AGENDA

CALIFORNIA TRAFFIC CONTROL DEVICES COMMITTEE (CTCDC)
February 16, 2012 Meeting (Start Time 9 a.m.)
1500 Pacific Hwy, Tower 6, County Administrative Center (CAC)
San Diego 92102

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

Organization Items

1 Approval of Minutes (October 20th, 2011 Meetings)
2 Membership – The current Committee members first need to address and vote on Agenda Item 11-14, Amendment of the CTCDC By-Laws, in order for the newly appointed members to take their seats on the CTCDC. Then the entire Committee needs to elect a Chairman and Vice-Chairman for the next two years.
3 Introduction
4 Public Comments

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

Agenda Items

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

		Page #s
11-14	Proposal to amend CTCDC By-Laws to expand the membership of the CTCDC by including two additional voting members representing non-motorized highway users- Proposed by Caltrans	(Continued) (Henley/Fogle) 5-9
12-1	The Proposal to amend Section 2D.45 of CA MUTCD 2010 (Section 2I.03 of CA MUTCD 2012) to clarify local responsibility to establish STAA Route - Submitted by Caltrans	(Introduction) (Fogle) 10-11
12-2	Policy updates throughout Part 6 – Submitted by Caltrans	(Introduction) (Fogle) 12-41
12-3	TTC policy change for Part6A, 6B, 6C, 6F, 6G, and 6H – Submitted by Caltrans	(Introduction) (Fogle) 42-63

12-4	Policy change for TMP Guidelines and defining "night" and "nighttime" in Part1 – Submitted by Caltrans	(Introduction) (Fogle) 64-65
12-5	TTC regulatory and warning signs and new Typical Application for Part 6H – Submitted by Caltrans	(Introduction) (Fogle) 66-74
12-6	TTC policy change for Part6F and 6H – Submitted by Caltrans	(Introduction) (Fogle) 75-89
12-7	TTC policy change on use of audible warning devices for sidewalk closure – Submitted by Caltrans	(Introduction) (Fogle) 90-99
12-8	Adopt a new Section 2B.112 in to the CA MUTCD to add "MOVE OVER OR SLOW DOWN FOR STOPPED EMERGENCY & MAINTENANCE VEHICLES" sign	(Introduction) (Fogle) 100-102

6 Request for Experimentation

12-9	Request to Experiment with Yellow LED Border on Pedestrian Signal -Submitted by Caltrans	(Introduction) (Fogle) 103-108

7 Information Items

11-1	CA MUTCD 2012 (Letter to CTCDC and Compliance letter from FHWA)	(Continued) (Fogle) 109-111
07-19	Wildlife Corridor Signage (Staff recommends removal of this item from the agenda, no action since 2007)	
07-1	Proposal to revise the sizes for the Supplemental School Plaques (S4-3, W16-7p and W16-9p) (Item will be removed from the Pending Items for Caltrans Action, because it has been incorporated into the CA MUTCD 2012)	

8 Tabled Item

11-5	Request to Experiment with New Bicycle Pavement Marking (Requested by the City of Palo Alto) (Item will be removed from the agenda)	(Introduction) (Knowles)

9 Next Meeting

10 Adjourn

ITEM UNDER EXPERIMENTATION

06-2 Experiment with Colored Bike Lane (Wong)
(Proposed by the City of San Francisco)
Status: San Francisco has completed material testing and determined that thermoplastic is the best colored pavement treatment material for the experimental installations based on durability, visibility, slip-resistance and estimated lifecycle costs. Beginning in April 2011, dashed retroreflective green thermoplastic was added to the dashed portion of bicycle lanes at six intersection approaches on Market Street. Photos can be viewed here: http://sf.streetsblog.org/2011/04/28/sfmta-crews-begin-filling-in-green-bikeway-gaps-on-market-street/

Data will be collected at the Market Street locations to determine if the treatment has any impact on merging behavior between motorists making right turns and bicyclists continuing straight through intersections. Market Street was selected as the first installation location to coordinate with ongoing improvements to bicycle facilities along Market Street, which is the highest-use bicycle facility in San Francisco.

The revised schedule for the remainder of the experiment is as follows:
June-July 2011 – Collect "before" data prior to installation of green retroreflective thermoplastic (except for Market Street locations described above)
August -September 2011 - Install green retroreflective thermoplastic
October-November 2011 – Collect "after" data following installation of green retroreflective thermoplastic
January 2012 - Draft report
February 2012 - Final report

07-19 Wildlife Corridor Signage (Babico)
(Proposed by the County of San Bernardino)
Status: The applicant still searching for someone to do study for the Federal Highway folks. The type of study that they requested would cost many thousands of dollars. Applicant is looking for a college student that could make the study part of his curriculum.

08-7 Request for Experimentation with new Warning Sign for Bicyclists (Wong)
(Proposed by the City/Co of San Francisco)
Status: No change since their last report. The City and County of San Francisco would like to bring this experiment to a close and therefore will analyze collision data collected before and after the installation of this experimental warning sign and submit the results to the Committee within the next 12 months for its evaluation.

08-21 Proposal to Experiment with Regulatory Sign “BIKES IN LANE” with Bicycle Symbol (Originally submitted as “Bike May Use Full Lane”) (Henley)
Status: No New update. Caltrans District 5 still looking for funding for the human factors study. The signs have been well received and there are no negative issues to report at this time. State collision data is not yet available, however, collision data obtained from the City of Santa Cruz up to 09/01/09, shows that there have been 3 bike related collisions since the signs went up, 5 in the year previous, and 7 in the year prior to that.

09-9 Request to Experiment with Steady Red Stop Line Light (Fisher)

Status: See report on the following website under "Status Report – Ongoing Experiments"
http://www.dot.ca.gov/hq/traffops/signtech/newtech/index.htm

09-14 Experiment request for the Usage of "TRANSIT LANE" in lieu of "CARPOOL" Signage (Henley)
Status: The project is in planning stage

09-21 Request for Permission to Experiment with Separated/Protected Bikeway On the Left Side of Two One-Way Streets in the City of Long Beach (Rte 9-112E) (Fisher)
Status: See report on the following website under "Status Report – Ongoing Experiments"
http://www.dot.ca.gov/hq/traffops/signtech/newtech/index.htm

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

Status: See report on the following website under "Status Report – Ongoing Experiments"
http://www.dot.ca.gov/hq/traffops/signtech/newtech/index.htm

10-10 Request for Permission to Experiment with modified SPEED HUMP (W17-1) Signs (Knowles)

11-3 Request to Experiment with Buffered Bicycle Lanes on 2nd St.between Bayshore & PCH in Naples (Fisher)

11-4 Request for Permission to Experiment with Round Rapid Flashing Beacon (Fisher)

Pending Items for Caltrans Action

07-1 Proposal to revise the sizes for the Supplemental School Plaques (S4-3, W16-7p and W16-9p)
Status: No update received.

11-14 Proposal to amend CTCDC By-Laws to expand the membership of the CTCDC by including two additional voting members representing non-motorized highway users

Proposal: Caltrans requesting the Committee to approve amended CTCDC By-Laws to include two additional voting members representing non-motorized highway users

Requesting Agency/Sponsor: Don Fogle, Caltrans

Background: The California Department of Transportation (Caltrans) is firmly committed to the implementation of Complete Streets. Caltrans has the authority, after consulting with local agencies and conducting public hearings, to develop traffic control device standards for public roadways in California. To ensure that non-motorized traffic control issues are recognized and addressed while developing traffic control device standards, Caltrans would like to expand the membership of the California Traffic Control Devices Committee (CTCDC) by including two additional voting members representing non-motorized highway users. Caltrans requests that the CTCDC review and modify its bylaws and operating procedures to reflect this change. Caltrans has appointed two new voting and alternate members to represent non-motorized highway users and required CTCDC vote on the amended By-Laws, before they can take seat on the CTCDC.

Amended By-Laws

BY-LAWS (Amended September 12, 2011)

CALIFORNIA TRAFFIC CONTROL DEVICES COMMITTEE

ARTICLE I
NAME

The name of this organization shall be the California Traffic Control Devices Committee. It was formed pursuant to acceptance by the parent organizations in 1968.

ARTICLE II
PURPOSES

The Committee shall:

a. ~~Represent those local agencies referred to in California Vehicle Code Section 21400 and is designated as the entity which the California State Department of Transportation shall consult~~ Advise the California State Department of Transportation on standards and policy for official traffic control devices in California, thereby fulfilling the requirements of California Vehicle Code Section 21400. The committee is to take into account the needs of all users of streets, roads and highways specified in Government Code Section 65302(b), prior to advising the California State Department of Transportation.

b. Promote the uniform and functional design and application of traffic control devices.

c. Gather, disseminate, and exchange information among stakeholders. ~~State, national and local agencies having responsibilities relative to traffic control devices.~~

d. Serve as a forum to review and evaluate proposals of responsible agencies concerned with traffic control devices. ~~on behalf of their respective local authorities (as defined in Section 385 of the California Vehicle Code) concerning experimentation with traffic control devices.~~

e. ~~Obtain and report to the parent organizations the consensus on legislation, research and development, and practices regarding traffic control devices.~~
Periodically advise the parent organizations on significant issues regarding traffic control devices that are exclusive to California.

~~f~~ ~~Advise the California State Department of Transportation on standards and policy for traffic control devices in California, and to encourage their use.~~

~~g~~f. Encourage research and development of traffic control devices.

~~h~~ g. Review the ~~State Department of Transportation~~ California Manual on Uniform Traffic Control Devices pertaining to traffic control devices, and advise the California State Department of Transportation in the revisions thereof.

~~i~~ h. To assist the California State Department of Transportation in interpretation of the Federal Highway Administration Manual on Uniform Traffic Control Devices and other Federal publications.

ARTICLE III

MEMBERSHIP AND ORGANIZATION

The membership of the Committee shall consist of six parent organizations. It is the intent that Committee members shall represent both urban and rural areas distributed geographically throughout the State, and to this end dual representation is authorized to the County State Association of Counties and League of California Cities.

The parent organizations shall consist of the following:

California State Association of Counties
League of California Cities,
State of California Department of Transportation,
Department of California Highway Patrol,
California State Automobile Association,
Automobile Club of Southern California.

The parent organizations shall each designate in writing one delegate and one alternate except that:

a. The California State Association of Counties and League of California Cities shall each designate two delegates and two alternates. The State of California Department of Transportation shall designate three delegates and three alternates, one of whom will represent all road users and two

of whom will represent non-motorized road users. Only designated alternates may act in the absence of the appointed delegate.

ARTICLE IV

PRACTICES

Section 1 - Voting

Each delegate is entitled to one vote. A concurring vote of ~~six~~ seven delegates shall be required on all policy decisions pertaining to Article II Paragraph a.

Section 2 - Officers

The officers of the Committee shall consist of a chairperson, and a vice chairperson.

~~The chairperson and vice chairperson of the Committee shall be elected to serve for two calendar years.~~ The chairperson and vice chairman are to be nominated, elected and to take office at the first meeting of the calendar year of the two-year term. The representatives of the California Highway Patrol and the California Department of Transportation are not eligible to be chairperson and vice chairperson. It shall be the chairperson's duty to moderate the meetings. The vice chairperson shall preside in the absence of the chairperson. If both are absent, a temporary chairperson shall be chosen at the meeting.

A secretary shall be appointed by the California State Department of Transportation. It shall be his/her duty to maintain Committee files, publish an agenda prior to each meeting, keep and publish minutes of the meetings, distribute pertinent action of national committees and other agencies to members, transmit actions of the Committee to members and other interested agencies, and to perform such other duties as may be assigned by the chairperson or by vote of the Committee.

Section 3 - Non-Voting Membership

Other organizations and individuals concerned with traffic control devices may be invited to attend meetings, particularly if agenda items are of special interest to them. Technical consultants may be invited to participate in the activities of the Committee as needed. Legal services shall be provided by the California State Department of Transportation.

ARTICLE V

PROCEDURES

Section 1 - Meetings

The Committee shall hold at least three public meetings each year and at such additional times as may be designated by the chairperson or requested by seven or more of the delegates. The meeting places shall be determined by the chairperson and consecutive meeting locations should

be alternated between Northern and Southern California. Seven delegates or their designated alternates shall constitute a quorum.

Voting delegates who miss three consecutive meetings will be relieved of their service to the CTCDC.

Section 2 - Procedure

The following rules of procedure shall define the routine internal operation of the Committee:

To carry out the purposes of this Committee.
To publish an annual report of the Committee's activities.

Section 3 - Amendments

These By-laws may be amended by ~~three-fourths~~ seven votes of the ~~eight~~ ten delegates, either at a meeting or by letter ballot.

These By-laws, or any amendments thereof, shall become effective upon the approval of the parent organizations.

ARTICLE VI
ADOPTION

These By-laws of the California Traffic Control Devices Committee are hereby approved by the parent organizations:

CALIFORNIA STATE DEPARTMENT OF TRANSPORTATION

_____ Director _____
NAME Title Date

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

_____ Commissioner _____
NAME Title Date

CALIFORNIA STATE ASSOCIATION OF COUNTIES

_____ Executive Director _____

NAME Title Date

LEAGUE OF CALIFORNIA CITIES

_____ Executive Director _____
NAME Title Date

AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA

_____ President _____
NAME Title Date

CALIFORNIA STATE AUTOMOBILE ASSOCIATION

_____ President _____
NAME Title Date

12-1 The Proposal to amend Section 2D.45 of CA MUTCD 2010 (Section 2I.03 of CA MUTCD 2012) to clarify local responsibility to establish STAA Route

Recommendations: Caltrans request that CTCDC make recommendation to amend Section 2D.45 as amended under the proposal.

Requesting and Sponsor Agency: Caltrans-Don Fogle

Background:

PROPOSED CHANGES TO THE 2010 MUTCD
Truck Size & Weight Unit
12/12/11

The Caltrans Office of Truck Services, Truck Size & Weight work group, is submitting the following proposed changes to the CA MUTCD, Section 2D-45, Page 2D-32.
The proposed changes are needed for the following reasons.

1 – Local Application: The existing language in the CA MUTCD requires that local governments inform the Department in writing that the roads and intersections meet the geometric criteria for a STAA route. The purpose of this language is to reduce the need for Department staff to analyze local roads for STAA access.
Analyzing local roads increases Department work load and Department liability. However, the existing language in the MUTCD should be strengthened to improve the Department's assurance that local governments have done a thorough analysis, while still limiting the Department's liability for local decisions.
The proposed language requires that local governments submit to the Department a check list of locations that the local authorities have analyzed, signed by the proper local authorities, to ensure that local governments have performed analyses at the appropriate locations.

2 – 24-Hour Turn Around: It is already standard practice to require a 24-hour turn around for STAA trucks where the TA route ends, but this practice is not yet included in any document that would ensure that it be required. Staff has determined that the most appropriate location for this requirement is the CA MUTCD.

3 – Order of Sign Placement: The State should post signs for STAA trucks to exit the State highway ONLY AFTER the locals have posted trailblazing signs along the new local TA route. If the State signs are placed first, then STAA trucks could exit the State highway and have no idea where to travel next. This sign placement order (locals first, then State) is standard practice, but the language is not strong enough in the CA MUTCD and should be made clearer.

4 – Minor edits for clarity: Several minor edits are proposed to improve clarity. For example, the existing term "STAA vehicle" is proposed to be changed to "STAA design vehicle," as there are many sizes of STAA vehicles, but only one standard "STAA design vehicle" in the Highway Design Manual. The "STAA design vehicle" should always be used when analyzing STAA routes.

PROPOSAL:

Proposal to Amend Section 2D.45 Page 2D-32 of CA MUTCD 2010 as follows: (This Section has moved to Section 2I.03 General Service Signs for Freeways and Expressways in to the CA MUTCD 2012)

Standard:

2. On Local Highways:

- **Signing of egress from a State Terminal Access route to a local Terminal Access route shall be done only if requested by the local jurisdiction and:**

  a) the local jurisdiction has ~~informed~~ submitted to the Department an application provided by the Department ~~in writing~~ listing ~~that~~ the local roads and intersections that have been analyzed on the proposed local Terminal Access route, and stating that they meet all geometric criteria* for STAA trucks, and this application has been approved and signed by the Engineer of the public agency or by the authority having jurisdiction over the roadway and,

  b) the State highway ramp or intersection meets all geometric criteria for STAA trucks.
  *** - The geometric criteria involve~~s~~ using ~~a~~ the STAA design vehicle to design or analyze the intersection, ~~or~~ ramp, or curve so that the STAA vehicle can stay in its lane without encroaching into the adjacent or opposing lane (for more details, see Topic 404 in the Caltrans Highway Design Manual) and, if the Terminal Access route ends, ensuring that an adequate turn-around location is available for all STAA vehicles 24 hours per day, 7 days per week.**
- **If the route passes … .”**

- **Local agency shall place G66-56(CA) signs at every critical decision point on the Terminal Access route, including a G66-56(CA) sign with END Auxiliary (M4-6) sign.**
- **After the local agency places signs on the local routes, ~~T~~the State shall place a G66-56(CA) sign on the State route in advance of the ramp or intersection to the local Terminal Access highway.**

12-2 Policy updates throughout Part 6 of CA MUTCD

Recommendation:

Caltrans recommends as part of the cleanup efforts, various policies in Part 6 need to be changed or updated, as outlined in proposal.

Agency Making Request/Sponsor: Caltrans – Don Fogle

Background:

During the 2009 MUTCD adoption process Caltrans identified many policies that need to be changed or updated. Some were accepted during the workshops and some are identified as beyond the scope of the adoption process and need to be reviewed as CTCDC Agenda items. Here is a list of those policy changes.

CA MUTCD	Proposed Change	Background Information
Section 6C.01	Rewrite TTC speed limit policy	Comments were received from Caltrans, City of Lancaster, and TTC industry individual to revise this policy.
Section 6C.10	Policy added for state highways	State highways are mostly high volume high speed. Self-regulated lane closure should not be used.
Section 6C.12	Policy added for state highways	State highways are mostly high volume high speed. Pilot car should be used instead of flag transferring method.
Section 6D.01	Policy added for day time lighting	Covered walkways can be dark during day time hours as well.
Section 6E.04	Policy added for state highways	Used of Automated Flagger Assistance Devices on state highways should be notified and approved by Caltrans.
Section 6F.12	Rewrite speed limit sign policy	Comments were received from Caltrans, City of Lancaster, and TTC industry individual to revise this policy.
Section 6F.18	Add policy for use of plaque	C23B(CA) plaques was used on C23(CA) signs. When W20-1 sign replaced C23(CA) sign the policy using C23B(CA) plaque on W20-1 sign was left out.
Section 6F.22	Edit sign name for upper case	W20-5 and C20(CA) signs are word message signs. So they should be shown in policy as “LEFT (RIGHT) LANE CLODED signs” not “Lane Closed signs”.
Section 6F.37	Edit terms for types of work	Terms like “maintenance, reconstruction” do not include works such as landscape, garbage removing, etc. and should be replaced with “should works”.
Section 6F.60	Edit policy for delineate PCMS	Current policy of using 9 cones of 200 feet in total length to delineate PCMS would not work well in urban settings.

