CALIFORNIA TRAFFIC CONTROL DEVICES COMMITTEE (CTCDC) AGENDA
September, 2016 Meeting (9:00 am to end)
San Diego Caltrans District Office
DOT Gallegos (Conference room)
4050 Taylor Street, San Diego, CA 92110

The Meeting is open and public/local agencies are invited to attend. For further information regarding this meeting, please contact Atifa Ferouz at (916) 654-5032, or email atifa.ferouz@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/engineering/ctcdc/index.htm.

Organization Items

1. **Introduction**
2. **Membership**
3. **Approval of Minutes of the June 30, 2016 Meeting**
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 the Committee, for the record please state your name, address, and business or organization you are representing.
5. **Items under Experimentation**

Agenda Items

6. **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, the Department of Transportation is required to consult with local agencies and hold public hearings.

Consent Items (minor discussion with vote expected)

Agenda Item	Description	Submitted by:	Lead	Pages
16-20	Proposal to Clarify 2009 Updates to Chapter 2M	Caltrans	Tong	7-15

Information Items (New items that may be voted on or brought back as an Action Item in a future meeting)

Agenda Item	Description	Submitted by:	Lead	Page
16-21	Modify Existing sign and propose new sign and word marking for Senior Zone	Caltrans for California Walk	Bahadori	16-24
16-22	Proposal to discontinue the use of non-reflective Pavement Markers	Caltrans	Tong	25-28
10-3	City of Riverside pilot project findings	City of River Side	Gilbert Hernandez	29-31

Action Items (Continuing discussion from prior meetings with vote expected)

Agenda Item	Description	Submitted by:	Lead	Page
	None			

7. Request for Experimentation

Agenda Item	Description	Submitted by:	Lead	Page
16-23	Request to experiment with green-backed Sharrow	City of Goleta	Teresa Lopes & Peter Brown	32-39
16-24	Request to experiment with a new modified regulatory sign in the City of Laguna Beach	Caltrans	Adrian Dang	40-41
16-25	Request to experiment with through lane bicycle box in the City of South Pasadena	City of South Pasadena	Sam Zneimer	42-46

8. Discussion Items

Agenda Item	Description	Submitted by:	Lead	Page
16-26	Word Sign Message in Work Zone	Caltrans	Tong	47

9. Tabled Items

Agenda Item	Description	Submitted by:	Lead	Page
None				

10. Next Meeting

December 1, 2016
Sacramento

11. Adjourn

5. Items under Experimentation

Some reports are available at: http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/status.htm

10-3 Experiment with Second Train Warning Sign "Additional Train May Approach" with a Symbol Sign (Submitted by City of Riverside) (Greenwood)

Providing input at this meeting

Status: 5/25/16 - The FHWA has not provided formal approval nor have they informed the City if the MUTCD plans on adopting the sign. Once we hear from the FHWA we'd be happy to make a presentation to the CTCDC on the outcome of our pilot project.

Thanks,

Gilbert Hernandez, P.E., T.E.
City of Riverside
City Traffic Engineer
ghernandez@riversideca.gov
951-826-5148

11-13 Experiment with a Sign "RECKLESS DRIVING PROHIBITED" (Winter)
Status: Experiment is on-going and has been extended to collect more data.

Arnel G. Dulay, P.E., T.E.
Head, Traffic Investigations II Section
Traffic and Lighting Division
(626) 300-4748; Dulay, Arnel [ADULAY@dpw.lacounty.gov]

11-19 Experiment with 2nd advance California Welcome Center Destination Sign (Tong)
Status: No Update at this time.

12-9 Request to Experiment with Yellow LED Border on Pedestrian Signal (Tong)
Status: 5/25/16 – Additional locations are being pursued to install this device and collect additional data.

The complete report is posted on the following website:
http://www.dot.ca.gov/hq/traffops/engineering/ctcdc/reports.htm

Rob Stinger, P.E.
Chief - Traffic Engineering & Operations
Caltrans District 2
530-225-3229

12-18 Request to experiment with Red Colored Transit-only Lanes (SF) (Walter)
Status: No new update

12-19 Request to Experiment with Highlighted Shared Lane Markings (LA City) (Bahadori)
Status: No new 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: 7-28-15: Here is some background and current status information on the "In-Roadway Warning Lights" (IRWLs).

8(09)-8(E)-Red In-Roadway Lights at LRT Grade Crossings-Los Angeles, CA (Reference# HOTO-1)

The Los Angeles County Metropolitan Transportation Authority (Metro), in cooperation with the City of Los Angeles and the County of Los Angeles, has received permission from the FHWA to conduct a demonstration of an In-Roadway Warning Light (IRWL) system that would supplement existing traffic signal indications at (10) intersections along the Metro Gold Line Eastside Extension and (2) intersections along the Metro Blue Line. This non-standard traffic control system, which is composed of a series of LED lights embedded in the roadway is designed to increase the awareness of the street running light rail trains among motorists approaching the intersection. The IRWLs are intended to supplement (not substitute) the circular red signal indications being shown to the cross-street traffic and the red left turn arrow signal indications being shown to the traffic in the left-turn lanes on the roadway that is parallel to and on both sides of the LRT tracks. The added lights enhance warning indications for motorists when trains approach the intersections, deterring them from making illegal left turns and increasing compliance with red traffic signal indications. The system uses red in-roadway lights that steadily illuminate when LRT traffic is approaching or occupying the crossing.

Installation of the IRWLs at the (12) grade crossings is now complete and the two-year monitoring period began on May 1, 2015. Progress reports will be submitted to the FHWA every 6 months and will include data collected at the trial and control locations. The approved Evaluation Plan analyzes traffic violations observed by photo enforcement and in-field observation. Collected data will be summarized and compared to data collected prior to the IRWL installation. A final report will be developed once the monitoring period is complete on April 30, 2017.

For more information, please contact Lia Yim, YimB@metro.net

13-01 Request to Experiment with Green & Shared Roadway Bicycle Markings – Proposed by the City of Oakland (Patterson)
Status: No new update

Jason Patton, PhD
Bicycle & Pedestrian Program Manager
Transportation Planning & Funding Division

Items under Experimentation

Department of Engineering & Construction
City of Oakland | Public Works Agency | APWA Accredited Agency
250 Frank H. Ogawa Plaza, Suite 4344 | Oakland, CA 94612
(510) 238-7049 | (510) 238-7415 Fax
jpatton@oaklandnet.com

13-02 Request to Experiment with Bike Boxes and Wide Bike Strip Stripe (Walter)
-Proposed by the City of Davis
Status: (12/1/2014) City of Davis installed experimental bike boxes in September 2014. Experimentation is ongoing.

15-12 Evaluation of Traffic Calming in Treatments in Princeton, CA (Sallaberry)

Status: (5/26/16) 03-45-COL-Princeton Experimental Striping

We have no new data to share. However, we are currently working with Caltrans to see if we can revise the geometry of the optical bars/chevrons to a much longer length, and using wider striping. The hope is the outer locations will have reduced speeds similar to the central area of town (re: previous update letter.) We don't have definitive plans yet, but I'll forward anything we come to agreement on before installation. Let me know if we would need to bring this to the Committee before making changes to the original layout.

Scott M. Lanphier, PE, CFM
Director of Public Works+
1215 Market Street
Colusa, CA 95932
530-458-0466 (p)
530-458-2035 (f)
slanphier@countyofcolusa.org
www.countyofcolusa.org

Items under Experimentation

6. Public Hearing

Consent Items (New items that are voted on with minimal discussion)

Item 16-20 Proposal to Clarify 2009 Updates to Chapter 2M Recreational Series Signs, Prohibited Symbol Series Signs and Educational Plaques

Recommendation: This Consent Item on the agenda: 1) Provides updated grid graphics updated in the 2009 national Manual on Uniform Traffic Control Devices (MUTCD), 2) Identifies eligible Recreational Series (RS- series) signs that may be shown as Prohibited [Recreational Series] Symbols (PS- (CA)) series signs, 3) Clarifies various RS- series signs that have established prohibited symbol signs, included in Chapter 2B, 4) Clarifies two RS- series signs that need prohibited series versions, eligible in California; and, 5) Specifies a Prohibited Recreational [Series] Educational Plaque (PREP- (CA)) series that may be used (optional) to place below PS- (CA) Series signs, as specified, for use in California.

Agency Making Request/Sponsor: Caltrans/ Duper Tong, Voting Member

Background:
In 2009, the Federal Highway Administration (FHWA) published updated Recreational Series symbols, as adopted from the United States Department of the Interior, National Park Service (NPS). The updated symbols, to date, have not been provided by FHWA in the 2012 Supplement to the 2004 Standard Highway Signs Book. Prohibited activities or an item with a recreational or cultural interest area for non-road use are referred to in **Section 2M.07 Use of Prohibitive Circle and Diagonal Slash for Non-Road Applications**. However, specific eligible versions are not specified in the MUTCD, nor the CA MUTCD. Pursuant to this, eligible RS- series signs are identified for use in Prohibited [Recreational Series] Symbols (PS- (CA)) series versions.
Proposal
Policy Language: Add to **Section 2M.07**

(at the end of Paragraph 01): . . . **The symbol shall be scaled proportionally to fit completely within the circle and the diagonal slash shall be oriented from the upper left to the lower right portions of the circle as shown in Figure 2M-1** and Figure 2M-102(CA).

03 If used, Figure 2M-102(CA), Table 2M-1 (with annotations), and Table 2M-1(CA) shall identify eligible Prohibited Symbol (PS- (CA) series) signs for use in California.

Option:
04 If used, Figure 2M-102(CA), Table 2M-1 (with annotations), and Table 2M-1(CA) identify eligible Prohibited Recreation Educational Plaque (PREP- (CA) series) for optional use in California.

The following attachments are provided to add to content in the proposed Revision 2, to be published at the end of Calendar Year 2016:
1) Figure 2M-102(CA). Prohibited Recreational and Cultural Interest Area Symbol Signs and Educational Plaques (1 page).

2) Annotations on the existing **Table 2M-1 Category Chart for Recreational and Cultural Interest Area Symbols**, to be included in the CA MUTCD Revision 2, as the overall listing of RS-Series signs to identify in the table with a small, red prohibitive circle and diagonal slash symbol next to those RS- series signs that are eligible for Prohibited [Recreational Series] Symbols (PS- (CA)) series signs, which are consistent with the United States Department of the Interior, National Park Service's Uniguide Standards Manual, which was the basis of FHWA's adoption for updated RS- series symbol signs (1 page).
3) **Table 2M-1(CA) California Category Chart for Recreational and Cultural Interest Area Symbols**, that provide clarification on existing prohibited word message or symbol signs or plaques in Chapter 2B, Regulatory Signs (1 page).

The following attachments to this agenda item are not to be included in Revision 2 of the CA MUTCD. However, these provide additional details and specifications on the above PS- (CA) and PREP- (CA) series signs and plaques:

4) Explanation of Table 2M-1 Category Chart for Recreational and Cultural Interest Area Symbols, which includes dimensional layouts for general presentation of prohibited symbol series adaptations, with examples provided and notes explaining applicability of these types of signs.
5) Sign Specification for single-line Prohibited Recreation Educational Plaque (PREP- (CA) series) plaques (1 page).
6) Sign Specification for two-line Prohibited Recreation Educational Plaque (PREP- (CA) series) plaques (2 pages).
For your information: Seventy-two pages of gridded graphics are also proposed for inclusion into the California Sign Specification files to eventually be posted on-line. However, due to the extreme size of 72 pages, they are not included in this agenda item, but an electronic file may be sent, upon request, prior to the meeting, or, limited numbers of hard copies of the graphics grids may be made available, upon request, from Atifa Ferouz, at the day of the public hearing. Please call, or e-mail ahead: Atifa Ferouz, phone: (916) 654-5032, e-mail: atifa.ferouz@dot.ca.gov to request an advance electronic .pdf file, or a printed hard copy.

