devices should be included in the California MUTCD.	Richard Haggstrom SHSP CA8 Committee	Agree.
16	Figure 3B-19	742	We should add the "triple four" crosswalk marking on Figure 3B-19.	Roberta McLaughlin	Agree.
17	Figure 3B-19	742	This figure should include the "Triple-Four" crosswalk marking as used by the City of Sacramento. This and the other recommendations of the Caltrans Crosswalk Committee that involve traffic control devices should be included in the California MUTCD.	The SHSP CA 8 Committee	Agree.
18	Figure 3B-21 (CA)	747	Add 4 ft dimension on bottom detail, between the 20 ft dimensions. Reason for Recommendation: Clarifies spacing between marked parking spaces.	Laura R. Wells (DDT City of San Jose)	Fig. 3B-21(CA) comment: Agree, figure needs to be revised and looked into in more detail. Compare Fed. fig. & CA Fig., text needs to match the Fig.

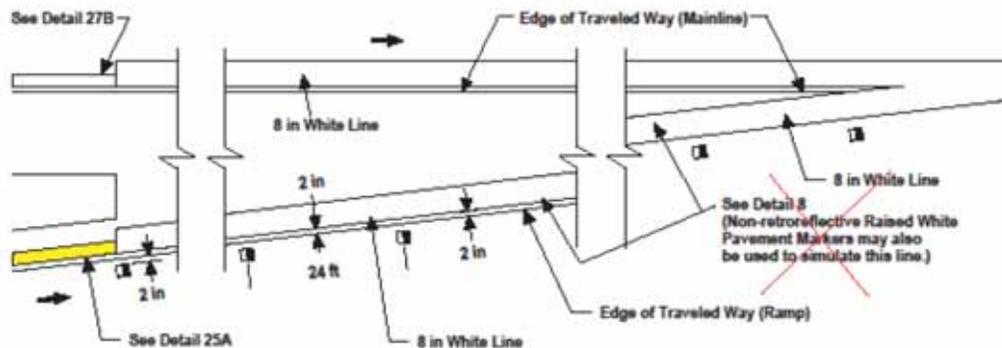
#	CA MUTCD Section	CA MUTCD Page #	Public Comment	Commenter	CTCDC Workshop Resolution	
19	Figure 3B-23 (CA)	749	Add TRAIL into examples. Reason for Recommendation: See comment above regarding Trail Xing.	Laura R. Wells (DDT City of San Jose)	Fig. 3B-23(CA) comment: Agree, add option of TRAIL XING.	
20	3F.04	Figure 3F-1	806	In Section 3F.04 (page 824), Guidance "a" in the added blue text identifies delineators to be placed "on the outsides of highway curves," which has been the practice in California for many years. Figure 3F-1 (page 827), shows delineators on the inside of a curve, which conflicts with this written policy, and delineators in both direction on the outside of the curve, which presents confusion for designers who are not familiar with Caltrans delineator types (such as Type E, with retroreflective sheeting on both the front and back sides). Either edit/cross out the non-applicable information in Figure 3F-1 or replace this figure with Figure 6-47 that was used in the Traffic Manual prior to adoption of the MUTCD, so that the written policy and the figure showing examples will be complementary instead of conflicting.	John Keber (Dist. 3)	Agree, this issue needs to be reconciled.
21	3H.01	3H.01	815	The figure specifies only one height, 36". This statement implies other heights on non-state highways are acceptable.	Steve Pyburn (FHWA)	Agree. Text will be revised accordingly.
22	3H.01	815	Not a public comment but came up in workshop discussion. Need to add reference to Figure 6F-102(CA).			

**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
  - 4 in Yellow
  - One-Way Clear Retroreflective Markers
  - Direction of Travel
- NOT TO SCALE

**PROPOSED**

**Section 3B.03 Other Yellow Longitudinal Pavement Markings****Standard:**

**01** If reversible lanes are used, the lane line pavement markings on each side of reversible lanes shall consist of a normal broken double yellow line to delineate the edge of a lane in which the direction of travel is reversed from time to time, such that each of these markings serve as the center line markings of the roadway during some period (see Figure 3B-6).

**02** Signs (see Section 2B.26), lane-use control signals (see Chapter 4M), or both shall be used to supplement reversible lane pavement markings.

**03** If a two-way left-turn lane that is never operated as a reversible lane is used, the lane line pavement markings on each side of the two-way left-turn lane shall consist of a normal broken yellow line and a normal solid yellow line to delineate the edges of a lane that can be used by traffic in either direction as part of a left-turn maneuver. These markings shall be placed with the broken line toward the two-way left-turn lane and the solid line toward the adjacent traffic lane as shown in Figure 3B-7.

**Guidance:****Option:**

**04** White two-way left-turn lane-use arrows (see Figure 3B-7), ~~should~~ may be used in conjunction with the longitudinal two-way left-turn markings at the locations described in Section 3B.20.

**05** Signs ~~should~~ may be used in conjunction with the two-way left turn markings (see Section 2B.24).

**Standard:**

**06** If a continuous flush median island formed by pavement markings separating travel in opposite directions is used, two sets of solid double yellow lines shall be used to form the island as shown in Figures 3B-2 and 3B-5. Other markings in the median island area shall also be yellow, except crosswalk markings which shall be white (see Section 3B.18).

**07** On State highways, reversible lanes shall be separated by physical barriers or delineators.

**Support:**

**08** A two-way left-turn lane is a lane reserved in the center of a highway for exclusive use of left or U-turning vehicles. Refer to CVC 21460.5. It is normally used where there are many points of access.

**Standard:**

**09** The two-way left-turn lane markings shall be selected from those shown in Figure 3A-108(CA).

**Option:**

**10** Optional treatments at signalized, major and minor intersections as shown in Figure 3B-7(CA) may be used.

**11** Two-way opposing pavement arrows may be used as shown in Figure 3B-7(CA). The arrows may be supplemented by Two-Way Left Turn Lane (R67(CA)) sign at new installations and problem locations.

**Guidance:**

**12** A gap in the markings should be made at all intersections.

**Support:**

**13** For left turn channelization, see Figure 3B-101(CA) and Department of Transportation's Highway Design Manual, Section 405.2. See Section 1A.11 for information regarding this publication.

**14** Channelized left-turn lanes in combination with continuous raised-curb medians are used instead of two-way left-turn lanes (TWLTL) if one or more of the following conditions exist:

- A. Average daily traffic volumes exceed 20,000 vehicles per day
- B. For remediation where there is a demonstrated crash problem,
- C. Wherever a need is demonstrated through engineering study.

**15** Refer to CVC 21460.5 for Two-Way Left-Turn Lanes.

**16** For details of two-way left-turn lanes, see Figure 3B-7(CA). For left turn channelization, see Figure 3B-101(CA) and Department of Transportation's Highway Design Manual, Section 405.2. See Section 1A.11 for information regarding this publication.

**Standard:**

**17** Left-turn or right-turn lanes shall be separated from the through lanes by a single solid 8 inch wide white line as shown in Figure 3A-112(CA).

**Option:**

**## Left-turn or right-turn lanes may be separated from the through lanes by multiple solid 8 inch wide white lines or two longitudinal solid 8 inch wide lines with diagonal lines used for crosshatch markings.**

**Section 3B.04 White Lane Line Pavement Markings and Warrants**

**Standard:**

**01 When used, lane line pavement markings delineating the separation of traffic lanes that have the same direction of travel shall be white.**

**02 Lane line markings shall be used on all freeways and Interstate highways.**

**Guidance:**

*03 Lane line markings should be used on all roadways that are intended to operate with two or more adjacent traffic lanes in the same direction of travel, except as otherwise required for reversible lanes. Lane line markings should also be used at congested locations where the roadway will accommodate more traffic lanes with lane line markings than without the markings.*

**Support:**

04 Examples of lane line markings are shown in Figures 3B-2, 3B-3, and 3B-7 through 3B-13.

**Standard:**

**05 Except as provided in Paragraph 6, where crossing the lane line markings with care is permitted, the lane line markings shall consist of a normal broken white line.**

**06 A dotted white line marking shall be used as the lane line to separate a through lane that continues beyond the interchange or intersection from an adjacent lane for any of the following conditions:**

**A. A deceleration or acceleration lane,**

**B. A through lane that becomes a mandatory exit or turn lane,**

**C. An auxiliary lane 2 miles or less in length between an entrance ramp and an exit ramp, or**

**D. An auxiliary lane 1 mile or less in length between two adjacent intersections.**

**07 For exit ramps with a parallel deceleration lane, a normal width dotted white lane line shall be installed from the upstream end of the full-width deceleration lane to the theoretical gore or to the upstream end of a solid white lane line, if used, that extends upstream from the theoretical gore as shown in Drawings A and C of Figure 3B-8 3B-8(CA).**

**Option:**

08 For exit ramps with a parallel deceleration lane, a normal width dotted white line extension may be installed in the taper area upstream from the full-width deceleration lane as shown in Drawings A and C of Figure 3B-8 3B-8(CA).

09 For an exit ramp with a tapered deceleration lane, a normal width dotted white line extension may be installed from the theoretical gore through the taper area such that it meets the edge line at the upstream end of the taper as shown in Drawing B of Figure 3B-8 3B-8(CA).

**Standard:**

**10 For entrance ramps with a parallel acceleration lane, a normal width dotted white lane line shall be installed from the theoretical gore or from the downstream end of a solid white lane line, if used, that extends downstream from the theoretical gore, to a point at least one-half the distance from the theoretical gore to the downstream end of the acceleration taper, as shown in Drawing A of Figure 3B-9 3B-9(CA).**

**Option:**

11 For entrance ramps with a parallel acceleration lane, a normal width dotted white line extension may be installed from the downstream end of the dotted white lane line to the downstream end of the acceleration taper, as shown in Drawing A of Figure 3B-9 3B-9(CA).

12 For entrance ramps with a tapered acceleration lane, a normal width dotted white line extension may be installed from the downstream end of the channelizing line adjacent to the through lane to the downstream end of the acceleration taper, as shown in Drawings B and C of Figure 3B-9 3B-9(CA).

**Standard:**

**13 A wide dotted white lane line shall be used:**

**A. As a lane drop marking in advance of lane drops at exit ramps to distinguish a lane drop from a normal exit ramp (see Drawings A, B, and C of Figure 3B-10 3B-10(CA)),**

- B. In advance of freeway route splits with dedicated lanes (see ~~Drawing D~~ of Figure ~~3B-10~~ 3B-10(CA)),**
- C. To separate a through lane that continues beyond an interchange from an adjacent auxiliary lane between an entrance ramp and an exit ramp (see ~~Drawing E~~ of Figure ~~3B-10~~ 3B-10(CA)),**
- D. As a lane drop marking in advance of lane drops at intersections to distinguish a lane drop from an intersection through lane (see Drawing A of Figure 3B-11), and**
- E. To separate a through lane that continues beyond an intersection from an adjacent auxiliary lane between two intersections (see Drawing B of Figure 3B-11).**

**Guidance:**

*14 Lane drop markings used in advance of lane drops at freeway and expressway exit ramps should begin at least 1/2 mile in advance of the theoretical gore.*

*14a If the dropped lane is an auxiliary lane 1/2 mile or less in length, the lane drop line should extend throughout the entire length.*

*15 On the approach to a multi-lane exit ramp having an optional exit lane that also carries through traffic, lane line markings should be used as illustrated in ~~Drawing B~~ of Figure ~~3B-10~~ 3B-10(CA). In this case, if the right-most exit lane is an added lane such as a parallel deceleration lane, the lane drop marking should begin at the upstream end of the full-width deceleration lane, as shown in ~~Drawing C~~ of Figure ~~3B-8~~ 3B-8(CA).*

*16 Lane drop markings used in advance of lane drops at intersections should begin a distance in advance of the intersection that is determined by engineering judgment as suitable to enable drivers who do not desire to make the mandatory turn to move out of the lane being dropped prior to reaching the queue of vehicles that are waiting to make the turn. The lane drop marking should begin no closer to the intersection than the most upstream regulatory or warning sign associated with the lane drop.*

*17 The dotted white line markings that are used for lane drop markings and that are used as a lane line separating through lanes from auxiliary lanes should consist of line segments that are 3 feet in length separated by 9-foot gaps.*

**Standard:**

*17a The lane drop line pattern shall be as shown in Figure 3A-11(CA).*

**Support:**

*17b See Figures 3A-11(CA), 3B-8(CA), 3B-9(CA), 3B-10(CA), 3B-14(CA) and 3B-106(CA) for further details of markings and signing.*

**Option:**

*17c A 8 inch wide single solid white line preceded by a 8 inch wide dotted white line may be placed in advance of an intersection where the outside lane is dropped at the intersection, and as a result, creates a mandatory turn lane.*

**Standard:**

*17d If used, diagonal lines shall be the same color as the edge line.*

**Support:**

*18 Section 3B.20 contains information regarding other markings that are associated with lane drops, such as lane-use arrow markings and ONLY word markings.*

*19 Section 3B.09 contains information about the lane line markings that are to be used for transition areas where the number of through lanes is reduced.*

**Standard:**

*20 Where crossing the lane line markings is discouraged, the lane line markings shall consist of a normal or wide solid white line, except as provided in Paragraph 5 where crossing the lane line markings is permitted.*

**Option:**

*21 Where it is intended to discourage lane changing on the approach to an exit ramp, a wide solid white lane line may extend upstream from the theoretical gore or, for multi-lane exits, as shown in ~~Drawing B~~ of Figure ~~3B-10~~ 3B-10(CA), for a distance that is determined by engineering judgment.*

*22 Where lane changes might cause conflicts, a wide or normal solid white lane line may extend upstream from an intersection.*

*23 In the case of a lane drop at an exit ramp or intersection, such a solid white line may replace a portion, but not all of the length of the wide dotted white lane line.*

**Support:**

California MUTCD 2012 Edition  
(FHWA's MUTCD 2009 Edition, as amended for use in California)

Page 681

<sup>24</sup> Section 3B.09 contains information about the lane line markings that are to be used for transition areas where the number of through lanes is reduced.

*Guidance:*

<sup>25</sup> *On approaches to intersections, a solid white lane line marking should be used to separate a through lane from an added mandatory turn lane.*

*Option:*

<sup>26</sup> On approaches to intersections, solid white lane line markings may be used to separate adjacent through lanes or adjacent mandatory turn lanes from each other.

<sup>27</sup> Where the median width allows the left-turn lanes to be separated from the through lanes to give drivers on opposing approaches a less obstructed view of opposing through traffic, white pavement markings may be used to form channelizing islands as shown in Figure 2B-17.

<sup>28</sup> Solid white lane line markings may be used to separate through traffic lanes from auxiliary lanes, such as an added uphill truck lane or a preferential lane (see Section 3D.02).

<sup>29</sup> Wide solid lane line markings may be used for greater emphasis.

**Standard:**

<sup>30</sup> **Where crossing the lane line markings is prohibited, the lane line markings shall consist of a solid double white line (see Figure 3B-12).**

<sup>31</sup> Lane line patterns shall be selected from those shown in Figure 3A-102(CA). Detail 9 or 10 (40 mph or less) or Detail 12 or 13 (45 mph or more) shall be used on State freeways, expressways, freeway ramps, freeway to freeway connectors and collector roads, except when used in snow areas, the raised pavement markers, if used, shall will be recessed; otherwise, use Detail 8 or 11.

<sup>32</sup> When a climbing lane is provided on an upgrade and it is necessary to prohibit trucks from passing slower moving vehicles, a 8 inch solid white line shall be used in place of the standard lane line stripe. See Section 2B.31 for truck lane control signs.

### **Section 3B.05 Other White Longitudinal Pavement Markings**

**Standard:**

<sup>01</sup> **A channelizing line shall be a wide or double solid white line.**

*Option:*

<sup>02</sup> Channelizing lines may be used to form channelizing islands where traffic traveling in the same direction is permitted on both sides of the island.

**Standard:**

<sup>03</sup> **Other pavement markings in the channelizing island area shall be white.**

*Support:*

<sup>04</sup> Examples of channelizing line applications are shown in Figures ~~3B-8~~ 3B-8(CA), ~~3B-9~~ 3B-9(CA), and ~~3B-10~~ 3B-10(CA), and in Drawing C of Figure 3B-15.