Section 6F.68	Update policy Crashworthy	According to FHWA memorandum WZ-54 all barricades need to be crash tested with a TTC sign as one unit.
Section 6F.70	Modify temp. barrier for Ped.	Caltrans pedestrian experts and ADA managers provided policy changes where Temporary Traffic Barriers are used as Channelizing Devices.
Section 6F.71	Modify policy for Pedestrian	Caltrans pedestrian experts and ADA managers provided policy changes for Longitudinal Channelizing Devices.
Section 6F.87	Add rumble strip warning signs	Rumble strips are not TCDs, but the warnings signs for them are TCDs. Policies are added for use of warning signs for rumble strips.
Section 6F.88	Delete color policy	Traffic screen mounted on top of barriers are mostly made of plywood and they are gray in color not orange. No color policy is needed and should be deleted.
Section 6F. 101-103(CA)	Language cleanup	Those policies were written for specifications. They need to be more in line with CA MUTCD style.
Section 6F. 107(CA)	Sign location change	Caltrans bought roll-up SC19(CA) signs to be used in lane closures. So the sign location policy needs to be changed for those roll-up signs.
6H TA-4 notes	Add signs	To allow the use of both Fed and CA signs. Reduced # of signs in inventory.
Figure 6H-04	Add signs	Delete CA figure, add CA signs to Fed figure according to new policy.
6H TA-5 notes	Add signs	To allow the use of both Fed and CA signs. Delete duplicate policy notes.
Figure 6H-05	Add signs	Delete CA figure, add CA signs to Fed figure according to new policy.
6H, TA-18 notes	Policy added for state highways	State highways are mostly high volume high speed. Self-regulated lane closure should not be used.
Figure 6H-26	Optional signs added	The TTC layout makes it hard for motorists to turn left from any approach. Optional No Left Turn signs are added.
Figure 6H-27	Flagger positions added	The Fed figure shows use of flagger signs but does not show where flaggers are stationed. Flagger stations are added.
6H, TA-28 notes	Modify policy for Pedestrian	Caltrans pedestrian experts and ADA managers provided policy changes for pedestrian in TTC zones.
Figure 6H-28	Dimensioning	Pedestrian path width changed to be consistent with other parts of CA MUTCD

6H, TA-37 notes	Policy added for state highways	Policies modified based on Caltrans Standard Plans for freeway TTC.
6H TA-101 (CA) notes	Delete policies	Delete duplicate policy notes.
6H TA-102 (CA) notes	Delete policies	Delete duplicate policy notes.
Figure 6H-102(CA)	Change Figure	Graphical error made bike lane as part of #2 vehicle lane. Bike lane should be outside of lane #2.

Proposal:

Section 6C.01 Temporary Traffic Control Plans

12 *Reduced speed limits should be used only in the specific portion of the TTC zone where conditions or restrictive features are present. However, frequent changes in the speed limit should be avoided. A TTC plan should be designed so that vehicles can travel through the TTC zone with a speed limit reduction of no more than 10 mph.*
13 *A reduction of more than 10 mph in the speed limit should be used only when required by restrictive features in the TTC zone. Where restrictive features justify a speed reduction of more than 10 mph, additional driver notification should be provided. The speed limit should be stepped down in advance of the location requiring the lowest speed, and additional TTC warning devices should be used.*
14 *Reduced speed zoning (lowering the regulatory speed limit) should be avoided as much as practical because drivers will reduce their speeds only if they clearly perceive a need to do so.*
~~**Standard:**~~
~~**The justification for the reduced speed limit shall be documented in writing, in satisfaction of the Engineering and Traffic Survey (E&TS) requirement. Refer to CVC 627 for E&TS.**~~
Support:
15 Research has demonstrated that large reductions in the speed limit, such as a 30 mph reduction, increase speed variance and the potential for crashes. Smaller reductions in the speed limit of up to 10 mph cause smaller changes in speed variance and lessen the potential for increased crashes. A reduction in the regulatory speed limit of only up to 10 mph from the normal speed limit has been shown to be more effective.
Support:
Three methods for speed reduction in TTC zones are used per below:

1. Advisory speed reduction uses a series of warning signs and devices to warn public where traveling speed needs to be reduced due to various work zone conditions.
2. Temporary reduction in regulatory speed limit is used where and when workers are present mostly during short and intermediate term TTC.
3. Construction zone stationary speed limit reduction is used mostly for long term TTC zones where lower speeds are needed due to road conditions and the lowered speed limit is enforced even if workers are not present (See Section 6G.02 for work durations).

Standard:
All three methods of speed reduction through TTC zones shall be applied based on engineering judgment and shall be documented in writing. Both temporary and stationary speed limit reductions shall be communicated with state or local law enforcement agencies before they are applied.

Advisory Speed Reduction:

Support:

Advisory Speed is a recommended speed for all vehicles operating on a section of TTC zone based on operating characteristics and conditions.

Guidance:

An advisory speed plaque (see Section 6F.52) mounted below a warning sign should be used to warn road users of the advisory speed. A Speed Limit (R2-1) sign should not be used for this situation. To preserve the effectiveness of the W13-1P plaque, it should not be used unless the condition to which it applies is immediate and ~~will be experienced by~~ prevalent for all motorists.

The advisory speed should be determined based on free-flowing traffic conditions. Because changes in conditions, such as roadway geometrics, surface characteristics, or sight distance, could affect the advisory speed, each location should be evaluated periodically or when conditions change.

Option:

An Advisory Speed (W13-1P) plaque may be used to indicate the advisory speed for the following conditions: horizontal alignment (Section 2C.07, 2C.08), truck rollover (Section 2C.13), ramps (Section 2C.14), blocked view (Section 2C.18), road / lane narrows (Section 2C.19), bump & dip (Section 2C.28), speed hump (Section 2C.29), pavement condition (Section 2C.30), detour (Figure 6F-1), one lane road (Figure 6H-11, 6H-12), lane closure (Figure 6H-37).

~~Option:~~

~~The Advisory Speed (W13-1) plaque may be used in combination with various warning type signs to decrease speed at a particular location.~~

Standard:

The Advisory Speed plaque shall not be used in conjunction with any sign other than a warning sign, nor shall it be used alone.

Support:

Typical use and placement of the W13-1P plaque can be found in the following Typical Applications from Part6H: Figure 6H-7(CA), 6H-11, 6H-12(CA), 6H-31(CA), 6H-32(CA), 6H-36(CA), 6H-37, 6H-39, 6H-43. Advisory speed is the recommended speed. Regulatory speed limit signs are not to be used. An example of effectively reduce speed using advisory speed is using transverse rumble strips (Section 6F.87) and BUMP warning signs (Section 2C.28). Department of transportation experimented with them and produced measureable results.

Temporary Reduction in Regulatory Speed Limit

Guidance:

Speed reduction is one of the key elements of worker safety and TTC management and should be considered to improve worker safety (Section 6D.03). Protection of workers during working hours is provided for under CVC Section 22362.

~~Construction speed zones~~ Temporary reduction in regulatory speed limit should be avoided if traffic can be controlled by other means. Speed restrictions should be imposed on the public only when necessary for worker or public safety.

Reduced speed limits ~~in construction zones may~~ should be established by an engineering analysis, which may include a traffic and engineering survey. ~~Before using a C17(CA) sign, work~~ TTC zone conditions should be analyzed to determine what maximum speed limit would be appropriate for that particular location.

Support:

~~The C17(CA) sign~~ Temporary reduction in regulatory speed limits is authorized for use by CVC Section 22362. This section provides authority to post a speed limit of not less than 25 mph at locations where employees of any contractor, or of the agency in charge of the job, are engaged in work upon the roadway.

Posting unrealistically low speed limits will result in loss of sign credibility and ~~a~~ high violation rates.

Standard:

The reduced speed limit shall not be less than 25 mph. Refer to CVC 22362.

~~The C17(CA)~~ Temporary regulatory speed limit signs shall only be used in conjunction with appropriate advance warning signs.

~~Speed restriction~~ Temporary regulatory speed limit signs shall be used only during working hours when workers are present. They shall be removed, or covered during non-working hours. ~~unless the movement of traffic through the TTC zone is affected during non-working hours as well. Refer to CVC 21367.~~

Signs shall be removed immediately following completion of the construction or change in the conditions for which they were installed. ~~**When the construction is completed or the speed restriction is no longer necessary, the formal speed zone orders shall be revoked.**~~

~~**Speed restriction**~~ **Temporary regulatory speed limit signs shall be posted only in areas where** ~~**the traveling public is affected by construction operations.**~~ **worker or public safety is affected by traffic in the TTC zone**.

Guidance:

~~The C17(CA)~~ Temporary regulatory speed limit signs should be placed within 400 feet of the zone where workers are on the roadway or so nearly adjacent as to be endangered by traffic.

Support:

An example of applying temporary reduction in regulatory speed limit is when work on the shoulder with minor encroachment (Section 6G.08). The remaining lane width is reduced to 10 feet and workers are nearly adjacent to the roadway to be endangered by traffic. Temporary reduction in regulatory speed limit will provide increased safety for workers during short-term or intermediate-term TTC (See Section 6G.02 for work duration).

Option:

~~The C17(CA)~~ Temporary regulatory speed limit signs may be provided by the agency having jurisdiction over the street or road.

Standard:

A ROAD WORK SPEED LIMIT (C17(CA)) sign or a WORK ZONE (G20-5aP) plaque (see Figure 6F-3) mounted above a Speed Limit sign shall be used as temporary regulatory speed limit signs. Any R2 series of speed limit signs alone shall not be used for this purpose.

Option:

An END WORK ZONE SPEED LIMIT (R2-12) sign (see Figure 6F-3) or Optional back side of C17(CA) sign may be installed at the downstream end of the reduced speed limit zone. See Section 6F.12 for details.

~~The C17(CA) should be posted a minimum distance of 400 feet in advance of where, and when workers are present; and~~ In addition to the temporary regulatory speed limit signs, the Speed Reduction (W3-5) sign or Speed Zone Ahead (R2-4(CA)) sign maybe used to informs road users of the reduced speed limit in TTC zone.

More than 10 mph reduction in speed limit is not recommended but may be used if necessary. See stationary speed limit reduction below for proper procedures.

Support:

~~See Section 2B.13 for permanent Speed Limit and Speed Zone signs.~~

See Section 6F.12 for Road Work/Speed Zone (C17(CA)) sign, WORK ZONE (G20-5aP) plaque and END WORK ZONE SPEED LIMIT (R2-12) sign.

~~**Construction Speed Zones:**~~

Construction Zone Stationary Speed Reductions Using Speed Restriction Signs

Support:

Construction ~~speed~~ zone~~s~~ stationary speed reductions are established on roads under construction where reduced speed is necessary to limit the risk of an accident to workers and the traveling public during all hours of the day and night. Refer to CVC Section 21367. Construction zone is defined by CVC Section 21370. Erect and use of speed restriction signs is authorized by CVC Section 21359

~~**Standard:**~~

~~**Where traffic obstructions exist only during the hours of construction, the speed zone signs shall be covered during non-working hours.**~~

Per CVC 21367, agency can "...regulate the movement of traffic...whenever the traffic would endanger the safety of workers or the work would interfere with or endanger the movement of traffic through the area." If obstructions would be present throughout the project duration the signs would not need to be covered or removed. This would also apply to situations where the construction work changes the highway configuration, curvature or elevation, making it necessary to post reduced speed limits.

Guidance:

Construction ~~speed~~ zone~~s~~ stationary speed reductions should be avoided if traffic can be controlled by other means. Speed restrictions should be imposed on the public only when necessary for worker or public safety.

~~Guidance:~~

The traveled way should be signed and delineated to communicate physical conditions to the motorists such as curvature, narrow roadways, detours, rough roads, dips or ~~h~~bumps, etc.

Option:
Reduced speed limits in construction zones may be established by an engineering analysis, which may include a traffic and engineering survey.
Guidance:
Construction zone speed limits should be reduced in sequential stages and where overall reduction of 15 mph or more is required. The first stage of the sequence should be a reduction of 10 mph and the final stage reduction should be 10 mph or 5 mph, as necessary.
~~Option:~~ Support:
As an example, if the project falls within an established 55 mph zone, and a 40 mph speed limit is considered necessary, it ~~may~~ can be posted only if the approaching speed limits are lowered in two stages (i.e., first to a 45 mph speed limit followed by a reduction to the desired 40 mph.
Standard:
The reduced speed limit shall not be less than 25 mph. Refer to CVC 22362.
Guidance:
Speed Limit and End Zone signs should be installed at locations jointly agreed upon by the Traffic Engineer and the Construction Engineer.
~~Support:~~
~~Orders for construction speed zones are ordinarily issued for the entire length of the construction project. This avoids the necessity and resulting delay of obtaining a new order each time the speed restriction signs require relocation to fit the conditions. It is not the intention, however, that the entire length be posted for the duration of the contract.~~
Standard:
Speed restriction signs shall be posted only in areas where the traveling public is affected by construction operations.
Guidance:
As the construction progresses, signs should be moved as appropriate.
Standard:
~~**Signs shall be used only during working hours and removed, or covered during non-working hours unless the movement of traffic through the TTC zone is affected during non-working hours as well. Refer to CVC 21367.**~~
Speed restriction signs shall consist of a WORK ZONE (G20-5aP) plaque (see Figure 6F-3) mounted above a Speed Limit sign to emphasize that a reduced speed limit is in effect within a TTC zone.
Any R2 series of speed limit signs by itself or ROAD WORK SPEED LIMIT (C17(CA)) sign shall not be used for construction zone stationary speed reduction. See Section 6F.12 for details.
Option:
An END WORK ZONE SPEED LIMIT (R2-12) sign (see Figure 6F-3) may be installed at the downstream end of the reduced speed limit zone. See Section 6F.12 for details.
Standard:
Signs shall be removed immediately following completion of the construction or change in the conditions for which they were installed. ~~**When the construction is completed or the speed restriction is no longer necessary, the formal speed zone orders shall be revoked.**~~
Option:
~~The C17(CA)~~ Speed restriction signs may be provided by the agency having jurisdiction over the street or road.
~~The C17(CA) should be posted a minimum distance of 400 feet in advance of where, and when workers are present; and~~ In addition to the speed restriction signs, the Speed Reduction (W3-5) sign or Speed Zone Ahead (R2-4(CA)) sign maybe used to informs road users of the reduced speed limit in TTC zone.
Support:
An example of applying construction zone stationary speed reductions using speed restriction signs is during typical freeway median replacement work. Often temporary traffic barriers are placed along the edge of traveled way to separate traffic from construction work. Speed limit reduction should be applied where temporary traffic barriers are placed so traffic will move at reduced speed where lanes are narrowed and left shoulders are closed.
See Section 2B.13 for permanent Speed Limit and Speed Zone signs.
See Section 6F.12 for ~~Road Work/Speed Zone (C17(CA)) sign,~~ WORK ZONE (G20-5aP) plaque and END WORK ZONE SPEED LIMIT (R2-12) sign.

Section 6C.10 One-Lane, Two-Way Traffic Control

Standard:

01 **Except as provided in Paragraph 5, when traffic in both directions must use a single lane for a limited distance, movements from each end shall be coordinated.**

Guidance:

02 *Provisions should be made for alternate one-way movement through the constricted section via methods such as flagger control, a flag transfer, a pilot car, traffic control signals, or stop or yield control.*

03 *Control points at each end should be chosen to permit easy passing of opposing lanes of vehicles.*

04 *If traffic on the affected one-lane roadway is not visible from one end to the other, then flagging procedures, a pilot car with a flagger used as described in Section 6C.13, or a traffic control signal should be used to control opposing traffic flows.*

Option:

05 If the work space on a low-volume street or road is short and road users from both directions are able to see the traffic approaching from the opposite direction through and beyond the worksite, the movement of traffic through a one-lane, two-way constriction may be self-regulating.

Standard:

Paragraph 5 shall not be applicable to State highways. Paragraph 1 shall be applied on state highways.

Section 6C.12 Flag Transfer Method of One-Lane, Two-Way Traffic Control

Support:

01 The driver of the last vehicle proceeding into the one-lane section is given a red flag (or other token) and instructed to deliver it to the flagger at the other end. The opposite flagger, upon receipt of the flag, then knows that traffic can be permitted to move in the other direction. A variation of this method is to replace the use of a flag with an official pilot car that follows the last road user vehicle proceeding through the section.

Guidance:

02 *The flag transfer method should be employed only where the one-way traffic is confined to a relatively short length of a road, usually no more than 1 mile in length.*

Section 6C.12, at the end this text should be added:

Standard:

This section shall not be applicable on State highways. Section 6C.13 shall be applied on state highways.

Section 6D.01 Pedestrian Considerations

Guidance:

18 *Covered walkways should be sturdily constructed and adequately lighted for both day and nighttime use.*

Section 6E.04 Automated Flagger Assistance Devices

Guidance:

17 *A State or local agency that elects to use AFADs should adopt a policy, based on engineering judgment, governing AFAD applications. The policy should also consider more detailed and/or more restrictive requirements for AFAD use, such as the following:*

A. Conditions applicable for the use of Method 1 and Method 2 AFAD operation,
B. Volume criteria,
C. Maximum distance between AFADs,
D. Conflicting lenses/indications monitoring requirements,
E. Fail safe procedures,
F. Additional signing and pavement markings,
G. Application consistency,
H. Larger signs or lenses to increase visibility, and
I. Use of backplates.

Standard:

On state highways, AFAD shall not be used in place of human flaggers without prior approval from California Department of Transportation.

Section 6F.12 Work Zone and Higher Fines Signs and Plaques

Option:

01 A WORK ZONE (G20-5aP) plaque (see Figure 6F-3) may be mounted above a Speed Limit sign to emphasize that a reduced speed limit is in effect within a TTC zone. An END WORK ZONE SPEED LIMIT (R2-12) sign (see Figure 6F-3) may be installed at the downstream end of the reduced speed limit zone.

