



Bicycles and Pedestrians

Implementing Complete Streets at the District Level

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District 5 ADA Coordinator

Tips for success:

- Learn as much as you can about engineering and especially technical transportation concepts (PTP is a good opportunity)
- Learn as much as you can about other Caltrans units that have an influence on bicycle and pedestrian issues (Design, PM, Traffic Safety & Ops, Environmental, etc.)
- Know your resources (TCR, MUTCD, HDM, HCM, Status of Projects, etc.)
- Find an engineering champion
- Understand liability
- Understand interest-based communication



Bicycle Planning

- Participate with local bike planning efforts including bike plans, general plans, local area plans, circulation elements, RTPs – recommendations for the State Highway System
- TCRs are an opportunity to capture local bike needs--especially shoulders!

The Importance of Shoulders

- Shoulders are the major facility for bikes on conventional highways and expressways
- Do not require a special funding source for bikes
- Serve multiple uses including traveler breakdown, safety for all modes, and increased sight distance to avoid wildlife crossing.
- The minimum standard width for a shoulder is 8 ft

CONVERTING SHOULDERS TO BIKE LANES?

- More than just installing stencils and signage...
- No parking
- Reconfiguring intersections with bike channels
- Urban vs rural context
- Funding for one mode vs all modes with shoulders
- Connectivity of bike lanes through a corridor

Streets & Highways Code Section 888

- “The department shall not construct a state highway as a freeway that will result in the severance or destruction of an existing major route for nonmotorized transportation traffic and light motorcycles, unless it provides a reasonable, safe, and convenient alternative route or such a route exists.”



Santa maria River Bridge Widening





Ortega Hill Bike Path in Santa Barbara, US 101





SR 227 (South St) Road Diet









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Image © 2010 DigitalGlobe

Madonna Rd & H



© 2009 Tele Atlas
Image © 2009 DigitalGlobe



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WHAT IS A BIKE BOX?

The bike box is a green box on the road, with a white bicycle symbol inside.

It is designed to reduce bicyclist/motorist conflicts.

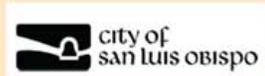
WHY GREEN?

A national committee that works on such issues has recommended that green be the standard color for bicycle lanes and boxes.



If you have questions, comments or feedback about bike boxes, please contact Caltrans Public Information Office at (805) 549-3318 or the City of San Luis Obispo at (805) 784-7190

Please be safe and courteous.
There's a lot riding on it.



Thanks to the City of Portland, OR

THE BIKE BOX Get Behind It





WAIT BEHIND...

WHY ARE BIKE BOXES BEING INSTALLED?

The main goal is to reduce conflicts between motorists going straight and cyclists going left. It's all about visibility and awareness. At a red light, cyclists are more visible by waiting in front of motorists.



**CYCLISTS STOP IN THE BIKE BOX TO BE MORE VISIBLE.
MOTORISTS WAIT BEHIND THE STOP LINE.**



WATCH AHEAD...

WHAT MOTORISTS SHOULD KNOW

When the traffic signal is red, motorists stop behind the white stop line, behind the green bike box. Do not stop on top of the bike box. Keep it clear for cyclists to use.

When the traffic signal turns green, motorists and cyclists may proceed through the intersection as usual, with cyclists going first.