<sup>05</sup> Channelizing lines at exit ramps as shown in Figures ~~3B-8~~ 3B-8(CA) and ~~3B-10~~ 3B-10(CA) define the neutral area, direct exiting traffic at the proper angle for smooth divergence from the main lanes into the ramp, and reduce the probability of colliding with objects adjacent to the roadway.

<sup>06</sup> Channelizing lines at entrance ramps as shown in Figures ~~3B-9~~ 3B-9(CA) and ~~3B-10~~ 3B-10(CA) promote orderly and efficient merging with the through traffic.

**Standard:**

<sup>07</sup> **For all exit ramps and for entrance ramps with parallel acceleration lanes, channelizing lines shall be placed on both sides of the neutral area (see Figures ~~3B-8~~ 3B-8(CA) and ~~3B-10~~ 3B-10(CA) and Drawing A of Figure ~~3B-9~~ 3B-9(CA)).**

<sup>08</sup> **For entrance ramps with tapered acceleration lanes, channelizing lines shall be placed along both sides of the neutral area to a point at least one-half of the distance to the theoretical gore (see Drawing C of Figure ~~3B-9~~ 3B-9(CA)).**

*Option:*

<sup>09</sup> For entrance ramps with tapered acceleration lanes, the channelizing lines may extend to the theoretical gore as shown in Drawing B of Figure ~~3B-9~~ 3B-9(CA).

**Standard:**

~~03 If raised pavement markers are used to substitute for broken line markings, a group of three to five markers equally spaced at a distance no greater than N/8 (see Section 3B.11) shall be used. If N is other than 40 feet, the markers shall be equally spaced over the line segment length (at 1/2 points for three markers, at 1/3 points for four markers, and at 1/4 points for five markers). At least one retroreflective or internally illuminated marker per group shall be used or a retroreflective or internally illuminated marker shall be installed midway in each gap between successive groups of non-retroreflective markers.~~

~~04 When raised pavement markers substitute for solid line markings, the markers shall be equally spaced at no greater than N/4, with retroreflective or internally illuminated units at a spacing no greater than N/2.~~

~~04a The widths and patterns of raised pavement markers shall conform to the details shown in Figures 3A-101(CA) through 3A-112(CA). See Section 3A.06.~~

**Guidance:**

~~05 Raised pavement markers should not substitute for right-hand edge line markings unless an engineering study or engineering judgment indicates the benefits of enhanced delineation of a curve or other location would outweigh possible impacts on bicycles using the shoulder, and the spacing of raised pavement markers on the right-hand edge line is close enough to avoid misinterpretation as a broken line during wet night conditions.~~

**Standard:**

~~06 When raised pavement markers substitute for dotted lines, they shall be spaced at no greater than N/4, with not less than one raised pavement marker per dotted line segment. At least one raised marker every N shall be retroreflective or internally illuminated.~~

**Option:**

~~07 When substituting for wide lines, raised pavement markers may be placed laterally adjacent to each other to simulate the width of the line.~~

**Standard:**

~~08 If used on State highways, internally-illuminated raised pavement markers shall be installed by an encroachment permit and include a maintenance agreement as a provision of the permit for the service life of the markers.~~

**Section 3B.15 Transverse Markings****Standard:**

01 Transverse markings, which include shoulder markings, word and symbol markings, arrows, stop lines, yield lines, crosswalk lines, speed measurement markings, speed reduction markings, speed hump markings, parking space markings, and others, shall be white unless otherwise provided in this Manual.

01a Crosswalk markings near schools shall be yellow. Refer to CVC 21368 and Part 7.

**Guidance:**

02 Because of the low approach angle at which pavement markings are viewed, transverse lines should be proportioned to provide visibility at least equal to that of longitudinal lines.

**Support:**

03 Refer to Department of Transportation's Standard Plans for pavement marking letters, numerals and symbols. See Section 1A.11 for information regarding this publication

**Section 3B.16 Stop and Yield Lines****Guidance:**

01 Stop lines, *if used*, should be used to indicate the point behind which vehicles are required to stop in compliance with a traffic control signal.

**Option:**

02 Stop lines may be used to indicate the point behind which vehicles are required to stop in compliance with a STOP (R1-1) sign, a ~~Stop Here For Pedestrians (R1-5b or R1-5c) sign~~, or some other traffic control device that requires vehicles to stop, except YIELD signs that are not associated with passive grade crossings.

03 Yield lines may be used to indicate the point behind which vehicles are required to yield in compliance with a YIELD (R1-2) sign or a Yield Here To Pedestrians (R1-5 or R1-5a) sign.

California MUTCD 2012 Edition  
(FHWA's MUTCD 2009 Edition, as amended for use in California)

Page 690

**Standard:**

**<sup>04</sup> Except as provided in Section 8B.28, stop lines shall not be used at locations where drivers are required to yield in compliance with a YIELD (R1-2) sign or a Yield Here To Pedestrians (R1-5 or R1-5a) sign or at locations on uncontrolled approaches where drivers are required by State law to yield to pedestrians.**

**<sup>05</sup> Yield lines shall not be used at locations where drivers are required to stop in compliance with a STOP (R1-1) sign, a ~~Stop Here For Pedestrians (R1-5b or R1-5c) sign~~, a traffic control signal, or some other traffic control device.**

**<sup>06</sup> Stop lines shall consist of solid white lines extending across approach lanes to indicate the point at which the stop is intended or required to be made.**

**<sup>07</sup> Yield lines (see Figure ~~3B-16~~ 3B-16(CA)) shall consist of a row of solid white isosceles triangles pointing toward approaching vehicles extending across approach lanes to indicate the point at which the yield is intended or required to be made.**

**Guidance:**

<sup>08</sup> Stop lines should be 12 to 24 inches wide.

<sup>09</sup> The individual triangles comprising the yield line should have a base of ~~12 to~~ 24 inches wide and a height equal to 1.5 times the base. The space between the triangles should be ~~3 to~~ 12 inches.

<sup>10</sup> If used, stop and yield lines should be placed a minimum of 4 feet in advance of the nearest crosswalk line at controlled intersections, except for yield lines at roundabouts as provided for in Section 3C.04 and at midblock crosswalks. In the absence of a marked crosswalk, the stop line or yield line should be placed at the desired stopping or yielding point, but should not be placed more than 30 feet or less than 4 feet from the nearest edge of the intersecting traveled way.

<sup>11</sup> Stop lines at midblock signalized locations should be placed at least 40 feet in advance of the nearest signal indication (see Section 4D.14).

<sup>12</sup> If yield or stop lines are used at a crosswalk that crosses an uncontrolled multi-lane approach, the yield lines or stop lines should be placed 20 to 50 feet in advance of the nearest crosswalk line, and parking should be prohibited in the area between the yield or stop line and the crosswalk (see Figure 3B-17).

**Standard:**

**<sup>13</sup> If yield (stop) lines are used at a crosswalk that crosses an uncontrolled multi-lane approach, Yield Here To ~~(Stop Here For)~~ Pedestrians (R1-5 series) signs (see Section 2B.11) shall be used.**

**Guidance:**

<sup>14</sup> Yield (stop) lines and Yield Here To ~~(Stop Here For)~~ Pedestrians signs should not be used in advance of crosswalks that cross an approach to or departure from a roundabout.

**Support:**

<sup>15</sup> When drivers yield or stop too close to crosswalks that cross uncontrolled multi-lane approaches, they place pedestrians at risk by blocking other drivers' views of pedestrians and by blocking pedestrians' views of vehicles approaching in the other lanes.

**Option:**

<sup>16</sup> Stop and yield lines may be staggered longitudinally on a lane-by-lane basis (see Drawing D of Figure 3B-13).

**Support:**

<sup>17</sup> Staggered stop lines and staggered yield lines can improve the driver's view of pedestrians, provide better sight distance for turning vehicles, and increase the turning radius for left-turning vehicles.

<sup>18</sup> Section 8B.28 contains information regarding the use of stop lines and yield lines at grade crossings.

**Support:**

<sup>19</sup> As defined in CVC 377, a "limit line" is a solid white line not less than 12 inch nor more than 24 inch wide, extending across a roadway or any portion thereof to indicate the point at which traffic is required to stop in compliance with legal requirements.

**Standard:**

**<sup>20</sup> For all purposes, limit line(s) as defined per CVC 377 shall mean stop line(s). See Paragraph 5 for where yield lines shall not be used at locations where drivers are required to stop.**

**<sup>21</sup> A limit line shall be placed in conjunction with STOP (R1-1) signs on paved approaches, except where marked crosswalk exists.**

California MUTCD 2012 Edition  
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Page 694

### **Section 3B.19 Parking Space Markings**

Support:

01 Marking of parking space boundaries encourages more orderly and efficient use of parking spaces where parking turnover is substantial. Parking space markings tend to prevent encroachment into fire hydrant zones, bus stops, loading zones, approaches to intersections, curb ramps, and clearance spaces for islands and other zones where parking is restricted. Examples of parking space markings are shown in Figure ~~3B-21~~ 3B-21(CA).

**Standard:**

02 **Parking space markings shall be white.**

Option:

03 Blue lines may supplement white parking space markings of each parking space designated for use only by persons with disabilities.

Support:

04 Additional parking space markings for the purpose of designating spaces for use only by persons with disabilities are discussed in Section 3B.20 and illustrated in Figure ~~3B-22~~ 3B-22(CA). The design and layout of accessible parking spaces for persons with disabilities is provided in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" (see Section 1A.11).

Support:

05 Refer to CVC 22500 through 22522 for parking space markings.

06 Refer to Section 2B.39 for Parking Regulations.

#### **Policy on Parking Restrictions**

Option:

07 Local authorities may, by ordinance, provide for the establishment of parking meter zones and cause streets and highways to be marked with white lines designating parking spaces. Refer to CVC Section 22508.

**Standard:**

08 **Where the proposed zones are on State highways, the ordinances shall be approved by the Department of Transportation.**

09 **Local authorities shall furnish a sketch or map showing the definite location of all parking meter stalls on State highways before departmental approval is given.**

Support:

10 The District Directors have been delegated the authority to approve such ordinances.

11 The desirable dimensions of parking meter stalls are 8 feet by 24 feet with a minimum length of 20 feet.

*Guidance:*

12 *At all intersections, one stall length on each side measured from the crosswalk or end of curb return should have parking prohibited. A clearance of 6 feet measured from the curb return should be provided at alleys and driveways.*

13 *At signalized intersections parking should be prohibited for a minimum of two stall lengths on the near side and one stall length on the far side. See Figure 3B-21(CA).*

**Standard:**

14 **The departmental approval for the installation of the parking meters shall be covered by an encroachment permit.**

Option:

15 Local authorities may by ordinance permit angle parking. Refer to CVC 22503.

Support:

16 Department of Transportation does not approve ordinances establishing angle parking on State highways.

17 Diagonal parking stalls are not permitted on State highways.

### **Section 3B.20 Pavement Word, Symbol, and Arrow Markings**

Support:

01 Word, symbol, and arrow markings on the pavement are used for the purpose of guiding, warning, or regulating traffic. These pavement markings can be helpful to road users in some locations by supplementing signs and providing additional emphasis for important regulatory, warning, or guidance messages, because the markings do not require diversion of the road user's attention from the roadway surface. Symbol messages are

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(FHWA's MUTCD 2009 Edition, as amended for use in California)

Page 695

preferable to word messages. Examples of standard word and arrow pavement markings are shown in Figures ~~3B-23~~ ~~3B-23~~ 3B-23(CA) and ~~3B-24~~ 3B-24(CA).

<sup>01a</sup> Normally, pavement word and symbol markings supplement standard signing.

Option:

<sup>02</sup> Word, symbol, and arrow markings, including those contained in the "Standard Highway Signs and Markings" book (see Section 1A.11), may be used as determined by engineering judgment to supplement signs and/or to provide additional emphasis for regulatory, warning, or guidance messages. Among the word, symbol, and arrow markings that may be used are the following:

A. Regulatory:

1. STOP
2. YIELD
3. RIGHT (LEFT) TURN ONLY
4. 25 MPH
5. Lane-use and wrong-way arrows
6. Diamond symbol for HOV lanes
7. Other preferential lane word markings

B. Warning:

1. STOP AHEAD
2. YIELD AHEAD
3. YIELD AHEAD triangle symbol
4. SCHOOL XING
5. SIGNAL AHEAD
6. PED XING
7. SCHOOL
8. R X R
9. BUMP
10. HUMP
11. Lane-reduction arrows
12. TRAIL XING

C. Guide:

1. Route numbers (route shield pavement marking symbols and/or words such as I-81, US 40, STATE 135, or ROUTE 10)
2. Cardinal directions (NORTH, SOUTH, EAST, or WEST)
3. TO
4. Destination names or abbreviations thereof

**Standard:**

<sup>03</sup> **Word, symbol, and arrow markings shall be white, except as otherwise provided in this Section.**

<sup>04</sup> **Pavement marking letters, numerals, symbols, and arrows shall be installed in accordance with the design details in the Pavement Markings chapter of the "Standard Highway Signs and Markings" book (see Section 1A.11).**

*Guidance:*

<sup>05</sup> *Letters and numerals should be 6 feet or more in height.*

<sup>06</sup> *Word and symbol markings should not exceed three lines of information.*

<sup>07</sup> *If a pavement marking word message consists of more than one line of information, it should read in the direction of travel. The first word of the message should be nearest to the road user.*

<sup>08</sup> *Except for the two opposing arrows of a two-way left-turn lane marking (see Figure 3B-7), the longitudinal space between word or symbol message markings, including arrow markings, should be at least four times the height of the characters for low-speed roads, but not more than ten times the height of the characters under any conditions.*

<sup>09</sup> *The number of different word and symbol markings used should be minimized to provide effective guidance and avoid misunderstanding.*

<sup>10</sup> *Except for the SCHOOL word marking (see Section 7C.03), pavement word, symbol, and arrow markings should be no more than one lane in width.*

California MUTCD 2012 Edition  
(FHWA's MUTCD 2009 Edition, as amended for use in California)

Page 699

arrows are not appropriate, to indicate the correct direction of traffic flow and to discourage drivers from traveling in the wrong direction.

### **Section 3B.21 Speed Measurement Markings**

Support:

<sup>01</sup> A speed measurement marking is a transverse marking placed on the roadway to assist the enforcement of speed regulations.

**Standard:**

<sup>02</sup> **Speed measurement markings, if used, shall be white, and shall not be greater than 24 inches in width.**

Option:

<sup>03</sup> Speed measurement markings may extend 24 inches on either side of the center line or 24 inches on either side of edge line markings at 1/4-mile intervals over a 1-mile length of roadway. When paved shoulders of sufficient width are available, the speed measurement markings may be placed entirely on these shoulders (see ~~Drawing A of Figure 3B-10~~ 3B-105(CA)). Advisory signs may be used in conjunction with these markings.

Support:

<sup>04</sup> The California Highway Patrol patrols certain highways with both helicopters and fixed-wing aircraft. The purpose of the patrol is to monitor traffic, provide motorist assistance and initiate appropriate enforcement action.

<sup>05</sup> In order to make the air patrol effective, the California Highway Patrol and Department of Transportation have agreed upon markings and signs as shown in Figure 3B-105(CA).

Option:

<sup>06</sup> Speed measurement markings may be placed on the right shoulder in areas patrolled by aircraft as requested by the California Highway Patrol.

**Standard:**

<sup>07</sup> **Where there is an equation of more than 100 feet in a 1 mile posting, a white 'X' pavement marking shall be placed at each end of the section to indicate the markings are less than 1 mile apart.**

Support:

<sup>08</sup> **An equation is a place where post mile on a linear feature, such as a highway or rail line, fail to increase normally, usually due to realignment or changes in planned alignment.**

Guidance:

<sup>09</sup> The SPEED ENFORCED BY AIRCRAFT (R48-2(CA)) sign should be used for both directions of travel and should be spaced at 25 mile intervals.

<sup>10</sup> Pavement marking should be placed on the shoulder in one direction only, except where the opposing roadway is widely separated.