Figure 2M-102(CA). Prohibited Recreational and Cultural Interest Area Symbol Signs and Educational Plaque

General

PS-002(CA)
PREP-002(CA)

PS-017(CA)
PREP-017(CA)

PS-042(CA)
PREP-042(CA)

PS-101(CA)
PREP-101(CA)

PS-103(CA)
PREP-103(CA)

PS-111(CA)
PREP-111(CA)

PS-120(CA)
PREP-120(CA)

PS-122(CA)
PREP-122(CA)

PS-123(CA)
PREP-123(CA)

SG8(CA)

Services

PS-013(CA)
PREP-013(CA)

PS-112(CA)
PREP-112(CA)

Land

R9-14
PREP-064(CA)

R9-3
R5-10c
PREP-068(CA)

PS-082(CA)
PREP-082(CA)

PS-083(CA)
PREP-083(CA)

PS-096(CA)
PREP-096(CA)

PS-098(CA)
PREP-098(CA)

R9-13
PREP-125(CA)

PS-128(CA)
PREP-128(CA)

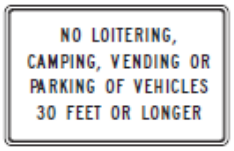
Water

PS-093(CA)
PREP-093(CA)

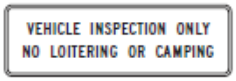
PS-147(CA)
PREP-147(CA)

Related Recreation Activities or Services

R5-6
PREP-R5-6(CA)



S22(CA)



S22-1(CA)

Table 2M-1 Category Chart for Recreational and Cultural Interest Area Symbols

General		
Bear Viewing Area		RS-012
Bus Stop		RS-031
Campfires *	⊘	RS-042
Cans or Bottles *	⊘	RS-101
Cultural Interest Area		RS-142
Dam		RS-009
Deer Viewing Area		RS-011
Falling Rocks *		RS-008
Fire Extinguisher *		RS-090
Lighthouse		RS-007
Lookout Tower		RS-006
Nature Study Area		RS-141
Pets on Leash *	⊘	RS-017
Pick-Up Trucks	[⊘]	RS-140
Point of Interest		RS-080
Radios *	⊘	RS-103
Rattlesnakes *		RS-099
Recycling *		RS-200
Sea Plane		RS-115
Smoking *	⊘	RS-002
Snack Bar *		RS-102
Stay on Trail *	⊘	RS-123
Strollers *	⊘	RS-111
Tunnel		RS-005
Viewing Area		RS-036
Walk on Boardwalk *	⊘	RS-122
Wood Gathering *	⊘	RS-120

Accommodations	
Baby Changing Station (Men's Room)	RS-137
Baby Changing Station (Women's Room)	RS-138
Men's Restroom	RS-021
Parking	RS-034
Recreational Vehicle Site	RS-104
Restrooms	RS-022
Sleeping Shelter *	RS-037
Trailer Site	RS-040
Walk-In Camp	RS-148
Women's Restroom	RS-023

Services		
Drinking Water ^	⊘	RS-013
Electrical Hook-Up		RS-150
Firewood Cutting *	⊘	RS-112
First Aid		RS-024
Grocery Store		RS-020
Kennel		RS-045
Laundromat		RS-085
Litter Receptacle		RS-086
Lockers/Storage *		RS-030
Mechanic		RS-027
Picnic Shelter		RS-039
Picnic Site		RS-044
Post Office		RS-026
Ranger Station		RS-015
Sanitary Station		RS-041
Showers *		RS-035
Stable		RS-073
Theater		RS-109
Trail Shelter *		RS-043
Tramway		RS-071
Trash Dumpster		RS-091

Land		
All-Terrain Trail		RS-095
Amphitheater		RS-070
Archery		RS-116
Baseball *	⊘	RS-096
Climbing *	⊘	RS-082
Corral		RS-149
Driving Tour		RS-113
Exercise/Fitness		RS-097
Golfing *	⊘	RS-128
Hang Gliding		RS-126
Hiking Trail	[⊘]	RS-068
Horse Trail	[⊘]	RS-064
In-Line Skating	[⊘]	RS-125
Interpretive Trail		RS-114
Off-Road Vehicle Trail		RS-067
Rock Collecting *	⊘	RS-083
Skateboarding *	⊘	RS-098
Spelunking/Caves		RS-084
Technical Rock Climbing		RS-081
Tennis		RS-129
Wildlife Viewing		RS-076

Water		
Beach		RS-145
Boat Motor ^	⊘	RS-147
Boat Ramp		RS-054
Canoeing		RS-079
Diving		RS-062
Fish Cleaning *	⊘	RS-093
Fish Hatchery		RS-010
Fish Ladder *		RS-089
Fishing Area		RS-063
Fishing Pier		RS-119
Hand Launch/Small Boat Launch		RS-117
Jet Ski/Personal Watercraft		RS-121
Kayaking		RS-118
Lifejackets *		RS-094
Marina		RS-053
Motorboating		RS-055
Rafting		RS-146
Rowboating		RS-057
Sailing		RS-056
Scuba Diving		RS-060
Seal Viewing		RS-106
Surfing		RS-059
Swimming		RS-061
Tour Boat		RS-087
Wading		RS-088
Waterskiing		RS-058
Whale Viewing		RS-107
Wind Surfing		RS-108

Winter	
Chair Lift/Ski Lift	RS-105
Cross Country Skiing	RS-046
Dog Sledding	RS-143
Downhill Skiing	RS-047
Ice Fishing	RS-092
Ice Skating	RS-050
Ski Jumping	RS-048
Sledding	RS-049
Snow Tubing	RS-144
Snowboarding	RS-127
Snowmobiling	RS-052
Snowshoeing	RS-078
Winter Recreational Area	RS-077

* For non-road use only

⊘ Eligible for Prohibited Symbol sign

^ For use, as needed, in California

[⊘] Prohibited Word Message or Symbol Sign in Chapter 2B .

Table 2M-1(CA) California Category Chart for Recreational and Cultural Interest Area Symbols

General RS- Series Title	Sign Designation	PS- (CA) Series Title	Sign Designation	PREP- (CA) Series Legend	Sign Designation
Campfires * ⊘	RS-042	No Campfires *	PS-042(CA)	NO CAMPFIRES	PREP-042(CA)
Cans or Bottles * ⊘	RS-101	No Bottles or Cans *	PS-101(CA)	NO BOTTLES OR CANS	PREP-101(CA)
Pets on Leash * ⊘	RS-017	No Pets * (no leash)	PS-017(CA)	NO PETS	PREP-017(CA)
Pick-Up Trucks [⊘]	RS-140			NO PICKUPS	SG8(CA)
Radios * ⊘	RS-103	No Radios *	PS-103(CA)	NO RADIOS	PREP-103(CA)
Smoking * ⊘	RS-002	No Smoking *	PS-002(CA)	NO SMOKING	PREP-002(CA)
Stay on Trail * ⊘	RS-123	No Step *	PS-123(CA)	NO STEP	PREP-123(CA)
Strollers * ⊘	RS-111	No Baby Strollers*	PS-111(CA)	NO BABY STROLLERS	PREP-111(CA)
Walk on Boardwalk * ⊘	RS-122	Stay on Boardwalk *	PS-122(CA)	STAY ON BOARDWALK	PREP-122(CA)
Wood Gathering * ⊘	RS-120	No Wood Gathering *	RS-120(CA)	NO WOOD GATHERING	PREP-120(CA)

Services RS- Series Title	Sign Designation	PS- (CA) Series Title	Sign Designation	PREP- (CA) Series Legend	Sign Designation
Drinking Water ^ ⊘	RS-013	Do Not Drink ^	PS-013(CA)	DO NOT DRINK	PREP-013(CA)
Firewood Cutting * ⊘	RS-112	No Wood Chopping *	PS-112(CA)	NO WOOD CHOPPING	PREP-112(CA)

Land RS- Series Title	Sign Designation	PS- (CA) Series Title	Sign Designation	PREP- (CA) Series Legend	Sign Designation
Baseball * ⊘	RS-096	No Ball Playing *	PS-096(CA)	NO BALL PLAYING	PREP-096(CA)
Climbing * ⊘	RS-082	No Climbing *	PS-082(CA)	NO CLIMBING	PREP-082(CA)
Golfing * ⊘	RS-128	No Golfing *	PS-128(CA)	NO GOLFING	PREP-128(CA)
Hiking Trail [⊘]	RS-068	No Pedestrians	R9-3	NO PEDESTRIANS	R5-10c
Horse Trail [⊘]	RS-064	No Equestrians	R9-14	NO EQUESTRIANS	PREP-064(CA)
In-Line Skating [⊘]	RS-125	No Skaters	R9-13	NO SKATERS	PREP-125(CA)
Rock Collecting * ⊘	RS-083	No Rock Collecting *	PS-083(CA)	NO ROCK COLLECTING	PREP-083(CA)
Skateboarding * ⊘	RS-098	No Skateboarding *	PS-098(CA)	NO SKATEBOARDING	PREP-098(CA)

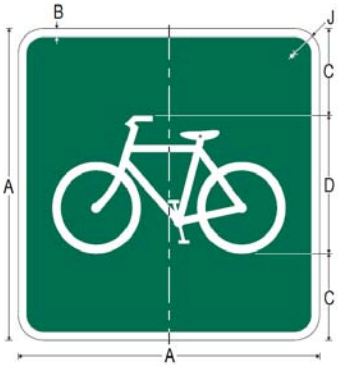
Water RS- Series Title	Sign Designation	PS- (CA) Series Title	Sign Designation	PREP- (CA) Series Legend	Sign Designation
Boat Motor ^ ⊘	RS-147	No Boat Motor ^	PS-147(CA)	NO BOAT MOTOR	PREP-147(CA)
Fish Cleaning * ⊘	RS-093	No Fish Cleaning *	PS-093(CA)	NO FISH CLEANING	PREP-093(CA)

Related Recreation Activities or Services	Sign Designation	Related Recreation Activities or Services	Sign Designation	PREP- (CA) Series Legend	Sign Designation
Bicycles Permitted [⊘]	*D11-1a*	No Bicycles	R5-6	NO BICYCLES	PREP-R5-6(CA)
Camping [⊘]	*D9-3*			NO LOITERING, CAMPING, VENDING OR PARKING OF VEHICLES 30 FEET OR LONGER	S22(CA)
				VEHICLE INSPECTION ONLY, NO LOITERING OR CAMPING	S22-1(CA)

* For non-road use only
^ For use, as needed, in California
⊘ Eligible for Prohibited Symbol Sign
[⊘] Prohibited Word Message or Symbol Sign in Chapter 2B
PS - Prohibited [Recreational Series] Symbol
PREP - Prohibited Recreational [Series] Educational Plaque

Explanation of Table 2M-1 Category Chart for Recreational and Cultural Interest Area Symbols

Layout—Recreational and Cultural Interest Area Symbols and Prohibited Series



D11-1a

R5-6

Dimensions (inches)

A	B	C	D	E	F	G	H	I	J
18	0.50	5.0	8	0.375	0.625	6.375	7.875	1.5	1.500
24	0.50	6.0	12	0.375	0.625	8.500	10.500	2.0	1.500
30	0.75	7.5	15	0.500	0.750	10.625	13.125	2.5	1.875

Notes:

1. The Recreational and Cultural Interest Area Signs (RS-Series) are for guiding road users to a general area and then to specific facilities or activities within the area, as specified in Section 2M.01 in the California MUTCD.
2. Unless specified, RS-Series signs may be for road use or non-road use (park and ride lots, safety roadside rest areas, vista points, parking lots, parks, campgrounds, trails or other recreational facilities).
3. Unless the sign has a prohibited word message or prohibited sign symbol specified in Chapter 2B of the California MUTCD, signs with a red circle-slash next to the sign name to indicate that the symbol sign has a prohibited counterpart, Prohibited [Recreational] Series PS- (CA) Series, and, an optional Prohibited Recreational Education Plaque (PREP- (CA) Series). Optional educational plaques may be installed below PS- (CA) series signs.
4. Symbols specified in graphics grids may be reversed to show a mirror image if it better reflects direction of the activity or area, or adds clarity when presented with prohibited, red circle slash imposed over the symbol. Match the direction of the symbol and arrow.
5. For prohibitive applications, the symbol shall be scaled proportionately to fit completely within the red circle slash. The diagonal slash shall be oriented from the upper left to the lower right portions of the circle.
6. Colors and Retroreflective Sheeting:
   Retroreflective — ASTM Type XI white legend and border on brown or green ASTM Type XI background.

   For prohibited applications — black legend and border on retroreflective ASTM type VIII, IX, or XI white background with retroreflective ASTM Type XI red circle slash superimposed over black symbol, within black border.