Standard:

Where construction zone stationary speed reduction is applied (See Section 6C.01 for different methods of speed reduction), a WORK ZONE (G20-5aP) plaque shall be mounted above a Speed Limit sign to form a speed restriction sign to emphasize that a regulatory speed limit reduction is in effect 24 hours a day, 7 days a week. Any R2 series of speed limit signs by itself or ROAD WORK SPEED LIMIT (C17(CA)) sign shall not be used for this application.

Signs shall be removed immediately following completion of the construction or change in the conditions for which they were installed.

Option:

In addition to the speed restriction signs, the Speed Reduction (W3-5) sign or Speed Zone Ahead (R2-4(CA)) sign maybe used to informs road users of the reduced speed limit in TTC zone.

Guidance:

02 *A BEGIN ~~HIGHER~~* DOUBLE *FINES ZONE (R2-10) sign (see Figure 6F-3) should be installed at the upstream end of a work zone where increased fines are imposed for traffic violations, and an END ~~HIGHER~~* DOUBLE *FINES ZONE (R2-11) sign (see Figure 6F-3) should be installed at the downstream end of the work zone.*

Option:

03 Alternate legends such as BEGIN (or END) DOUBLE FINES ZONE may also be used for the R2-10 and R2-11 signs.

04 A ~~FINES HIGHER,~~ FINES DOUBLE, ~~or $XX FINE~~ plaque (see Section 2B.17 and Figure 6F-3) may be mounted below the Speed Limit sign if increased fines are imposed for traffic violations within the TTC zone.

05 Individual signs and plaques for work zone speed limits and higher fines may be combined into a single sign or may be displayed as an assembly of signs and plaques.

The TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONES (C40(CA)) and TRAFFIC FINES DOUBLED IN WORK ZONES (C40A(CA)) signs may be placed approximately 500 feet in advance of the first required TTC sign(s). The placement of the C40(CA) and C40A(CA) signs is at the discretion of the responsible person(s) in charge of the work zone.

Support:

Refer to CVC 42009 for fines for offenses committed in highway construction or maintenance area. In California, as per CVC only doubling of the fines is allowed, not higher fines of other denominations.

Guidance:
The C40A(CA) sign is intended to be manufactured as a fabric sign and should be used on a short term (daily) basis only. Longer term situations should use the C40(CA) sign.
~~Support:~~
~~CVC 22362 applies to "When Workers are Present" condition and signs need to be covered or removed when no work is in progress. However, per CVC 21367, agency can "...regulate the movement of traffic...whenever the traffic would endanger the safety of workers or the work would interfere with or endanger the movement of traffic through the area." If obstructions~~
~~would be present throughout the project duration the signs would not need to be covered or removed. This would also apply to situations where the construction work changes the highway configuration, curvature or elevation, making it necessary to~~
~~post reduced speed limits.~~

Option:
~~A WORK ZONE (G20-5aP) plaque may be mounted above a Speed Limit sign to emphasize that a permanent (24 hours a day, 7 days a week) reduced speed limit is in effect within a TTC zone. An END WORK ZONE SPEED LIMIT (R2-12) sign (see Figure 6F-3) may be installed at the downstream end of the reduced speed limit zone.~~
The Road Work/Speed Limit (C17(CA)) sign may be used for the protection of workers during working hours for temporary reduction in regulatory speed limit within a TTC zone. See Section 6C.01 for different methods of speed reduction.
An END WORK ZONE SPEED LIMIT (R2-12) sign (see Figure 6F-3) or optional backside of C17(CA) sign may be installed at the downstream end of the reduced speed limit zone.
Standard:
The C17(CA) sign shall not be used for construction zone stationary speed reduction.
The C17(CA) sign shall only be used in conjunction with appropriate advance warning signs.
The C17(CA) signs shall be removed or covered promptly when no longer applicable.
Support:
The C17(CA) sign is authorized for use by CVC Section 22362. This section provides authority to post a speed limit of not less than 25 mph at locations where employees of any contractor, or of the agency in charge of the job, are engaged in work upon the roadway.
Posting unrealistically low speed limits will result in loss of sign credibility and ~~a~~ high violation rates.
Guidance:
Before using a C17(CA) sign, work zone conditions should be analyzed to determine what maximum speed limit would be appropriate for that particular location.

The C17(CA) sign should be placed within 400 feet of the zone where workers are on the roadway or so nearly adjacent as to be endangered by traffic.
Option:
The C17(CA) sign may be provided by the agency having jurisdiction over the street or road.
~~Guidance:~~
~~The C17(CA) should be posted a minimum distance of 400 feet in advance of where, and when workers are present; and~~ In addition to the C17(CA) signs, the Speed Reduction (W3-5) sign or Speed Zone Ahead (R2-4(CA)) sign maybe used to informs road users of the reduced speed limit in TTC zone.
A WORK ZONE (G20-5aP) plaque (see Figure 6F-3) mounted above a Speed Limit sign may be used in place of C17(CA) sign for temporary reduction in regulatory speed limit.

Section 6F.18 ROAD (STREET) WORK Sign (W20-1)

Guidance:
01 *The ROAD (STREET) WORK (W20-1) sign (see Figure 6F-4), which serves as a general warning of obstructions or restrictions, should be located in advance of the work space or any detour, on the road where the*
work is taking place.
02 *Where traffic can enter a TTC zone from a crossroad or a major (high-volume) driveway, an advance warning sign should be used on the crossroad or major driveway.*
Standard:

03 **The ROAD (STREET) WORK (W20-1) sign shall have the legend ROAD (STREET) WORK, XX FEET, XX MILES, or AHEAD.**

Option:

04 The ROAD (STREET) WORK Informational Plaque (C23B(CA)) may be used with ROAD (STREET) WORK (W20-1)
sign.

Standard:

05 **The message displayed on the ROAD (STREET) WORK Informational plaque (C23B(CA)) shall be worded in terms common to motorists, as shown in examples below. The height and width of the plate will vary according to**
the lettering size and message. When used on W20-1 sign the C23C(CA) plaque should cover the word ROAD or WORK or both completely where applicable. The width of the plate shall not exceed the overall width of the W20-1 sign.

Section 6F.22 Lane(s) Closed Signs (W20-5, W20-5a)

Standard:

01 **The Lane(s) Closed sign (see Figure 6F-4) shall be used in advance of that point where one or more**
through lanes of a multi-lane roadway are closed.

02 **For a single lane closure, the ~~Lane Closed~~ LANE CLOSED (W20-5) sign (see Figure 6F-4) shall have the legend RIGHT (LEFT) LANE CLOSED, XX FEET, XX MILES, or AHEAD. Where two adjacent lanes are closed, the**
W20-5a sign (see Figure 6F-4) shall have the legend XX RIGHT (LEFT) LANES CLOSED, XX FEET, XX
MILES, or AHEAD.

Option:

03 The ~~Lane Closed~~ LANE(S) CLOSED (W20-5, W20-5a or C20(CA)) sign by itself, or in combination with LEFT (C20A(CA)) plaque and/or Numeral (C20B(CA)) plaque may be used.

Section 6F.37 Shoulder Work Signs (W21-5, W21-5a, W21-5b)

Guidance:

04 *On freeways and expressways, the RIGHT (LEFT) SHOULDER CLOSED XX FT or AHEAD (W21-5b) sign*
followed by RIGHT (LEFT) SHOULDER CLOSED (W21-5a) sign should be used in advance of the point where
the shoulder work occurs and should be preceded by a ROAD WORK AHEAD sign.

Option:

05 The SHOULDER WORK AHEAD (C24(CA)) sign may be used in advance of the point where ~~maintenance, reconstruction,~~ shoulder works or utility operations involve the shoulder but the roadway is unobstructed.

Section 6F.60 Portable Changeable Message Signs

30 *Portable changeable message signs should be placed off the shoulder of the roadway and behind a traffic*
barrier, if practical. Where a traffic barrier is not available to shield the portable changeable message sign, it
should be placed off the shoulder and outside of the clear zone. If a portable changeable message sign has to be
placed on the shoulder of the roadway or within the clear zone, it should be delineated with retroreflective TTC

devices.
When used, advanced warning delineation is not needed if the portable changeable message sign is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway (see Section 6C.04). If the portable changeable message sign is placed on shoulder or partially blocking the shoulder (including overhangs), the shoulder should be closed off by a taper of channelizing devices with a length of 1/3 L using the formulas in Tables 6C-3, 6C-3(CA) and 6C-4 (see Section 6C.08).
Option:
For incident management before additional resources are available or for short duration use (see Section 6G.02) or when portable changeable message sign is placed well beyond the shoulder but partially within 15 feet from the edge of any roadway it may be delineated with a minimum of a 30 feet taper formed by three traffic cones.

31 *When portable changeable message signs are used in TTC zones, they should display only TTC messages.*
32 *When portable changeable message signs are not being used to display TTC messages, they should be relocated such that they are outside of the clear zone or shielded behind a traffic barrier and turned away from*
traffic. If relocation or shielding is not practical, they should be delineated with retroreflective TTC devices.
If the portable changeable message sign is stored within a shoulder or partially blocking a shoulder, the shoulder should be closed according to Section 6G.07. If the portable changeable message sign is stored well beyond the shoulder but within the clear zone, it should be delineated by a taper of channelizing devices with a length of 1/3 L using the formulas in Tables 6C-3, 6C-3(CA) and 6C-4 (see Section 6C.08). Clear zone is defined by AASHTO's "Roadside Design Guide" (see Section 1A.11).

33 *Portable changeable message sign trailers should be delineated on a permanent basis by affixing retroreflective material, known as conspicuity material, in a continuous line on the face of the trailer as seen by*
oncoming road users. ~~*If the sign trailer is located within 15 feet of the edge of the traveled way, it should be delineated with*~~
~~*a taper consisting of 9 cones placed at a spacing of 25 feet apart.*~~

Section 6F.68 Type 1, 2, or 3 Barricades

22 **A sign shall be installed with the appropriate legend concerning permissible use by local road users**
(see Section 6F.09). Adequate visibility of the barricades from both directions shall be provided.
Option:
23 Signs may be installed on barricades (see Section 6F.03).
24 ~~Type III b~~ Barricades may be used as sign supports if the barricades have been successfully crash tested as one unit with a construction area sign attached.

Section 6F.70 Temporary Traffic Barriers as Channelizing Devices

Support:
01 Temporary traffic barriers are not TTC devices in themselves; however, when placed in a position identical to a line of channelizing devices and marked and/or equipped with appropriate channelization features to provide guidance and warning both day and night, they serve as TTC devices.
Standard:
02 **Temporary traffic barriers serving as TTC devices shall comply with requirements for such devices as set forth throughout Part 6.**

03 **Temporary traffic barriers (see Section 6F.85) shall not be used solely to channelize road users, but also to protect the work space. If used to channelize vehicular traffic, the temporary traffic barrier shall be supplemented with delineation, pavement markings, or channelizing devices for improved daytime and nighttime visibility.**

Guidance:

04 *Temporary traffic barriers should not be used for a merging taper except in low-speed urban areas.*

05 *When it is necessary to use a temporary traffic barrier for a merging taper in low-speed urban areas or for a constricted/restricted TTC zone, the taper length should be designed to optimize road user operations considering the available geometric conditions.*

Standard:

06 **When it is necessary to use a temporary traffic barrier for a merging taper in low-speed urban areas or for a constricted/restricted TTC zone, the taper shall be delineated.**

Guidance:

07 *When used for channelization, temporary traffic barriers should be of a light color for increased visibility.*

Option:

Side reflectors with cube-corner lenses or top mounted reflectors (facing the driver) may be used on temporary traffic barriers.

Guidance:

If used, the spacing of these reflectors should not exceed a distance in feet equal to 1.0 times the speed limit in mph through the TTC zone.

When temporary traffic barriers are used as channelizing devices for pedestrians and / or to separate pedestrians from motor vehicle traffic, temporary traffic barriers should be placed to provide adequate pedestrians access.

The end treatments and / or end flares of the temporary traffic barrier system should be placed so they do not block pedestrian access and should be accessible to pedestrians who have visual disabilities.

Support:

See Section 6F.74 for details on detectable edging for pedestrians. See Section 6F.85 for details on using temporary traffic barriers to separate pedestrians from motor vehicle traffic. See Section 6D.02 for details on pedestrian accessibility considerations.

Section 6F.71 Longitudinal Channelizing Devices

Support:

01 Longitudinal channelizing devices are lightweight, deformable devices that are highly visible, have good target value, and can be connected together.

Standard:

02 **If used singly as Type 1, 2, or 3 barricades, longitudinal channelizing devices shall comply with the**
general size, color, stripe pattern, retroreflectivity, and placement characteristics established for the devices described in this Chapter.

Guidance:

03 *If used to channelize vehicular traffic at night, longitudinal channelizing devices should be supplemented with retroreflective material or delineation for improved nighttime visibility.*

Option:

04 Longitudinal channelizing devices may be used instead of a line of cones, drums, or barricades.

05 Longitudinal channelizing devices may be hollow and filled with water as a ballast.

06 Longitudinal channelizing devices may be used for pedestrian traffic control.

Standard:

07 **If used for pedestrian traffic control, longitudinal channelizing devices shall be interlocked to delineate or channelize flow. The interlocking devices shall not have gaps that allow pedestrians to stray from the channelizing path.**

Guidance:

When longitudinal channeling devices are used as channelizing devices for pedestrians, the longitudinal channeling devices should be placed to adequate pedestrian access.

Support:

See Section 6F.74 for details on detectable edging for pedestrians. See Section 6D.02 for details on pedestrian accessibility considerations.

Guidance:

08 *Longitudinal channelizing devices have not met the crashworthy requirements for temporary traffic barriers and should not be used to shield obstacles or provide positive protection for pedestrians or workers.*

Standard:

If used instead of a line of cones, drums, or barricades to channelize vehicular traffic, longitudinal channelizing devices shall met the crashworthy requirements for Category 2 hardware for Work Zones (see section 6F.01).

Section 6F.87 Rumble Strips

Support:

01 Transverse rumble strips consist of intermittent, narrow, transverse areas of rough-textured or slightly raised or depressed road surface that extend across the travel lanes to alert drivers to unusual vehicular traffic conditions. Through noise and vibration they attract the driver's attention to such features as unexpected changes in alignment and to conditions requiring a stop.

02 Longitudinal rumble strips consist of a series of rough-textured or slightly raised or depressed road surfaces located along the shoulder to alert road users that they are leaving the travel lanes.

Standard:

03 **If it is desirable to use a color other than the color of the pavement for a longitudinal rumble strip, the color of the rumble strip shall be the same color as the longitudinal line the rumble strip supplements.**

04 **If the color of a transverse rumble strip used within a travel lane is not the color of the pavement, the color of the rumble strip shall be white, black, or orange.**

Option:

05 Intervals between transverse rumble strips may be reduced as the distance to the approached conditions is diminished in order to convey an impression that a closure speed is too fast and/or that an action is imminent. A sign warning drivers of the onset of rumble strips may be placed in advance of any transverse rumble strip installation.

When semi permanent rumble strips (grooved in) are used, the GROOVED PAVEMENT (W8-15) sign may be used in advance of the rumble strip installation.

When temporary rumble bars (also known as portable transverse rumble strips) are used, the BUMP (W8-1) sign may be used in advance of the rumble strip installation.

Guidance:

06 *Transverse rumble strips should be placed transverse to vehicular traffic movement. They should not adversely affect overall pavement skid resistance under wet or dry conditions.*

07 *In urban areas, even though a closer spacing might be warranted, transverse rumble strips should be designed in a manner that does not promote unnecessary braking or erratic steering maneuvers by road users.*

08 *Transverse rumble strips should not be placed on sharp horizontal or vertical curves.*
09 *Rumble strips should not be placed through pedestrian crossings ~~or on bicycle routes~~.*
10 ~~*Transverse rumble strips should not be placed on roadways used by bicyclists unless a minimum clear path of*~~
~~*4 feet is provided at each edge of the roadway or on each paved shoulder as described in AASHTO's "Guide to*~~
~~*the Development of Bicycle Facilities" (see Section 1A.11).*~~
11 ~~*Longitudinal rumble strips should not be placed on the shoulder of a roadway that is used by bicyclists unlessa minimum clear path of 4 feet is also provided on the shoulder.*~~
Consideration should be given to making accommodations for bicyclists and pedestrians on roads where longitudinal and transverse rumble strips are considered by practitioner to address run off road and/or cross center line or other collisions. Similarly when transverse rumble strips are used on a temporary basis within a TTC zone consideration by the practitioner should be provided to accommodating bicycles and pedestrians on a temporary basis through the TTC zone while the rumble strips are in place.

Section 6F.88 Screens

Support:
01 Screens are used to block the road users' view of activities that can be distracting. Screens might improve
safety and motor vehicle traffic flow where volumes approach the roadway capacity because they discourage
gawking and reduce headlight glare from oncoming motor vehicle traffic.
Guidance:
02 *Screens should not be mounted where they could adversely restrict road user visibility and sight distance and*
adversely affect the reasonably safe operation of vehicles.

Option:
03 Screens may be mounted on the top of temporary traffic barriers that separate two-way motor vehicle traffic.
03a Temporary traffic screen may be mounted on top of temporary traffic barriers, when barriers are used in transition and
crossover areas for glare-control on high-volume roadways.
Guidance:
03b *If used, temporary traffic screen panels should be contiguous without gaps, minimum 32 inch in height~~. and orange or~~*
~~*red-orange in color.*~~
04 *Design of screens should be in accordance with Chapter 9 of AASHTO's "Roadside Design Guide" (see*
Section 1A.11).

Section 6F.101(CA) LOOSE GRAVEL Sign (W8-7)

Guidance:
01 *The LOOSE GRAVEL (W8-7) sign should be used on chip seal jobs or other areas to warn motorists that there is loose*
gravel on the roadway.
Standard:
02 **When used, the W8-7 sign shall be placed at the beginning of work and at maximum 2000 feet intervals.**
Option:

03 When warning is intended to be directed primarily to motorcyclists, use of the W8-7 sign with motorcycle plaque (W8-
15P) may be considered.
04 The Advisory Speed (W13-1) plaque may be used in combination with the W8-7 sign to indicate the need to decrease
speed at a particular location. *See Section 6C.01.*
Guidance:
05 *The advisory speed should be reasonable or prudent, considering weather, visibility, traffic, surface condition and width*

of the roadway.

Standard:
06 **On State highways for seal coat projects, the W13-1 (35) plaque shall supplement the W8-7 sign ~~during placing~~**
~~and/or brooming of screenings~~ where applicable.