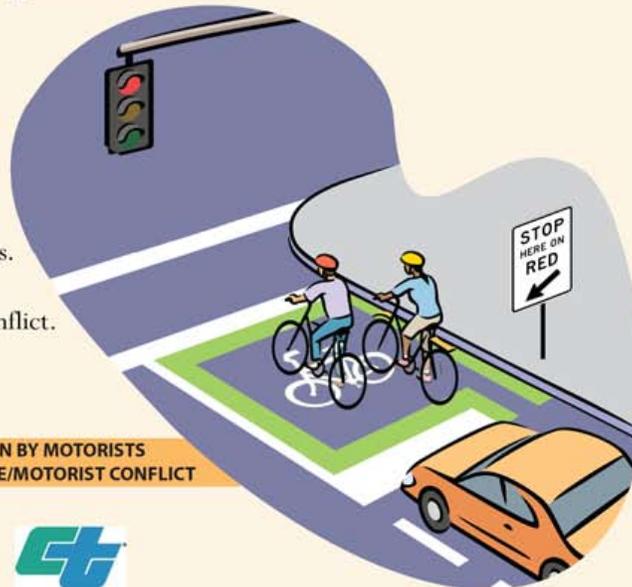
WHAT BICYCLISTS SHOULD KNOW

When the traffic signal is red, enter the bike box from the approaching bike lane.

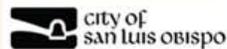
When the traffic signal is green, proceed as normal.

BIKE BOXES

- Allow cyclists to move in front of waiting vehicles.
- Help motorists to see cyclists.
- Reduce bicycle/motorist conflict.



**CYCLISTS ARE EASILY SEEN BY MOTORISTS
REDUCING THE RISK OF BICYCLE/MOTORIST CONFLICT**





Sr 225 road diet





Green bike lanes at interchanges



US 101 and California Street in San Luis Obispo

Green bike lanes at interchanges



Atascadero Road and State Route 1 in Morro Bay

Madonna Inn Bike Path along US 101



Rumble Strips



D5 Rumble Strip Policy

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

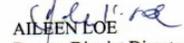
Memorandum

*Flex your power!
Be energy efficient!*

To: PROJECT DEVELOPMENT TEAMS

Date: June 27, 2012

From:  STEVE PRICE
Deputy District Director
Maintenance and Operations

 AILEEN LOE
Deputy District Director
Planning and Local Programs

Subject: GUIDANCE ON RUMBLE STRIP PROJECTS

Background. In October 2008, Caltrans issued Deputy Directive 64-R-1 on Complete Streets. The intent of the directive is to ensure that travelers of all ages and abilities can move safely and efficiently along and across a network of "complete streets."

District 5 Goal. As part of the implementation of Deputy Directive 64-R-1, the goal of this memorandum is to maximize safety and comfort for all users of the highway system in District 5 in consideration of rumble strip projects and to ensure 5 feet of minimum pavement width to the right of the rumble strip.

In the PID Phase:

- 1) Determine accessibility for bicycles in the project area (if there is no prohibition on the segment, bicycles can be expected.)
- 2) Where bicycles are expected and it is anticipated the users of the road would be sensitive to right shoulder rumble strips, perform an analysis for roadway departure collision trends in the study area.
- 3) Determine the degree of flexibility of the design (i.e. variations in type and width of rumble strips or stripes, their placement [such as gaps] or other variations.)
- 4) Provide an estimate of hours for outreach activities to be conducted during the PA&ED Phase.

"Caltrans improves mobility across California"

PROJECT DEVELOPMENT TEAMS

June 27, 2012

Page 2

In the PA&ED Phase:

- 1) Internal Kick Off Meeting – Identify key stakeholder groups and adopt/refine a draft outreach plan
- 2) Consider options for and Conduct Outreach, which may include:
 - Inviting an external representative to the PDT
 - Attending external meetings including TACs, bicycle advisory committees or bicycle advocacy groups
 - Discussions with key bicycle stakeholders
 - Special meetings to receive input and present conclusions
- 3) Summarize results of outreach and recommendations for the project to be carried out through project development.

For further assistance, contact the Bicycle Coordinator in Planning, Adam Fukushima at (805) 549-3131 or the Bicycle Coordinator in Traffic Safety, Dario Senor at (805) 503-9374.

"Caltrans improves mobility across California"

Rumble Strips in D5

- Only with 5 feet of clear
- Under the stripe



Chip seal on SR 1



SR 1 Realignment in Piedras Blancas

PIEDRAS BLANCAS REALIGNMENT PROJECT RATIONALE FOR 8-FOOT PAVED SHOULDERS



Looking northbound from along the southern portion of the new alignment.