PREP-017(CA) [1]

ENGLISH UNITS

A	B	C	D	E	F	G	H
18	6	.375	.625	2	2D[2]	11.5	1.5
24	9	.375	.625	3	3D[2]	17.25	1.5
30	12	.5	.75	4	4D[2]	23	1.875

COLORS: BORDER & LEGEND - BLACK
BACKGROUND - WHITE (RETROREFLECTIVE)

NOTE 1: Same dimensions apply to PREP-103(CA), and PREP-123(CA)
NOTE 2: PREP-103(CA) uses Series C Lettering

PREP-103(CA)

PREP-123(CA)

PREP-002(CA) [1]

ENGLISH UNITS

A	B	C	D	E	F	G	H	J [4]	K
18	9	.375	.625	2	2E[2]	1	2E[2]	16	1.5
24	12	.375	.625	2.25	3E[2]	1.5	3E[2]	21.25	1.5
30	15	.5	.75	2.75	4E[2]	1.5	4E[2]	26.5	1.875

COLORS: BORDER & LEGEND - BLACK
BACKGROUND - WHITE (RETROREFLECTIVE)

NOTE 1: Same dimensions apply to PREP-013(CA), PREP-042(CA), PREP-064(CA), PREP-068(CA), PREP-082(CA), PREP-083(CA),PREP-093(CA), PREP-096(CA), PREP-098(CA), PREP-101(CA), PREP-111(CA), PREP-112(CA), PREP-120(CA), PREP-122(CA), PREP-125(CA), PREP-128(CA), PREP-147(CA), and PREP-R5-6(CA)

NOTE 2: Legend font series is specfied on page 2 of this specification

NOTE 3: Reduce character spacing of line 2 in PREP-068(CA) 40% and for 24" wide option use R5-10c sign specification

NOTE 4: Reduce character spacing of line 2 in PREP-098(CA) to fit maximum length specifed in dimension J

PREP-013(CA)

PREP-042(CA)

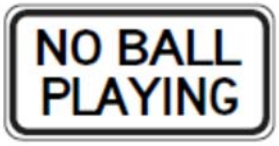
PREP-064(CA)

R5-10c [24"] or
PREP-068(CA) [3]

PREP-082(CA)

PREP-083(CA)

Item 16-20 Clarify 2009 updates to Chapter 2M

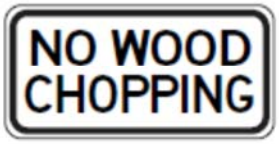


PREP-096(CA)

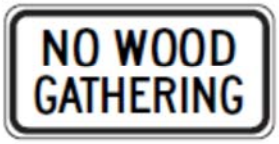
PREP-098(CA) [4]

PREP-101(CA)

PREP-111(CA)



PREP-112(CA)

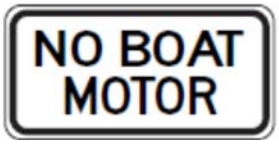


PREP-120(CA)

PREP-122(CA)

PREP-125(CA)

PREP-128(CA)



PREP-147(CA)

PREP-D9-3(CA)

PREP-R5-6(CA)

ENGLISH UNITS

Sign Designation	Line 1 Series	Line 2 Series
PREP-013(CA)	E	E
PREP-042(CA)	E	C
PREP-064(CA)	E	B
PREP-068(CA)	D	C[3]
PREP-082(CA)	E	D
PREP-083(CA)	C	C
PREP-093(CA)	D	D
PREP-096(CA)	D	D
PREP-098(CA)	D	B[4]

ENGLISH UNITS

Sign Designation	Line 1 Series	Line 2 Series
PREP-101(CA)	B	B
PREP-111(CA)	C	C
PREP-112(CA)	D	D
PREP-120(CA)	C	C
PREP-122(CA)	C	C
PREP-125(CA)	E	D
PREP-128(CA)	E	E
PREP-147(CA)	D	D
PREP-R5-6(CA)	E	D

COLORS: BORDER & LEGEND - BLACK
BACKGROUND - WHITE (RETROREFLECTIVE)

NOTE 1: Same dimensions apply to PREP-013(CA), PREP-042(CA), PREP-064(CA), PREP-068(CA), PREP-082(CA), PREP-083(CA),PREP-093(CA), PREP-096(CA), PREP-098(CA), PREP-101(CA), PREP-111(CA), PREP-112(CA), PREP-120(CA), PREP-122(CA), PREP-125(CA), PREP-128(CA), PREP-147(CA), and PREP-R5-6(CA)

NOTE 2: Legend font series is specfied on page 2 of this specification

NOTE 3: Reduce character spacing of line 2 in PREP-068(CA) 40% and for 24" wide option use R5-10c sign specification

NOTE 4: Reduce character spacing of line 2 in PREP-098(CA) to fit maximum length specifed in dimension J

COLORS: BORDER & LEGEND - BLACK
BACKGROUND - WHITE (RETROREFLECTIVE)

Item 16-20 Clarify 2009 updates to Chapter 2M

Information Items (New items that may be voted on or brought back as an Action Item in a future meeting)

Item 16-21 Proposal to Modify SW50 (CA) sign, create a new "SENIOR" plaque, Add "SENIOR XING" to section 3B-20 and Figure 3B-23 (CA)

Recommendation: Make a recommendation to create a new "SENIOR" plaque, replace the SW-50 (CA) sign with a new SW_## (CA) sign, add "SENIOR XING" to list of permissible word markings in section 3B, and add "SENIOR" to figure 3B-23 (CA)

Agency Making Request/Sponsor: California Walks/ Hamid Bahadori Automobile Club S. CA

Background:

The California Vehicle Code 22352(b)(3) on prima facie 25 MPH Senior Safety Zones refers to a "standard "SENIOR" warning sign." The current California Manual on Uniform Traffic Control Devices (CA-MUTCD) designates sign SW-50 ("SENIOR CITIZEN FACILITY") for use in senior safety zones; however, this sign was developed in 1991 and has not been updated or revised to reflect modern safety needs and standards. This request is submitted for the CTCDC to update signage and marking standards for Senior Safety zones to better align with current CA MUTCD standards guiding reduced speeds in school zones and work zones.

Proposal:

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

01a Normally, pavement word and symbol markings supplement standard signing.

Option:

02 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

Item 16-21 Modify Existing Sign and Propose New Sign and Word Marking for SENIOR Zone

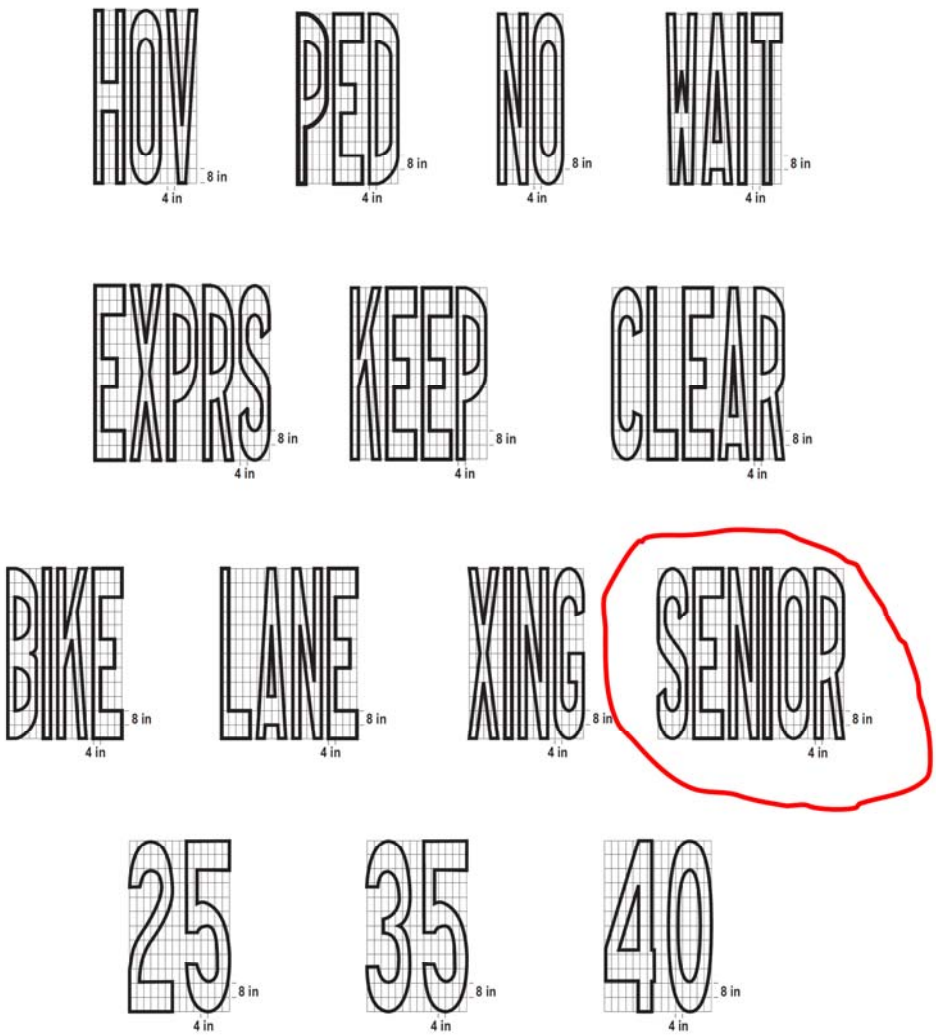
5. Lane-use and wrong-way arrows
6. Diamond symbol for HOV lanes
7. Other preferential lane word markings

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
13. SENIOR 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

Add Word Pavement Marking to figure 3B-23 (CA)

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.

DRAFT

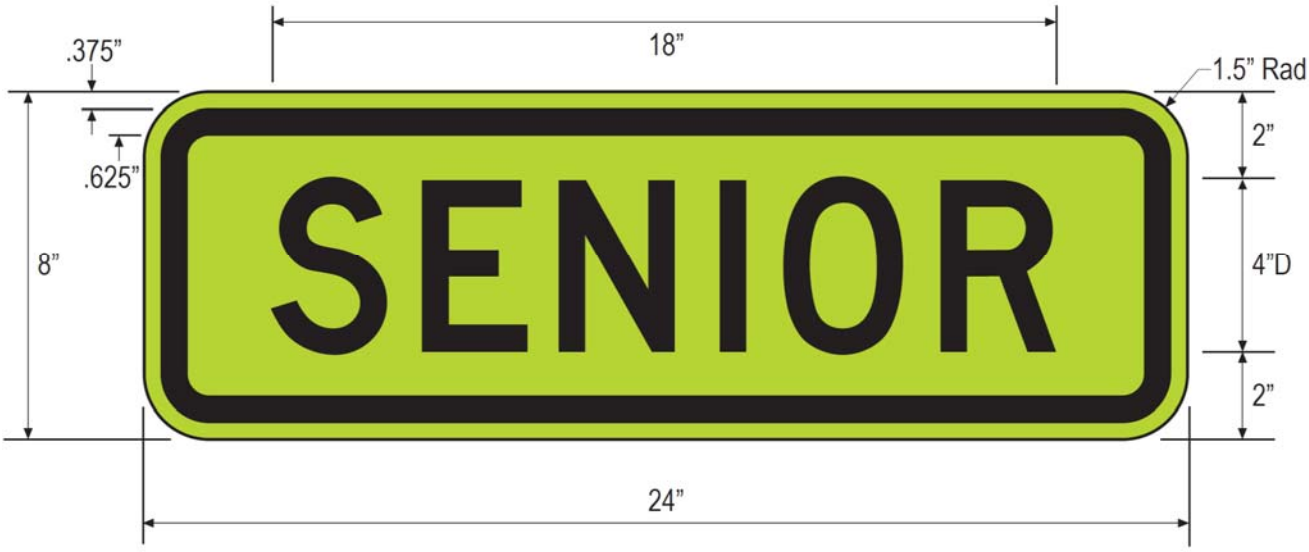
Figure 2C-11 (CA). Non-Vehicular Warning Signs

SW50-1P (CA)

COLORS: BORDER & LEGEND - BLACK
BACKGROUND - YELLOW (RETROREFLECTIVE)
FLOURESCENT YELLOW GREEN (RETROREFLECTIVE)

DATE PENDING

DRAFT



SW50-2P (CA)

COLORS: BORDER & LEGEND - BLACK
BACKGROUND - YELLOW (RETROREFLECTIVE)
FLOURESCENT YELLOW GREEN (RETROREFLECTIVE)

DATE PENDING

DRAFT

Section 2C.50 Non-Vehicular Warning Signs (W11-2, W11-3, W11-4, W11-6, W11-7, W11-9, and W11-16 through W11-22)

Option:

01 Non-Vehicular Warning (W11-2, W11-3, W11-4, W11-6, W11-7, W11-9, and W11-16 through W11-22) signs (see Figure 2C-11) may be used to alert road users in advance of locations where unexpected entries into the roadway might occur or where shared use of the roadway by pedestrians, animals, or equestrians might occur.