Section 6F.102(CA) NARROW LANE(S) Sign (C12(CA))

Option:
01 The NARROW LANE(S) (C12(CA)) sign may be used, when appropriate, to warn the approaching motorist of a narrow
lane condition.
Guidance:
02 *When used, the C12(CA) sign should be used in conjunction with an Advisory Speed (W13-1) plaque. See Section 6C.01.*

~~*2C.08.*~~

Section 6F.103(CA) OPEN TRENCH Sign (C27(CA))

Standard:
The OPEN TRENCH (C27(CA)) sign shall be used in advance of open trenches in/or adjacent to roadway. The edge of the traveled way shall be defined by edge line delineation consisting of appropriate markers or striping. Edge line delineation shall be white when located on the right of traffic and yellow when located on the left of traffic.
~~Support:~~
~~The 36 x 36 inch size is for conventional state highways and the 48 x 48 inch size is for use on freeways and expressways.~~
Guidance:
Trenches in excess of 0.15 feet in depth but not exceeding 0.25 feet in depth that are less than 8 feet from the edge of traveled way should be identified by LOW SHOULDER (W8-9) ~~portable~~ signs ~~on Type II barricades~~ set in the trench adjacent to the edge of pavement at intervals not ~~to~~ exceeding every 2,000 feet.

Option:
Portable delineators may be placed at intervals not to exceed 100 feet in lieu of edge line delineation.

Standard:
Trenches in excess of 0.25 feet but lesser than 2.5 feet in depth that are less than 8 feet from the edge of traveled way shall be identified by C27(CA) and NO SHOULDER (C31A(CA)) ~~portable~~ signs ~~on Type II or Type III barricades~~ alternately set in the trench at intervals not ~~to~~ exceeding every 2,000 feet.

Guidance:
Channelizers or portable delineators should be placed 2 feet to 6 feet outside of the edge line at 100 feet intervals for above condition.

Trenches in excess of 0.25 feet in depth but not exceeding 2.5 feet in depth that are 8 feet to 15 feet from the edge of traveled way should be identified by C27(CA) ~~portable~~ signs ~~on Type II or Type III barricades~~ set in the trench at intervals not ~~to~~ exceeding every 2,000 feet. Portable d~~D~~elineators should be placed at 200 feet intervals within 2 feet from the edge of the trench and at 100 feet intervals for edge conditions exceeding 0.5 feet in depth.

Trenches in excess of 0.5 feet in depth but not exceeding 2.5 feet in depth that are more than 15 feet from the edge of
traveled way at locations where a recovery area was available prior to construction should be identified by placing portable delineators at 200 feet intervals within 2 feet from the edge of the trench and by placing C27(CA) signs in the trench at intervals not ~~to~~ exceeding every 2,000 feet.

Standard:
Signing for trenches in excess of 2.5 feet in depth shall be based upon engineering judgment or studies (as noted in Section 1A.09) to ensure proper visibility of barricades and signing.

Section 6F.107(CA) Slow For The Cone Zone (SC19(CA) and SC20(CA)) Signs

Option:
The Slow For The Cone Zone (SC19(CA)) and SLOW FOR THE CONE ZONE (SC20(CA)) signs (see Figures 6H-32(CA), 6H-33 & 6H-36(CA)) may be used to remind motorists to slow down when entering a temporary traffic control (TTC) zone
to improve worker and road user safety.

~~Guidance:~~ Option:
If used, both SC19(CA) and SC20(CA) signs may be used along advance warning area, transition area, or activity area of a TTC zone. ~~the Slow For The Cone Zone (SC19(CA)) Sign should be located after the ROAD (STREET) WORK, XX FT, XX~~
~~MILES, or AHEAD (W20-1) sign.~~
~~If used, the SLOW FOR THE CONE ZONE (SC20(CA)) Sign should be located in the portion of the TTC zone where~~
~~channelizing devices are being used.~~

Notes for Figure 6H-4 ~~6H-4(CA)~~ —Typical Application 4
Short Duration or Mobile Operation on a Shoulder

Guidance:
1. In those situations where multiple work locations within a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.
2. In those situations where the distance between the advance signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ROAD WORK AHEAD or SHOULDER WORK AHEAD (C24(CA)) ~~(W21-5)~~ sign.
Option:
3. ~~The ROAD WORK NEXT XX MILES sign may be used instead of the ROAD WORK AHEAD sign~~ Next
Distance (W7-3a) plaque may be used with the SHOULDER WORK (W21-5) or SHOULDER CLOSED C30(CA) sign if the work locations occur over a
distance of more than 2 miles.

4. Stationary warning signs may be omitted for short duration or mobile operations if the work vehicle displays
high-intensity rotating, flashing, oscillating, or strobe lights.
5. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or
strobe lights.

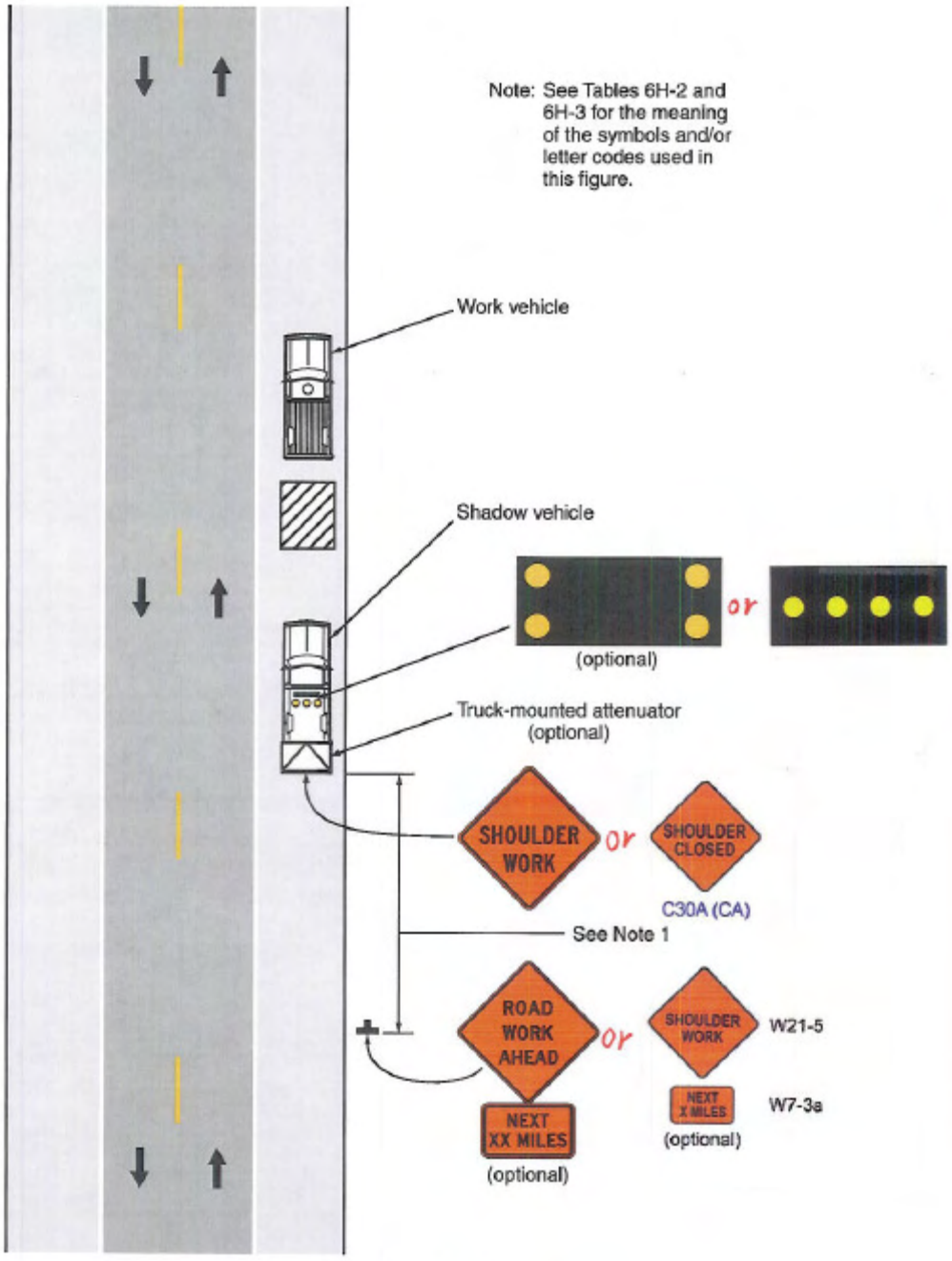
Standard:

6. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

7. If an arrow board is used for an operation on the shoulder, the caution mode shall be used.

**8. Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or
supplies. Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.**

Figure 6H-4. Short-Duration or Mobile Operation on a Shoulder (TA-4)



Typical Application 4

Notes for Figure 6H-5 ~~6H-5(CA)~~ —Typical Application 5
Shoulder Closure on a Freeway

Guidance:
1. SHOULDER CLOSED signs should be used on limited-access highways where there is no opportunity for
disabled vehicles to pull off the roadway.
2. If drivers cannot see a pull-off area beyond the closed shoulder, information regarding the length of the
shoulder closure should be provided in feet or miles, as appropriate.
3. The use of a temporary traffic barrier should be based on engineering judgment.

Standard:

4. Temporary traffic barriers, if used, shall comply with the provisions of Section 6F.85.

Option:

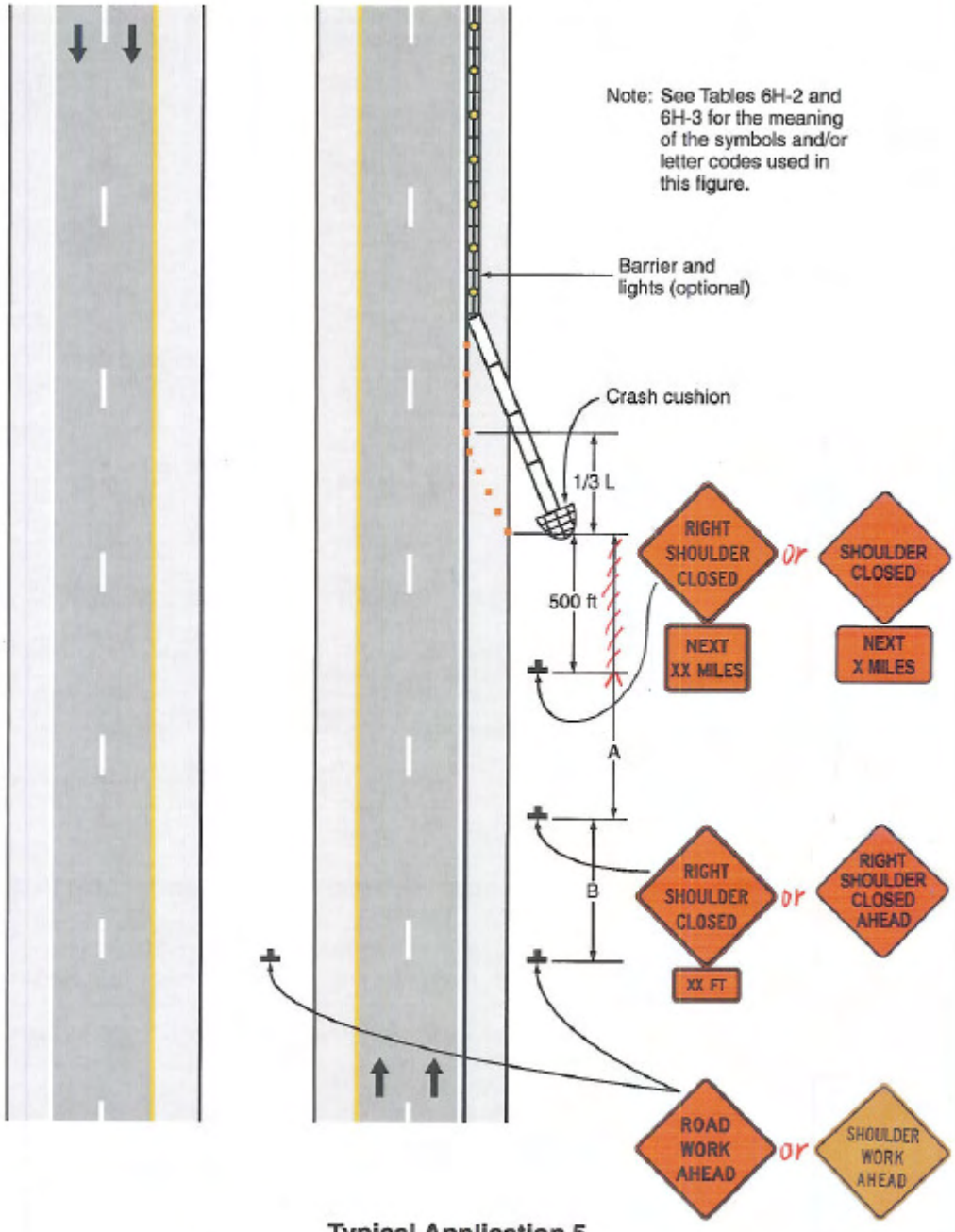
5. The barrier shown in this typical application is an example of one method that may be used to close a shoulder of a long-term project.
6. The warning lights shown on the barrier may be used.

Standard:

~~7. The minimum offset from the upstream end of the barrier to the edge of the traveled way shall be at least 15 feet~~
~~unless shielded by a crash cushion.~~

8. Temporary traffic barriers, including their end treatments, shall be crashworthy. In order to mitigate the effect of
striking the upstream end of a temporary traffic barrier, the end shall be installed in accordance with AASHTO's
"Roadside Design Guide" (see Section 1A.11) by flaring until the end is outside the acceptable clear zone or by
providing crashworthy end treatments. See Section 6F.85 for more details.

Figure 6H-5. Shoulder Closure on a Freeway (TA-5)



Typical Application 5

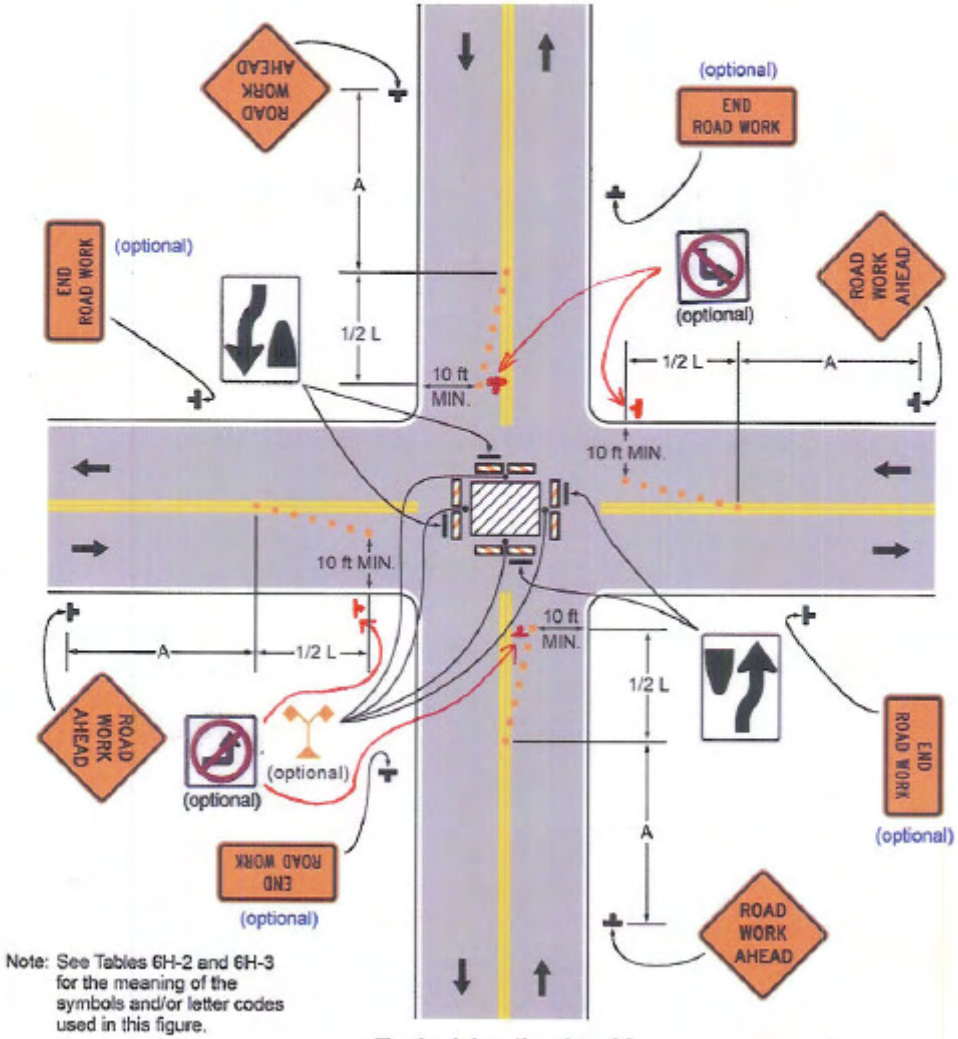
Notes for Figure 6H-18—Typical Application 18
Lane Closure on a Minor Street
Standard:
1. This TTC shall be used only for low-speed facilities having low traffic volumes.
Option:
2. Where the work space is short, where road users can see the roadway beyond, and where volume is low,
vehicular traffic may be self-regulating.
Standard:
3. Where vehicular traffic cannot effectively self-regulate, one or two flaggers shall be used as illustrated in Figure 6H-10 6H-10(CA).
Option:
4. Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

5. A truck-mounted attenuator may be used on the work vehicle and the shadow vehicle.

Standard:

6. **This typical application shall not be used on State highways, Typical Application 10 or Department of Transportation's Standard Plan T13 for flagging shall be used instead. See Section 1A.11 for information regarding this publication.**