PHOTO-SIMULATIONS
COMPARISON OF SHOULDER WIDTHS
FIGURE A

SR 1 Realignment in Piedras Blancas

- Safety Rationale for shoulders
- On 2-lane highways, widening roadway shoulders from 4ft to 8 ft reduces crash rates by 30%. (*Designing Safer Roads*, Transportation Research Board, Special Report 214, 1987)
- Widening bridge shoulders from 4ft to 8ft reduces crash rates by 50% (*Accident Mitigation Guide for Congested Rural Two-Lane Highways*, K. Fitzpatrick and K. Balke, National Highway Research Program, Report 440, 2000)
- 8 ft paved shoulders are the Caltrans Highway Design Manual mandatory standard on two lane conventional highways



IGR and Complete Streets

- Great opportunity to build projects
- Assess impacts to bike and ped the same way as auto
- Bicycle Level of Service (BLOS) – qualitative, not quantitative. Does not require bike counts

Bicycle Level of Service

V	300	hourly directional volume (veh/h)
PHF	0.95	peak hour factor
N	1	number of directional lanes (=1 for two-lane highways)
v(OL)	315.79	directional demand flow rate in the outside lane (veh/h)
Ws	2	paved shoulder width (ft)
Wol	11	outside lane width (ft)
%OHP	0	percentage of segment with occupied on-highway parking (decimal)
Wv	13.00	effective width as a function of traffic volume (ft)
We	13.00	average effective width of the outside through lane (ft)
Sp	50	posted speed limit (mph)
St	4.62	effective speed factor
HV	0.152	percentage (decimal) of heavy vehicles; if V < 200 veh/h, then HV should be limited to a maximum of 50%
P	5	FHWA's 5-point pavement surface condition rating (5=best,1=worst)
BLOS	8.55	Bicycle level of service score
LOS	F	

Accommodating Bicyclists in Temporary Traffic Control (TTC) Zones



What are we trying to avoid?

Ar



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Accommodating Bicyclists in Temporary Traffic Control (TTC) Zones

History of Bicycles in TTC's

- Deputy Directive (DD) 64-R2
- Traffic Operations Policy Directive (TOPD) 11-01
- CA Manual of Uniform Traffic Control Devices (CAMUTCD) 2014, as of November 7, 2014.
- CAMUTCD Section 6



Deputy Directive

<i>Number:</i>	DD-64-R2
<i>Refer to Director's Policy:</i>	DP-22 Context Sensitive Solutions DP-05 Multimodal Alternatives DP-06 Caltrans Partnerships DP-23-R1 Energy Efficiency, Conservation and Climate Change
<i>Effective Date:</i>	10/17/14
<i>Supersedes:</i>	DD-64-R1 (10/2/2008)
<i>Responsible Program:</i>	Planning and Modal Programs

TITLE Complete Streets - Integrating the Transportation System

POLICY

The California Department of Transportation (Caltrans) provides for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities and products on the State highway system. Caltrans views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.

Caltrans develops integrated multimodal projects in balance with community goals, plans, and values. Addressing the safety and mobility needs of bicyclists, pedestrians, and transit users in all projects, regardless of funding, is implicit in these objectives. Bicycle, pedestrian, and transit travel is facilitated by creating "complete streets" beginning early in system planning and continuing through project delivery and maintenance and operations. Developing a network of "complete streets" requires collaboration among all Department functional units and stakeholders to establish effective partnerships.

DEFINITION/BACKGROUND

Complete Street - A transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit riders, and motorists appropriate to the function and context of the facility.