Option:

<sup>11</sup> In areas where identifying features are widely separated, white 3 feet high post mile numbers may be placed at 5 mile points where needed for aircraft reference.

**Standard:**

<sup>12</sup> **Markings shall not be on the traveled way.**

Option:

<sup>13</sup> If routes with narrow shoulders are requested for marking, the standard marking shape may be modified to provide an equivalent area without encroaching on the traveled way or the Alternate Marking System described.

Support:

<sup>14</sup> The Alternate Marking System is an 8 inch wide solid white longitudinal line, 20 feet in length and in line with the right edge line. It is preceded and followed by a 20 feet gap in the right edge line.

### **Section 3B.22 Speed Reduction Markings**

Support:

<sup>01</sup> Speed reduction markings (see Figure 3B-28) are transverse markings that are placed on the roadway within a lane (along both edges of the lane) in a pattern of progressively reduced spacing to give drivers the impression that their speed is increasing. These markings might be placed in advance of an unexpectedly severe horizontal or vertical curve or other roadway feature where drivers need to decelerate prior to reaching the feature and where

California MUTCD 2012 Edition  
(FHWA's MUTCD 2009 Edition, as amended for use in California)

Page 701

*Guidance:*

*02 If used, speed reduction markings should be reserved for unexpected curves and should not be used on long tangent sections of roadway or in areas frequented mainly by local or familiar drivers, (e.g., school zones). If used, speed reduction markings should supplement the appropriate warning signs and other traffic control devices and should not substitute for these devices.*

**Standard:**

**03 If used, speed reduction markings shall be a series of white transverse lines on both sides of the lane that are perpendicular to the center line, edge line, or lane line. The longitudinal spacing between the markings shall be progressively reduced from the upstream to the downstream end of the marked portion of the lane.**

*Guidance:*

*04 Speed reduction markings should not be greater than 12 inches in width, and should not extend more than 18 inches into the lane.*

**Standard:**

**05 Speed reduction markings shall not be used in lanes that do not have a longitudinal line (center line, edge line, or lane line) on both sides of the lane.**

### **Section 3B.23 Curb Markings**

**Support:**

*01 Curb markings are most often used to indicate parking regulations or to delineate the curb.*

**Standard:**

**02 Where curbs are marked to convey parking regulations in areas where curb markings are frequently obscured by snow and ice accumulation, signs shall be used with the curb markings except as provided in Paragraph 4.**

*Guidance:*

*03 Except as provided in Paragraph 4, when curb markings are used without signs to convey parking regulations, a legible word marking regarding the regulation (such as "No Parking" or "No Standing") should be placed on the curb.*

**Option:**

*04 Curb markings without word markings or signs may be used to convey a general prohibition by statute of parking within a specified distance of a stop sign, YIELD sign, driveway, fire hydrant, or crosswalk.*

*05 Local highway agencies may prescribe special colors for curb markings to supplement standard signs for parking regulation.*

**Support:**

*06 Since yellow and white curb markings are frequently used for curb delineation and visibility, it is advisable to establish parking regulations through the installation of standard signs (see Sections 2B.46 through 2B.48).*

**Standard:**

**07 Where curbs are marked for delineation or visibility purposes, the colors shall comply with the general principles of markings (see Section 3A.05).**

*Guidance:*

*08 Retroreflective solid yellow markings should be placed on the approach ends of raised medians and curbs of islands that are located in the line of traffic flow where the curb serves to channel traffic to the right of the obstruction.*

*09 Retroreflective solid white markings should be used when traffic is permitted to pass on either side of the island.*

**Support:**

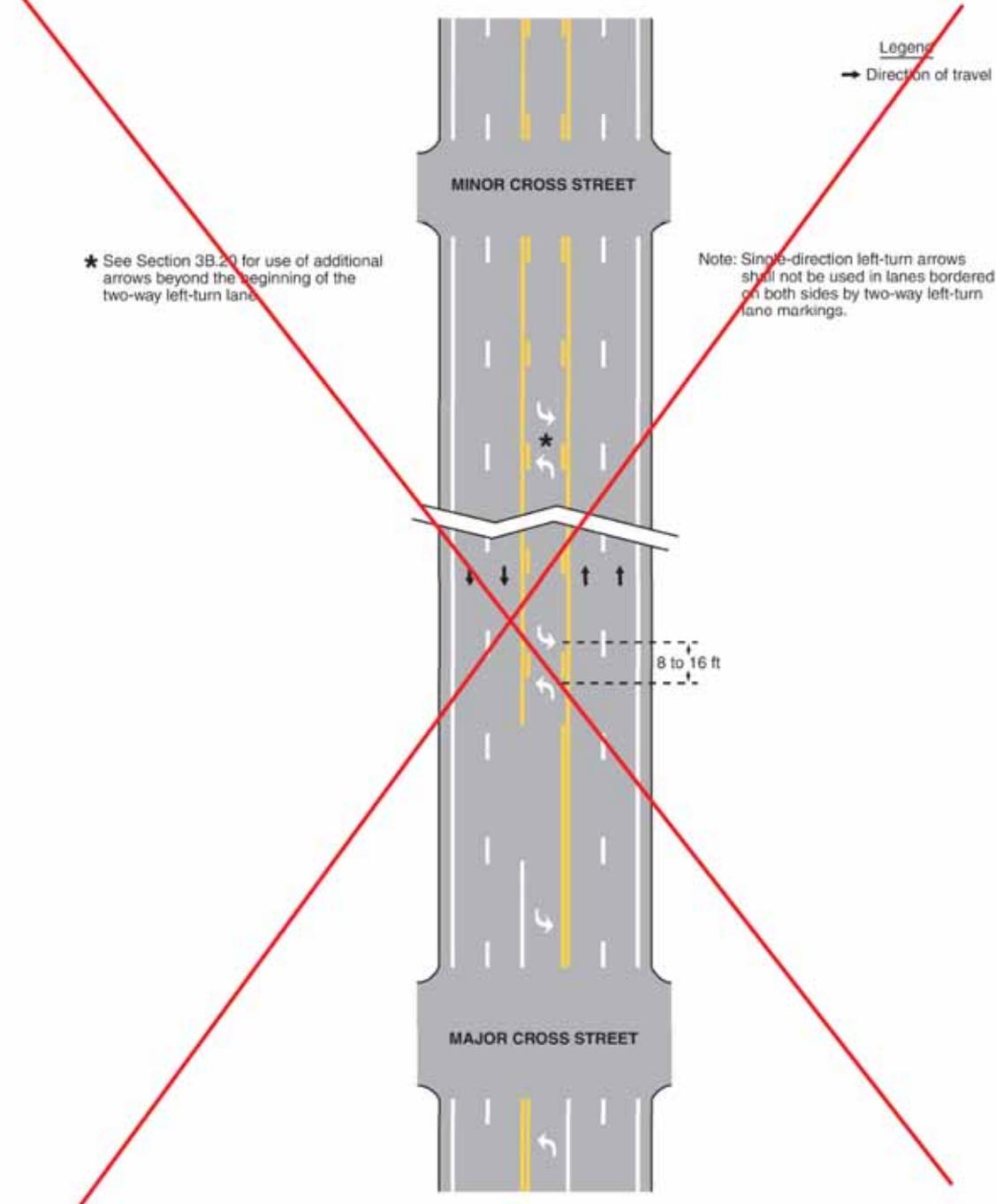
*09a Refer to Sections 2C.63 through 2C.66 for marking noses of raised medians and curbs of islands with object markers.*

**Support:**

*10 Where the curbs of the islands become parallel to the direction of traffic flow, it is not necessary to mark the curbs unless an engineering study indicates the need for this type of delineation.*

*11 Curbs at openings in a continuous median island need not be marked unless an engineering study indicates the need for this type of marking.*

Figure 3B-7. Example of Two-Way Left-Turn Lane Marking Applications

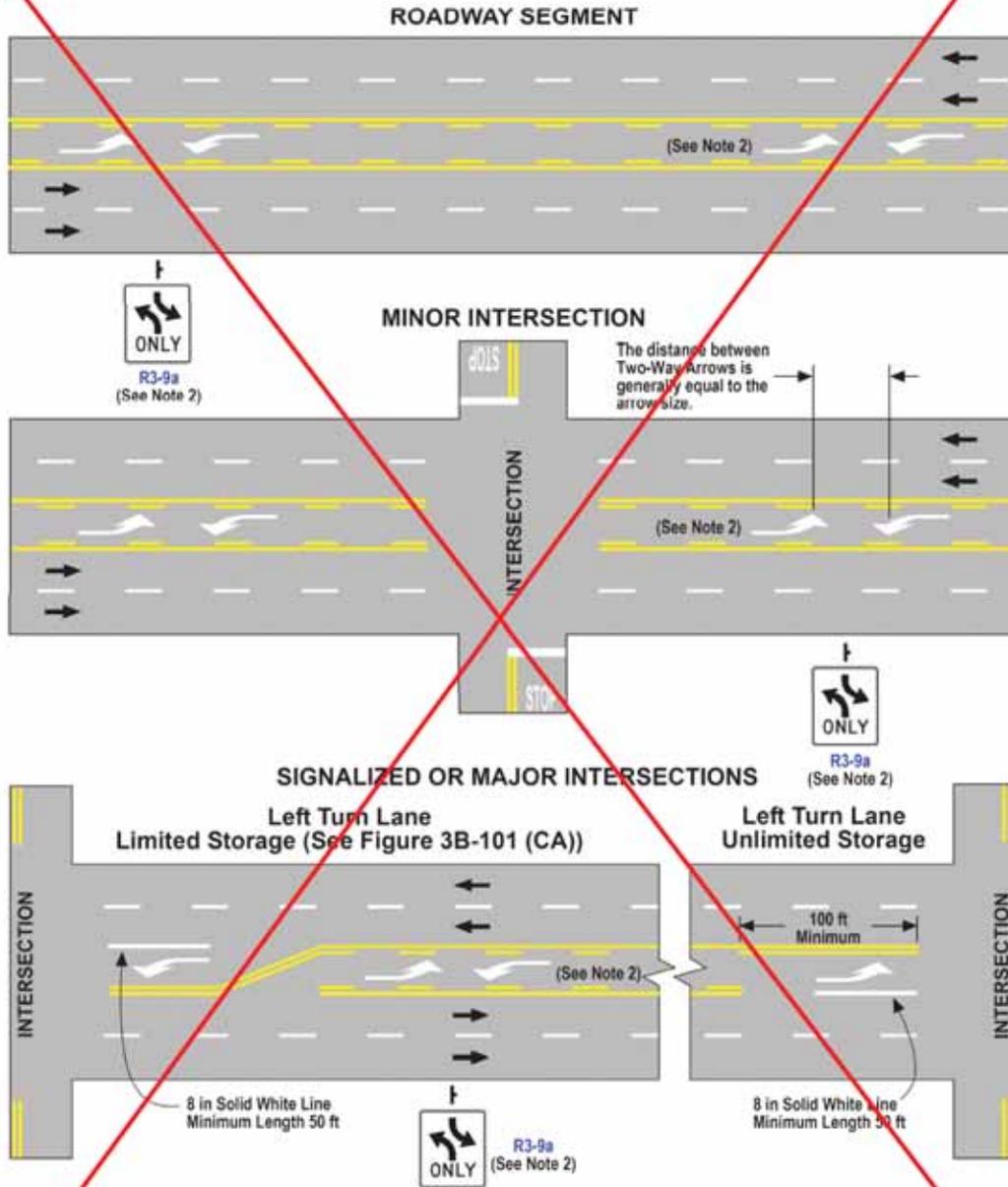


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(FHWA's MUTCD 2009 Edition, as amended for use in California)

**EXISTING**

Page 712

**Figure 3B-7 (CA). Example of Two-Way Left-Turn Lane Marking Applications**



- NOTES:**
1. See Figure 3A-108 (CA) for Two-Way Left-Turn Lane line markings.
  2. Two-Way Pavement Arrows and the R3-9a sign are optional.

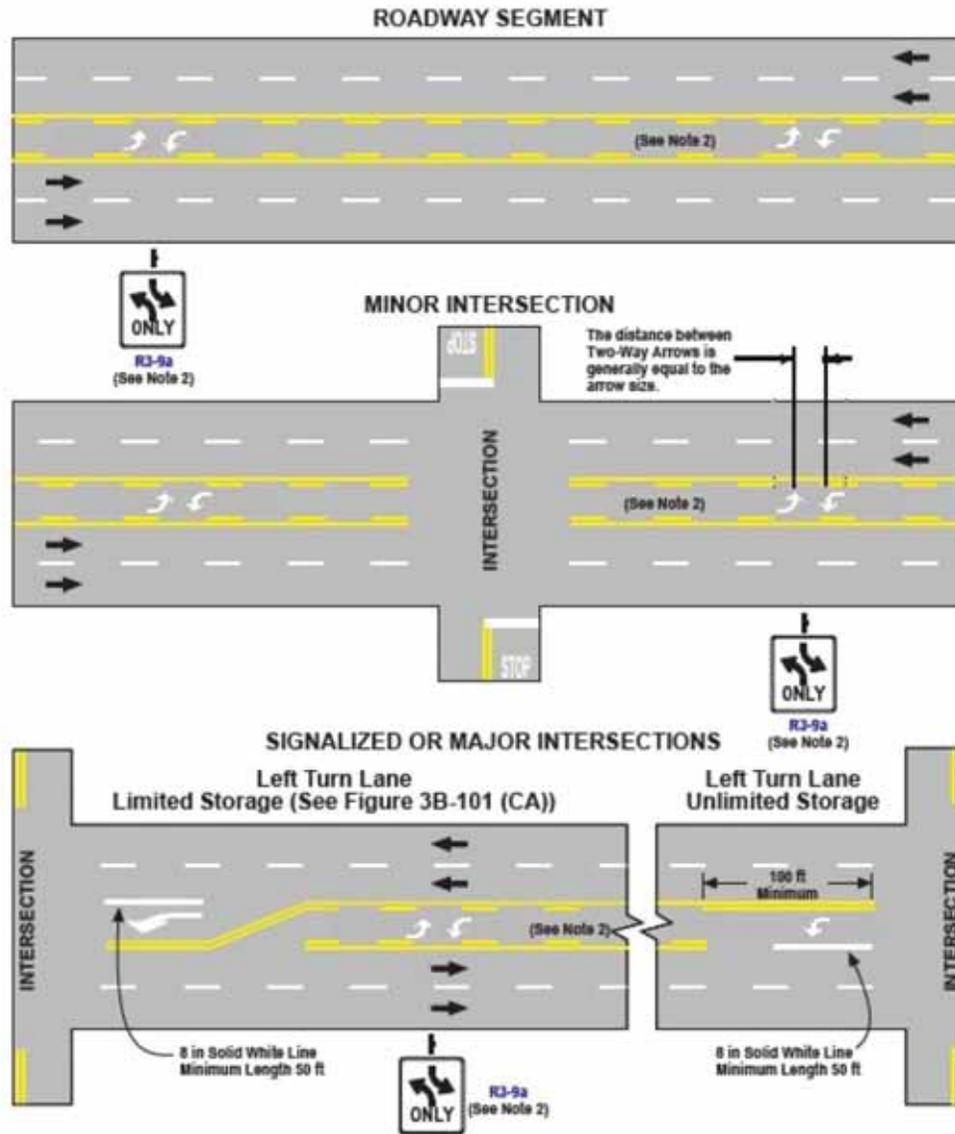
**LEGEND**

→ Direction of Travel      Two-Way Pavement Arrows

NOT TO SCALE

**PROPOSED**

**Figure 3B-7 (CA). Example of Two-Way Left-Turn Lane Marking Applications**



- NOTES: 1. See Figure 3A-108 (CA) for Two-Way Left-Turn Lane line markings.  
2. Two-Way Pavement Arrows and the R3-9a sign are optional.