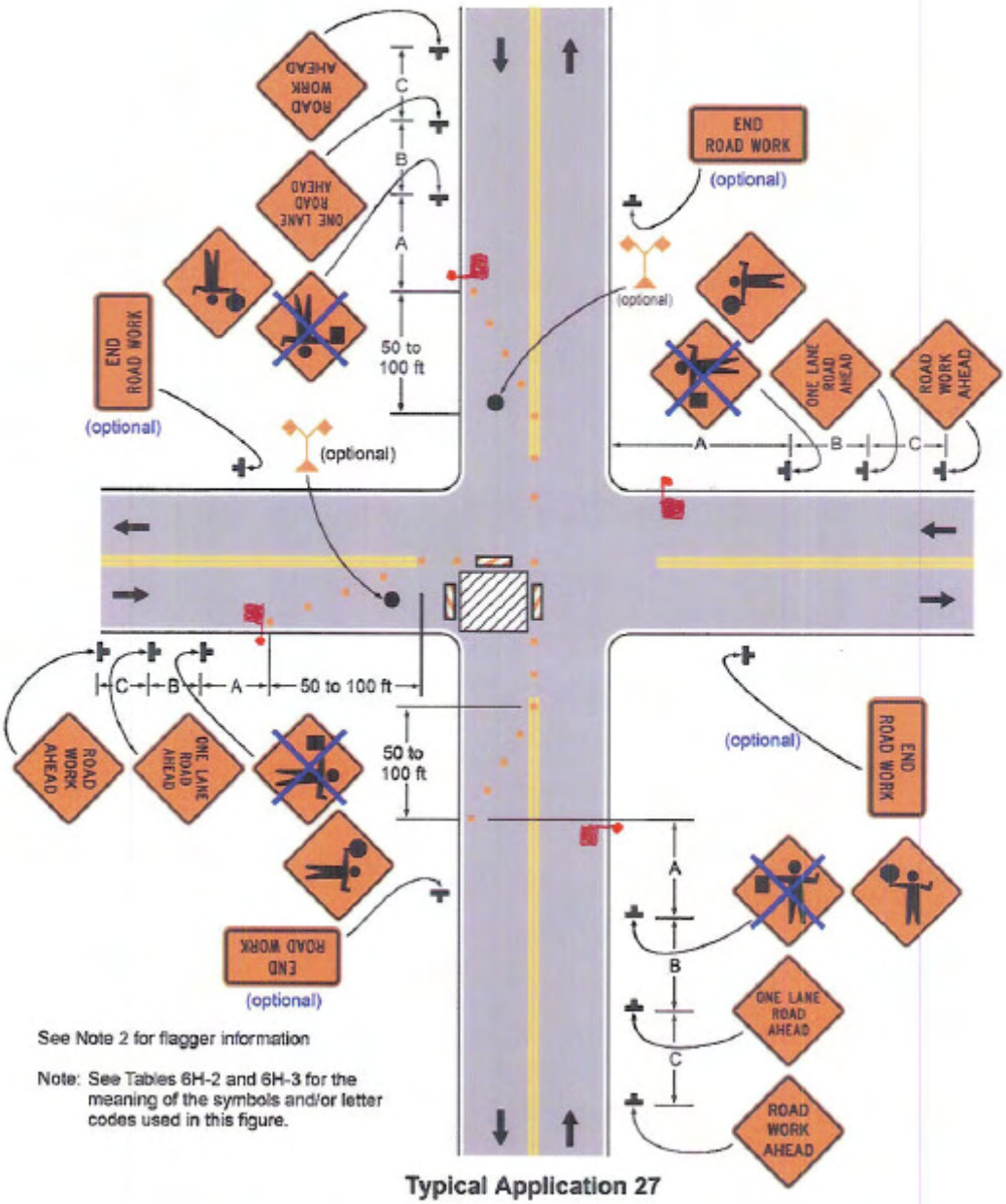
Figure 6H-26. Closure in the Center of an Intersection (TA-26)



Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 26

Figure 6H-27. Closure at the Side of an Intersection (TA-27)



See Note 2 for flagger information

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Typical Application 27

Notes for Figure 6H-28—Typical Application 28
Sidewalk Detour or Diversion

Standard:

1. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Guidance:

2. Where high speeds are anticipated, a temporary traffic barrier and, if necessary, a crash cushion should be used to separate the temporary sidewalks from vehicular traffic.

3. Audible information devices should be considered where midblock closings and changed crosswalk areascause inadequate communication to be provided to pedestrians who have visual disabilities.

Option:

4. Street lighting may be considered.

5. Only the TTC devices related to pedestrians are shown. Other devices, such as lane closure signing or ROAD NARROWS signs, may be used to control vehicular traffic.

6. For nighttime closures, Type A Flashing warning lights may be used on barricades that support signs and close sidewalks.

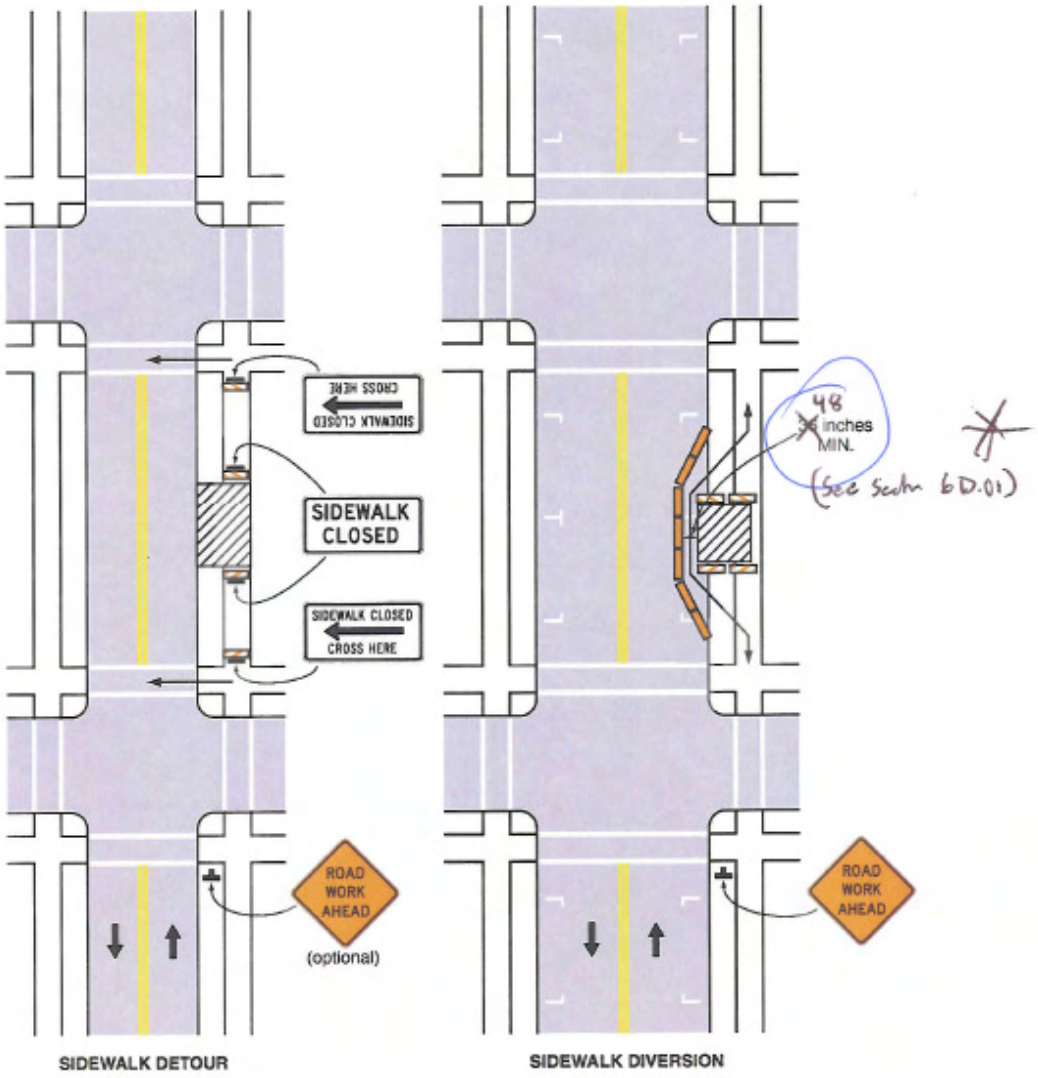
7. Type C Steady-Burn or Type D 360-degree Steady-Burn warning lights may be used on channelizing devices separating the temporary sidewalks from vehicular traffic flow.

8. Signs, such as KEEP RIGHT (LEFT), may be placed along a temporary sidewalk to guide or direct pedestrians.

Guidance:

9. The width of the existing pedestrian facility should be provided for the temporary facility if practical. Traffic control devices and other construction materials and features should not intrude into the usable width of the sidewalk, temporary pathway, or other pedestrian facility. When it is not possible to maintain a minimum width of 60 inches throughout the entire length of the pedestrian pathway, a 60 x 60-inch passing space should be provided at least every 200 feet to allow individuals in wheelchairs to pass.

Figure 6H-28. Sidewalk Detour or Diversion (TA-28)



Typical Application 28

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Notes for Figure 6H-37—Typical Application 37
Double Lane Closure on a Freeway
Standard:
1. An arrow board shall be used when a freeway lane is closed. When more than one freeway lane is closed, a separate arrow board shall be used for each closed lane.
Guidance:
2. Ordinarily, the preferred position for the second arrow board is in the closed exterior lane at the upstream end of the second merging taper. However, the second arrow board should be placed in the closed interior lane at the downstream end of the second merging taper in the following situations:
a. When a shadow vehicle is used in the interior closed lane, and the second arrow board is mounted on the shadow vehicle;
b. If alignment or other conditions create any confusion as to which lane is closed by the second arrow board; and
c. When the first arrow board is placed in the closed exterior lane at the downstream end of the first merging taper (the alternative position when the shoulder is narrow).
Option:
3. Flashing warning lights and/or flags may be used to call attention to the initial warning signs.
Standard:
On state highways during hours of darkness flashing warning lights shall be used to call attention to the initial warning signs. During daylight hours flashing warning lights or flags shall be used to call attention to the initial warning signs.
4. A truck-mounted attenuator may be used on the shadow vehicle.
5. If a paved shoulder having a minimum width of 10 feet and sufficient strength is available, the left and adjacent interior lanes may be closed and vehicular traffic carried around the work space on the right-hand lane and a right-hand shoulder.
Guidance:
6. When a shoulder lane is used that cannot adequately accommodate trucks, trucks should be directed to use the normal travel lanes.
Standard:
7. 3 cones or 2 Type II barricades shall be placed transversely across each closed lane at end of each merging taper and every 2000 feet throughout the lane closure.
8. On freeways, maximum spacing of channelizing devices shall be 50 feet in advance warning and transition areas, 100 feet in activity and termination areas (see figure 6C-1).
9. On state highways LANE CLOSED C30(CA) sign shall be placed every 2000 feet throughout the lane closure adjacent to the open lane within the closed lane.
Support:
10. For State highways, see Department of Transportation's Standard Plan T10. See Section 1A.11 for information regarding this publication.

Notes for Figure 6H-101CA) – Typical Application 101(CA)
Shoulder Closure on Urban (Low Speed) Locations to Accommodate Bicyclists
Guidance:
1. When existing accommodations for bicycle travel are disrupted or closed, information and devices contained in Figures
6H-101(CA) through 6H-104(CA), as appropriate per situation encountered, should be used to consider the needs and
control of bicyclists through a TTC zone.
2. SHOULDER CLOSED signs should be used on limited-access roadways where there is no opportunity for disabled
vehicles to pull off the roadway.
3. If drivers cannot see a pull-off area beyond the closed shoulder, information regarding the length of the shoulder closure

should be provided in feet or miles, as appropriate.
4. The use of a temporary traffic barrier should be based on engineering judgment.
~~**Standard:**~~
~~**5. Where temporary traffic barriers are installed, the ends of the barrier shall be treated in accordance with the**~~
~~**provisions of Section 6F.85.**~~
Option:
6. The barrier shown in this typical application is an example of one method that may be used to close a shoulder of a longterm
project.
7. The warning lights shown on the barrier may be used.
~~**Standard:**~~
~~**8. The minimum offset from the upstream end of the barrier to the edge of the traveled way shall be at least 15 feet**~~
~~**unless shielded by a crash cushion.**~~
Guidance:
9. This typical application should only be used in urban areas where posted speed is 25 mph or less. For applications on
roadway with a posted speed of 30 mph or more use typical application TA-102(CA).
10. All advance warning signs should be placed so that the path of travel for bicycles is not blocked, while maintaining
visibility for road users.
11. Where feasible, an adequate lane width should be provided to allow bicyclists and motor vehicles to travel side by side
throughout the TTC zone. If lane width conditions are not met, use the SHARE THE ROAD or Bicycles May Use Full Lane sign. If lane width conditions are not met, use the SHARE THE ROAD sign or Bicycles May Use Full Lane sign should be considered.

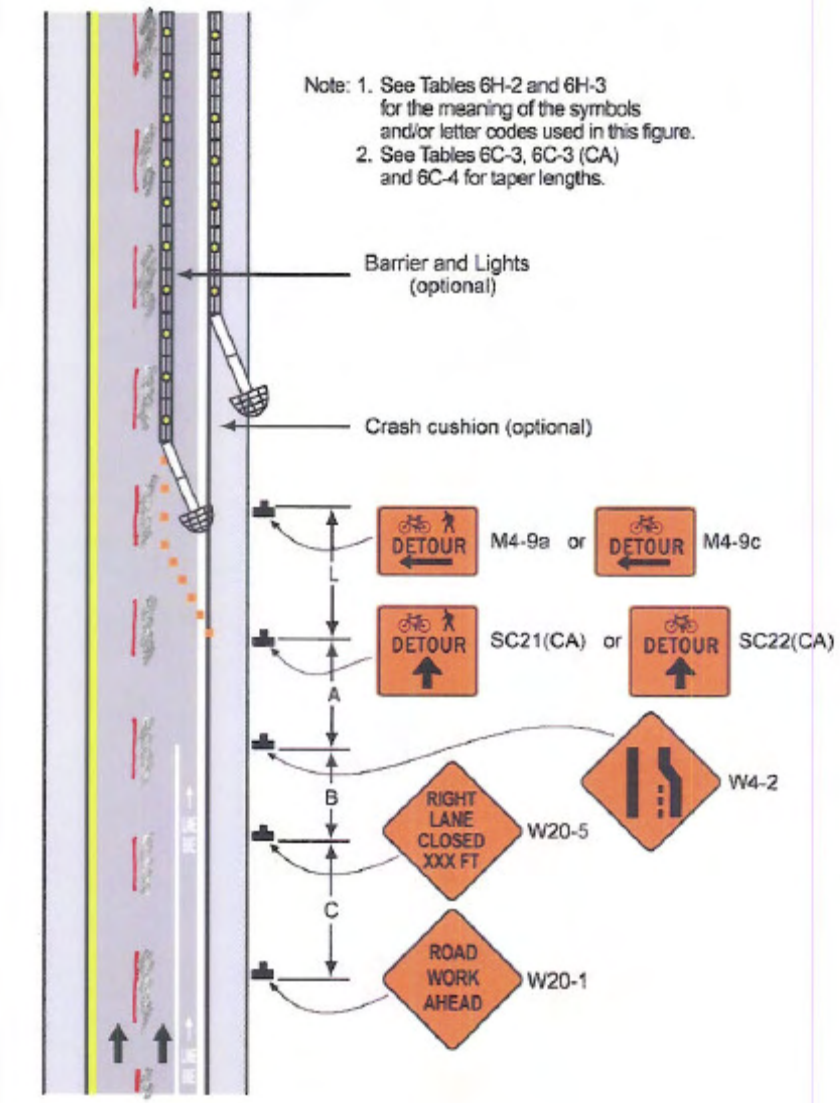
12. The speeds used for the shoulder taper calculations should be of bicyclists in the project vicinity or if a special event
such as a bike race, the expected speed of bicyclists approaching the TTC zone.
Standard:
13. Temporary traffic barriers, including their end treatments, shall be crashworthy. In order to mitigate the effect
of striking the upstream end of a temporary traffic barrier, the end shall be installed in accordance with AASHTO's "Roadside Design Guide" (see Section 1A.11) by flaring until the end is outside the acceptable clear
zone or by providing crashworthy end treatments. See Section 6F.85 for more details.

Notes for Figure 6H-102(CA) – Typical Application 102(CA)
Lane Closure on Freeway, Expressway, Rural and Urban (High Speed)
Locations to Accommodate Bicyclists

Guidance:
1. When existing accommodations for bicycle travel are disrupted or closed, information and devices contained in Figures
6H-101(CA) through 6H-104(CA), as appropriate per situation encountered, should be used to consider the needs and
control of bicyclists through a TTC zone.
2. SHOULDER CLOSED signs should be used on limited-access highways where there is no opportunity for disabled vehicles to pull off the roadway.
3. If drivers cannot see a pull-off area beyond the closed shoulder, information regarding the length of the shoulder closure

should be provided in feet or miles, as appropriate.
4. The use of a temporary traffic barrier should be based on engineering judgment.
~~**Standard:**~~
~~**5. Where temporary traffic barriers are installed, the ends of the barrier shall be treated in accordance with the**~~
~~**provisions of Section 6F.85.**~~
Option:
6. The barrier shown in this typical application is an example of one method that may be used to close a shoulder of a longterm
project.
7. The warning lights shown on the barrier may be used.
~~**Standard:**~~
~~**8. The minimum offset from the upstream end of the barrier to the edge of the traveled way shall be at least 15 feet**~~
~~**unless shielded by a crash cushion.**~~
Guidance:
9. All advance warning signs should be placed so that the path of travel for bicycles is not blocked, while maintaining visibility for road users.
10. The width of the existing pedestrian facility should be provided for the temporary facility, if practical. When it is not possible to maintain a minimum width of 60 inch throughout the entire length of the pedestrian pathway, a 60 x 60 inch
passing space should be provided at least every 200 feet to allow individuals in wheelchairs to pass.
Standard:
11. Temporary traffic barriers, including their end treatments, shall be crashworthy. In order to mitigate the effect
of striking the upstream end of a temporary traffic barrier, the end shall be installed in accordance with AASHTO's "Roadside Design Guide" (see Section 1A.11) by flaring until the end is outside the acceptable clear
zone or by providing crashworthy end treatments. See Section 6F.85 for more details.

Figure 6H-102 (CA). Lane Closure on Freeway, Expressway, Rural and Urban (High Speed) locations to accommodate bicyclists (TA-102 (CA))



Typical Application 102 (CA)

Attachments:

CVC References

V C Section 21359 Speed Signs for Special Areas
Speed Signs for Special Areas

21359. Whenever the Department of Transportation or a local authority as authorized by this code determines and declares a speed limit different from the limit otherwise applicable under Sections 22349 and 22352, appropriate speed restriction signs shall be erected and maintained at the outside entrance of the highway or portion thereof upon which the special speed limit is applicable. The special speed limit is not effective until appropriate signs have been erected.

V C Section 22362 Speed Limit Where Persons at Work
Speed Limit Where Persons at Work

22362. It is prima facie a violation of the basic speed law for any person to operate a vehicle in excess of the posted speed limit upon any portion of a highway where officers or employees of the agency having jurisdiction of the same, or any contractor of the agency or his employees, are at work on the roadway or within the right-of-way so close thereto as to be endangered by passing traffic. This section applies only when appropriate signs, indicating the limits of the restricted zone, and the speed limit applicable therein, are placed by such agency within 400 feet of each end of such zone. The signs shall display the figures indicating the applicable limit, which shall not be less than 25 miles per hour, and shall indicate the purpose of the speed restriction. Nothing in this section shall be deemed to relieve any operator of a vehicle from complying with the basic speed law.