Support:

02 These conflicts might be relatively confined, or might occur randomly over a segment of roadway.

Guidance:

03 *If used in advance of a pedestrian, snowmobile, or equestrian crossing, the W11-2, W11-6, W11-7, and W11-9 signs should be supplemented with plaques (see Section 2C.55) with the legend AHEAD or XX FEET to inform road users that they are approaching a point where crossing activity might occur.*

Standard:

04 **If a post-mounted W11-2, W11-6, W11-7, or W11-9 sign is placed at the location of the crossing point where pedestrians, snowmobilers, or equestrians might be crossing the roadway, a diagonal downward pointing arrow (W16-7P) plaque (see Figure 2C-12) shall be mounted below the sign. If the W11-2, W11-6, W11-7, or W11-9 sign is mounted overhead, the W16-7P plaque shall not be used.**

Option:

05 A Pedestrian Crossing (W11-2) sign may be placed overhead or may be post-mounted with a diagonal downward pointing arrow (W16-7P) plaque at the crosswalk location where Yield Here To ~~(Stop Here For)~~ Pedestrians signs (see Section 2B.11) have been installed in advance of the crosswalk.

Standard:

06 **If a W11-2 sign has been post-mounted at the crosswalk location where a Yield Here To ~~(Stop Here For)~~ Pedestrians sign is used on the approach, the Yield Here To ~~(Stop Here For)~~ Pedestrians sign shall not be placed on the same post as or block the road user's view of the W11-2 sign.**

Option:

07 An advance Pedestrian Crossing (W11-2) sign with an AHEAD or a distance supplemental plaque may be used in conjunction with a Yield Here To ~~(Stop Here For)~~ Pedestrians sign on the approach to the same crosswalk.

08 The crossing location identified by a W11-2, W11-6, W11-7, or W11-9 sign may be defined with crosswalk markings (see Section 3B.18).

09 The W11-2 and W11-9 signs and their related supplemental plaques may have a fluorescent yellow-green background with a black legend and border.

Support:

09a Refer to CVC 21364 and 21365 for the Cattle (W11-4) sign.

09b Refer to CVC 21805 for the Equestrian (W11-7) sign.

Guidance:

09c *The Deer Crossing (W11-3) sign should be used only after confirmation from a Department of Fish and Game warden having jurisdiction in the area that a substantial problem exists.*

Option:

09d The Migrating Bears (SW59(CA)) sign (see Figure 2C-11(CA)) may be used in advance of an area known to be inhabited by bear and there have been reported instances where bears are crossing the roadway.

Guidance:

09e *If used, the NEXT XX MILES supplemental plaque should be placed at approximately 5 mile intervals, or when intersecting major traffic generators.*

Option:

09f The DEAF CHILDREN NEAR (SW38(CA)) sign (see Figure 2C-11(CA)) may be used on city streets or county roads to indicate that a deaf child is near. Refer to CVC 21351.7.

Guidance:

09g *The SENIOR ZONE (SW50-1P (CA)) plaque ~~CITIZEN FACILITY (SW50(CA)) sign~~ and the SENIOR (SW50-2P(CA)) plaque (see Figure 2C-11(CA)) should not be used alone.*

Option:

09h The ~~SW50(CA) sign~~ SW50-1P (CA) plaque may be used in combination, above the Speed Limit (R2-1 (25,20 or 15)) sign on any street or road, other than a State highway, with a speed limit greater than 25 mph that is adjacent to a senior citizen facility. The SW50-2P(CA) plaque may be placed below the pedestrian crossing (W11-2) warning sign at locations where senior citizens cross the road. Refer to CVC 22352 and 22358.4.

Guidance:

10 *When a fluorescent yellow-green background is used, a systematic approach featuring one background color within a zone or area should be used. The mixing of standard yellow and fluorescent yellow-green backgrounds within a selected site area should be avoided.*

Option:

11 A Warning Beacon (see Section 4L.03) may be used with any Non-Vehicular Warning sign to indicate specific periods when the condition or activity is present or is likely to be present, or to provide enhanced sign conspicuity.

12 ~~A supplemental WHEN FLASHING (W16-13P) plaque (see Figure 2C-12) may be used with any Non-Vehicular Warning sign that is supplemented with a Warning Beacon to indicate specific periods when the condition or activity is present or is likely to be present.~~

Standard:

13 WHEN FLASHING (W16-13P) plaque shall not be used to supplement any Non-Vehicular Warning sign.

Support:

14 Studies indicate that the W16-13P plaque is generally not effective as a warning device for motorists approaching signalized intersections. Not using the W16-13P plaque also addresses the situation when a warning beacon is inoperative for any reason.

Table 2C-2(CA). California Warning Sign and Plaque Sizes (Sheet 2 of 2)

Sign or Plaque	Sign Designation	Section	Conventional Road		Expressway	Freeway	Minimum	Oversized
			Single Lane	Multi-Lane				
WATCH FOR SNOW SLIPPERY	SW46(CA)	2C.32	36X36	36X36	48X48	48X48	---	---
OFF HIGHWAY VEHICLES	SW47(CA)	2C.49	36X36	36X36	36X36	---	30X30	---
TRACTOR-SEMIS OVER ___ FEET KINGPIN TO REAR AXLE NOT ADVISED	SW48(CA)	2C.07	48X36	48X36	72X54	72X54	---	---
NEXT RIGHT	SW48-1(CA)	2C.07	48X12	48X12	72X18	72X18	---	---
PLAYGROUND	SW49(CA)	2C.51	36X12	36X12	36X12	---	---	---
SENIOR ZONE ~~CITIZEN FACILITY~~	SW50-1P(CA)	2C.50	36X24*	36X24*	36X24*	---	---	---
SENIOR	SW50-2P(CA)	2C.50	*	*	*			
EMERGENCY VEHICLES	SW52(CA)	2C.49	42X42	42X42	48X48	48X48	30X30	---
WATCH FOR SNOW REMOVAL EQUIPMENT	SW58(CA)	2C.49	36X36	36X36	54X48	54X48	---	---
Migrating Bears	SW59(CA)	2C.50	36X36	36X36	48X48	48X48	30X30	---
WATCH FOR STOPPED VEHICLES	SW60(CA)	2C.36	36X36	36X36	48X48	48X48	---	---

* Sizes to be determined upon sign spec. finalization

Item 16-22 Proposal to discontinue the use of Non-reflective Raised Pavement Markers

Recommendation: Provide a recommendation on discontinuing the use of non-reflective raised pavement markers.

Agency Making Request/Sponsor: Caltrans/ Duper Tong, Voting Member

Background

A raised pavement marker (RPM) is a safety device used on roads. These devices are usually made with plastic, ceramic, or occasionally metal, and come in a variety of shapes and colors. The two types of RPMs used in California are the ceramic non-reflecitve and the retroreflective RPMs. The non-reflective ceramic RPMs are used, in conjunction with retroreflective markers, as an alternative to painted markings for lane lines. The retroreflecitve raised pavement markers include a lens or sheeting that enhances their visibility by reflecting automotive headlights. They are used in conjunction with retroreflecitve traffic stripes for longitudinal striping. RPMs can be used to show roadway alignment, or to replace or supplement other pavement markings. More frequently, however, retroreflective RPMs are used in conjunction with retroreflective striping for longitudinal delineation. Retroreflective RPMs provide increased visibility at night, especially during rain to provide wet weather visibility. Some states have opted to discontinue the use of non-reflective RPMs while other states are still using them.

Figure 1: Non-Reflective RPM

EXISTING STANDARDS:

1. **CA MUTCD:** CA MUTCD includes both language and details for non-reflective and retroreflective pavement markers.

2. **Standard Plans and Standard Specifications:**
   Caltrans standard plans and standard specifications includes details and language for both retroreflective and non-reflective raised pavement markers.

   - **Retroreflective Pavement Markers** Caltrans' standard plans show retroreflective RPMs in conjunction with other longitudinal traffic striping material.

- **Non-reflective markers** are used, in conjunction with retroreflective markers, as an alternative to painted markings for lane lines.

3. **California Vehicle Code (CVC) Sections 21460 (e), 21460.5 (e) & 21655.8 (c):**
   CVC includes language that states "Raised pavement markers may be used to simulate painted lines described in this section if the markers are placed in accordance with standards established by the Department of Transportation".

Proposal

To discontinue the use of RPMs both in Caltrans' standards and the CA MUTCD, we will first need a policy change in CVC. Will need to go through the CTCDC process to request recommendation from the members in order the revise the existing CA MUTCD figures and language showing raised pavement markers.

We recommend to limit this proposal to Caltrans' standards only and not the CA MUTCD. If we do not eliminate RPM from CA MUTCD, then there is no need to make any changes to the CVC.

The following is the recommended proposal in moving forward with this issue:

Keep the language and figures in the CA MUTCD regarding RPMs as is and only propose changes to standard plans details and standard specifications language for non-reflective pavement markers.

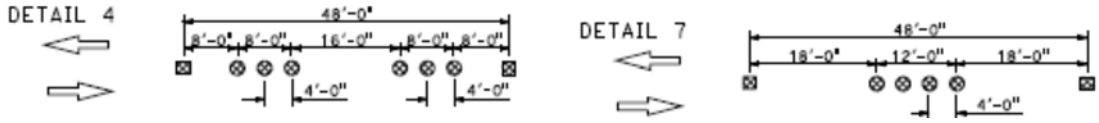
We recommend keeping the existing standards with retroreflective pavement markers and eliminate language and details for non-reflective pavement markers from standard specifications and standard plans respectively.

Following are some of the benefits of discontinuing non-reflective RPMs:

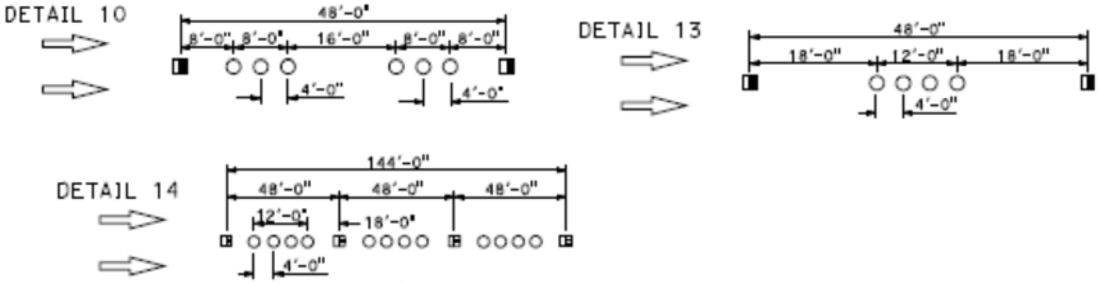
- Less Maintenance
- Less worker exposure to traffic (during initial installation and restriping)
- Less traffic impact (during re-striping)
- Benefit for autonomous vehicles
- Less inventory to track
- Better for bikes and motorcycles
- More uniformity with other states

The following pavement markers and traffic lines details will be removed from standard plans sheets A20A, A20B, A20C, and A20D:

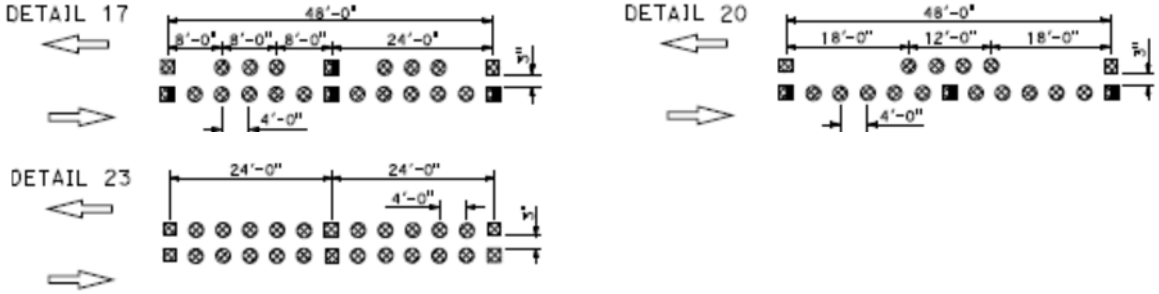
Centerlines:



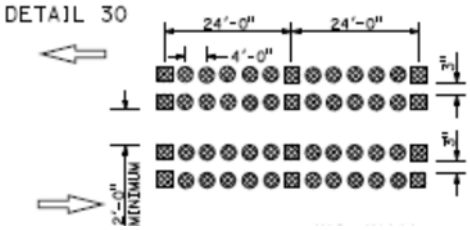
Lanelines:



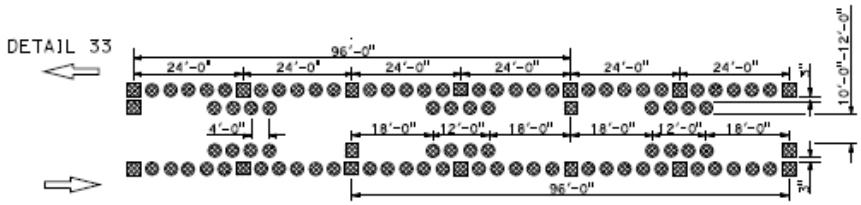
No Passing Zones:



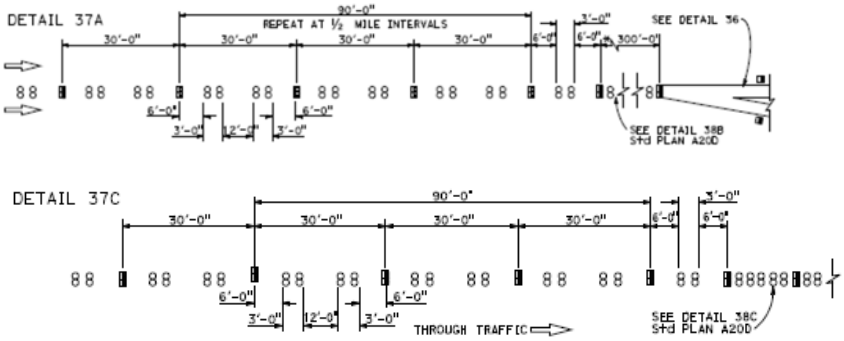
Median Islands:



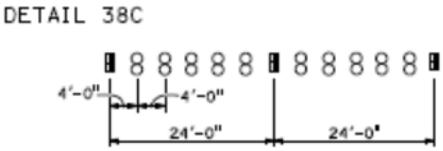
Two-Way Left Turn Lanes:



Lane Drop at Exit Ramps and Intersections:



Channelizing Line



Item 10-3 City of Riverside Pilot Project Findings for "Additional Trains May Approach"

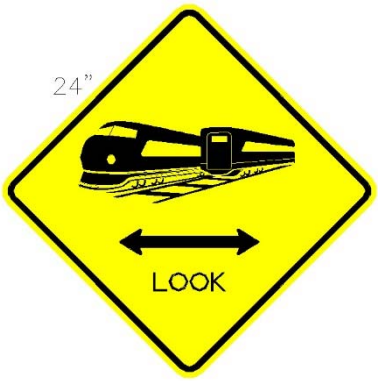
Recommendation: Provide a Pilot Project summary on the "Additional Trains May Approach" signs at 22 at-grade railroad crossings having multiple tracks.

Agency/Sponsor: City of Riverside / John Fisher P.E., PTOE, Assistant General Manager, City of Los Angeles DOT

Background: As of 2014, California leads the nation in railroad casualties with 141 and approximately 700 train-related injuries; the state of Texas was a distant second with 65 train-related deaths. During 2014, train-related pedestrian deaths rose by 17% across the nation. The majority of these deaths were considered preventable and through public outreach, education, and/or improved warning devices pedestrian and bicyclist safety can increase to reduce train vs pedestrian/bicyclist incidents.

The City of Riverside has 22 multiple-track at-grade railroad crossings, which serve approximately 100 Burlington Northern Santa Fe (BNSF), Union Pacific Railroad (UPRR), and Metrolink trains in total per day. The high volume of trains passing through the City increases the chance of both tracks being occupied during a crossing event. Multiple pedestrian casualties and injuries have involved pedestrians who were unaware of a second train arriving at the crossing while the railroad arms are down. In 2010 the City was granted approval by the FHWA and CTCDC to proceed with a pilot project to deploy the following two signs at all 22 at-grade crossings having multiple tracks:

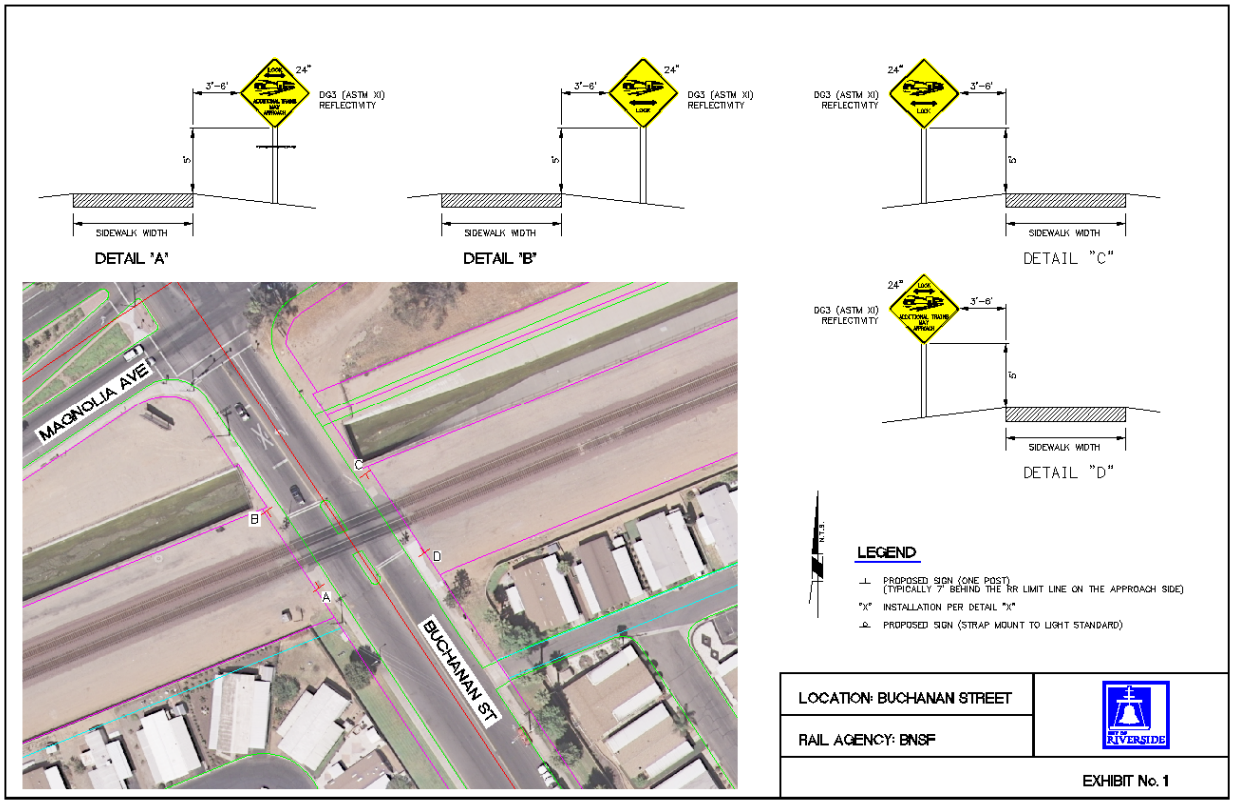
Sign No. 1

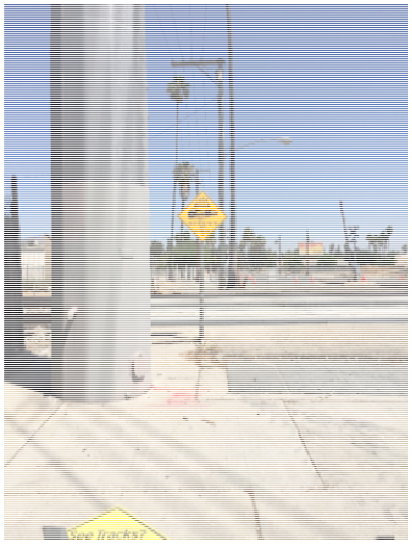


Sign No. 2

The City submitted four semi-annual reports documenting survey results and effectiveness of the signs. In general the public responded that Sign No. 1 conveyed the stronger warning message and 96% responded that Sign No. 1 improved safety to "some or great extent". During the study period of July 21, 2010 through May 31, 2013 the City experienced 7 train-related deaths although three were attributed to suicide. Of the four non-suicide incidents one was a bicyclist, another was a mother whose stroller wheels got stuck on the tracks, and two were pedestrians who failed to notice a second train approaching. In February 2016 the City was informed that FHWA is not recommending adoption of a "passive" sign but instead would like to conduct additional research to consider adoption of an active warning sign. The City believes that static/passive signs are beneficial, feasible, and are an effective means to warn the public of the risks that multiple-track crossings pose to pedestrians and bicyclists. The City support their use until more effective and feasible measures are adopted at the State or National level.

The following exhibit and pictures show the standard deployment of the Additional Trains May Approach signs as well as sidewalk sticker promoting increased rail safety:





Some of the Key findings of the City's Pilot Project include:

- 90% of survey respondents preferred Sign No. 1
- Of the survey respondents, approximately 10% stated they have entered active railroad crossings while the bells and flashers were on
- 96% believe the Sign No. 1 would improve pedestrian and bicyclists safety through the rail crossings
- When the crossing is inactive pedestrians believe that the signs request pedestrians to look both ways before crossing.

A "Second Train Coming" warning sign demonstration project was conducted by the Los Angeles County Metropolitan Transportation Authority (TRB 2001) and concluded that dynamic signs were effective in reducing risky pedestrian behavior although implementation can be cost prohibitive as some of these systems are in excess of $100,000. In addition, in 2002 the Long Island Railroad implemented a second-train changeable message sign system that was activated when a second-train event was present. Additional studies in the United States, Australia, Canada, and Japan determined that warning devices, including static signs such as Sign No. 1 and Sign No. 2, need to be clear in order to reduce risk. The City's surveys concluded that the public comprehends and support Sign No. 1 over Sign No. 2 and that Sign No. 1 is effective in promoting pedestrian/bicyclist safety and awareness at multiple track at-grade crossings. Table 1 shows a summary of the public's support for the Sign No. 1 that incorporates "Additional Trains May Approach" wording.

Table 1: Additional Trains May Approach Survey Results

Report Period	Prefer Sign No. 1	Prefer Sign No. 2	Sign Would Improve Safety to Some or Great Extent
7/21/10 to 1/21/11	78%	22%	96%
1/21/11 to 12/31/11	80%	16%	87%
1/1/12 to 7/31/12	78%	19%	90%
8/1/12 to 5/31/13	*N/A	*N/A	96%

*The last report did not compare Sign No. 1 to Sign No. 2 as the previous surveys determined that the public prefers Sign No. 1 over Sign No. 2

Based on the survey results during the experimentation phase and the public's support of the "Additional Trains May Approach" signs the City of Riverside intends to maintain the signs to continue warning pedestrians and bicyclists of the risk of an additional train arriving at multiple track locations while a crossing is active. Furthermore, the City encourages the FHWA and/or CTCDC to adopt Sign No. 1 or a similar sign into the FHWA MUTCD and/or the FHWA MUTCD as amended for use in California to standardize pedestrian warning devices at at-grade crossings with multiple tracks.