**LEGEND**

➔ Direction of Travel      ↔ Two-Way Pavement Arrows

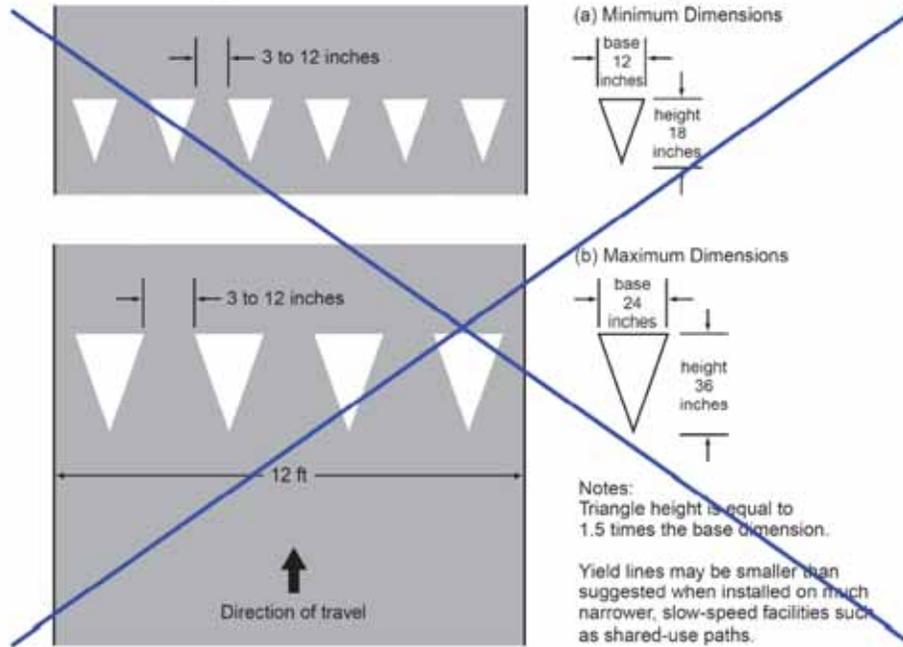
NOT TO SCALE

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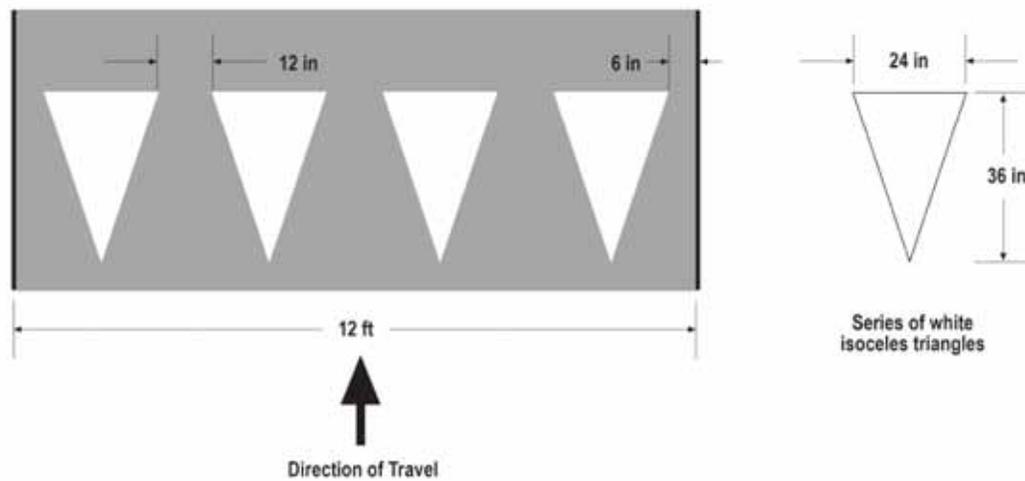
**EXISTING**

Page 739

**Figure 3B-16. Recommended Yield Line Layouts**



**Figure 3B-16 (CA). Recommended Yield Line Layouts**



California MUTCD 2012 Edition  
(FHWA's MUTCD 2009 Edition, as amended for use in

Page 740

**PROPOSED**

Figure 3B-16. Recommended Yield Line Layouts

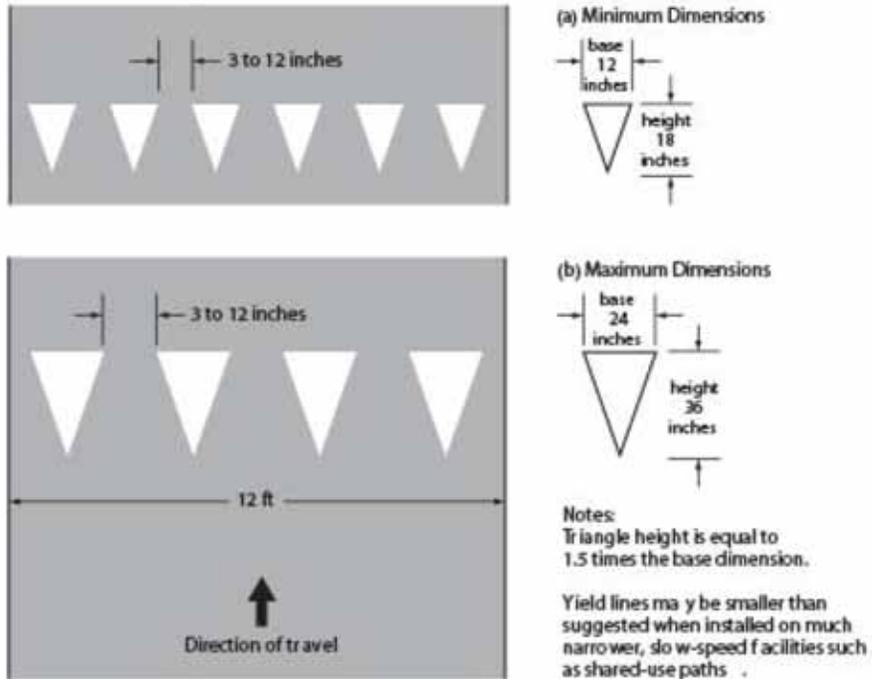


Figure 3B-16 (CA). Recommended Yield Line Layouts

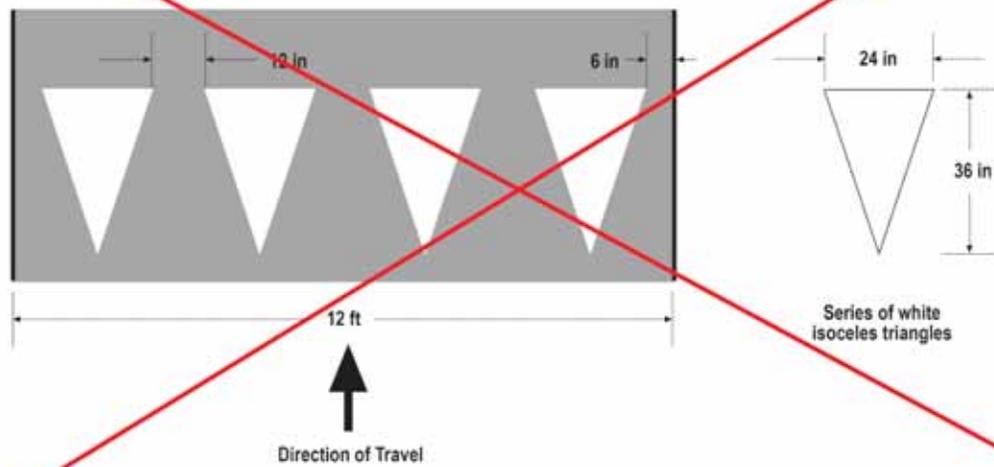
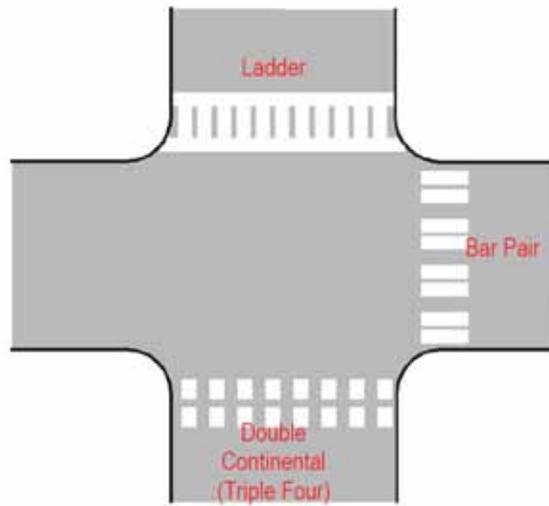
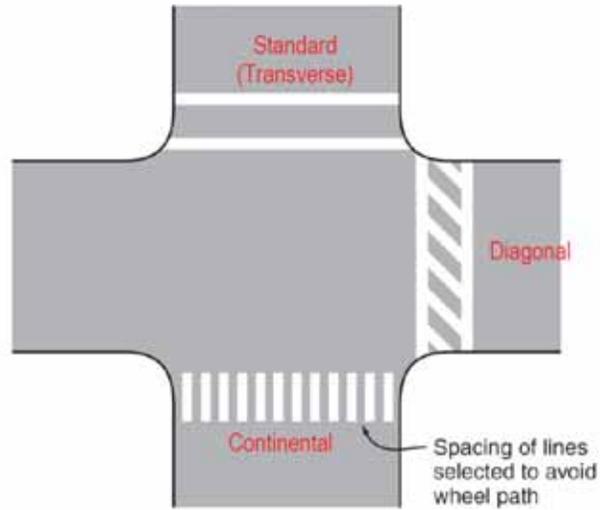


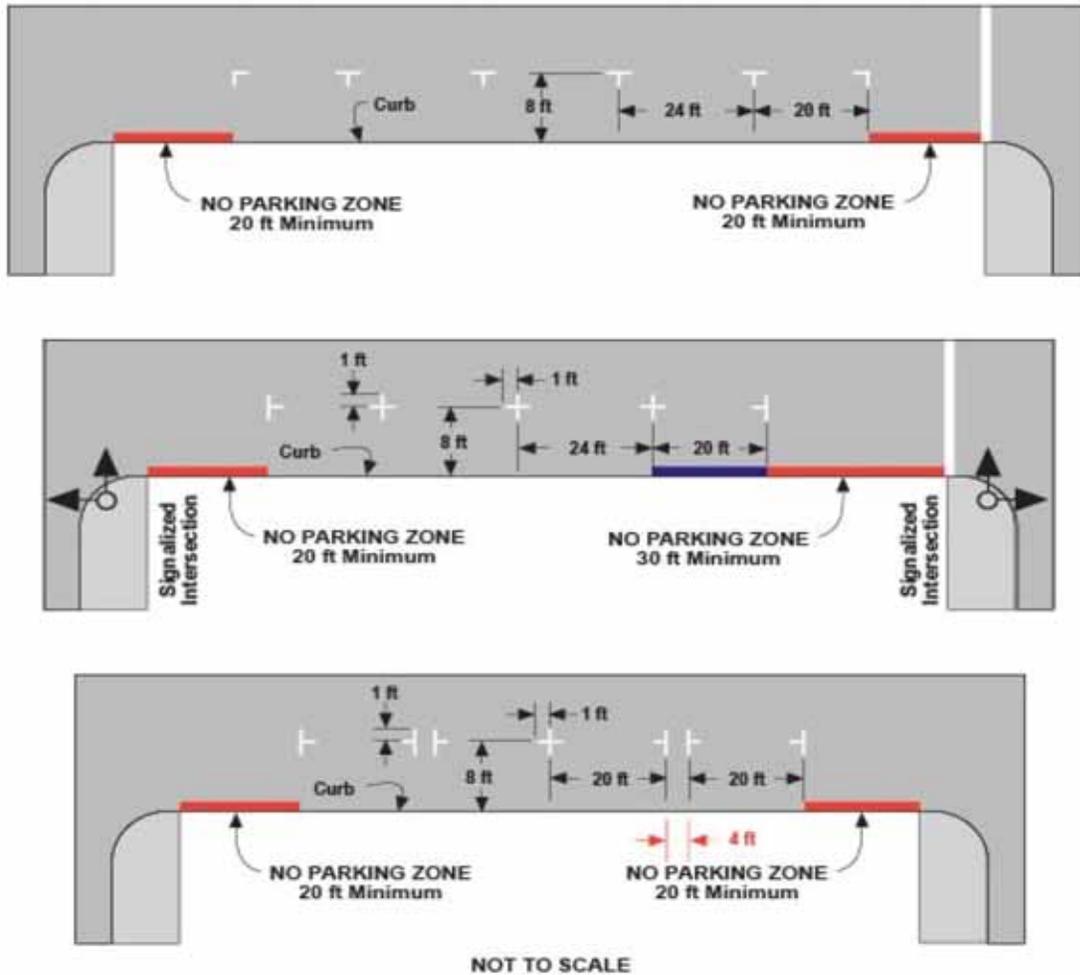
Figure 3B-19. Examples of Crosswalk Markings



California MUTCD 2012 Edition  
 (FHWA's MUTCD 2009 Edition, as amended for use in California)

Page 747

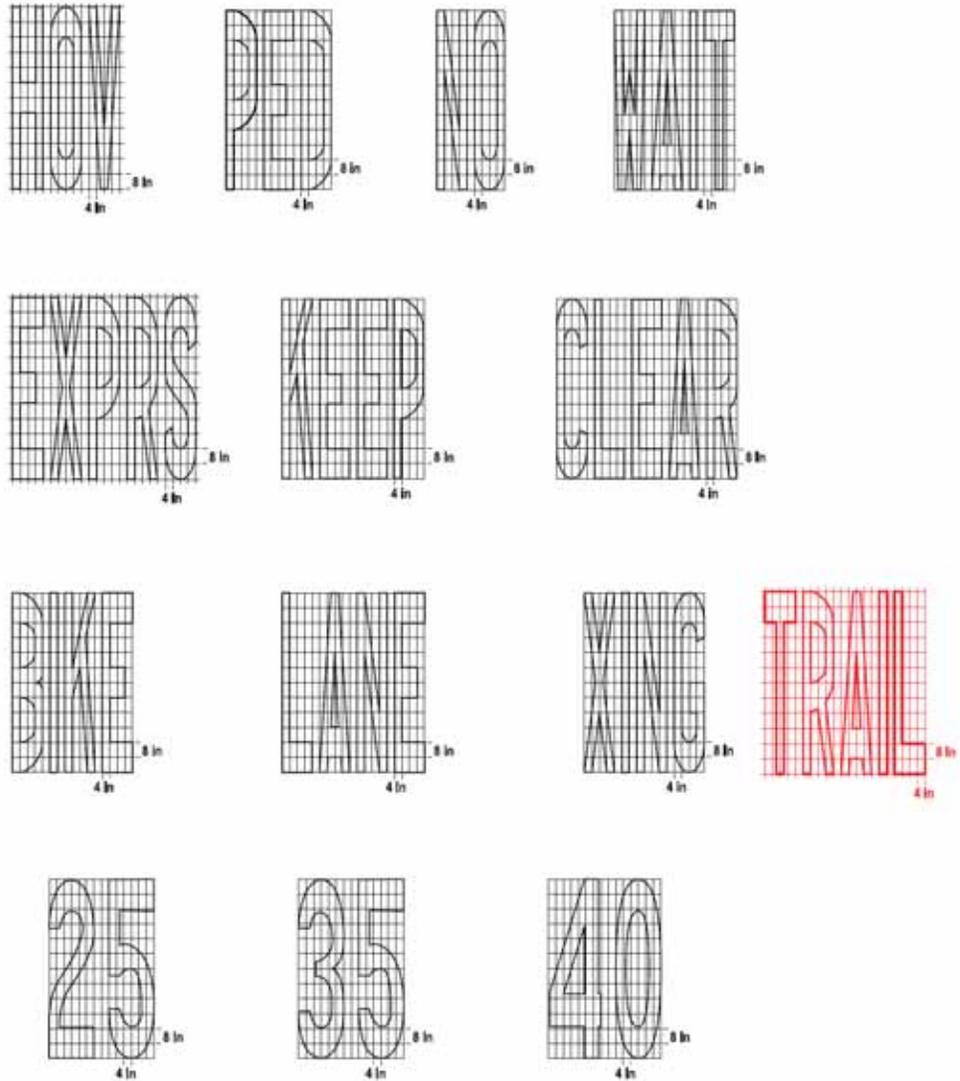
**Figure 3B-21 (CA). Examples of Parking Space Markings**



**NOTES:**

1. For Parking Stalls along the left side curb on one-way streets, markings may be placed on the curb delineating the ends of the individual stalls.
2. All stall markings are made with 4 in wide white lines. The shape is optional.
3. The parking stall cross line, 8 ft from the curb, may be continuous longitudinally.