V C Section 21367 Traffic Control Highway Construction
Traffic Control: Highway Construction
21367. (a) As provided in Section 125 of the Streets and Highways Code and in Section 21100 of this code, respectively, the duly authorized representative of the Department of Transportation or local authorities, with respect to highways under their respective jurisdictions, including, but not limited to, persons contracting to perform construction, maintenance, or repair of a highway, may, with the approval of the department or local authority, as the case may be, and while engaged in the performance of that work, restrict the use of, and regulate the movement of traffic through or around, the affected area whenever the traffic would endanger the safety of workers or the work would interfere with or endanger the movement of traffic through the area. Traffic may be regulated by warning signs, lights, appropriate control devices, or by a person or persons controlling and directing the flow of traffic.

(b) It is unlawful to disobey the instructions of a person controlling and directing traffic pursuant to subdivision (a).

(c) It is unlawful to fail to comply with the directions of warning signs, lights, or other control devices provided for the regulation of traffic pursuant to subdivision (a).

V C Section 21370 Regulation of Traffic Construction Zone
Regulation of Traffic: Construction Zone

21370. The Department of Transportation, or its duly authorized representatives with the approval of the department, while engaged in the construction of a state highway upon new alignment may restrict the use of and regulate the movement of traffic upon any highway intersecting the project at or near the place of intersection whenever such work interferes with or endangers the safe movement of traffic through the work.

12-3 TTC policy change for Part 6A, 6B, 6C, 6F, 6G, and 6H of the CA MUTCD

Recommendation:

Caltrans recommends policy changes for Part 6A, 6B, 6C, 6F, 6G, and 6H based on SFMTA and County of L.A.'s comments.

Agency Making Request/Sponsor: Caltrans – Don Fogle

Background:

Based on the comments received from SFMTA and L.A. county, Caltrans recommends the CA MUTCD policies to be changed as proposed under the section "Proposal".

Mr. Ricardo Olea from SFMTA made comments on 2011 CA MUTCD draft. He stated:

The San Francisco Municipal Transportation Agency has the following comments and concerns regarding Chapter 6 of the proposed California MUTCD. Below I have copied the relevant California MUTCD section text with comments in **bold red** text. Thank you for your consideration.

Section 6A.01

Standard:

Before work begins, traffic control plans, when developed for handling traffic through a construction or maintenance project, shall be approved by the Engineer of the public agency or authority having jurisdiction over the highway.

There should be a statement exempting approval of standard traffic control plans provided in section 6H. As written, this requires approval of all traffic control plans, even when using standard traffic control plans from Section 6H. This seems unnecessary. If Caltrans or a local agency grants permission to a private party (contractor) to close a lane and the contractor is directed to use a standard application from section 6H, why would Caltrans or the local agency need to formally approve a standard traffic control plan?

Section 6B.01

Standard:

Any changes in the TTC plan should shall be approved by an official who is knowledgeable (for example, trained and/or certified) in proper TTC practices the Engineer of the public agency or authority having jurisdiction over the highway.

SAME AS 6A.01 - There should be a statement exempting approval of standard traffic control plans provided in section 6H. As written, this requires approval of all traffic control plans, even when using standard traffic control plans from Section 6H. This seems unnecessary. If Caltrans or a local agency grants permission to a private party (contractor) to close a lane and the contractor is directed to use a standard application from section 6H, why would Caltrans or the local agency need to formally approve a standard traffic control plan?

Notes for Figure 6H-4 6H-4(CA) —Typical Application 4 Short Duration or Mobile Operation on a Shoulder

Guidance:

1. In those situations where multiple work locations within a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.
2. In those situations where the distance between the advance signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ~~ROAD WORK AHEAD~~ SHOULDER WORK (W21-5) *sign.*
Option:
3. The ROAD WORK NEXT XX MILES sign may be used instead of the ROAD WORK AHEAD sign Next Distance (W7-3a) plaque may be used with the SHOULDER WORK (W21-5) sign if the work locations occur over a distance of more than 2 miles.
Why is there no option to use ROAD WORK AHEAD sign? Shoulder is part of the roadway. This deviation from the Federal text does not improve safety in an obvious way, though it will increase sign inventories. Likewise for Figure 6H-5 (CA).

On September 20th, Mr. Brain Dussealt from SF MTA provided additional comments on their Part6 issues:

Here are my recommendations to address the comments SFMTA made about Section 6A.01 of the CA-MUTCD

Section 6A.01
Standard:
Before work begins, traffic control plans, when developed for handling traffic through a construction or maintenance project, shall be approved by the Engineer of the public agency or authority having jurisdiction over the highway.

Suggested policy – Local and state agencies are not required or directed to approve the MUTCD or CA-MUTCD standard traffic control plans. When the work is to use MUTCD and CA-MUTCD standard traffic control plans, local and state agencies shall approve their use for the work to ensure the appropriate plan is used.

Please insert this sentence:

Use of MUTCD or CA-MUTCD standard traffic control plans shall be approved by the Engineer of the public agency or authority having jurisdiction over the highway.

Section 6B.01
Standard:
Any changes in the TTC plan ~~should~~ shall be approved by an official who is knowledgeable (for example, trained and/or certified) in proper TTC practices the Engineer of the public agency or authority having jurisdiction over the highway.

I think that if we include the above language into **6A.01**, this item is addressed.

Mr. James Chon from County of L.A. made comments on 2011 CA MUTCD draft. He stated:

PART 6A.01, PART 6B.01, AND PART 6C.01
The standard to have temporary traffic control (TTC) plans developed by 'engineers' for all roadway maintenance work would require a cumbersome and costly process for large public agencies such as the County of Los Angeles. As a large public agency it becomes practically infeasible to have the plans for all roadway maintenance work approved by an engineer. We recommend revising these standards to allow the **engineers or the engineer's designee** to approve the TTC plans as well as changes to the TTC plans. This recommendation is supported by the fact that per Section 6C.01 of the CA MUTCD, non-engineers exercising engineering judgment are permitted to prepare TTC plans, and it is only reasonable that they should also be allowed to approve the plans.

PART 6F.82: Floodlights
The recommended Standard to use floodlights to illuminate the work area is cumbersome and increases potential liability. The requirement to use floodlights for minor maintenance work, without regard to scope and consideration for sufficient ambient lighting, can be costly and infeasible for small projects such as man hole inspection, traffic signal maintenance, and minor pavement patching. We recommend removing this Standard and allow local agencies to exercise discretion in determining the requirement for the usage of floodlights. Furthermore, the Guidance statement in Section 6F.85 conflicts with this Standard statement because both statements refer to using floodlights to illuminate the work area but have two different conditions of requirements.

PART 6F: Figure 6F-1 Height and Lateral Location of Signs—Typical Installations
The recommended mounting height changes for A-Rural Area is in conflict with Section 2A.18, paragraph 04 which states, "The minimum height, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement, of signs installed at the side of the road in rural areas shall be 5 feet". Section 2A.18, paragraph 07 states, "The minimum height, measured vertically from the bottom of the sign to the sidewalk, of signs installed above sidewalks shall be 7 feet". Thus in rural areas, signs should be mounted at minimum of 5 feet regardless of the presence of a sidewalk, unless the sign is mounted above the sidewalk. We recommend keeping the mounting height standard provided in the current Federal Highway Administration's (FHWA) MUTCD to avoid conflict with the standard in Section 2A.18.

PART 6H: Figure 6H-4(CA) Short-Duration or Mobile Operation on Shoulder (TA-4) AND Figure 6H-17 Mobile Operations on Two-Lane Road (TA-17)
The figures should be clarified to reflect the optional use of Shadow Vehicle as supported per Section 6D.03 which states, "Shadow Vehicle--in the case of mobile and constantly moving operations, such as pothole patching and striping operations, a shadow vehicle.. .may be used..."..

Attached are emails from SFMTA and LA County shown on pages 54 thru 64.

Proposal to address comments provided by SFMTA and LA County:

Section 6A.01 General

Standard:
Before work begins, traffic control plans, when developed for handling traffic through a construction or maintenance project, shall be approved by the Engineer or the engineer's designee of the public agency or authority having jurisdiction over the highway.

Option:
Local agencies are not required or directed to approve the MUTCD or CA-MUTCD standard traffic control plans. When the work is to use MUTCD and CA-MUTCD standard traffic control plans, local agencies shall approve their use for the work to ensure the appropriate plan is used. Use of MUTCD or CA-MUTCD standard traffic control plans shall be approved by the engineer or engineer's designee of the local agency or authority having jurisdiction over the highway.

Section 6B.01 Fundamental Principles of Temporary Traffic Control

Guidance:
07 *The following are the seven fundamental principles of TTC:*
1. General plans or guidelines should be developed to provide safety for motorists, bicyclists, pedestrians, workers, enforcement/emergency officials, and equipment, with the following factors being considered:
A. The basic safety principles governing the design of permanent roadways and roadsides should also govern the design of TTC zones. The goal should be to route road users through such zones using roadway geometrics, roadside features, and TTC devices as nearly as possible comparable to those for normal highway situations.
B. A TTC plan, in detail appropriate to the complexity of the work project or incident, should be prepared and understood by all responsible parties before the site is occupied.
Standard:
Any changes in the TTC plan ~~should~~ shall be approved by ~~an official who is knowledgeable (for example, trained and/or certified) in proper TTC practices~~ the Engineer or the engineer's designee of the public agency or authority having jurisdiction over the highway.
Guidance:

Section 6C.01 Temporary Traffic Control Plans

~~*Guidance:*~~
Standard:
09 **This alternate or modified plan ~~should~~ shall have the approval of the Engineer or the engineer's designee of the public agency or authority having jurisdiction over the highway responsible highway agency prior to implementation.**
Guidance:

Section 6F.65 Tubular Markers

Standard:
01 **Tubular markers (see Figure 6F-7) shall be predominantly orange and shall be not less than 18 inches high and 2 inches wide facing road users. They shall be made of a material that can be struck without causing damage to the impacting vehicle.**
02 **Tubular markers shall be a minimum of 28 inches in height when they are used on freeways and other high-speed highways, on all highways during nighttime, or whenever more conspicuous guidance is needed.**

03 **For nighttime use, tubular markers shall be retroreflectorized. Retroreflectorization of tubular markers that have a height of less than 42 inches shall be provided by two 3-inch wide white bands placed a maximum of 2 inches from the top with a maximum of 6 inches between the bands. Retroreflectorization of tubular markers that have a height of 42 inches or more shall be provided by four 4- to 6-inch wide alternating orange and white stripes with the top stripe being orange.**
Support:
03a The 42 inch high tubular markers provide additional conspicuity in visually complex environments and for older road users.
03b Cylindrical tubular markers that are fixed (cemented) to the pavement are commonly referred to as tubular markers. Non-cylindrical tubular markers that are attached to the pavement or some form of anchoring device imbedded in the pavement are often referred to as channelizers (CA) ~~Non-cylindrical tubular markers are commonly referred to as channelizers (CA)~~. Tubular markers that are not fixed to the pavement but stabilized by using weighted bases are commonly referred to as portable delineators.

Section 6F.82 Floodlights

Support:
01 Utility, maintenance, or construction activities on highways are frequently conducted during nighttime periods when vehicular traffic volumes are lower. Large construction projects are sometimes operated on a double-shift basis requiring night work (see Section 6G.19).
Guidance:
02 *When nighttime work is being performed, floodlights should be used to illuminate the work area, equipment crossings, and other areas.*
Standard:
~~**When nighttime work is being performed, floodlights shall be used to illuminate the work area.**~~
Highway construction work lighting shall be as per Construction Safety Order 1523 (California Code of Regulations Title 8, Division 1, Chapter 4, Subchapter 4, Article 3, Section 1523 - Illumination). See Section 1A.11 for information regarding this publication.
03 **Except in emergency situations, flagger stations shall be illuminated at night.**
04 **Floodlighting shall not produce a disabling glare condition for approaching road users, flaggers, or workers.**
Guidance:
05 *The adequacy of the floodlight placement and elimination of potential glare should be determined by driving through and observing the floodlighted area from each direction on all approaching roadways after the initial floodlight setup, at night, and periodically.*
Support:
06 Desired illumination levels vary depending upon the nature of the task involved. An average horizontal luminance of ~~5 foot candles~~ 10 foot candles (108 lux) can be adequate for general activities. Tasks requiring high levels of precision and extreme care can require an average horizontal luminance of 20 foot candles. ~~Refer to Construction Safety Orders in the California Code of Regulations (Title 8, Division 1, Chapter 4, Subchapter 4, Article 3, Section 1523 – Illumination and Section 1599 - Flaggers) for the above modifications. See Section 1A.11 for information regarding this publication.~~

Section 6G.19 Temporary Traffic Control During Nighttime Hours

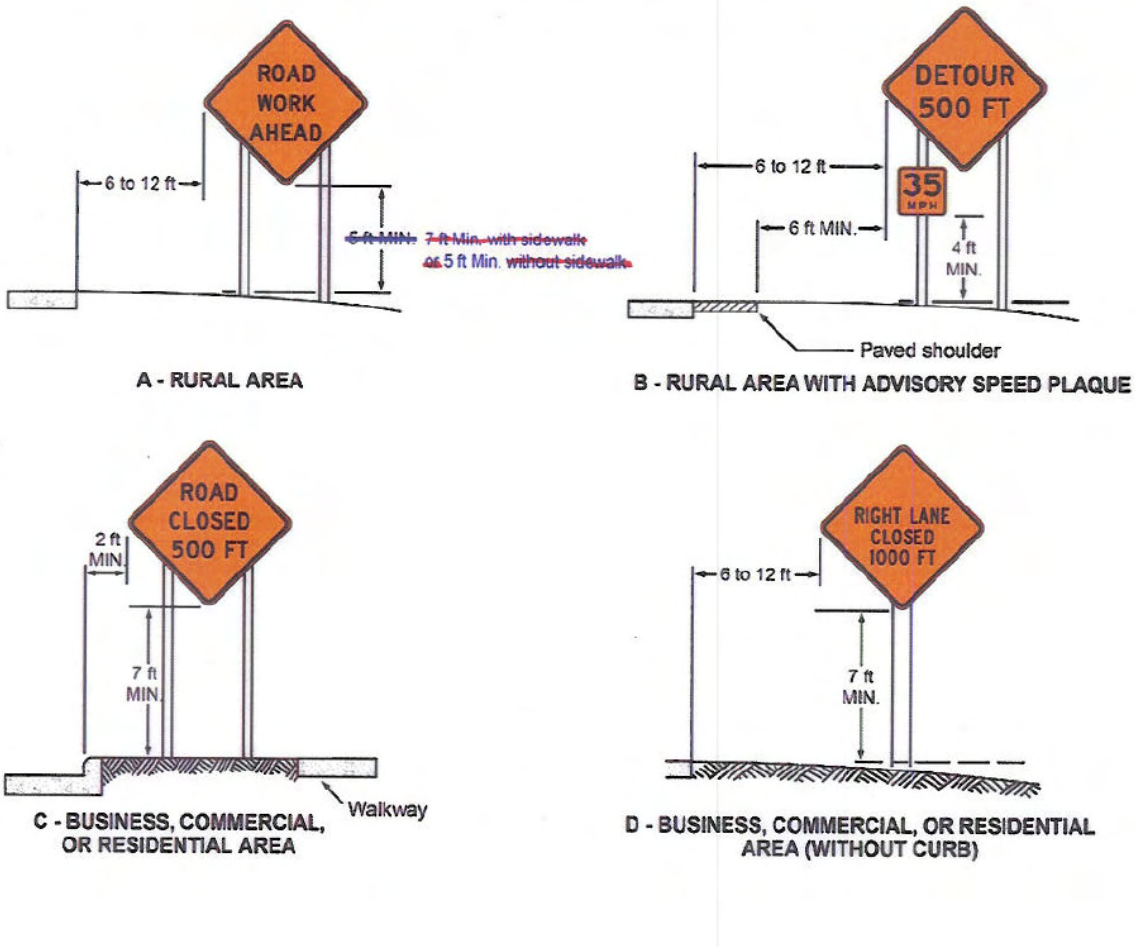
Standard:
10 **Except in emergencies, temporary lighting shall be provided at all flagger stations.**
Refer to Construction Safety Order in the California Code of Regulations (Title 8, Division 1, Chapter 4, Subchapter 4, Article 11, Section 1599 - Flaggers). See See Section 1A.11 for information regarding this publication.
Support:
11 Desired illumination levels vary depending upon the nature of the task involved. ~~An average horizontal luminance of 5 foot candles can be adequate for general activities.~~ An average horizontal luminance of 10

foot candles can be adequate for general activities and activities around equipment. Tasks requiring high levels of precision and extreme care can require an average horizontal luminance of 20 foot candles.

Standard:

Highway construction work lighting shall be as per Construction Safety Order 1523 (California Code of Regulations Title 8, Division 1, Chapter 4, Subchapter 4, Article 3, Section 1523 - Illumination). See Section 1A.11 for information regarding this publication.

Figure 6F-1. Height and Lateral Location of Signs—Typical Installations



Notes for Figure 6H-4 6H-4(CA) —Typical Application 4 Short Duration or Mobile Operation on a Shoulder

Guidance:

1. In those situations where multiple work locations within a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.

2. In those situations where the distance between the advance signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ROAD WORK AHEAD sign or SHOULDER WORK (W21-5) sign.

Option:

3. The ~~ROAD WORK NEXT XX MILES sign may be used instead of the ROAD WORK AHEAD sign~~ Next Distance (W7-3a) plaque may be used with the SHOULDER WORK (W21-5) sign if the work locations occur over a distance of more than 2 miles.

4. Stationary warning signs may be omitted for short duration or mobile operations if the work vehicle displays high-intensity rotating, flashing, oscillating, or strobe lights.

5. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

Standard:

6. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

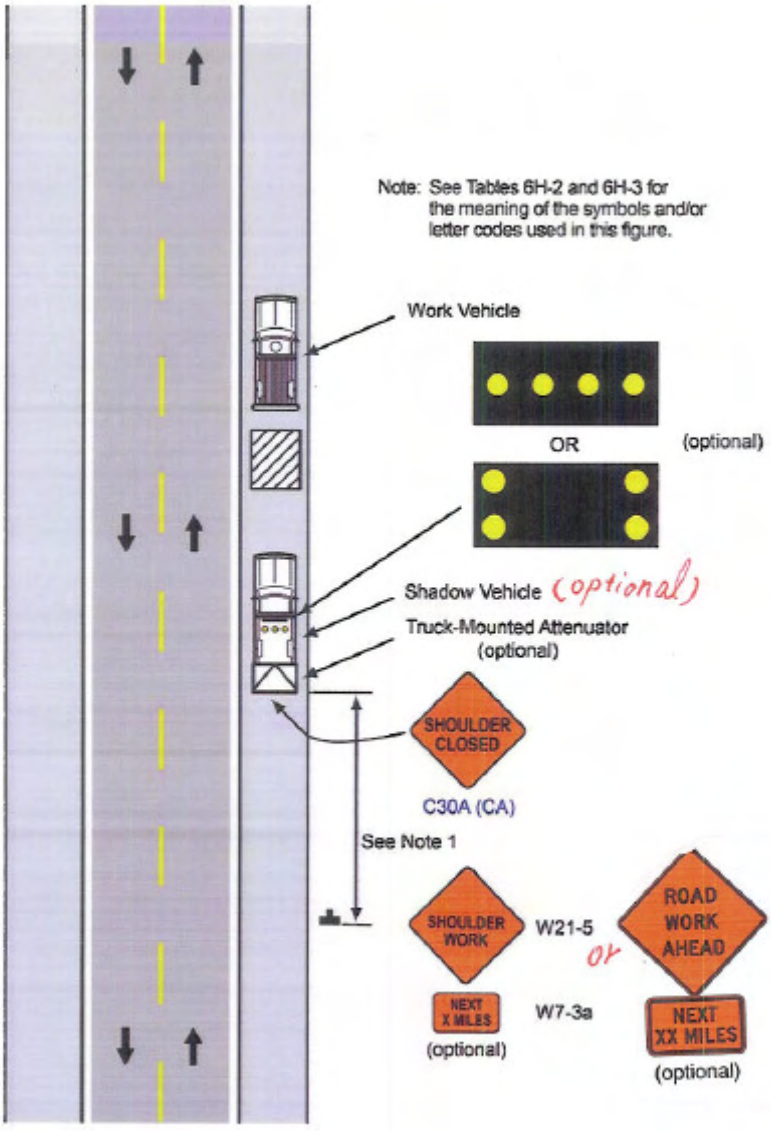
7. If an arrow board is used for an operation on the shoulder, the caution mode shall be used.

8. Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.

Option:

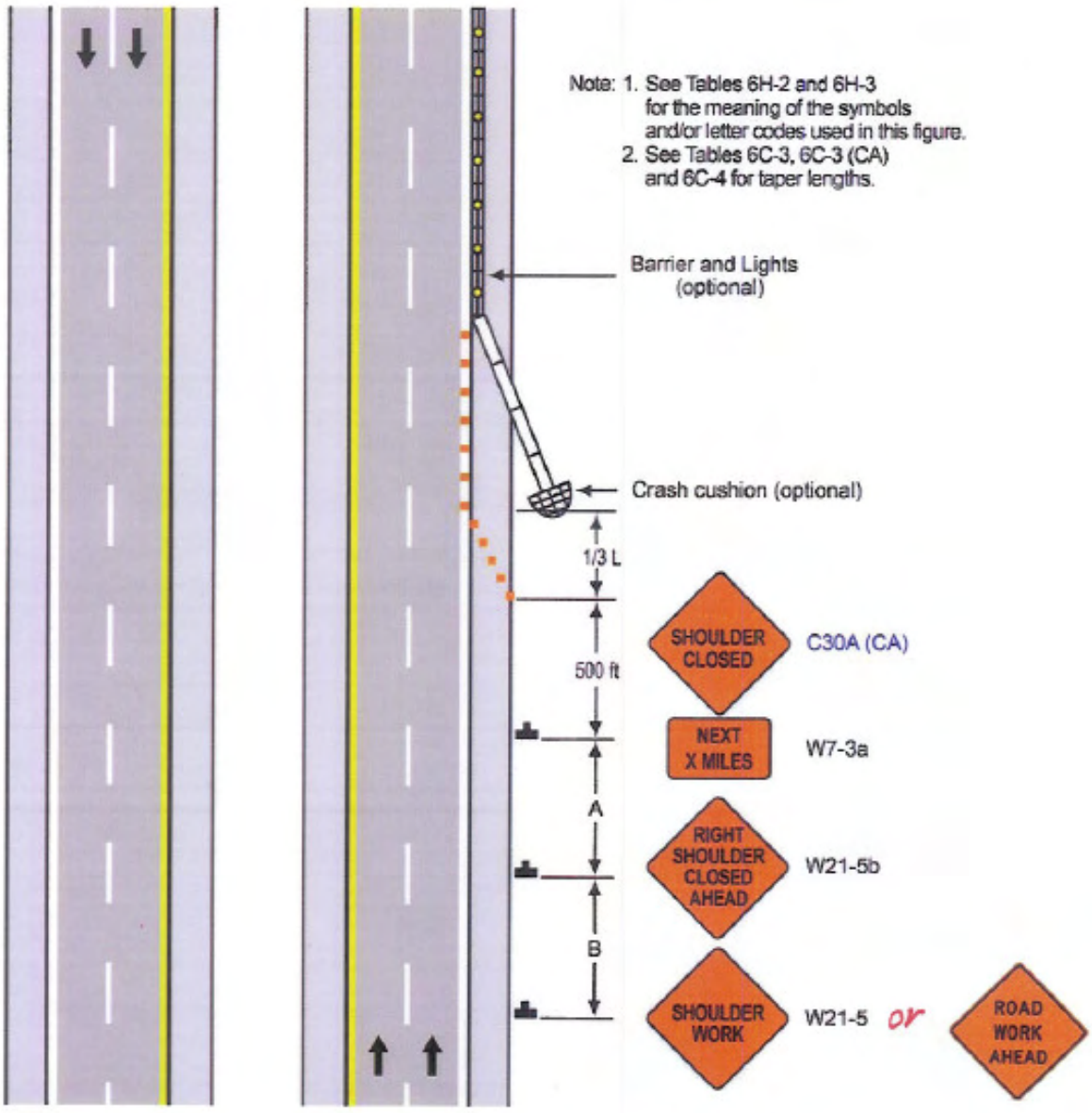
9. In the case of mobile and constantly moving operations, such as pothole patching and striping operations, a shadow vehicle, equipped with appropriate lights and warning signs, may be used to protect the workers from impacts by errant vehicles. The shadow vehicle may be equipped with a rear mounted impact attenuator.

Figure 6H-4 (CA). Short-Duration or Mobile Operation on Shoulder (TA-4)



Typical Application 4

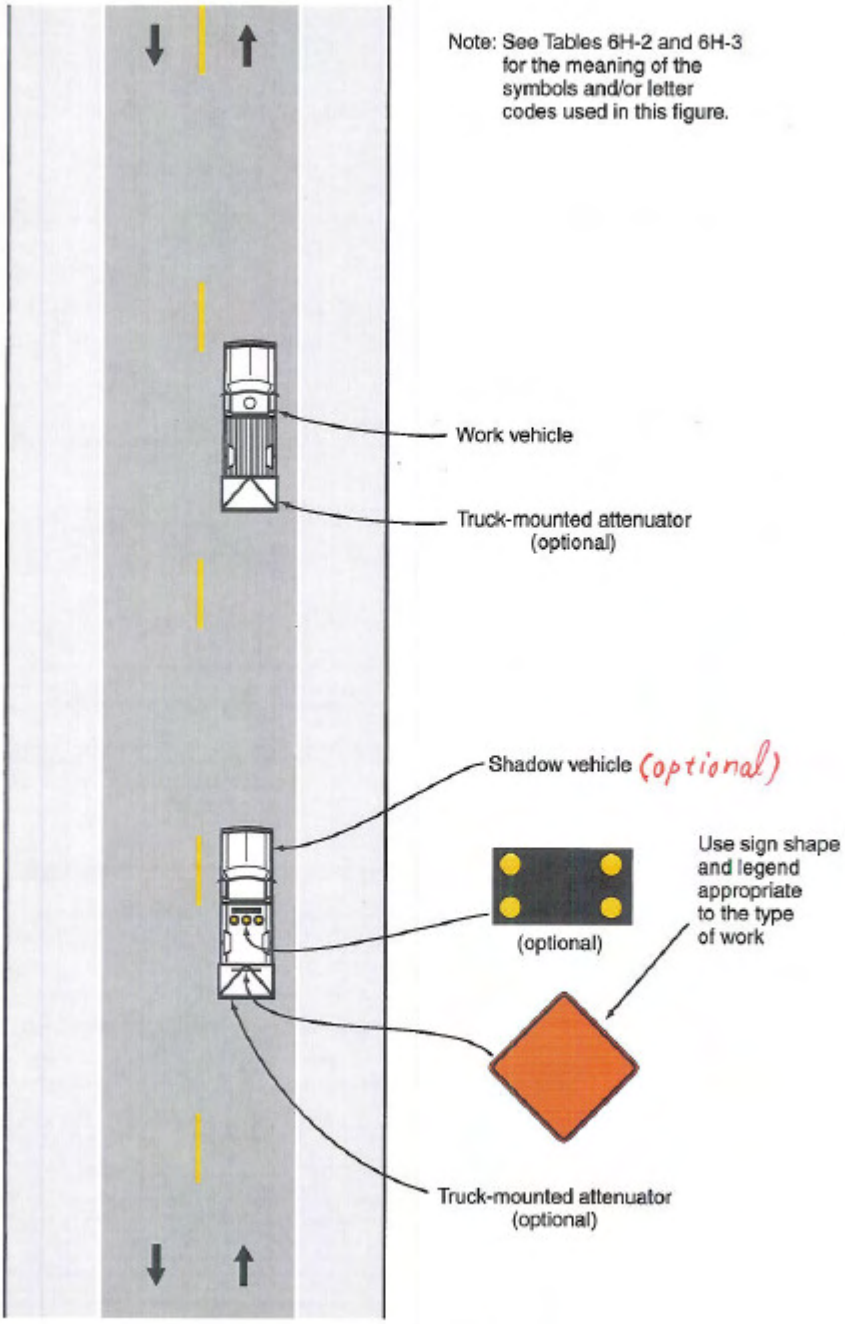
Figure 6H-5 (CA). Shoulder Closure on Freeway (TA-5)



Typical Application 5

Notes for Figure 6H-17—Typical Application 17
Mobile Operations on a Two-Lane Road
Standard:
1. Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.
2. Shadow and work vehicles shall display high-intensity rotating, flashing, oscillating, or strobe lights.
3. If an arrow board is used, it shall be used in the caution mode.
Guidance:
4. Where practical and when needed, the work and shadow vehicles should pull over periodically to allow vehicular traffic to pass.
5. Whenever adequate stopping sight distance exists to the rear, the shadow vehicle should maintain the minimum distance from the work vehicle and proceed at the same speed. The shadow vehicle should slow down in advance of vertical or horizontal curves that restrict sight distance.
6. The shadow vehicles should also be equipped with two high-intensity flashing lights mounted on the rear, adjacent to the sign.
Option:
7. The distance between the work and shadow vehicles may vary according to terrain, paint drying time, and other factors.
8. Additional shadow vehicles to warn and reduce the speed of oncoming or opposing vehicular traffic may be used. Law enforcement vehicles may be used for this purpose.
9. A truck-mounted attenuator may be used on the shadow vehicle or on the work vehicle.
10. If the work and shadow vehicles cannot pull over to allow vehicular traffic to pass frequently, a DO NOT PASS sign may be placed on the rear of the vehicle blocking the lane.
~~Support:~~
11. Shadow vehicles ~~are~~ may be used to warn motor vehicle traffic of the operation ahead. In the case of mobile and constantly moving operations, such as pothole patching and striping operations, a shadow vehicle, equipped with appropriate lights and warning signs, may be used to protect the workers from impacts by errant vehicles.
Standard:
12. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.
13. This typical application shall not be used on State highways, Department of Transportation's Standard Plan T17 for moving lane closure shall be used instead. See Section 1A.11 for information regarding this publication.

Figure 6H-17. Mobile Operations on a Two-Lane Road (TA-17)



Typical Application 17

Attachment:

"Olea, Ricardo" <Ricardo.Olea@sfmta.com>
07/14/2011 05:27 PM

To <mutcdsupp@dot.ca.gov>
cc
bcc
Subject CA MUTCD Draft Chapter 6 Comments

CA MUTCD Team,

The San Francisco Municipal Transportation Agency has the following comments and concerns regarding Chapter 6 of the proposed California MUTCD. Below I have copied the relevant California MUTCD section text with comments in **bold red** text. Thank you for your consideration.

Section 6A.01

Standard:
Before work begins, traffic control plans, when developed for handling traffic through a construction or maintenance project, shall be approved by the Engineer of the public agency or authority having jurisdiction over
the highway.

There should be a statement exempting approval of standard traffic control plans provided in section 6H. As written, this requires approval of all traffic control plans, even when using standard traffic control plans from Section 6H. This seems unnecessary. If Caltrans or a local agency grants permission to a private party (contractor) to close a lane and the contractor is directed to use a standard application from section 6H, why would Caltrans or the local agency need to formally approve a standard traffic control plan?

Section 6B.01

Standard:
Any changes in the TTC plan should shall be approved by an official who is knowledgeable (for example, trained and/or certified) in proper TTC practices the Engineer of the public agency or authority having jurisdiction over the highway.

SAME AS 6A.01 - There should be a statement exempting approval of standard traffic control plans provided in section 6H. As written, this requires approval of all traffic control plans, even when using standard traffic control plans from Section 6H. This seems unnecessary. If Caltrans or a local agency grants permission to a private party (contractor) to close a lane and the contractor is directed to use a standard application from section 6H, why would Caltrans or the local agency need to formally approve a standard traffic control plan?

Section 6F.31 Flagger Signs (W20-7, W20-7a)
Guidance:
01 The Flagger (W20-7) symbol sign (see Figure 6F-4) California Flagger symbol (C9A(CA)) sign *(see Figure 6F-4(CA)) should be used in advance of any point where a flagger is stationed to control road users.*

Typographical error. There is no Figure 6F-4(CA) in this section. The California Flagger symbol (C9A(CA)) sign is located in Figure 6F-101 (CA).

Section 6F.83 Warning Lights
Support:
01 Type A, Type B, Type C, and Type D 360-degree warning lights are portable, powered, yellow, lens-directed,
enclosed lights.
Standard:
02 Warning lights shall be in accordance with the current ITE "Purchase Specification for Flashing and
Steady-Burn Warning Lights" (see Section 1A.11).
03 When warning lights are used, they shall be mounted on signs or channelizing devices in a manner
that, if hit by an errant vehicle, they will not be likely to penetrate the windshield.
.
.
.
Support:
Flashing warning beacon is a type of warning light and often used to supplement other TTC devices.
Standard:
Flashing warning beacon shall comply with the provisions of Chapter 4K and Department of Transportation's
standard signal lenses. A flashing warning beacon shall be a flashing yellow light with a minimum nominal diameter
of 12 inch. Where flashing warning beacon is required, a Type B warning light shall not be used in its place. When
placed within 15 feet of the edge of travel way the beacon and its support shall be certified as crashworthy (see
section 6F.01) or the beacon ~~meets~~ **shall meet** the lightweight criteria set for Type B warning light and is mounted on a certified
crashworthy support. The mounting height shall be between 6 feet and 10 feet, measured from the bottom of the
base to the center of the lens.

Proposed grammar revision.

Notes for Figure 6H-4 6H-4(CA) **—Typical Application 4**
Short Duration or Mobile Operation on a Shoulder
Guidance:
1. In those situations where multiple work locations within a limited distance make it practical to place

stationary signs, the distance between the advance warning sign and the work should not exceed 5 miles.
2. In those situations where the distance between the advance signs and the work is 2 miles to 5 miles, a Supplemental Distance plaque should be used with the ~~ROAD WORK AHEAD~~ SHOULDER WORK (W21-5)
sign.
Option:
3. The ~~ROAD WORK NEXT XX MILES sign may be used instead of the ROAD WORK AHEAD sign~~
Next
Distance (W7-3a) plaque may be used with the SHOULDER WORK (W21-5) sign if the work locations occur over a
distance of more than 2 miles.

Why is there no option to use ROAD WORK AHEAD sign? Shoulder is part of the roadway. This deviation from the Federal text does not improve safety in an obvious way, though it will increase sign inventories. Likewise for Figure 6H-5 (CA).

Thank you,

Ricardo Olea
City Traffic Engineer
San Francisco Municipal Transportation Agency
City and County of San Francisco

"Dusseault, Brian" <Brian.Dusseault@sfmta.com>
09/12/2011 03:14 PM

To <johnny_bhullar@dot.ca.gov>, <gordon.wang@dot.ca.gov>
cc "Olea, Ricardo" <Ricardo.Olea@sfmta.com>
bcc
Subject FW: Part6 policy change, need draft language.

Hello Mr. Bhullar and Mr. Wang,

Sorry for late response. Here are my recommendations to address the comments SFMTA made about Section 6A.01 of the CA-MUTCD

Section 6A.01
Standard:
Before work begins, traffic control plans, when developed for handling traffic through a construction or maintenance project, shall be approved by the Engineer of the public agency or authority having jurisdiction over the highway.

Suggested policy – Local and state agencies are not required or directed to approve the MUTCD or CA-MUTCD standard traffic control plans. When the work is to use MUTCD and CA-MUTCD standard traffic control plans, local and state agencies shall approve their use for the work to ensure the appropriate plan is used.

Please insert this sentence:

Use of MUTCD or CA-MUTCD standard traffic control plans shall be approved by the Engineer of the public agency or authority having jurisdiction over the highway.

Section 6B.01
Standard:
Any changes in the TTC plan should shall be approved by an official who is knowledgeable (for example, trained and/or certified) in proper TTC practices the Engineer of the public agency or authority having jurisdiction over the highway.

I think that if we include the above language into **6A.01**, this item is addressed.

Brian B Dusseault, P.E.
Senior Engineer
San Francisco Municipal Transportation Agency
Division of Sustainable Streets - Transportation Engineering
(415) 701-4676

"Chon, James" <JCHON@dpw.lacounty.gov>
10/06/2011 05:45 PM

To mutcdsupp <mutcdsupp@dot.ca.gov>
cc "Schales, Scott" <SSCHALES@dpw.lacounty.gov>, "Lehman, Dean" <DLEHMAN@dpw.lacounty.gov>, "DeChellis, Patrick" <pdechellis@dpw.lacounty.gov>,
bcc
Subject CA MUTCD FINAL DRAFT COMMENT

<<CA MUTCD 2011 DRAFT.PDF>> Mr. Bhullar,

We have reviewed the CA MUTCD 2011 Final Draft Revisions and submit our comments in the attached letter. A hard copy of the letter will be mailed to your attention.