7. Requests for Experimentation

Item 16-23 Request to experiment with green-backed Sharrow

Recommendation: Grant approval to experiment with green-backed Sharrow in the City of Goleta and City of Santa Barbara

Requesting Agencies/Sponsor: City of Goleta, CA and City of Santa Barbara, CA / Bryan Jones, Voting Member

Background:

The City of Goleta and City of Santa Barbara are requesting permission to experiment with using Green Background Shared Lane Markings on 20 roadway segments. There are 19 segments posted 25mph, and there is 1 segment posted 30mph, with 19 of the 20 segments including on-street parallel parking:
City of Goleta Roadway Segments Include:
Hollister Avenue: connecting bike lanes east of Fairview Avenue to bike lanes west of Kinman Avenue (2016)
City of Santa Barbara Roadway Segments include:

1. 4-lane streets with parking and speed limit of 30mph: Cabrillo Blvd east bound, Castillo to Milpas (2016)
2. 2-lane street without parking and 25mph limit: Castillo Street, Micheltorena to Arrellaga
3. 2-lane streets with parking and speed limits of 25mph:
    a. Canon Perdido: Castillo to Santa Barbara and Philinda to Alisos Street (2016)
    b. Ortega: Castillo to Chapala (2016)
    c. Cota: Castillo to Chapala (2016)
    d. Micheltorena: Chino to Dutton
    e. Laguna: Canon Perdido to Haley
    f. Anapamua: Chino to Milpas
    g. Alisos: Indio Muerto to Canon Perdido
    h. Chino: Mission to Carrillo
    i. Punta Gorda: Voluntario to Salinas
    j. Yanonali: State to Cesar Chavez
    k. Pueblo: State to Oak Park
    l. Oak Park: Pueblo to Junipero
    m. Junipero: Oak Park to Calle Real
    n. Sola: Castillo to Alta Vista
    o. Alta Vista: Sola to Anapamu

p. Cacique: Quarantina to Salinas

q. Camino de La Luz, Edgewater, Mesa Lane (2016)

r. Montecito: Castillo to Santa Barbara (2016)

The City of Goleta proposes to collect data and evaluate the one roadway segment within the City of Goleta, namely Hollister Avenue (east of Fairview Avenue to west of Kinman Avenue). The City of Santa Barbara proposes to collect data and evaluate the 6 City of Santa Barbara roadway segment that are listed with an installation year of 2016 in the above list. General descriptions of the categorized segments that are proposed for evaluation are provided as follows:

<u>Hollister Avenue: connecting bike lanes east of Fairview Avenue to bike lanes west of Kinman Avenue (2016)</u>

There is an existing bike route along the Hollister Avenue corridor that is primarily designated with bike lanes, except within this short segment from east of Fairview Avenue to west of Kinman Avenue (See **Figure 1**).

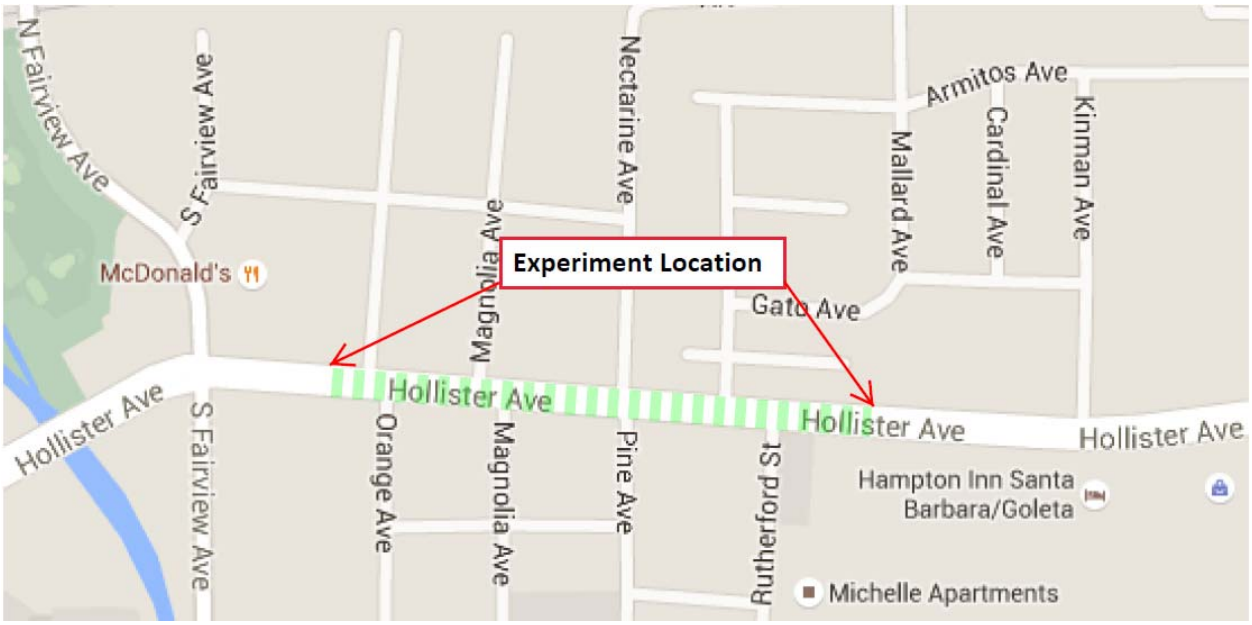


Figure 1: Proposed Experiment Location within the City of Goleta

This segment of Hollister Avenue is posted 25mph with 2 through lanes in each direction, a center 2-way left turn lane, and parking on both sides of the roadway. There are existing bike lanes on Hollister Avenue before and after the segment; and the segment is not wide enough to accommodate bike lanes (See **Figure 2a**).

Figure 2a: Existing Hollister Avenue Roadway Segment Configuration in Goleta

Cabrillo Blvd east bound, Castillo to Milpas (2016)

There is an existing bike route along the Cabrillo Blvd corridor that is primarily designated with bike lanes, except within portions of the segment from Castillo to Milpas. This segment of Cabrillo Blvd is posted 30mph with 2 through lanes in each direction, some center left turn lanes, and parking along portions of the roadway. There are existing bike lanes on Cabrillo Blvd before and after the segment; and the segment has a bike lane in one direction (See **Figure 2b**).

Figure 2b: Existing Cabrillo Blvd Roadway Segment Configuration in Santa Barbara

2-lane streets with parking and speed limits of 25mph

The 2-lane streets with parking and speed limits of 25mph within the City of Santa Barbara are typical residential and business areas with relatively narrow roadways, one travel lane in each direction, and parking on both sides of the roadway (See **Figure 2c**).

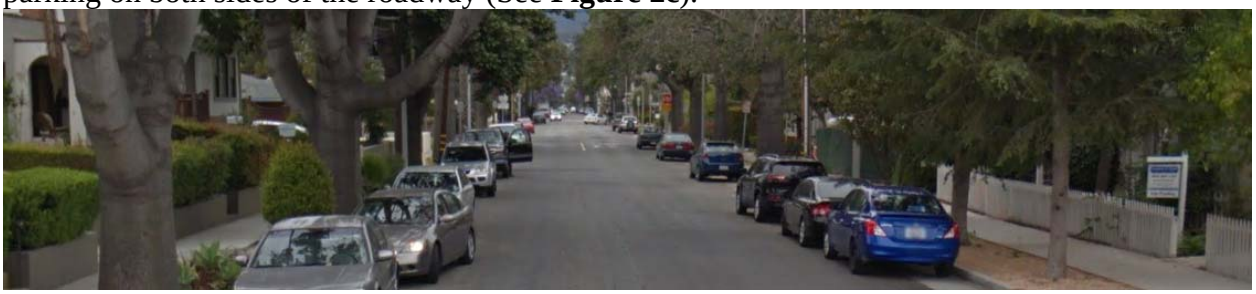


Figure 2c: Existing Typical 2-Lane Street Roadway Segment Configuration in Santa Barbara

The intended purpose of the Green Background Shared Lane Markings are to provide added emphasis of bicyclists using a shared lane route, to further encourage bicyclists to ride with traffic away from the door zone, and to add additional visibility to standard Shared Lane Markings. The City of Goleta's and City of Santa Barbara's proposal is aimed at maximizing bicyclists' comfort and safety along this corridor. The City of Goleta and City of Santa Barbara are seeking FHWA approval as authorized in the Manual of Uniform Traffic Control Devices, and this submittal format is in compliance with Section 1A.10 of the MUTCD:

Proposal
To provide for safe and efficient operation of bicycles along designated bicycle routes with on-street parallel parking, the City of Goleta and City of Santa Barbara are proposing to install Green Background Shared Lane Markings.

A. A statement indicating the nature of the problem

It has been brought to the City of Goleta's and City of Santa Barbara's attention that the Shared Lane Marking is sometimes difficult to see on faded asphalt, and could be improved to provide added emphasis of bicyclists using a shared lane route, to further encourage bicyclists to ride with traffic away from the door zone, and to add additional visibility to standard Shared Lane Markings. The City of Goleta and City of Santa Barbara propose to experiment with the use of a Green Background applied to Shared Lane Markings to determine if the treatment can be an improvement to provide added emphasis of bicyclists using a shared lane route, to further encourage bicyclists to ride with traffic away from the door zone, and to add additional visibility to standard Shared Lane Markings (See **Figure 3**).

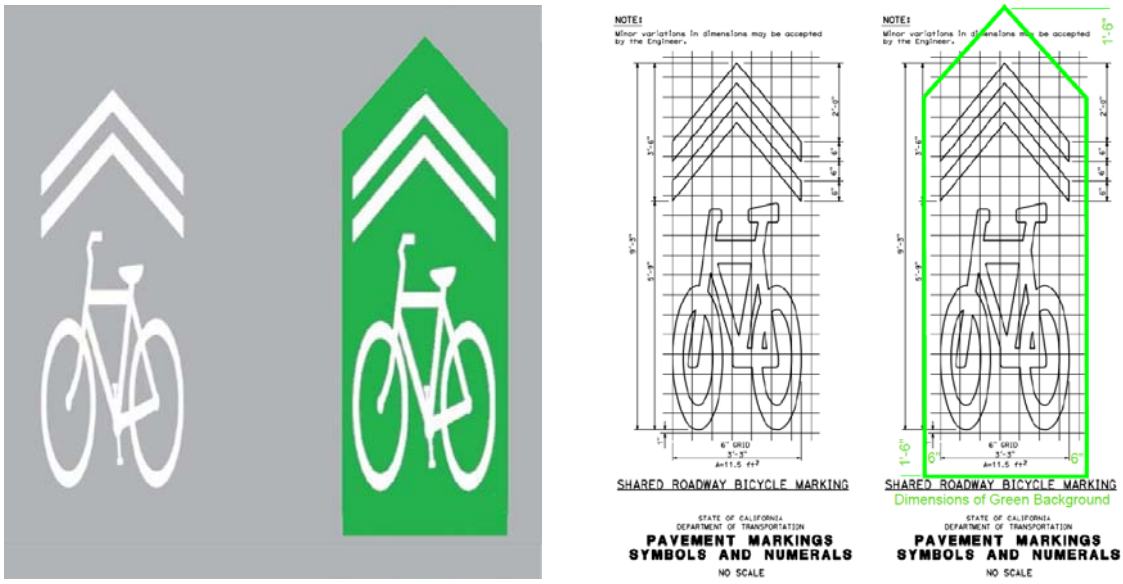


Figure 3: Conceptual Green Background applied to Shared Lane Markings

B. A description of the proposed change to the traffic control device or application of the traffic control device, how it was developed, the manner in which it deviates from the standard, and how it is expected to be an improvement over existing standards.

The City of Goleta and City of Santa Barbara propose to experiment with Green Background Shared Lane Markings to determine if the treatment can mitigate the effects of faded asphalt that reduce the desired intent of standard Shared Lane Markings. The Green Background Shared Lane Markings would take the existing standard Shared Lane Marking and provide a green backing within the color range as was approved by FHWA for green bicycle lane experimentation. Currently, the standard width of the markings ranges from three to five feet, and the markings are placed closer to the center portion of the lane in order to mitigate the likelihood of bicyclists riding in the door zone of parked vehicles. They also help to improve bicyclists' safety in conflict

areas where space is shared between vehicles and bicyclists. The City of Goleta and City of Santa Barbara propose to install each experimental lane marking with Green Background dimensions of approximately 4'-3" wide and 12'-3" long with a standard white Shared Lane Marking. The Green Background Shared Lane Markings will be placed a minimum of 12 feet from the face of the curb and spaced at intervals not less than 50 feet but not greater than 250 feet, with one Green Background Shared Lane Markings placed at the departure from each intersection.

C. Any illustration that would be helpful to understand the traffic control device or use of the traffic control device.

The conceptual layout of the Green Background Shared Lane Marking is illustrated in **Figure 4**.