POLICY DIRECTIVE

TR-0011 (REV 9/2006)

TRAFFIC OPERATIONS POLICY DIRECTIVE	NUMBER: 11-01	PAGE: 1 of 5
ROBERT COPP, DIVISION CHIEF (Signature)	DATE ISSUED: January 13, 2011	EFFECTIVE DATE: February 01, 2011
<p>Amend existing policy and typical applications and adopt new typical applications in the California Manual on Uniform Traffic Control Devices (California MUTCD) for accommodating bicyclists in Temporary Traffic Control (TTC) zones.</p>	<p>DISTRIBUTION</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> All District Directors <input checked="" type="checkbox"/> All Deputy District Directors - Traffic Operations <input checked="" type="checkbox"/> All Deputy District Directors - Maintenance <input checked="" type="checkbox"/> All Deputy District Directors - Construction <input checked="" type="checkbox"/> All Deputy District Directors - Design <input checked="" type="checkbox"/> All Deputy District Directors - Transportation Planning <input checked="" type="checkbox"/> Chief, Division of Engineering Services <input checked="" type="checkbox"/> Chief Counsel, Legal Division <input checked="" type="checkbox"/> Publications (California MUTCD Website) www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd.htm <input checked="" type="checkbox"/> Headquarters Division Chiefs for: Construction, Maintenance, Design 	
<p>DOES THIS DIRECTIVE AFFECT OR SUPERSEDE ANOTHER DOCUMENT? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p>	<p>IF YES, DESCRIBE Amends Chapters 6D, 6G & 6H of the California MUTCD.</p>	
<p>WILL THIS DIRECTIVE BE INCORPORATED IN THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</p>	<p>IF YES, DESCRIBE Sections 6D.101(CA) & 6G.05, Table 6H-1(CA), Notes and Figures 6H-15, 6H-30, 6H-32(CA), 6H-36, 6H-101(CA), 6H-102(CA), 6H-103(CA) and 6H-104(CA)</p>	

DIRECTIVE

Pursuant to the authority granted to the California Department of Transportation (Department) in Section 21400 and 21401 of the California Vehicle Code (CVC), the changes included in this directive for accommodating bicyclists in Temporary Traffic Control (TTC) zones will be included in Part 6 of the California MUTCD, dated January 21, 2010.

IMPLEMENTATION

Although encouraged, it is not required that this policy be applied retroactively to projects that are in design or construction phases.



Caltrans... Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

- » CA MUTCD Homepage
- » CA MUTCD 2014
- » Interim Approvals Status in CA
- » Sign Specifications
- » CA MUTCD Sign Charts
- » Work Zone Traffic Control Resources
- » Trainings & Events
- » New Policies & Directives
- » Publications
- » CA MUTCD 2012 (ARCHIVE)
- » CA MUTCD 2010 (ARCHIVE)
- » CA MUTCD 2014 (ARCHIVE)
- » MUTCD CA Sign Charts
- » Traffic Control
- » Traffic Control

Caltrans > [Traffic Operations](#) > [Office of Traffic Engineering](#) > [Traffic Control Devices Branch](#) > **California MUTCD**

California Manual on Uniform Traffic Control Devices



2014 California MUTCD

Chapter 5G - Temporary Traffic Control Zones	2 pages	96 KB
Chapter 5H - Traffic Control for School Areas	2 pages	15 KB
Part 6: Temporary Traffic Control	242 pages	10.28 MB
Chapter 6A - General	2 pages	161 KB
Chapter 6B - Fundamental Principles	4 pages	154 KB
Chapter 6C - Temporary Traffic Control Elements	14 pages	1.93 MB
Chapter 6D - Pedestrian and Worker Safety	6 pages	229 KB
Chapter 6E - Flagger Control	12 pages	1.87 MB
Chapter 6F - Temporary Traffic Control Zone Devices	66 pages	2.41 MB
Chapter 6G - Type of Temporary Traffic Control Zone Activities	14 pages	232 KB
Chapter 6H - Typical Applications	118 pages	6.87 MB
Chapter 6I - Control of Traffic Through Traffic Incident Management Areas	6 pages	274 KB
Part 7: Traffic Control for School Areas	34 pages	1.77 MB
Chapter 7A - General	4 pages	539 KB



Accommodating Bicyclists in Temporary Traffic Control (TTC) Zones

Per the California Manual of Uniform Traffic Control Devices (CA MUTCD) Section 6C.01:

"Traffic control planning should be completed for all highway construction, utility work, maintenance operations, and incident management including minor maintenance and utility projects prior to occupying the TTC (Temporary Traffic Control) zone. Planning for all road users should be included in the process."