**Figure 3B-23 (CA). Examples of Elongated Letters for Word Pavement Markings (Sheet 2 of 2)**

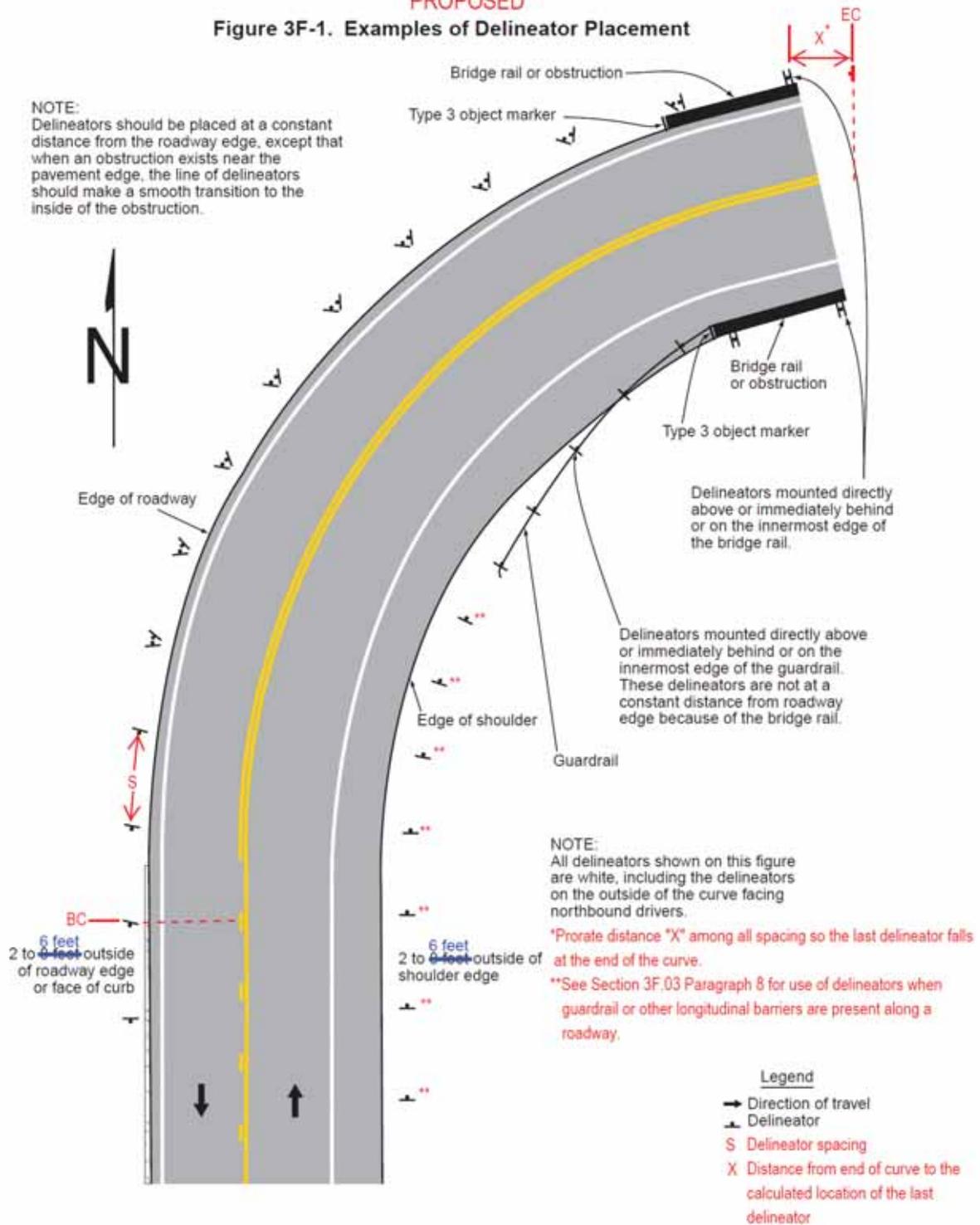


NOT TO SCALE

**NOTES:**

- 1. All letters and numerals should be in conformance with the standard alphabets for highway signs and pavement markings approved by Department of Transportation.
- 2. The design details for various words are also shown in Department of Transportation's Standard Plans.

**PROPOSED**  
**Figure 3F-1. Examples of Delineator Placement**



## CHAPTER 3H. CHANNELIZING DEVICES USED FOR EMPHASIS OF PAVEMENT MARKING PATTERNS

### Section 3H.01 Channelizing Devices

#### Option:

<sup>01</sup> Channelizing devices, as described in Sections 6F.63 through 6F.73, and 6F.75, and as shown in Figure 6F-7, such as cones, tubular markers, vertical panels, drums, lane separators, and raised islands, may be used for general traffic control purposes such as adding emphasis to reversible lane delineation, channelizing lines, or islands. Channelizing devices may also be used along a center line to preclude turns or along lane lines to preclude lane changing, as determined by engineering judgment.

#### Standard:

<sup>02</sup> Except for color, the design of channelizing devices, including but not limited to retroreflectivity, minimum dimensions, and mounting height, shall comply with the provisions of Chapter 6F.

<sup>03</sup> The color of channelizing devices used outside of temporary traffic control zones shall be either orange or the same color as the pavement marking that they supplement, or for which they are substituted.

<sup>04</sup> For nighttime use, channelizing devices shall be retroreflective (as described in Part 6) or internally illuminated. On channelizing devices used outside of temporary traffic control zones, retroreflective sheeting or bands shall be white if the devices separate traffic flows in the same direction and shall be yellow if the devices separate traffic flows in the opposite direction or are placed along the left-hand edge line of a one-way roadway or ramp.

#### Support:

<sup>04a</sup> In California, cones are used for temporary traffic control, not as permanent channelizing devices.

#### Guidance:

<sup>05</sup> Channelizing devices should be kept clean and bright to maximize target value.

#### Support:

<sup>06</sup> Channelizers are flexible retroreflective devices for installation within the roadway to discourage motorists from crossing a line or area of the roadway. Unlike delineators, which indicate the roadway alignment, channelizers are intended to provide additional guidance and/or restriction to traffic by supplementing pavement markings and delineation.

#### Option:

<sup>07</sup> Channelizers may be used for additional emphasis to discourage median crossings at traffic islands and at lane separations.

#### Standard:

<sup>08</sup> The design of a channelizer shall be as shown in Figure 3H-101(CA) and Figure 6F-102(CA).

<sup>09</sup> The retroreflective unit used on channelizers shall be a minimum of 3 x 12 inch. The 3 x 24 inch minimum retroreflective unit shall be visible at 1000 feet at night under illumination of legal high beam headlights, by persons with vision of or corrected to 20/20. Refer to Department of Transportation's Standard Specifications Section 12-3.07. See Section 1A.11 for information regarding this publication.

<sup>10</sup> The post shall be flexible with a 2 ¼ inch minimum width, except that the portion containing the retroreflective unit shall be a minimum width of 3 inch. The post shall be a minimum height of 36 inch above the pavement. **on-State highways.**

<sup>11</sup> Channelizer posts used for temporary traffic control shall be orange with white reflectors. See Section 6F.101(CA).

<sup>12</sup> If the channelizers are to remain in place as a permanent roadway feature, the post shall be white and the color of the reflector shall conform to that of the pavement markings it supplements with the following exceptions:

- A. Retroreflective units used in narrow bridge shoulder tapers shall be yellow as shown in Figure 3F-104(CA).
- B. Retroreflective units shall be white when used in construction and maintenance zones (posts shall be orange). See Section 6F.101(CA).

#### Option:

<sup>13</sup> At locations where speeds are 40 mph or less a minimum post height of 28 inch may be used.

**14-05 Adopt Interim Approval issued by the FHWA for Optional Use of a Bicycle Signal Face (1A-16)**

**Recommendations:** Caltrans request that the Committee make recommendations to seek statewide blanket approval for **Optional Use of a Bicycle Signal Face (1A-16) for all the local agencies of California.**

**Requesting Agency/Sponsor:** Caltrans

**FHWA IA Memo:**



# Memorandum

**Subject:** **INFORMATION:** MUTCD – Interim Approval for Optional Use of a Bicycle Signal Face (IA-16)

**Date:** DEC 24 2013

**From:** Jeffrey A. Lindley  
Associate Administrator for Operations

**In Reply Refer To:**  
HOTO-1

**To:** Federal Lands Highway Division Engineers  
Division Administrators

**Purpose:** The purpose of this memorandum is to issue an Interim Approval for the optional use of bicycle signal faces. Interim Approval allows interim use, pending official rulemaking, of a new traffic control device, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD).

All numerical or alpha-numeric references to Figures, Groups, Paragraphs, Parts, or Sections herein refer to the 2009 edition of the MUTCD.

**Background:** Part 9, Traffic Control for Bicycle Facilities, does not provide for bicycle signal faces. Part 4, Highway Traffic Signals, contains provisions to provide circular signal indications to control bikeways or bicycle movements (see Item F in Paragraph 3 of Section 4D.07). There are no provisions in the 2009 MUTCD that prohibit arrow signal indications from also being used to control bikeways or bicycle movements. However, bicycle signal faces that contain bicycle symbols are not mentioned in the 2009 MUTCD, and Paragraph 1 of Section 4D.06 provides that each signal indication (except for pedestrian signal heads and lane-use control signals) shall be circular or arrow.

The bicycle signal face described in this Interim Approval memorandum is a new traffic control device to the MUTCD and has only been used in the United States on an experimental basis through the MUTCD's experimentation process, which is described in Section 1A.10.

**Research on Bicycle Signal Faces:** Agencies across the United States are showing an increased interest in bicycle signal faces, and many of them have submitted requests to the Federal Highway Administration (FHWA) to experiment with bicycle signal faces. During the past 5 years, the FHWA has approved experiments with bicycle signal faces for a variety of State, county and local governmental agencies, including the following: the City of Denver, CO; the City of Long Beach, CA; the City of Washington, D.C.; the City of Minneapolis, MN; the City of Alexandria, VA; the County of Arlington, VA; the City of Madison, WI; the Oregon Department of Transportation; the County of Clackamas, OR;

the City of Canton, OH; the City of Sparks, NV; the City of Chicago, IL; the City of Lakeland, FL; and the City of Ithaca, NY.

In these experiments, the bicycle signal face is a traffic control device that is being used to provide for separate control of the bicycle movement and address one or more of the following situations:

1. Bicyclist non-compliance with the previous traffic control;
2. Provide a leading or lagging bicycle interval;
3. Continue the bicycle lane on the right-hand side of an exclusive turn lane that would otherwise be in non-compliance with Paragraph 6 of Section 9C.04;
4. Augment the design of a segregated counter-flow bicycle facility;
5. Provide an increased level of safety by facilitating unusual or unexpected arrangements of the bicycle movement through complex intersections, conflict areas, or signal control.

Research by governmental agencies internationally and also by academic institutions in the United States has also been performed on the operation of bicycle signal faces. These efforts include the Transportation Association of Canada, the Oregon Transportation Research and Education Consortium, and the City of Toronto, Ontario. Results by these organizations have been consistent with the findings of official experiments approved by the FHWA.

**FHWA Evaluation of Results:** The Office of Transportation Operations has reviewed the available data and considers the experimental bicycle signal face to be satisfactorily successful for the bicycle applications that were tested. Positive operational effects have been documented in the experiments such as a discernible and earlier behavioral adjustment(s) to newly installed bicycle traffic signals and traffic patterns as opposed to other devices, thereby resulting in an increased compliance by bicyclists with the traffic control. Additionally, depending on the specific application of the bicycle signal face, the research and experiments have shown that bicycle signal faces can provide an opportunity to either reduce the overall number of bicycle crashes, or reduce the bicycle crash rate up to 45 percent where bicycle volumes concurrently increase.

The design of the experimental bicycle signal face is not proprietary and can be used by any jurisdiction that requests and obtains approval from the FHWA to use bicycle signal faces in accordance with Paragraphs 14 through 22 of Section 1A.10. The FHWA believes that the experimental bicycle signal face has a low risk of safety or operational concerns.

This Interim Approval does not create a new mandate compelling the use of bicycle signal faces, but will allow agencies to install bicycle signal faces, pending official MUTCD rulemaking, to control bicycle movements at various locations and conditions.

While circular traffic signal indications can be used to control and facilitate bicycle movements as provided in Part 4, consideration should be given to any policy that uses the bicycle signal face to control specific bicycle movements. Agencies should exercise consistency with the decision to introduce bicycle signal faces to a roadway or bikeway network and use caution with any non-systematic policy to use bicycle signal faces because

the intermixing of bicycle traffic signal faces and circular traffic signal indications to control bicycle movements in the same corridor or jurisdiction could create comprehension issues by the roadway user or violate bicyclist expectation.

**Conditions of Interim Approval:** The FHWA will grant permission for the optional use of bicycle signal faces under this Interim Approval to any jurisdiction that submits a written request to the Office of Transportation Operations. A State may request Interim Approval for all jurisdictions in that State. Jurisdictions seeking permission to use bicycle signal faces under this Interim Approval must agree to:

- Comply with the technical conditions detailed below, and
- Maintain an inventory list of all locations where bicycle signal faces are installed, and
- Comply with Item D in Paragraph 18 of Section 1A.10.

1. General Conditions:

The use of a bicycle signal face is optional. However, if an agency opts to use bicycle signal faces under this Interim Approval, such use shall be limited to situations where bicycles moving on a green or yellow signal indication in a bicycle signal face are not in conflict with any simultaneous motor vehicle movement at the signalized location, including right (or left) turns on red.

2. Meaning of Bicycle Signal Indications

Steady and flashing RED BICYCLE, YELLOW BICYCLE, and GREEN BICYCLE signal indications shall have the same meanings as described in Paragraph 3 of Section 4D.04 for steady and flashing CIRCULAR RED, CIRCULAR YELLOW, and CIRCULAR GREEN signal indications for motor vehicles, respectively, except that the bicycle signal indications shall only be applicable to bicyclists.

3. Application of Steady Bicycle Signal Indications

Steady bicycle signal indications shall be applied as follows:

- a. A steady RED BICYCLE signal indication shall be displayed when it is intended to prohibit bicycle traffic from entering the intersection or other controlled area. Turning after stopping is permitted as stated in Item C.1 in Paragraph 3 of Section 4D.04, except that bicyclists positioned to the left of adjacent motor vehicle traffic on the same approach shall be prohibited from turning right on red, and bicyclists positioned to the right of adjacent motor vehicle traffic on the same approach shall be prohibited from turning left on red.
- b. A steady YELLOW BICYCLE signal indication shall be displayed following a GREEN BICYCLE signal indication or a GREEN ARROW in the same signal face. It shall not be displayed in conjunction with the change from the RED BICYCLE signal indication to a green signal indication. The YELLOW BICYCLE indication shall be followed by a RED BICYCLE signal indication.
- c. A steady GREEN BICYCLE signal indication shall be displayed only when it is intended to permit bicyclists to proceed in any direction that is lawful and

practical, provided that the bicyclists are not in conflict with any simultaneous motor vehicle movements at the signalized location, including right (or left) turns on red, and further provided that the bicycle movement is not modified by lane-use signs, turn prohibition signs, pavement markings, separate turn signal indications, or other traffic control devices.