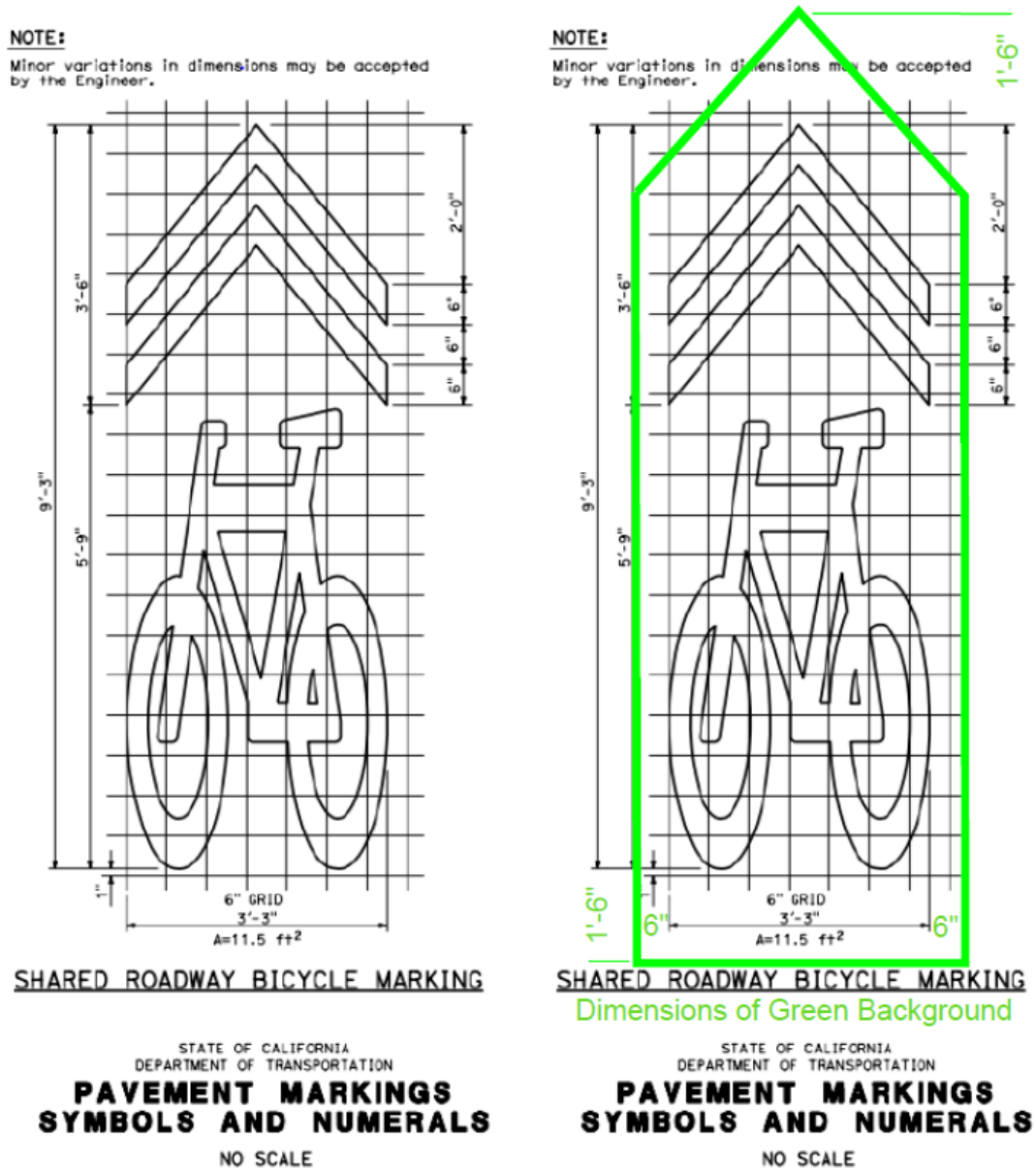


Figure 4: Conceptual Dimensions of Green Background Shared Lane Marking

D. Any supporting data explaining how the traffic control device was developed, if it has been tried, in what ways it was found to be adequate or inadequate, and how this choice of device or application was derived.

The Green Background Shared Lane Marking has been in use informally in the United States for several years by several jurisdictions, including San Francisco, CA; Denver, CO; Billings, MT; and others.

Figure 5: Sample Existing Green Background Shared Lane Markings

Formalized design guidance is being developed by the National Committee on Uniform Traffic Control Devices (NCUTCD) as Added Technical Guidance within MUTCD Section 9C.07 Shared Lane Markings, and has been discussed by the and as discussed by the California Traffic Control Devices Committee (CTCDC). The proposed Green Background Shared Lane Marking conforms to the Added Technical Guidance being developed by the NCUTCD, and will consider input from FHWA and CTCDC.

It is our opinion that the proposed configuration represents improved dimensions for Green Background Shared Lane Markings in general, by providing directionality to the green portion of the marking, and by providing a longer longitudinal green boarder that will account for the oblique viewing angle by motorists and bicyclists.

E. A legally binding statement certifying that the concept of the traffic control device is not protected by a patent or copyright.

To the best of the City of Goleta's and City of Santa Barbara's knowledge, the concept of using bicycle boxes to supplement standard traffic control devices are not protected by patents or copyrights.

F. The time period and location(s) of the experiment.

The City of Goleta and City of Santa Barbara are anticipating the installation of Green Background Shared Lane Markings in the fall of 2016.

The City of Goleta and City of Santa Barbara are requesting permission to experiment with using Green Background Shared Lane Markings on 25mph roadway segments with on-street parallel parking, initially including the segment of Hollister Avenue connecting existing bike lanes east of Fairview Avenue to existing bike lanes west of Kinman Avenue.

G. A detailed research or evaluation plan that must provide for close monitoring of the experimentation, especially in the early stages of its field implementation. The evaluation plan should include before and after studies as well as quantitative data describing the performance of the experimental device.

The City of Goleta and City of Santa Barbara propose to experiment with the use of a Green Background applied to Shared Lane Markings to determine if the treatment can be an improvement to provide added emphasis of bicyclists using a shared lane route, to further encourage bicyclists to ride with traffic away from the door zone, and to add additional visibility to standard Shared Lane Markings. The City of Goleta and City of Santa Barbara propose to conduct before and after evaluations on the 7 of 20 locations identified below with an installation date of 2016:

City of Goleta Roadway Segments Include:

Hollister Avenue: connecting bike lanes east of Fairview Avenue to bike lanes west of Kinman Avenue (2016)

City of Santa Barbara Roadway Segments include:

4. 4-lane streets with parking and speed limit of 30mph: Cabrillo Blvd east bound, Castillo to Milpas (2016)
5. 2-lane street without parking and 25mph limit: Castillo Street, Micheltorena to Arrellaga
6. 2-lane streets with parking and speed limits of 25mph:
    a. Canon Perdido: Castillo to Santa Barbara and Philinda to Alisos Street (2016)
    b. Ortega: Castillo to Chapala (2016)
    c. Cota: Castillo to Chapala (2016)
    d. Micheltorena: Chino to Dutton
    e. Laguna: Canon Perdido to Haley
    f. Anapamua: Chino to Milpas
    g. Alisos: Indio Muerto to Canon Perdido
    h. Chino: Mission to Carrillo
    i. Punta Gorda: Voluntario to Salinas
    j. Yanonali: State to Cesar Chavez
    k. Pueblo: State to Oak Park
    l. Oak Park: Pueblo to Junipero
    m. Junipero: Oak Park to Calle Real
    n. Sola: Castillo to Alta Vista
    o. Alta Vista: Sola to Anapamu
    p. Cacique: Quarantina to Salinas
    q. Camino de La Luz, Edgewater, Mesa Lane (2016)
    r. Montecito: Castillo to Santa Barbara (2016)

Bicyclist and motorist behavior and interaction will be observed by staff and/or by video at the proposed Green Background Shared Lane Markings prior to installation, and then again at approximately 1 year after installation. Variables to be studied and recorded in the field before and after installation will be:

- Crash data comparing the previous 5 years and one year subsequent to installation
- Video observation of a typical 24 hour weekday (Tuesday-Thursday) documenting the lane position of bicyclists with respect to the markings and the door zone.
- Video observation of a typical 24 hour weekday (Tuesday-Thursday) documenting bicyclists' usage of the bicycle route.

- Video observation of a typical 24 hour weekday (Tuesday-Thursday) noting the following:
  - Incidents of conflicts between the motor vehicle and bicycle,
  - Conflicts/avoidance maneuvers between the motor vehicle and the bicycle,
  - Differences in usage patterns by various types of bicyclists

The City of Goleta and City of Santa Barbara will provide semi-annual progress reports for the duration of the experiment. The above information will be presented in a final report within 3 months following the completion of the experiment. The number of bicyclists and motorists will be provided for comparison purposes.

H. An agreement to restore the site of the experiment to a condition that complies with the provisions of this Manual within 3 months following the end of the time period of the experiment. This agreement must also provide that the agency sponsoring the experimentation will terminate the experimentation at any time that it determines significant safety concerns are directly or indirectly attributable to the experimentation. The FHWA's Office of Transportation Operations has the right to terminate approval of the experimentation at any time if there is an indication of safety concerns. If, as a result of the experimentation, a request is made that this Manual be changed to include the device or application being experimented with, the device or application will be permitted to remain in place until an official rulemaking action has occurred.
The City of Goleta and City of Santa Barbara agree to the above conditions.

I. An agreement to provide a progress report at 6 months for the experimentation and an agreement to provide a copy of the final results of the experimentation to the FHWA's Office of Transportation Operations within 3 months following completion of the experimentation. The FHWA's Office of Transportation Operations has the right to terminate approval of the experimentation if reports are not provided in accordance with this schedule.

The City of Goleta and City of Santa Barbara agree to the above conditions.

Item 16-24 Request to experiment with a new modified regulatory sign in the City of Laguna Beach

Recommendation: Grant approval to experiment with a new modified regulatory sign in the City of Laguna Beach

Requesting Agencies/Sponsor: Caltrans District 12/Duper, Voting Member

Background
Caltrans (District 12) in Orange County received a number of citizens' complaints claiming motorists are confused by the alternating flashing red lights sequence at the mid-block HAWK pedestrian hybrid beacon. The HAWK was installed in mid-October 2014 at the Laguna College of Arts and Design (LCAD) on Laguna Canyon Road. There had been a pedestrian fatal accident at this heavy traffic location some months before the HAWK signal installation.

Field observations indicate some drivers may be confused by the flashing red sequence. Some drivers stop for the entire cycle and wait until the signal is no longer illuminated before proceeding. This behavior is accompanied by blaring of horns and unnecessary traffic queuing in both directions. We observed one driver pull out and bypass the queue using the center two way left turn lane – an extremely high risk behavior.

Proposal
District Operations would like to install two special signs (preferred Alternative 1) one in each direction on the mast arm to inform the motorist(s) to stop and proceed when clear on flashing red signals.

Below are the two (2) proposed alternative signs.

Alternative 1
(preferred)

Alternative 2
(State only approval)

- Alternative 1 - Currently in favorable use with HAWK signals in Salt Lake City by Utah DOT. If approved it would replace the existing R10-23 (CROSSWALK-STOP ON RED) signs on the signal mast arm. (see Attachment A).

Item 16-24 Caltrans' D12 Request to experiment with a new modified regulatory sign

- Alternative 2 - If approved, it would be ground mounted signs adjacent to the signal poles. (see Attachment B).

1. OBJECTIVE

   The objective of this proposal is to determine the effectiveness of these proposed sign message on driver compliance. If the sign message is successful in delay mitigation at the HAWK signal, additional installations in Laguna Beach and other cities are more likely.

   Anecdotal reports say the HAWK reduced everyday traffic collisions and near misses by 90%. If this is true, the HAWK safety benefits are superb. If these signs convey the message effectively, the HAWK would improve traffic throughput and reduce delay. If a reasonable trial period shows positive results, Caltrans and possibly FHWA could adopt one of these alternatives as a standard sign.

2. PROPOSED TRIAL PERIOD SCHEDULE

   - Pre-Installation Evaluation…… September to December 2016
   - Installation…….upon approval
   - Experimental Period…… 6 months after installation
   - Evaluation of Results……3 months after trial period

Thank you for your consideration of this request. District 12 is looking forward to a positive response from the CTCDC.

Should you have further questions or comments, please call me at (949) 724-2774.

Sincerely,

Steven Sowers, PE, PMP
Caltrans District 12
Branch Chief
Operations Southwest

Item 16-25 Request to Experiment with Through-lane Bike Boxes in the City of South Pasadena

Recommendation: Grant approval to experiment with Through-lane Bike Boxes in the City of South Pasedena

Requesting Agencies/Sponsor: City of South Pasadena/Mike Sallaberry, Voting Member

Background:

The City of South Pasadena is requesting permission to experiment with through-lane bicycle boxesp on northbound and southbound Fremont Avenue as well as southbound Grand Avenue at the intersection with Mission Street. The two intersections are signalized. The approaches have no Class II bicycle lanes. (See **Figure 1**). The City is seeking FHWA approval as authorized in the Manual of Uniform Traffic Control Devices.