Accommodating Bicyclists in Temporary Traffic Control (TTC) Zones

Any time Caltrans does any work on the roadway we are creating a "Temporary Traffic Control zone" and must comply with Section 6D.101 (E) of the (CA) MUTCD:

"Bicyclists shall not be led into direct conflicts with mainline traffic, work site vehicles, or equipment moving through or around the TTC zone."



Accommodating Bicyclists in Temporary Traffic Control

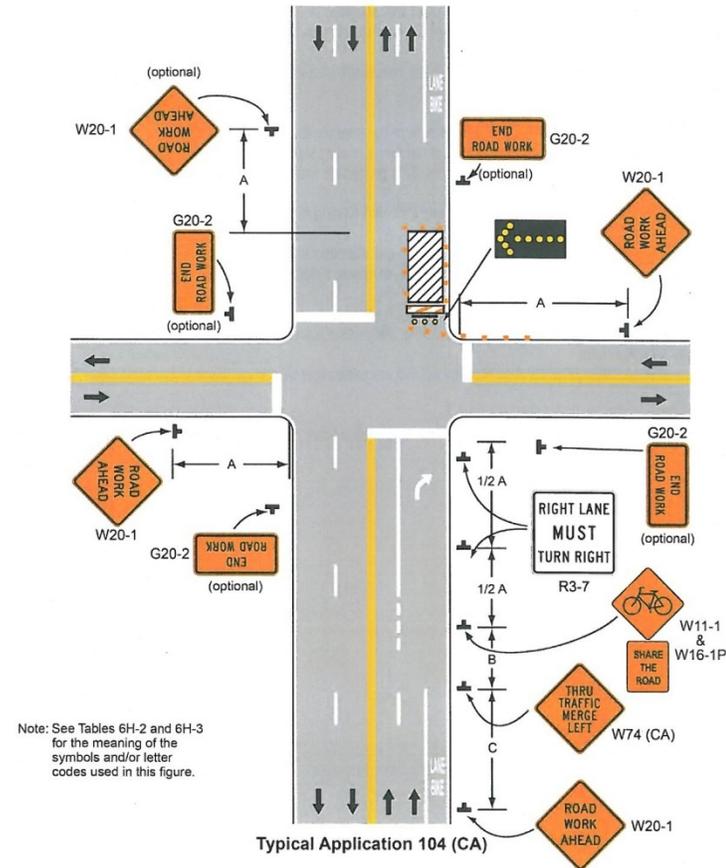
Chapter 6H – Typical

- Figure 6H-15 (TA-15)
- Figure 6H-30 (TA-30)
- Figure 6H-32 (TA-32)
- Figure 6H-36 (TA-36)
- Figure 6H-101 (TA-101)
- Figure 6H-102 (TA-102)
- Figure 6H-103 (TA-103)
- Figure 6H-104 (TA-104)

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

Page 1248

Figure 6H-104 (CA). Right Lane and Bike Lane Closure on Far Side of Intersection (TA-104 (CA))