#### 4. Design of Bicycle Signal Faces:

- a. Layout: The layouts and arrangements of the bicycle signal face (see Attachment IA-16-1) shall be in accordance with the following provisions:
  - i. Only the bicycle symbol shown on Page 6-7 in the 2004 Standard Highway Signs book is to be used for bicycle signal indications. The symbol shall only be positioned horizontally and shall face to the left.
  - ii. Bicycle signal faces may be oriented vertically or horizontally. The RED BICYCLE, YELLOW BICYCLE, and GREEN BICYCLE signal indications shall be in the same relative position to each other as specified for the CIRCULAR RED, CIRCULAR YELLOW, and CIRCULAR GREEN signal indications for motor vehicles, respectively, in Sections 4D.09 and 4D.10.
  - iii. Circular signal indications and bicycle signal indications shall not be used on the same traffic signal face.
  - iv. Arrow signal indications and bicycle signal indications may be used on the same traffic signal face.
  - v. As a specific exception to Paragraph 5 of Section 4D.09, two YELLOW BICYCLE signal indications or two GREEN BICYCLE signal indications shall not be arranged horizontally adjacent to each other at right angles to the basic vertical arrangement to form a clustered signal face.
  - vi. Single sections for continuous movements that would implement the bicycle symbol as illustrated in Group C of Figure 4D-2 shall not be used.
- b. Size: The provisions of Section 4D.07 apply to the sizes of bicycle signal faces except as follows:
  - i. There shall be three nominal diameter sizes for bicycle signal indications: 4 inches, 8 inches, and 12 inches. The bicycle symbol used for bicycle signal indications shall be proportioned to fit within the signal lens.
  - ii. All signal indications in a bicycle signal face shall be of the same size, including both signal indications that display arrows and signal indications that display bicycle symbols. As a specific exception to Paragraph 2 in Section 4D.07, 4-inch and 8-inch arrow signal indications may be used in bicycle signal faces.
  - iii. Four-inch signal indications shall only be used in supplemental, post-mounted, near-side bicycle signal faces. If used, 4-inch signal indications may exclude

the accompanying visor(s) and backplate. Near-side bicycle signal faces may alternatively be either 8-inch or 12-inch.

- c. Placement: The provisions of Sections 4D.13 through 4D.16 apply to the placement of the bicycle signal faces except as follows:
- i. As a specific exception to Item A in Paragraph 1 of Section 4D.11, a minimum of one primary bicycle signal face shall be provided traffic control for the bicycle movement, even if a bicycle through movement exists.
  - ii. The primary bicycle signal face shall have either 8-inch or 12-inch signal indications, even if it is located at the near side of the signal-controlled location.
  - iii. When the primary bicycle signal face is located more than 120 feet from beyond the stop line, a supplemental near-side bicycle signal face shall be provided.
  - iv. When the primary bicycle signal face is located more than 80 feet from beyond the stop line, a supplemental near-side bicycle signal face should be provided.
  - v. Bicycle signal faces should be placed such that visibility is maximized for bicyclists and minimized for adjacent or conflicting motor vehicle movements. In cases where motor vehicle drivers might be confused by viewing the bicycle signal indications, such as when the start or end of a green bicycle signal indication occurs at a different time than the start or end of a green signal indication for a concurrent adjacent motor vehicle movement, consideration should be given to using visibility-limited bicycle signal faces. If visibility-limited bicycle signal faces are used, the signal faces shall be adjusted so that bicyclists for whom the indications are intended can see the signal indications.
  - vi. A bicycle signal face should be separated vertically or horizontally from the nearest motor vehicle traffic signal face for the same approach by at least 3 feet.
- d. Mounting Height: The provisions of Section 4D.15 apply to the mounting height of bicycle signal faces except as follows:
- i. The bottom of the signal housing (including brackets) of a bicycle signal face that is not located over a roadway shall be a minimum of 7 feet above the sidewalk or ground, except where supplemental signing is installed below the bicycle signal face. If supplemental signing is installed below the bicycle signal face, the minimum mounting height to the bottom of the supplemental sign shall be 6 feet. If the bottom of the supplemental sign is mounted less than 7 feet above a pedestrian sidewalk or pathway, the supplemental sign shall not project more than 4 inches into the pedestrian facility.
  - ii. If 4-inch signal indications are used in a supplemental, post-mounted, near-side bicycle signal face, the bottom of the signal housing (including brackets) shall be a minimum of 4 feet and a maximum of 8 feet above the sidewalk or ground.

- e. Intensity and Light Distribution: Except for the 4-inch nominal size of the lens diameter, the intensity and distribution of light from each illuminated bicycle signal face should be similar to that recommended for vehicular traffic signal faces in accordance with Paragraph 10 of Section 4D.06 to the extent practicable.
- f. Backplates: Backplates may be used with bicycle signal faces. If used, ancillary legends of any kind that identify the purpose or operation of the bicycle signal face shall not be placed on the backplate.

#### 5. Operation of Bicycle Signal Faces:

The provisions of Part 4 apply to the operation of bicycle signal faces except as follows:

- a. Mode: The mode of operation of the bicycle signal faces shall be the same as the mode for the operation traffic signal faces for motor vehicle traffic. Bicycle signal faces shall operate in the steady (stop-and-go) mode when traffic signal faces for motor vehicle traffic are operating in the steady (stop-and-go) mode. Bicycle signal faces shall operate in the flashing mode when the signal faces for motor vehicles are operating in the flashing mode, whether programmed or due to a malfunction. Bicycle signal faces shall not be placed in a dark mode when the traffic signal faces for motor vehicle traffic are operating in the flashing mode.
- b. Timing: The provisions of Section 4D.26 apply to the duration of the yellow change and the red clearance intervals of a bicycle signal phase except as follows:
  - i. The minimum duration of the yellow change interval shall be 3 seconds.
  - ii. The maximum duration of the yellow change interval should be 6 seconds. The exclusive function of the yellow change interval shall be to warn bicyclists approaching a signalized location that their permission to proceed is being terminated after which they will be directed to stop. Providing enough clearance time for a bicyclist to travel through the intersection or conflict area is the purpose of the red clearance interval, not of the yellow change interval.
  - iii. If discernible non-concurrent activations or terminations of phases for motorized vehicular traffic and bicycle signal indications are necessary, visibility-limiting devices should be used on the bicycle signal face.
- c. Turning Movements: The following provisions apply to turning movements for bicyclists:
  - i. In cases where it is necessary to prohibit certain turning movements by bicyclists because of a conflict with motor vehicles moving concurrently from an adjacent lane(s), the bicycle signal face shall use a combination of red and yellow bicycle symbol (or arrow) signal indications and green arrow signal indications. Examples of typical bicycle signal face arrangements for accomplishing turn prohibitions are shown in Attachment IA-16-2.

In the presence of a bicycle signal face, the prohibition of bicycle turning movements shall not solely be through the use of movement prohibition signs (see Section 2B.18), modifications thereof, or through the use of plaques that supplement movement prohibition signs.

- ii. As a specific exception to Paragraph 11 of Section 4D.05, the simultaneous display of a straight-through GREEN ARROW signal indication in a bicycle signal face and a CIRCULAR RED signal indication in a motor vehicle signal face for the same approach shall be permitted. If the green arrows in the bicycle signal face can be seen by motor vehicle drivers in the adjacent lane(s), consideration should be given to using visibility-limited bicycle signal faces.

#### 6. Warrants for Bicycle Signal Faces

No new traffic signal warrant(s) specific to bicycle signal faces or in addition to those already provided in Chapter 4C are associated with this Interim Approval. Retrofitting existing traffic signals with bicycle signal faces is analogous to retrofitting existing traffic signals with pedestrian signals where such a determination is not required through an engineering study. Rather, engineering judgment is to be exercised in determining whether or not it would be advantageous or beneficial to have an existing location implement a bicycle signal face(s) or pedestrian signals.

New designs or installations for any traffic signal require an engineering study in accordance with Paragraph 1 of Section 4C.01. The need to incorporate bicycle signal faces into a new location or design would be established through this engineering study. For the purposes of an engineering study the appropriate warrant(s) provided in Chapter 4C shall be followed.

For the purpose of warrant analyses, provisions for classifying bicycles are provided in Paragraph 15 of Section 4C.01 and Paragraph 2 of Section 9D.01.

#### 7. Regulatory Signing:

A Bicycle SIGNAL (R10-10b) sign (see Attachment IA-16-3) shall be installed immediately adjacent to every bicycle signal face that is intended to control only bicyclists, including signal faces that are comprised of all bicycle symbol signal indications, all arrow signal indications, and every combination thereof. The purpose of the sign is to inform any motor vehicle drivers who can also see the signal face that these signal indications are intended only for bicyclists.

Traffic signal designs are to minimize other signing and rely on the fact that bicycles are legally considered vehicles and their responsibility to comply with traffic control devices and yield to other vehicles and pedestrians is part of the bicycling task.

8. Prohibited Uses:

The design, use, and operation of the bicycle signal face through this Interim Approval shall be in accordance with Items 1 through 7 above. If a specific use, application, or design element for bicycle signal faces has not been described in Items 1 through 7 above, and if the specific use, application, or design element would not otherwise be in compliance with the 2009 MUTCD, then the specific use, application, or design element is not permitted under this Interim Approval.

The following are among the applications of bicycle signal faces that shall not be permitted under this Interim Approval:

- a. Pedestrian Hybrid Beacons: Bicycle signal faces shall not be used in any manner with respect to the design and operation of a pedestrian hybrid beacon.
- b. Shared Lane Markings Only: Bicycle signal faces shall not be used for controlling any bicycle movement that is sharing a lane with motor vehicle traffic.
- c. Exclusive Bicycle Phases that permit "Scramble" Phases: Bicycle signal faces shall not be used to provide a bicycle phase that stops all motorized vehicles and pedestrians at the signalized location in order to allow multiple bicycle movements from multiple conflicting directions.

Any questions concerning this Interim Approval should be directed to Mr. Kevin Dunn at [kevin.dunn@dot.gov](mailto:kevin.dunn@dot.gov).

Attachment(s)

cc:

Associate Administrators

Chief Counsel

Chief Financial Officer

Directors of Field Services

Director of Technical Services

### Attachment IA-16-1 Typical Arrangements of Signal Sections in Bicycle Signal Faces

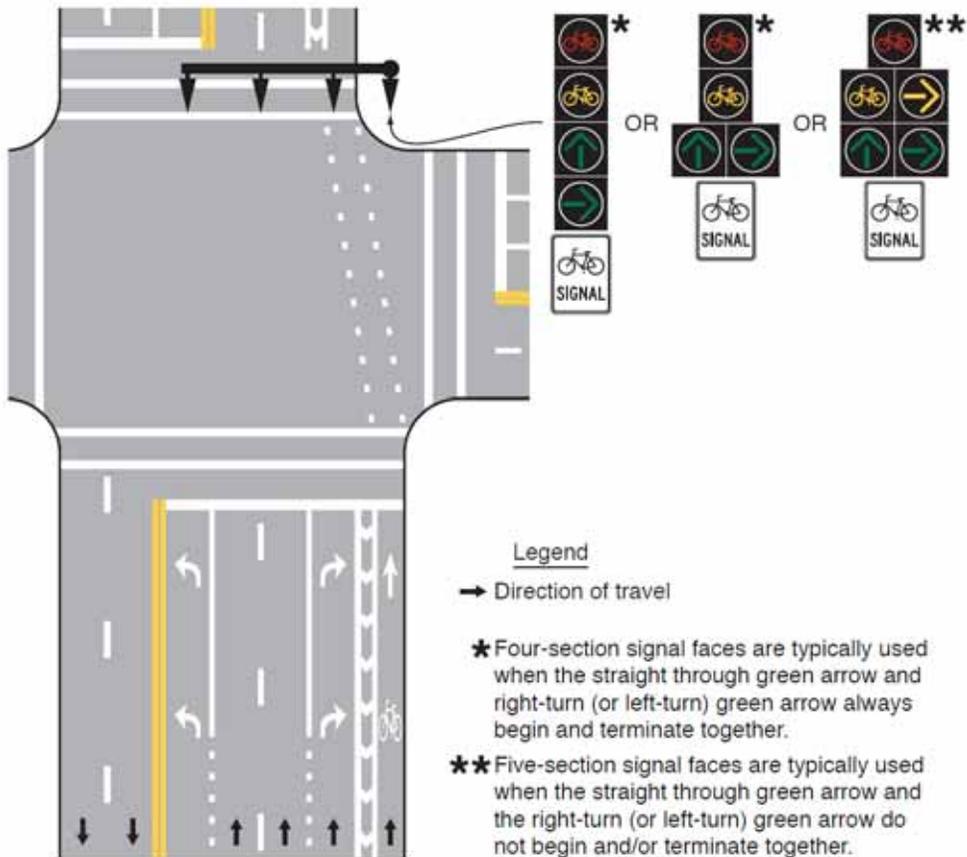
#### A - Vertical signal faces



#### B - Horizontal signal faces



### Attachment IA-16-2 Example of How to Prohibit a Left-Turning Bike Movement





R10-10b  
Bicycle SIGNAL

\* Reduce character spacing 20%.

A	B	C	D	E	F	G	H	J	K	L
12	18	0.375	0.375	4	5	2.5	2.5 C*	4.564	4.564	1.5
18	24	0.375	0.625	4.25	8	3.5	4 C*	7.303	7.302	1.5

COLORS: LEGEND, BORDER — BLACK  
BACKGROUND — WHITE (RETROREFLECTIVE)

**14-06 Proposal to amendment to Section 7B.15 of the CA MUTCD 2012 to define “WHEN CHILDREN ARE PRESENT” sign**

**Recommendation:** Caltrans District 2 requests that CTCDC make recommendation to define “WHEN CHILDREN ARE PRESENT” by amending Section 7B.15 of the CA MUTCD 2012.

**Agency Requesting and Sponsoring:** Caltrans

**BACKGROUND:**

Over the last couple years, there have been issues raised about the interpretation of what "WHEN CHILDREN ARE PRESENT" (sign code is S4-2) means for the 25 mph enforcement. Some local judges are supporting citations issued during the entire school day – even when the children are in the classroom and nowhere near the roadway. In other jurisdictions, the local police or CHP only enforce the 25-mph speed limit during morning arrival and afternoon departure times.

It is requested that the phrase "when children are present" be clarified to address this problem. Caltrans, District 2, initiated this request and provided the following suggested wording for incorporation into the CA MUTCD:

*The phrase WHEN CHILDREN ARE PRESENT refers to the following condition:*

- *Motorists can see children on foot or bicycling within 30 feet of the highway travelled way, and*
- *There is no fence, gate, or other physical barrier separating the children from the highway.*

*This condition typically occurs when children are arriving to school in the morning or departing in the afternoon, and possibly during lunchtime. The school speed limit is not in effect during regular school hours when no children are using the highway, such as when they are in the classroom or on the school grounds behind a fence, gate, or other physical barrier.*

A specific distance from the ETW was chosen to clarify when motorists can reasonably see children and respond accordingly. The following reasoning was used to support the distance of 30 feet:

- Per the Standard Plans, the maximum distance for roadside sign placement is 30' from the ETW. It is assumed that this maximum distance is specified, at least in part, for visibility reasons.
- Children outside 30' from the ETW are less likely to dart out in front of oncoming traffic (chasing a ball, paper flying in the wind, etc). If a child started heading towards the roadway from beyond 30', the driver would have time to observe and react to the incident.
- Although not directly related, the freeway clear recovery zone (CRZ) is 30' from ETW. If this CRZ is deemed sufficient for an errant vehicle (travelling at high speed) to regain control and maneuver back onto the freeway, one would expect a 30 ft. school zone buffer to provide a similar safety benefit.

Another aspect of defining a horizontal distance from the ETW is to address the situation when school buildings are far away from the highway, but there is no fence or physical barrier in between. Defining a zone, that outside of which children are considered safe will provide additional guidance on whether the school zone speed limit signs are needed.

**Proposal:****Section 7B.15 School Speed Limit Assembly (S4-1P, S4-2P, S4-3P, S4-4P, S4-6P, S5-1) and END SCHOOL SPEED LIMIT Sign (S5-3)**

California MUTCD 2012 Edition  
(FHWA's MUTCD 2009 Edition, as amended for use in California)

Page 1264

SCHOOL SPEED LIMIT (S5-3) sign ~~or the END SCHOOL ZONE (S5-2) sign~~ or the Speed Limit sign may be posted by itself (see Figure 7B-5(CA) and 7B-102(CA)).