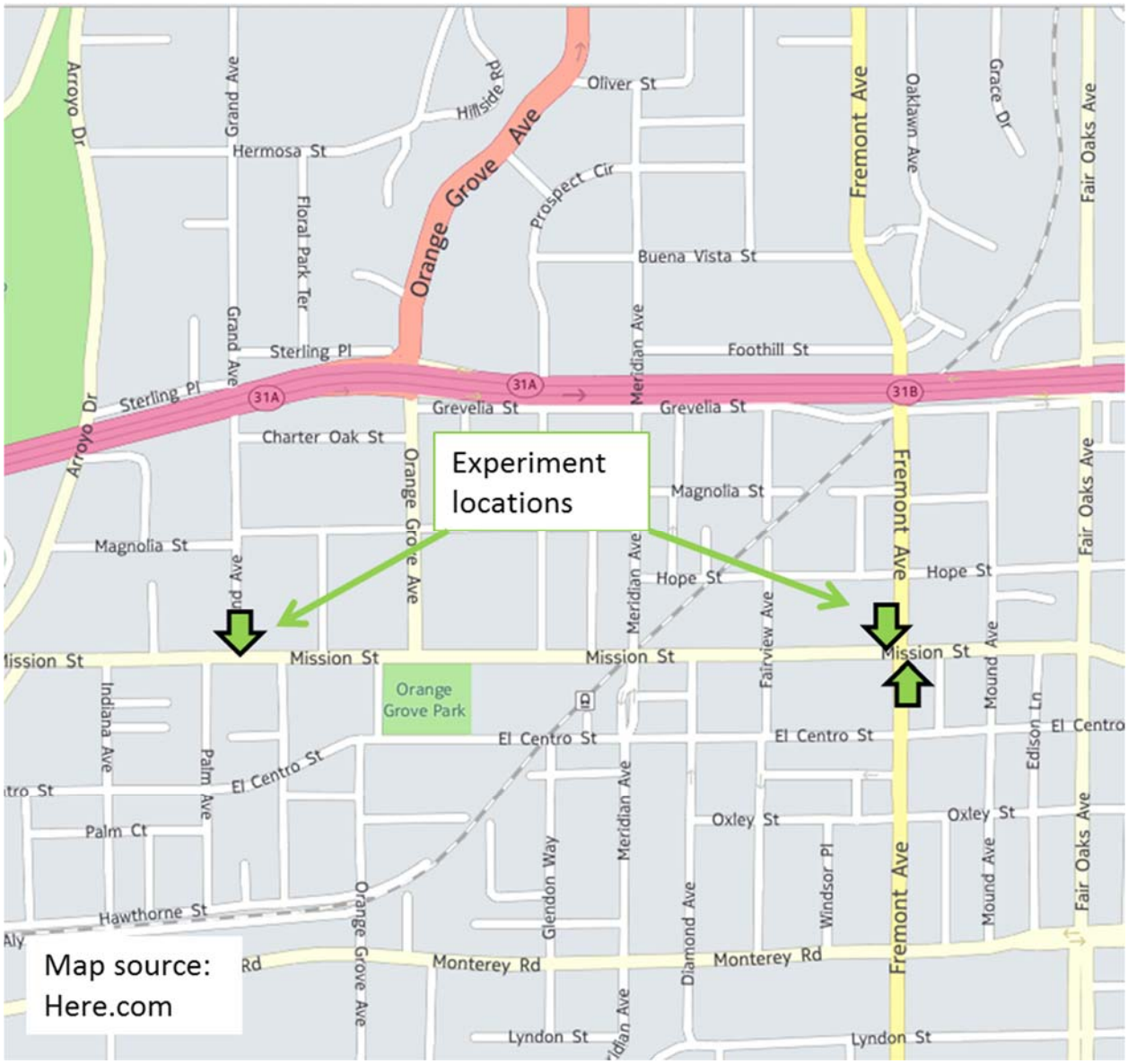


Figure 1: Experiment Locations

The City of South Pasadena received a Bicycle Transportation Account grant from the State of California to install a green sharrow lane along Mission Street. Since then, however, the FHWA discontinued experimentation with "green-colored pavement to communicate a continuous, longitudinal direction in conjunction with shared-lane markings" that was to be the main feature of the project. In place of the green sharrow lane, standard sharrow markings will be installed along with other features to encourage cycling such as the three through-lane bicycle boxes in this request for permission. Because the project documents must be completed by early 2017, approval of this request by the September 1, 2016 CTCDC meeting has some urgency.

The intended purpose of the through-lane bicycle boxes is to provide an exclusive area for cyclists to wait at a red light in a traffic lane dedicated to straight through travel, or in the case of the Grand Avenue southbound bicycle box, a left-and-through lane, and to discourage bicyclists who are not turning right from blocking an exclusive right turn lane. The through-lane bicycle boxes will have most of the following features of a typical bicycle box:

- Advance stop bar, and
- Bicycle symbol pavement marking(s), and
- The bicycle box must be setback (setback) from the adjacent crosswalk, and
- A recalculation of the yellow change and red clearance intervals is required.
- Optional element: green colored pavement

The key difference from a typical bicycle box is that a full-time turn on red prohibition would not be applicable.

Bicyclists would access the through-lane bicycle box in the following ways:

1. Cyclists would travel in the center of the through lane in mixed flow with motor vehicles (i.e., "take the lane"), and if they happen to be at the front of the queue when the traffic signal turns red, will occupy the bicycle box.
2. Cyclists would travel as close to the right side of the road as practicable until they reach the exclusive right turn lane, and then travel between the through lane and the right-turn lane (i.e., "lane splitting" or "filtering forward") to occupy the bicycle box.

A. A statement indicating the nature of the problem

Grand Avenue has moderate levels of bicycle travel. Fremont Avenue has lesser amounts of bicycle travel but provides the most direct north-south route across the City of South Pasadena. The candidate roadways have insufficient lateral width to install a Class II bicycle lane between the through lane and right turn lane. Bicyclists riding on Grand Avenue or Fremont Avenue faced with a red light at Mission Street are forced to choose between stopping in front of the through lane or the right turn lane. The optimal stopping location in terms of traffic operation would be in front of the through lane, so that stopped bicyclists do not impede motorists making right turns on red or turning on a right turn overlap signal. Furthermore, in terms of promoting bicycle-friendliness through traffic control devices, a bicycle box painted prominently in green at the front of the queue on a busy collector roadway would emphasize to motorists and bicyclists alike that bicycles belong on these roadways.

B. A description of the proposed change, how it was developed, the manner in which it deviates from the standard, and how it is expected to be an improvement over existing standards.

This experiment would evaluate the use of through-lane bicycle boxes at signalized approaches that have an exclusive right-turn lane but insufficient lateral space to provide a Class II bicycle lane on the approach. This condition is extremely common throughout the United States, possibly numbering in the hundreds of thousands of approaches, and includes roadways that might include Class II bicycle lanes, Class III bicycle routes, Class IV cycle tracks, or in the case of the two South Pasadena roadways, have no bicycle route designation at all.

The through-lane bicycle box is a variation on the bicycle box that has been granted permission to experiment by the FHWA at numerous locations throughout the country, with the key feature being that prohibitions of right turns on red would not be applicable. The through-lane bicycle box is expected to be a vast improvement over the typical L-shaped bicycle box in the following ways:

1. Bicyclists who wish to travel straight through the intersection would not be blocking or at risk of being clipped by motorists who make a right turn on red movement or proceed on a right turn overlap signal
2. Unlike the L-shaped bike box that requires prohibition of right turns on red, thereby potentially stirring up resentment from motorists against preferential treatment for bicyclists, the through-lane bicycle box positions the bicyclists at a location where motorists would not be significantly impeded. At the start of the green light, bicyclists can veer to the right through the intersection to allow a queue of motor vehicles to pass.
3. The lack of a Class II bicycle lane feeding into a broader bike box removes the implication that bicyclists can make a sharp L-shaped turn at the limit line.

C. Any illustration, photograph, or videos, which would help, explain the experimental device or use of this device.

The installed layout of the bicycle box is illustrated in **Figure 2**.

Figure 2: Through-lane bicycle box placement
(Aerial photo source: Google)

D. Any supporting data as to how the experimental device was developed, if it has been tried, in what ways it was found to be adequate or inadequate, and how was this choice of device or application arrived at.

Surprisingly, no request for experimentation has been previously submitted to the FHWA for a through-lane bicycle box, despite the potential to be applied in thousands of cities throughout the United States. Quite possibly some versions have been installed without permission, but documentation is unavailable.

E. A legally binding statement certifying that the concept of the traffic control device is not protected by a patent or copyright.
To the best of the City of South Pasadena's knowledge, the concept of using through-lane bicycle boxes to supplement standard traffic control devices are not protected by patents or copyrights.

F. The time period and location(s) of the experiment.
The through-lane bicycle boxes are intended to be designed during the winter of 2016 and installed prior to the end of the 2016-2017 fiscal year on southbound Grand Avenue at Mission Street and the north-south approaches of Fremont Avenue at Mission Street.

The experiment will be for a six-month period following installation.

G. A detailed research or evaluation plan that must provide for close monitoring of the experimentation, especially in the early stages of its field implementation. The evaluation plan should include before and after studies as well as quantitative data describing the performance of the experimental device.

According to the FHWA's MUTCD guidance website regarding standard bicycle boxes, *"The FHWA has approved 25 requests to experiment since 2008 for the bicycle box. These experiments have provided sufficient data to establish conclusions regarding the metrics provided in the list below. However additional data is needed on crash data, conflicts/avoidance maneuvers between the motor vehicle and the bicycle, and motor vehicle and bicycle compliance with the turn on red prohibition. New requests to experiment must include at a minimum these three performance measures but they are not required to also analyze statistical significance."*

Because the turn on red prohibition will not be applicable with the through-lane bicycle boxes, the City of South Pasadena intends to collect data regarding the positioning of bicyclists given the lack of a lead-in bike lane. The data collection associated with the experiment will therefore consist of the following:

1. Crash data compared from the previous three years and six months subsequent to installation
2. Conflicts and avoidance maneuvers between motor vehicles and bicycles through video observation that will be conducted over a 24-hour period before and a 24-hour period after installation. The video will be used to evaluate incidents of conflicts between the motor vehicle and bicycle as well as avoidance maneuvers between motor vehicles and bicycle.
3. Bicycle and motorist position and behavior approaching the intersection and positioning during a red light and resulting delay to motorists, observed through video surveillance for 24 hours before and after installation of the bicycle boxes.

H. An agreement to restore the site of the experiment to a condition that complies with the provisions of this Manual within 3 months following the end of the time period of the experiment. This agreement must also provide that the agency sponsoring the experimentation will terminate the experimentation at any time that it determines significant safety concerns are directly or indirectly attributable to the experimentation. The FHWA's Office of Transportation Operations has the right to terminate approval of the experimentation at any time if there is an indication of safety concerns. If, as a result of the experimentation, a request is made that this Manual be changed to include the device or application being experimented with, the device or application will be permitted to remain in place until an official rulemaking action has occurred.

The City of South Pasadena agrees to the above conditions.

I. An agreement to provide a progress report at 6 months for the experimentation and an agreement to provide a copy of the final results of the experimentation to the FHWA's Office of Transportation Operations within 3 months following completion of the experimentation. The FHWA's Office of Transportation Operations has the right to terminate approval of the experimentation if reports are not provided in accordance with this schedule.

The City of South Pasadena agrees to the above conditions.

8. Discussion Items:

Agenda Item 16-26 California Transportation Agency Request to Allow Local Agnecies to Create Word Sign Message in Work Zone

Agency Making Request/Sponsor: Caltrans/ Duper Tong, voting member

Background:

As result of the State Smart Transportation Initiative (SSTI) Report on Caltrans in 2014, one of the recommendations by the California Transportation Agency is to coordinate with FHWA in order to evaluate potential available flexibility where the requesting local agencies may be allowed to create and use their own word message signs within certain general guidelines or to pursue experimentation directly (rather than making such requests to the CTCDC).

California Vehicle Code 21401 requires that all traffic control devices are approved by Caltrans. New signs that includes symbols also require FHWA approval. Construction related signs may fall under this proposal with CTCDC's approval, giving agencies the option of developing their own signs for specific situations. The CTCDC may suggest that the CA MUTCD may need to develop basic guidelines for this type of application in order to ensure uniformity and sign recognition.

9. Tabled Items

None

10. Next Meeting

December 1, 2016
Sacramento

11. Adjourn