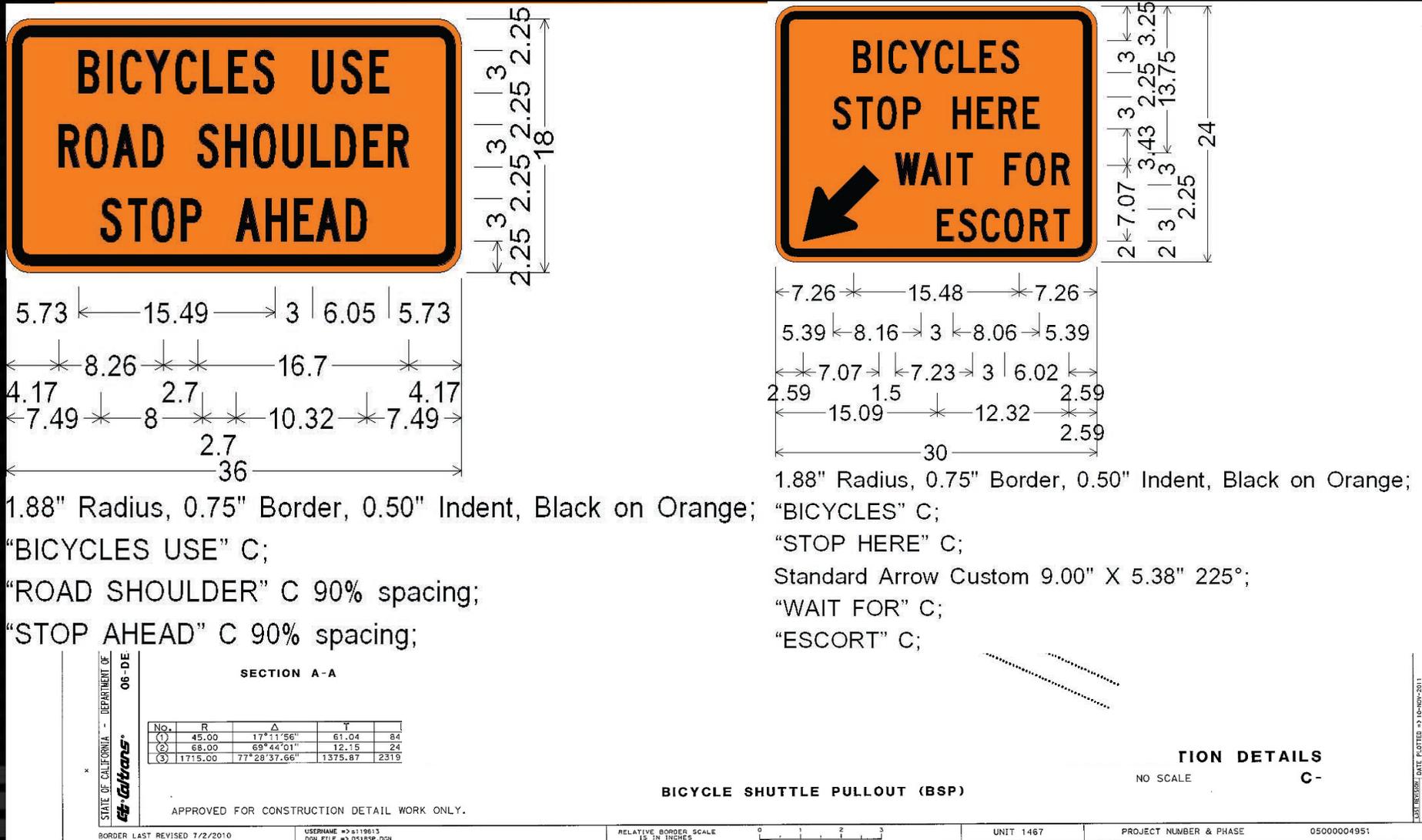
Accommodating Bicyclists in Temporary Traffic Control (TTC) Zones

So what can we do?

- If something doesn't make sense, **MAKE A CALL!**
- Discuss Bikes and Peds at pre-job meetings
- Minimize injury and liability
- If an alternate route is not available, a shuttle or something similar must be provided.
- **SHARE THE ROAD** signs
- **Bicycles cannot SHARE THE ROAD on a route with a speed differential greater than 15mph!!**



Accommodating Bicyclists in Temporary Traffic Control (TTC) Zones





Work with your District Safety Coordinator

- Every Caltrans district is required to give periodic safety presentations. Great opportunity to present on accommodating bikes and peds in construction projects
- Find an engineering champion who can assist with a presentation
- Present issues in a manner they will engage with
- Emphasize liability for bicyclists and pedestrians

Contact info

- Adam Fukushima, PTP adam.fukushima@dot.ca.gov (805) 549-3131
- Dario Senior, PE Dario.senior@dot.ca.gov (805) 503-9374