**Guidance:**

*~~07 The beginning point of a reduced school speed limit zone should be at least 200 feet in advance of the school grounds, a school crossing, or other school-related activities; however, this 200-foot distance should be increased if the reduced school speed limit is 30 mph or higher. Refer Figures 7B-1(CA), 7B-5, 7B-5(CA), and 7B-101(CA) through 7B-103(CA).~~*

**Standard:**

~~08 The School Speed Limit assembly **Assembly C(CA)** shall be either a fixed-message sign assembly or a changeable message sign.~~

~~09 The fixed-message School Speed Limit assembly **Assembly C(CA)** shall consist of a top plaque (S4-3P) with the legend SCHOOL, a Speed Limit (R2-1) sign, and a bottom plaque **WHEN CHILDREN ARE PRESENT (S4-1P, S4-2P, S4-4P, or S4-6P)** indicating the specific periods of the day and/or days of the week that the special school speed limit is in effect (see Figure ~~7B-1~~ **7B-1(CA)**).~~

*The phrase **WHEN CHILDREN ARE PRESENT** refers to the following condition:*

- Motorists can see children on foot or bicycling within 30 feet of the highway travelled way, and
- there is no fence, gate, or other physical barrier separating the children from the highway.

*This condition typically occurs when children are arriving to school in the morning or departing in the afternoon, and possibly during lunchtime. The school speed limit is not in effect during regular school hours when no children are using the highway, such as when they are in the classroom or on the school grounds behind a fence, gate, or other physical barrier.*

**Option:**

~~10 Changeable message signs (see Chapter 2L and Section 6F.60) may be used to inform drivers of the school speed limit. If the sign is internally illuminated, it may have a white legend on a black background. Changeable message signs with flashing beacons may be used for situations where greater emphasis of the special school speed limit is needed.~~

**Guidance:**

~~11 Even though it might not always be practical because of special features to make changeable message signs conform in all respects to the standards in this Manual for fixed-message signs, during the periods that the school speed limit is in effect, their basic shape, message, legend layout, and colors should comply with the standards for fixed-message signs.~~

~~12 A confirmation light or device to indicate that the speed limit message is in operation should be considered for inclusion on the back of the changeable message sign.~~

## 6. Requests for Experimentations

### 13-07 Request to Experiment with Bike Boxes

**Recommendation:**

The National City requests authorization from the Committee to conduct experiment with Bike Boxes.

**Agency Making Request:** National City

**Sponsor:** Mark Greenwood –Voting Member, representing LOCC of Southern California



City of National City  
Engineering Department  
1243 National City Boulevard  
National City, CA 91950

December 4, 2013

Mr. Bruce Friedman  
Office of Transportation Operations, HOTO  
Federal Highway Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590

Mr. Devinder Singh  
Executive Secretary  
California Traffic Control Devices Committee – MS36  
P.O. Box 942874  
Sacramento, CA 94274-0001

**Subject:** Request for Permission to Experiment – National City (Bike Boxes)

Mr. Friedman and Mr. Singh:

The City of National City requests permission to experiment with Bike Boxes at various signalized intersections throughout the city.

**Background:**

With the exception of the 2.42-mile section Sweetwater River Bikeway, the regional Class I bike path that runs parallel to Highway 54 on the southern border of the city, National City has essentially no designated bicycle facilities. According to the City of National City Bicycle Master Plan, the City's existing bicycle network consists of 1.71 miles of Class II bike lanes and a 0.59-mile segment of Class III bike route. The existing bicycle facilities locations are shown in **Figure 1**.

The City's Bicycle Master Plan seeks to rectify the lack of bicycle facilities and provide bicycle encouragement, awareness, enforcement, and parking along key corridors of the community. The City collaborated with the public through workshops, surveys, bicycle tours, and City Council working meetings and identified corridors within the City where bicycle facilities need to be added. A project ranking criteria was then established in order to prioritize the implementation of these facilities. **Figure 2** shows the ranking criteria used in developing the prioritization list. **Figure 3** illustrates the final prioritization list of projects. As shown in Figure 3, 4<sup>th</sup> Street, 18<sup>th</sup> Street, 30<sup>th</sup> Street and D Avenue were ranked as top priority project for implementation.

National City then collaborated with Kimley-Horn and Associates to create project improvement plans for 4<sup>th</sup> Street, 18<sup>th</sup> Street, 30<sup>th</sup> Street and D Avenue. **Figures 4-6** illustrate the proposed improvements along three of these corridors.

The City has applied for and received Active Transportation Grants from the San Diego Association of Governments (SANDAG) to provide Class II and Class III bicycle facilities, including bicycle detector loops and bicycle boxes at signalized intersections along the these three corridors. The City also received a grant to provide bicycle parking enhancements throughout the City.

Request to Experiment  
Page 2 of 12

Figure 1: Existing Bicycle Facilities in National City



Source: Figure 3-1: Existing Bicycle Facilities in National City, City of National City Bicycle Master Plan, City of National City (2010)

**Figure 2: Project Ranking Criteria**

Criteria	Description	Points
Bicycle Propensity Model Results	The results from the bicycle propensity model will be used to assist in ranking the various bikeway projects. Bikeways that serve areas that scored the highest in the bicycle propensity model will receive the most points, whereas bikeways that serve areas with low model results will receive minimal points for this evaluation criteria.	0 to 20
Collisions / Safety	This ranking is based on SWITRS data identifying corridors with a high number of bicycle collisions within a quarter mile buffer. The greater the number of collisions per mile, the greater the need to provide safety enhancements. Numbers of collisions per project mile will be calculated for all bikeways based on the following formula: [(# of collisions per mile/highest # of collisions per mile)*10]. Projects will be scored on a scale ranging from zero to ten.	0 to 10
Public Input	Projects identified by the public as important at public meetings and by communications with the City staff will receive ten points for this criteria. Projects are scored by either a "yes", they have received public comment, or "no", they have not.	Yes=10 No=0
Staff Input	Projects identified by City staff as key initiatives will receive ten points for this criteria. If not identified as a key initiative, the project will receive zero points for this criteria.	Yes=10 No=0
Project Feasibility	Project Cost: Project cost affects the ability of the City to construct the bikeway. Projects that are lower cost have higher scores. Projects are scored based upon the following five cost ranges: A: \$0-\$50,000 B: \$50,001-\$125,000 C: \$125,001-\$400,000 D: \$400,001-\$1,000,000 E: Greater than \$1,000,000	A=5 B=4 C=3 D=2 E=1
	Parking Impacts: Parking displacement affects the ability of the City to construct the bikeway. If a proposed bikeway project has no parking impacts it receives five points, and if the project displaces parking it receives zero points.	Yes=5 No=0
Local Connections	Projects that connect to existing or proposed bikeways in National City will receive ten points for this criteria. Projects are scored by either a "yes" or "no".	Yes=10 No=0
Regional Connections	Projects that connect to existing or proposed neighboring city, county or regional bikeways will receive ten points for this criteria. Projects are scored by either a "yes" or "no".	Yes=10 No=0
	Maximum Potential Overall Score:	80

Source: Table 5-4: Project Ranking Criteria. City of National City Bicycle Master Plan. City of National City (2010)

Request to Experiment  
Page 4 of 12

**Figure 3: Project Prioritization**

Priority Level	Location	From	To	Class	Miles	Total Points
Early Action	Harbor Drive / Tidelands Avenue / 32 <sup>nd</sup> Street (Bayshore Bikeway)	Northern City Limit	Marina Way (Sweetwater River Bikeway)	1	2.3	
Early Action	Interstate 805 Corridor	Northern City Limit	12 <sup>th</sup> Street	1	1.1	-
Early Action	Plaza Bonita Road	Sweetwater River Bikeway	Bonita Mesa Road	1	0.4	
Tier 1	Marina Way	Bay Marina Drive	32 <sup>nd</sup> Street	1	0.5	66.4
Tier 1	18 <sup>th</sup> Street	Wilson Avenue	Palm Avenue	2	1.3	65.7
Tier 1	4th Street	Roosevelt Avenue	Harbison Avenue	2	2.0	64.7
Tier 1	D Avenue	4th Street	32nd Street	2	1.8	60.4
Tier 1	30 <sup>th</sup> Street	Hoover Avenue	Highland Avenue	3	0.7	58.6
Tier 1	18th Street	Palm Avenue	Granger Avenue	3	0.8	57.7
Tier 1	Highland Avenue	30th Street	Southern City Limit	2	0.5	57.0
Tier 1	Harbor Drive	8th Street	Civic Center Drive	2	0.3	54.8
Tier 1	D Avenue	Division Street	4 <sup>th</sup> Avenue	3	0.2	51.5
Tier 1	Hoover Avenue / 33rd Street / National City Boulevard	Mile of Cars Way	Southern City Limit	2	1.2	51.4
Tier 1	8 <sup>th</sup> Avenue	Roosevelt Avenue	Paradise Valley Road	3	2.3	50.6
Tier 2	Roosevelt Avenue	Main Street	8 <sup>th</sup> Street	2	0.5	49.5

Source: Table 5-6: Project Prioritization, City of National City Bicycle Master Plan, City of National City (2010)

Request to Experiment  
Page 5 of 12

Figure 4: 4<sup>th</sup> Street Community Corridor Project Improvement Map



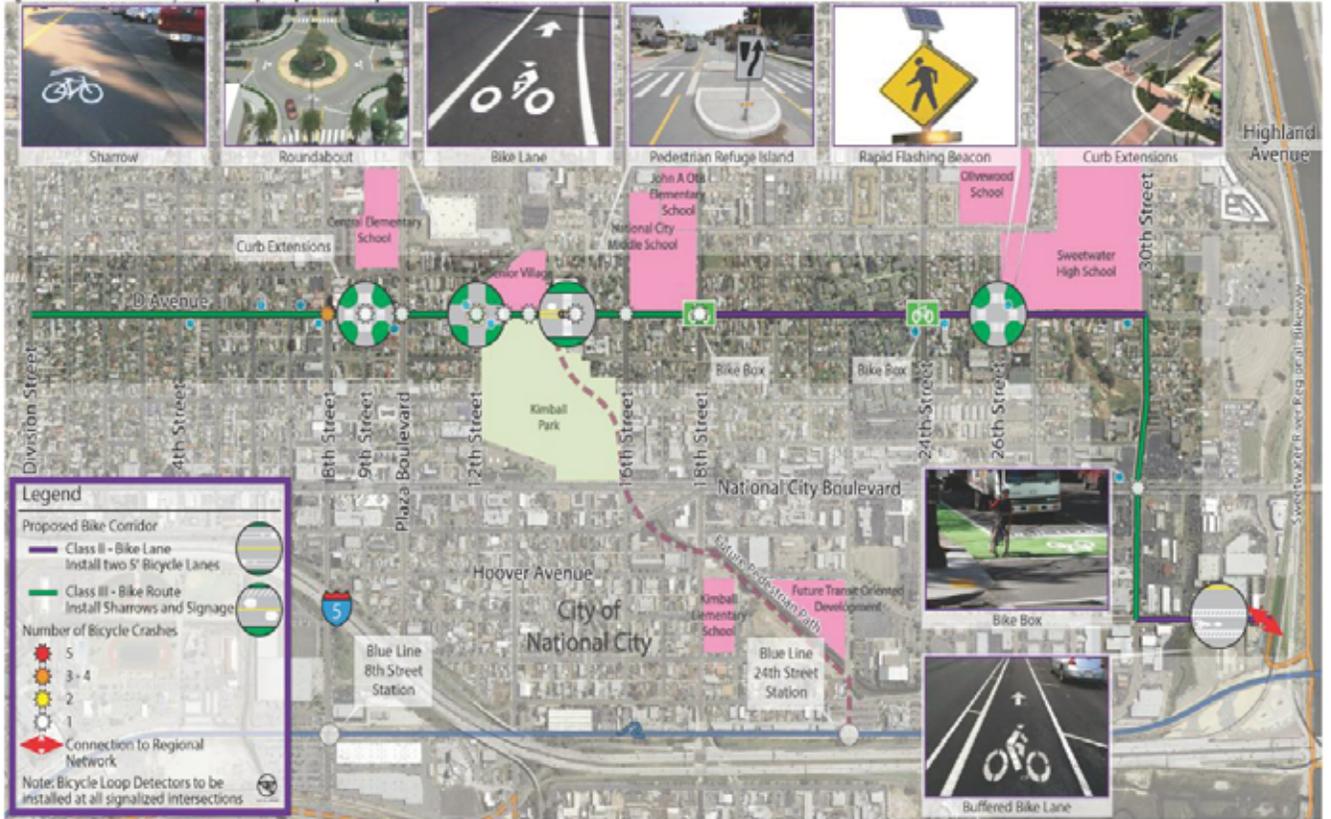
Request to Experiment  
Page 6 of 12

Figure 5: 15<sup>th</sup> Street Community Corridor Project Improvement Map



Request to Experiment  
Page 7 of 12

Figure 6: D Avenue Community Corridor Project Improvement Map



Request to Experiment  
Page 8 of 12

**Problem Statement:**

As National City is proposing to add approximately 6.5 miles of Class II and Class III bicycle facilities to an area that does not currently have any designated bicycle facilities, drivers in this area will not be accustomed to bicycle traffic. As such, increased bicycle visibility and reduced risk of bicycle-vehicular conflicts is a high priority. These priorities are consistent with the goal of the National City Bicycle Master Plan to create a safe and comprehensive local and regionally connected bikeway network where bicycling is a viable travel choice for users of all abilities.

**Proposed Changes:**

In order to increase bicycle visibility and to make bicycling a safe and viable travel choice for bicyclists of all experience levels, Bike Boxes are proposed at the signalized intersections along each of the three identified corridors where Class II bike lanes are added.

According to the National Association of City Transportation Officials (NACTO), "a Bike Box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase" (*NACTO Urban Bikeway Design Guide*, April 2011). Bike Boxes are intended to increase the visibility of bicyclists by positioning them ahead of stopped vehicles. Bike Boxes are also intended to help prevent right-hook conflicts with right-turning vehicles and can be useful in aiding bicycle queuing.

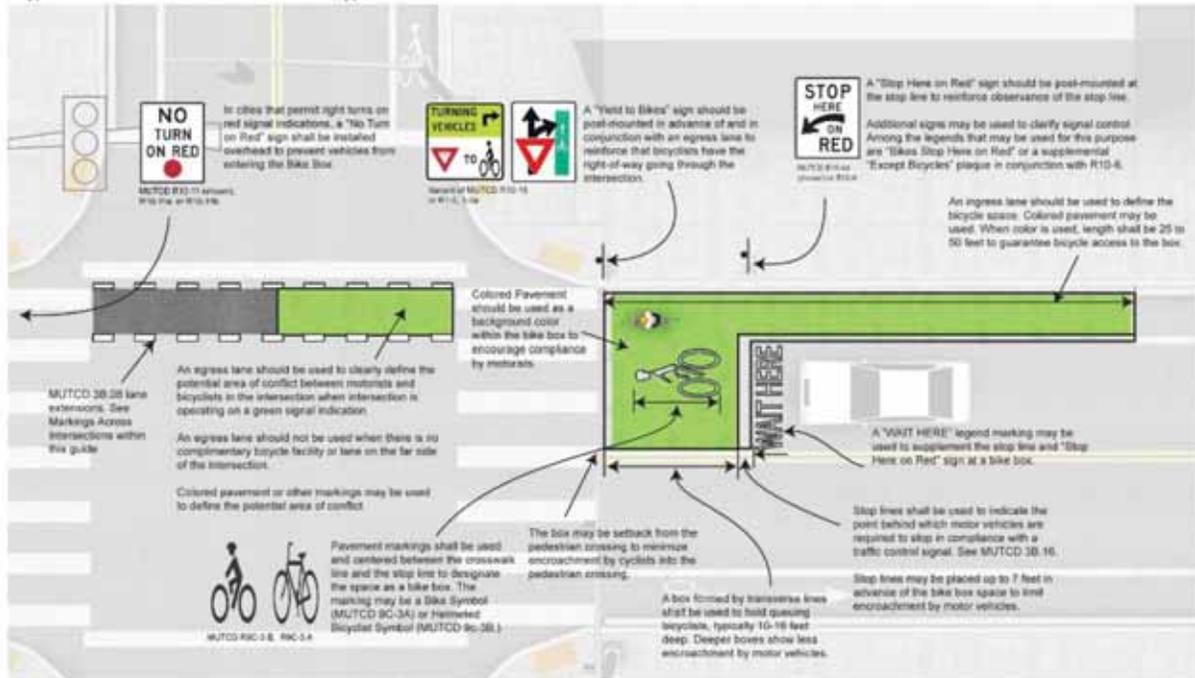
The proposed Bike Box design, as recommended by NACTO, is shown in **Figure 7**. As can be seen, the application of color and markings in the area between the limit line and the crosswalk line to designate an exclusive waiting area for cyclists causes the Bike Box design to deviate from the standards contained in the California Manual on Uniform Traffic Control Devices (CA-MUTCD). For the purpose of this experiment, the following deviations from NACTO's guidelines will be implemented and evaluated:

- Removal of the R10-15 signs;
- Removal of the egress lane through the intersection. For the intersections along D Avenue and 18<sup>th</sup> Street, the egress lane will be completely removed. For the intersections along 4<sup>th</sup> Street, the egress lane will be installed with only white dashed lines (Caltrans Detail 39A).
- Installation of white dashed striping approaching the bicycle box. For the intersections along D Avenue and 18<sup>th</sup> Street, standard Caltrans Detail 39A would be use. For the intersections along 4<sup>th</sup> Street, the white dashed lines will be complemented with green boxes to accentuate the conflict areas. **Figure 8** shows the proposed Bike Box design details for the typical bicycle boxes implementation along each of the corridors.. The proposed Bike Box design is not protected by a patent or copyright.

Request to Experiment

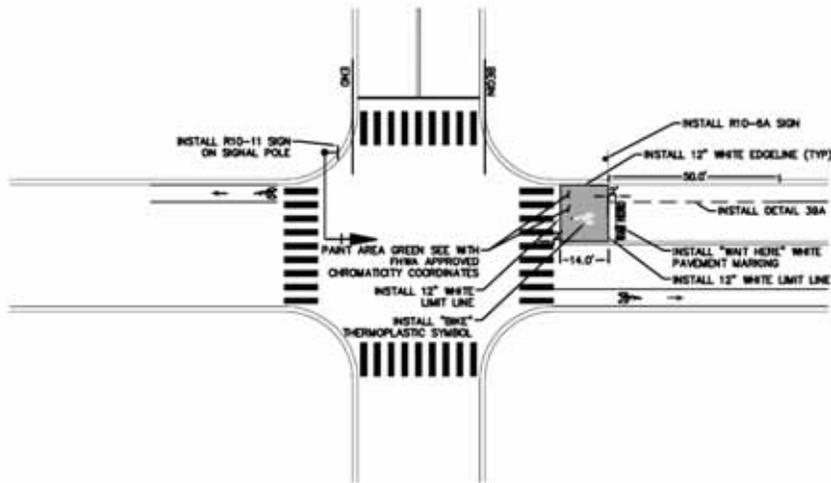
Page 9 of 12

Figure 7: NACTO Bike Box Design

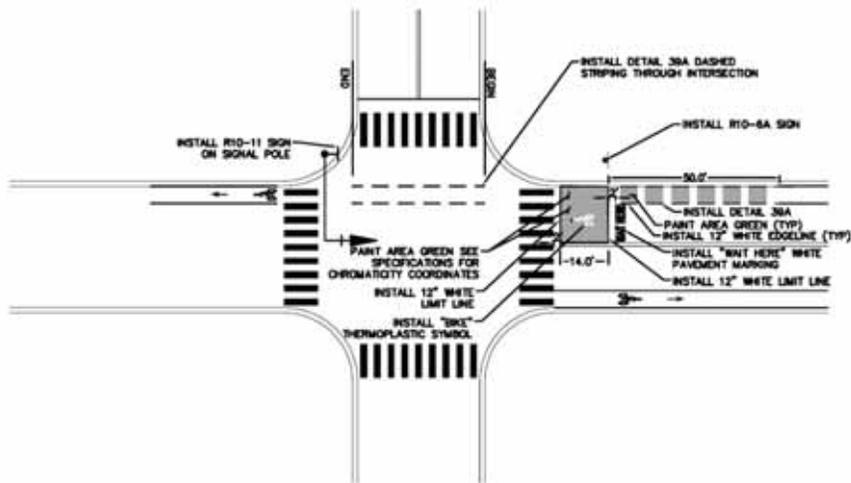


Source: [http://nacto.org/wp-content/uploads/2010/08/BikeBox\\_Plan\\_Annotated.jpg](http://nacto.org/wp-content/uploads/2010/08/BikeBox_Plan_Annotated.jpg)

BIKE BOX DETAIL FOR 18TH STREET AND D AVENUE CORRIDORS



BIKE BOX DETAIL FOR 4TH STREET CORRIDOR



Request to Experiment  
Page 11 of 12

**Proposed Locations:**

The requested Bike Boxes are proposed at the following signalized intersections:

- Along 18<sup>th</sup> Street where it intersects the following roadways:
  - National City Boulevard
  - D Avenue
  
- Along 4<sup>th</sup> Street where it intersects the following roadways:
  - National City Boulevard
  - Highland Avenue
  - Palm Avenue
  - Euclid Avenue
  
- Along D Avenue where it intersects 24<sup>th</sup> Street.

**Evaluation Plan:**

The objective of the experiment is to evaluate the effectiveness of the Bike Box design. National City will conduct before and after studies consistent with SANDAG's data collection requirements. The City will provide annual progress reports for the duration of the experiment to the Federal Highway Administration (FHWA) and the California Traffic Control Devices Committee (CTCDC) and will provide a copy of the final results to the FHWA within six months of the completion of the experiment. The City's target construction date is in the Spring 2014. The experiment will last as long as the City deems necessary for proper collection of data. The City of National City agrees to terminate the experiment if the City, the FHWA, or CTCDC determines that significant safety concerns are directly or indirectly attributable to the experiment. If necessary, the City will restore the site of the experiment to a condition that complies with the provisions of the CA-MUTCD within three months of the termination of the experiment. The City understands that if a request is made that the CA-MUTCD be changed to include the proposed Bike Box design, the experimental design will be permitted to remain in place until an official rulemaking decision has been made.

Some of the measures that will be observed to evaluate the Bike Boxes include:

- Vehicle compliance with the No Turn on Red requirement
- Proportion of vehicles encroaching into the Bike Box
- Position of bicyclist within the lane and Bike Box
- Bike-Car and Bike-Bike conflicts, position relative to crosswalk, timing, with particular emphasis on right-hook conflicts
- Near-misses and evasive maneuvers (close call) for bike-car, bike-bike conflicts
- Traffic counts of vehicles and bicycles
- Bicycle ridership type mix
- Speed of bicycles and vehicles
- Lateral position of bicyclist and motorist (right turning motorist should move toward the curb; the markings may affect this requirement)
- Scanning over shoulder by bicyclist, including change in scanning behavior after markings are installed

Request to Experiment  
Page 12 of 12

**Conclusion:**

The City of National City desires to provide bicycle facilities that will make bicycling a more practical and convenient transportation option for a wide variety of residents with various skill-levels and reasons for bicycling. Should the results of this experiment conclude that the Bike Box designs have been effective and successful in improving bicycle safety and enhancing bicyclists' experience, the FHWA and CTCDC should consider creating a guideline for these types of traffic control devices in a future revision of the CA-MUTCD.

We look forward to receiving approval for our request of permission to experiment with Bike Boxes. If you have any questions or require additional information, please don't hesitate to contact me.

Sincerely,



Stephen Manganiello  
City Engineer  
City of National City  
Engineering Department  
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619-336-4382

**6. Discussion Items:****14-07 Busway Warning Signs and Photo Enforcement Warning Sign**

James Lissner  
2715 El Oeste Drive  
Hermosa Beach, California 90254  
(310) 376-4626

January 2, 2014

California Traffic Control Devices Committee  
c/o: Mr. Devinder Singh, Executive Secretary, by email

Venue: February 20, 2014 CTCDC Meeting, San Mateo - Request to Agendize

Subject: Busway Warning Signs and Photo Enforcement Warning Signs

Honorable Chairman and Committee Members:

Last night I drove northbound along Canoga Avenue in Canoga Park and saw for my first time the blank-out signs being used to keep northbound drivers from making a right turn and crossing the Orange Line Busway which parallels Canoga Avenue and is, at times, as little as 50 feet away.

The signs I saw are similar to the W10-7 light rail warning sign, except that the rails have been erased from the image and the word BUS has been added. The signs come on only when a bus is nearby, and they flash. (I could not find this sign listed in the MUTCD, so for purposes of this letter I will call it W10-7BUS.)

Because they are very bright, large, unique, and because they flash, the W10-7BUS signs are quite compelling. In fact, the first time one of them came on, it startled me. Before I began my drive up Canoga Avenue I knew that I would encounter lighted warning signs, but I had assumed that the signs would be the R3-1 universal No Right Turn symbol. Nor did I expect the flashing.

I submit that this use of the W10-7BUS sign is fundamentally flawed, as it fails to tell the driver what to do, or not to do. (A further defect is that it depends upon the use of an English word to identify the type of vehicle depicted.) I am concerned that a first time visitor to the area who does not know where the Busway is - or even that there is such a thing nearby - will not know what to do when he first sees the present sign. What if, in his haste to obey, he assumes that he is obligated to clear the roadway for the transit of an emergency vehicle, and swings a right turn to get out of the way?

Field data suggests that the W10-7BUS signs, combined with photo enforcement, have had a beneficial effect, but not enough of an effect. For the seven photo enforced right turns along Canoga Avenue, the number of citations declined at first, then plateaued at a high level.

Oct. 2012: 1910 (first month of photo enforcement)  
Nov. 2012: 1320

Dec. 2012: 949  
Jan. 2013: 1470  
Feb. 2013: 858  
Mar. 2013: 821  
Apr. 2013: 765

I intercede here, and make the following request, because from the record, the only relevant experiment (09-9, lighted limit lines) has ceased to move forward. I submit that the Committee should make a blank-out R3-1 sign the Standard for the prohibition of the right turns described above - and should encourage the operators of the Busway to replace the faces on the blank-out signs they have, forthwith.

Further, I submit that the Committee should make a blank-out R3-1 sign the Standard in all other California locations where right on red is prohibited and is photo enforced.

I am also attaching, for the Committee's renewed attention, a letter I submitted a few months ago about a closely related subject.

Sincerely,

A handwritten signature in black ink, appearing to read "J. H. H. H.", written in a cursive style.

Attached: Letter about SB 1303 (of 2012)

James Lissner  
2715 El Oeste Drive  
Hermosa Beach, California 90254  
(310) 376-4626

October 13, 2013

California Traffic Control Devices Committee  
c/o: Mr. Devinder Singh, Executive Secretary, by email

Venue: October 17, 2013 CTCDC Meeting, Marina del Rey - Public Comments

Subject: Warning Signs for Red Light Cameras

Honorable Chairman and Committee Members:

On January 1, 2013, SB 1303 (Simitian) went into effect.

SB 1303 (codified in CVC 21455.5(a)(1) and CVC 21455.5(j)) removed the option for cities to post their red light camera warning signs at the entrances to town; the bill requires signs only at intersections and only on the one or two approaches (of the four) actually having a camera. Many cities will have fewer warning signs than they did before 2013. In some towns which have just two cameras (examples: Highland, Lynwood, Rancho Cordova, San Rafael, Walnut) there will be just two signs, while under the previous law those towns were likely to have substantially more than two signs if they chose to post the entrances to town, or eight signs if they chose to post the intersections.

When cities posted only the entrances to town - an option that SB 1303 took away - drivers new to town were left uncertain about the specific locations of the cameras.

If you think about it, that uncertainty was actually a *good* thing.

Under the revised law, drivers new to town no longer have to guess where the cameras are, and the scofflaws among them are guaranteed that if there isn't a big warning sign right in front of them, there's no camera at that intersection and they can blast through without risking a ticket.

Continued...



Under SB 1303 we are telling scofflaws exactly where red light cameras are - and are not - so why not require cities to post this sign too?

The camera Industry has been claiming that there is a Halo Effect - that the presence of cameras at just a few intersections has led to better behavior all over town. If the Halo Effect does exist, SB 1303 will put an end to it.

#### CONCLUSION

SB 1303's change to the warning sign requirements leaves Californians less safe. Please do whatever you can to change the rules back to the way they were.

Sincerely,

**14-08 Use of Blue Curbs as loading Zones in the LA City**

Devinder,

I'm sending you this e-mail as the CTCDC secretary. In the city of LA, we are beginning to see blue curbs used as loading zones as well as other installations installed by the School District that don't really meet guidelines in the CVC. I believe these installations are being approved by the State Architect to meet the proposed guidelines for ADA loading areas wherever there are loading zones. These installations have appeared in many locations throughout the City, and we are having to remove them or install red curbs. They don't necessarily meet the guidelines for curb ramps, yet there is no clear intent at this time if anyone can you these loading areas or if parking should be prohibited to treat them as curb ramps, or newer laws are necessary. I think there may need to be some discussion about these installations. I've attached some pictures of what I'm seeing. At some locations, we've had to add red curb to treat these as curb ramps, but this may not address the issue of using these as unloading areas. Look at the stencil and sign in the attached pictures 234-235. Also look at the other loading area with bollards shown in picture 618-20 which is at least a vehicle length long. I think Caltrans and the State Architects Office may need to coordinate with standards for the signage/usage of loading areas around schools to meet ADA conditions. Unfortunately, I only have pictures at two locations, but there are a wide range of various installations we've seen.

--

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**CVC Section 21458 Curb Markings****Curb Markings:**

21458. (a) Whenever local authorities enact local parking regulations and indicate them by the use of paint upon curbs, the following colors only shall be used, and the colors indicate as follows:

(1) Red indicates no stopping, standing, or parking, whether the vehicle is attended or unattended, except that a bus may stop in a red zone marked or signposted as a bus loading zone.

(2) Yellow indicates stopping only for the purpose of loading or unloading passengers or freight for the time as may be specified by local ordinance.

(3) White indicates stopping for either of the following purposes:

(A) Loading or unloading of passengers for the time as may be specified by local ordinance.

(B) Depositing mail in an adjacent mailbox.

(4) Green indicates time limit parking specified by local ordinance.

(5) Blue indicates parking limited exclusively to the vehicles of disabled persons and disabled veterans.

(b) Regulations adopted pursuant to subdivision (a) shall be effective on days and during hours or times as prescribed by local ordinances.

Amended Ch. 1243, Stats. 1992. Effective September 30, 1992.







**7. Information Items:****14-10 Alternatives for the Exit Gore Sign (E5-1 Series) placement**

Caltrans Preliminary Investigation on “*Freeway Exit Gore Signage: A Survey of State Practice and Related Research*,” in preparation for a request to experiment from FHWA to amend the national MUTCD, **Section 2E.37 Exit Gore Signs (E5-1 Series)**.

**Background:**

Caltrans is investigating the nationwide state of the practice of freeway gore signage. Installation and repairs to exit gore signs are high-risk activity for Caltrans maintenance, and some preliminary work in Caltrans District 6 has been done to install larger, 2-post E5-1 FHWA specification signs downstream of the gore point to reduce knockdowns and allow for additional room to perform maintenance in a protected work zone environment. Other options being considered are to move the exit gore sign to the far right-hand shoulder, or in the case of multi-lane exits in high-volume freeway corridors, delete the exit gore sign, completely, as a road-side sign and consider other locations or options. As a courtesy to the CTCDC, Caltrans is sharing its preliminary investigation, and will be in discussion with the FHWA to scope a request to experiment to add options to **Section 2E.37** of the national MUTCD. Future recommendations will be based upon additional study, experimentation (if request to experiment is granted, and future outcomes currently unknown).

In support of Caltrans’ inquiry, the attached Preliminary Investigation aims to identify alternative placement methods or other practices for signing freeway exits through a survey of state departments of transportation and an examination of related research. Next steps will be to develop a request for experimentation with FHWA, and Caltrans will keep the CTCDC aware of future progress.

For more detail see “Item 14-09-Attachment A” posted on the CTCDC website below the agenda file:

<http://www.dot.ca.gov/hq/traffops/engineering/newtech/agenda.htm>

**9. Next Meeting:** Suggested meeting dates are May 15 or May 22, 2014.

**10. Adjourn:**