James Chon
Traffic Investigations Section 1 Traffic and Lighting Division LA County Department of Public Works 1 P 626.300.4712



2011 CA MUTCD FINAL DRAFT.pdf 2011 DRAFT REVISIONS CA MUTCD.pdf CA MUTCD 2011 DRAFT.PDF

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

GAIL FARBER, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: T-3

October 6, 2011

Mr. Johnny Bhullar
MUTCD Supplement Branch, MS-36
Office of Signs, Markings & External Support
Caltrans, Division of Traffic Operations
P.O. Box 942874
Sacramento, CA 94274-0001

Dear Mr. Bhullar:

CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
2011 DRAFT REVISIONS
PUBLIC COMMENT

We have reviewed the 2011 Draft Revisions to the California Manual on Traffic Control Devices (MUTCD) that were posted September 9, 2011. Reference is made to our January 24, 2011, and June 30, 2011, responses (copies enclosed) to the call for public comment. In reviewing the latest draft of the CA MUTCD it appears that these comments were not fully addressed to our satisfaction. We request the comments previously submitted are incorporated in to the final draft of California MUTCD. We also have the following comments:

Introduction: Table I-103(CA) Deleted MUTCD Signs- No Target Compliance Dates (Sheet 1 of 2)

Please verify the "California MUTCD Section" sign section references. Some sections were incorrectly cited. Examples of the referencing error include the California MUTCD section for R2-5 sign cited as "Introduction, Page I-4" when it should be Section 2B.13 and the California MUTCD section for R7-1 sign cited as "2B.39" when it should be Section 2B.46. Although not exhaustive, these are just some of the examples of the types of errors identified.

PART 5: Figure 5G-1 Temporary Traffic Control Signs and Plaques on Low-Volume Roads

We recommend replacing W20-7 (depicting flagger with flag sign) in Figure 5G-1 with CA9(CA) (depicting flagger with paddle) for consistent usage in California.

PART 6A.01, PART 6B.01, AND PART 6C.01

The standard to have temporary traffic control (TTC) plans developed by 'engineers' for all roadway maintenance work would require a cumbersome and costly process for large public agencies such as the County of Los Angeles. As a large public agency it becomes practically infeasible to have the plans for all roadway maintenance work approved by an engineer. We recommend revising these standards to allow the **engineers or the engineer's designee** to approve the TTC plans as well as changes to the TTC plans. This recommendation is supported by the fact that per Section 6C.01 of the CA MUTCD, non-engineers exercising engineering judgment are permitted to prepare TTC plans, and it is only reasonable that they should also be allowed to approve the plans.

PART 6E.03: Hand-Signaling Devices

The Guidance statement requires, "The bottom of the STOP/SLOW sign portion of the paddle should be a minimum of 6 feet above the pavement". This is problematic since flaggers may not be able to physically raise the paddle beyond the 6 feet minimum for a prolong period of time without the assistance of a mounting pole. We propose to change this Guidance statement to "The bottom of the STOP/SLOW sign portion of the paddle should be a minimum of 6 feet when mounted on a rigid staff".

PART 6F.65: Tubular Markers

The Support statement "Tubular markers that are fixed (cemented) to the pavement are commonly referred to as channelizers" conflicts with the drawing in Figure 6F-102(CA) which does not show a tubular marker fixed to the ground. We propose to change this statement to "Tubular markers that are attached to the pavement or some form of anchoring device imbedded in the pavement are often referred to as 'channelizers'". This change is supported by the Support statement in Section 6H.01,05 where provisions are made for two basic types of channelizers: one attached to the pavement and the other attached to an anchoring device imbedded in the pavement.

PART 6F.70: Temporary Traffic Barriers as Channelizing Devices

The new Guidance statement "If used, the spacing of these reflectors should not exceed a distance in feet equal to 0.2 times the speed limit in 1.0 times the speed limit in mph through a TTC zone" conflicts with the Guidance statement in Section 6F.85, paragraph 07 which states, "If used, the spacing of these reflectors should not exceed a distance in feet equal to 1.0 times the speed limit in mph through the TTC zone". The statements in these sections should be clarified.

PART 6F.82: Floodlights

The recommended Standard to use floodlights to illuminate the work area is cumbersome and increases potential liability. The requirement to use floodlights for minor maintenance work, without regard to scope and consideration for sufficient ambient lighting, can be costly and infeasible for small projects such as man hole inspection, traffic signal maintenance, and minor pavement patching. We recommend removing this Standard and allow local agencies to exercise discretion in determining the requirement for the usage of floodlights. Furthermore, the Guidance statement in Section 6F.85 conflicts with this Standard statement because both statements refer to using floodlights to illuminate the work area but have two different conditions of requirements.

PART 6F.85: Temporary Traffic Barriers

The Guidance statement conflicts with the Guidance statement in Section 6F.70. See comment on Section 6F.70,07. This should be clarified.

PART 6F: Figure 6F-1 Height and Lateral Location of Signs—Typical Installations

The recommended mounting height changes for A-Rural Area is in conflict with Section 2A.18, paragraph 04 which states, "The minimum height, measured vertically from the bottom of the sign to the elevation of the near edge of the pavement, of signs installed at the side of the road in rural areas shall be 5 feet". Section 2A.18, paragraph 07 states, "The minimum height, measured vertically from the bottom of the sign to the sidewalk, of signs installed above sidewalks shall be 7 feet". Thus in rural areas, signs should be mounted at minimum of 5 feet regardless of the presence of a sidewalk, unless the sign is mounted above the sidewalk. We recommend keeping the mounting height standard provided in the current Federal Highway Administration's (FHWA) MUTCD to avoid conflict with the standard in Section 2A.18.

PART 6F: Figure 6F-103(CA) Examples of Object Markers in Temporary Traffic Control Zones

The height dimension referred in the figure for Type P (CA) Object Markers (OM-3L&R) appears to be in discrepancy with the height dimension requirement in the foot note. The foot note states, "The bottom of the marker is normally mounted 1 ft above the pavement surface" while the dimension shown for the sign appears to be 3 feet.

PART 6G.19: Paragraph 11 Temporary Traffic Control During Nighttime Hours

The Support statement "An average horizontal luminance of 5 foot candles..." conflicts with the Support statement in Section 6F.82 paragraph 06 which states, "An average horizontal luminance of 10 foot candles...". These statements should be clarified.

PART 6H: Figure 6H-1(CA)...(TA-1)

The W20-1 sign should be crossed out as the placement of this sign conflicts with Section 6G.06 part 02 which states, "Where the situation described....a single warning sign such as Workers (W21-1A) sign, should be used".

PART 6H: Figure 6H-4(CA) Short-Duration or Mobile Operation on Shoulder (TA-4) AND Figure 6H-17 Mobile Operations on Two-Lane Road (TA-17)

The figures should be clarified to reflect the optional use of Shadow Vehicle as supported per Section 6D.03 which states, "Shadow Vehicle--in the case of mobile and constantly moving operations, such as pothole patching and striping operations, a shadow vehicle...may be used...". .

PART 6H: Various Figures in Section 6 (Typical Applications)

Various Typical Applications (such as TA-21, TA-22, TA-23, TA-24, TA-25... TA-104(CA)) show the use of arrow boards for lane closures. Though the use of arrow boards is supported as a "should" condition in the Guidance statement in Section 6F.61, this agency is concerned about the cost associated with this requirement. The average cost of arrow boards is $6,000. This agency performs maintenance work for numerous locations a day with many requiring the temporary closure of one lane. The requirement to use arrow boards for every instance of lane closure regardless of duration and scope of work will be very costly. We propose that the use of arrow boards for lane closure be made "optional" consistent with FHWA's MUTCD.

If you have any questions, please contact Mr. James Chon of our Traffic Investigations Section at (626) 300-4708.

Very truly yours,

GAIL FARBER
Director of Public Works

for: DEAN R. LEHMAN
Assistant Deputy Director
Traffic and Lighting Division

PJB:kw
P:\tlpub\wpfiles\files\pjb\MUTCD Review Oct 2011

cc: Operational Services (Scharf)
Traffic and Lighting (Amundson, Quintana)

12-4 Policy change for TMP Guidelines and defining "night" and "nighttime" in Part 1 of the CA MUTCD

Recommendation: Caltrans recommends the following:

Define the term night and nighttime as darkness defined by CVC for entire CA MUTCD.

To include Transportation Management Plan Guidelines as one of the referenced material in Section 1A.11

Agency Making Request/Sponsor: Caltrans –Don Fogle

Background:

Neither night nor nighttime is defined by Federal MUTCD. Darkness is defined in CVC Section 280. Policy should define uses the term "night" and "nighttime" in CA MUTCD as "darkness" that is defined in CVC.

In June 2009 Caltrans published new guidelines for temporary traffic control. It's called "Transportation Management Plan Guidelines".

http://www.dot.ca.gov/hq/traffops/systemops/tmp_lcs/files/TMP_Guidelines.pdf

It needs to be referenced in the Part1 of CA MUTCD. It is referenced by Section 6B.01of the 2012 CA MUTCD.

Section 6B.01 Fundamental Principles of Temporary Traffic Control

Support:
Refer to Department of Transportation's Highway Design Manual Section 110.7 for Traffic Control Plans. Refer to Department of Transportation's Transportation Management Plan Guidelines for Temporary Traffic Control Zone Transportation Management Plan. See Section 1A.11 for information regarding this publication.

Proposal:

Section 1A.13 Definitions of Headings, Words, and Phrases in this Manual

124. Neutral Area—the paved area between the channelizing lines separating an entrance or exit ramp or a channelized turn lane or channelized entering lane from the adjacent through lane(s).
124A. Night and Nighttime — is equivalent of "darkness" defined by CVC Section 280: "Darkness" is any time from one-half hour after sunset to one-half hour before sunrise and any other time when visibility is not sufficient to render clearly discernible any person or vehicle on the highway at a distance of 1000 feet.
125. Object Marker—a device used to mark obstructions within or adjacent to the roadway.

Section 1A.11 Relation to Other Publications

Support:
06 The latest version of other documents that are useful sources of information with respect to the use of this Manual are
listed below. See Appendix for a list of web sites that have direct access to some of these publications. See the Introduction
Part of this California MUTCD for ordering information for the following publications:

A. “California Building Standards Code” (California Building Standards Commission)
B. “California Business and Professions Code” (State of California)
C. “California Code of Regulations” (State of California)
D. “California Education Code” (State of California)
E. “California Government Code” (State of California)
F. “California Health and Safety Code” (State of California)
G. “California Streets and Highways Code” (State of California)
H. “California Vehicle Code” (CVC) (Department of Motor Vehicles)
I. “Construction Manual” (Department of Transportation)
J. “Highway Design Handbook For Older Drivers And Pedestrians” (Federal Highway Administration)
K. “Highway Design Manual” (Department of Transportation)
L. “High Occupancy Vehicle Guidelines for Planning, Design, and Operations” (Department of Transportation)
M. “Historic Highway Bridges of California” (Department of Transportation)
N. “Maintenance Manual” (Department of Transportation)
O. “Manual for Encroachment Permits on California State Highways” (Department of Transportation)
P. “Plans, Specifications and Estimates Guide” (PS&E) (Department of Transportation)
Q. “Project Development Procedures Manual” (Department of Transportation)
R. “Ramp Meter Design Manual” (Department of Transportation)
S. “Ready to List and Construction Contract Award Guide” (Department of Transportation)
T. “Signal, Lighting and Electrical System Design Guide” (Department of Transportation)
U. “Standard Plans” (Department of Transportation)
V. “Standard Specifications” (Department of Transportation)
W. “Standard Special Provisions” (Department of Transportation)
X. “Traffic Engineering Metric Conversion Factors” (American Association of State Highway and transportation Officials -
AASHTO).
Y. “Traffic Manual” (Department of Transportation)

Z. ‘‘Transportation Management Plan Guidelines”, (Department of Transportation)

12-5 TTC regulatory and warning signs and new Typical Application for Part 6H of the CA MUTCD

Recommendation: Caltrans recommends the following to be adopted:

Adopt word message warning signs "UNEVEN PAVEMENT"

Adopt optional sign spec for "RIGHT (LEFT) LANE CLOSED AHEAD" (C20(CA)) sign.

Adopt word message regulatory signs "PILOT CAR DO NOT PASS" and "MOVE OVER OR SLOW WHEN AMBER LIGHT FLASHING".

Adopt Typical Application for Shoulder Work with Minor Encroachment on High Speed Highways.

Agency Making Request/Sponsor: Caltrans – Don Fogle

Background:

1. UNEVEN PAVEMENT sign

Currently there are 5 warning signs for pavement irregularities: "ROUGH ROAD", "UEVEN LANES", "GROOVED PAVEMENT", "BUMP", and "DIP". When uneven pavement occurs not along the lane line no warning sign can be used in this application. Many self made signs are used for this purpose and they are confusing. Until an official sign is adopted this condition will persist.

2. RIGHT (LEFT) LANE CLOSED AHEAD sign

Optional sign spec for "RIGHT (LEFT) LANE CLOSED AHEAD" (C20(CA)) sign will be shown in Figure 6F.101(CA). This optional spec has larger font for "RIGHT" and bigger number & "LEFT" plaque. The bigger fonts help older drivers to identify the action required in a TTC zone. It's only an option. The existing spec sign can still be made and used. Caltrans maintenance will stock the signs with the new spec for future use.

3. PILOT CAR DO NOT PASS sign

From 1962 Caltrans first listed work zone signs in the Planning manual to the 1971 Traffic Manual which was in use until 1976 the PILOT CAR FOLLOW ME sign has always been black on white regulatory sign. Since the 1977 Traffic Manual the PILOT CAR FOLLOW ME sign has became a black on orange warning sign.

Such warning sign is hard to enforce and the "pilot car follow me" wording has caused traffic to follow the pilot car after it has passed the work zone. Pilot car drivers reported that cars would follow them to the turnaround point and cause arguments between the pilot car driver and traveling public.

A black on white "PILOT CAR DO NOT PASS" sign would be enforceable and cause lesser confusion.

4. MOVE OVER OR SLOW WHEN AMBER LIGHT FLASHING sign

A sign mounted on the tailgate of a Caltrans vehicle will educate motorists of the "MOVE OVER" law (CVC 21809) and used as an enforcement tool. Some Caltrans vehicles have a "CAUTION FREQUENT STOPPING AND BACKING STAY BACK 100 FEET" (SC21(CA)) sign mounted on the back. This new sign will have a similar use and policy.

5. Typical Application for Shoulder Work with Minor Encroachment on High Speed Highways.

Figure 6H-6 and Typical Application 6 shows shoulder work with minor encroachment on low volume and low speed streets. Caltrans Maintenance often conducts such work on high speed facilities. A Figure should be shown in Part 6H as the typical layout for such traffic control.

Proposal:

The following signs will be added to Figure 6F-101(CA) and Table 6F-1(CA)

or

Section 6F.45 UNEVEN LANES Sign (W8-11)

Guidance:

01 *The UNEVEN LANES (W8-11) sign (see Figure 6F-4) should be used during operations that create a difference of 2 inch or more in elevation between adjacent lanes that are open to travel.*

Option:

When difference in pavement elevation is not along a lane line, use of the UNEVEN PAVEMENT (C41(CA)) sign may be considered.

When warning is intended to be directed primarily to motorcyclists, or when elevation difference is less than 2 inch but will affect motorcycle operation, use of the UNEVEN LANES (W8-11) sign or UNEVEN PAVEMENT (C41(CA)) sign with motorcycle plaque (W8-15P) may be considered.

Section 6C.13 Pilot Car Method of One-Lane, Two-Way Traffic Control

Option:

01 A pilot car may be used to guide a queue of vehicles through the TTC zone or detour.

Guidance:

02 *The pilot car should have the name of the contractor or contracting authority prominently displayed.*

Standard:

03 **The PILOT CAR FOLLOW ME (G20-4) sign or PILOT CAR DO NOT PASS (SC23(CA)) sign (see Section 6F.58) shall be mounted on the rear of thepilot vehicle.**

04 **A flagger shall be stationed on the approach to the activity area to control vehicular traffic until the pilot vehicle is available.**

Option:

Two or more pilot cars may be used to guide two-way traffic through a particularly complex detour.

Section 6F.58 PILOT CAR FOLLOW ME Sign (G20-4)

Standard:

01 **The PILOT CAR FOLLOW ME (G20-4) sign (see Figure 6F-4) shall be mounted in a conspicuous position on the rear of a vehicle used for guiding one-way vehicular traffic through or around a TTC zone (see Section 6C.13).**

Option:

Where needed, the PILOT CAR DO NOT PASS (SC23(CA)) sign may be used in place of the G20-4 sign.

Guidance:

The TRAFFIC CONTROL – WAIT AND FOLLOW PILOT CAR (C37(CA)) sign should be used at intersecting approaches to a work zone when pilot cars are controlling reversible lane traffic.

Section 6F.108(CA) CAUTION FREQUENT STOPPING AND BACKING STAY BACK 100 FEET (SC21(CA)) Sign and MOVE OVER OR SLOW WHEN AMBER LIGHT FLASHING (SC22(CA)) Sign

Option:

01 For mobile operations, CAUTION FREQUENT STOPPING AND BACKING STAY BACK 100 FEET (SC21(CA)) Sign may be mounted on a work vehicle to warn road users and workers of the frequent stopping and backing maneuvers made by the vehicle.

02 For lane and/or shoulder closures, incident management, and for short duration work, MOVE OVER OR SLOW WHEN AMBER LIGHT FLASHING (SC22(CA)) Sign may be mounted on the back of a work vehicle to warn and regulate road users to move over and/or slow when passing work vehicles displaying a flashing amber warning light within or adjacent to the highway.

Notes for Figure 6H-106(CA) —Typical Application 106
Shoulder Work with Minor Encroachment on High Speed Highways

Guidance:

1. SHOULDER CLOSED signs should be used on limited-access highways where there is no opportunity for disabled vehicles to pull off the roadway.

2. If drivers cannot see a pull-off area beyond the closed shoulder, information regarding the length of the shoulder closure should be provided in feet or miles, as appropriate.

3. All lanes should be a minimum of 10 feet in width as measured to the near face of the channelizing devices.

Option:

4. A truck-mounted attenuator may be used on the shadow vehicle.

5. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

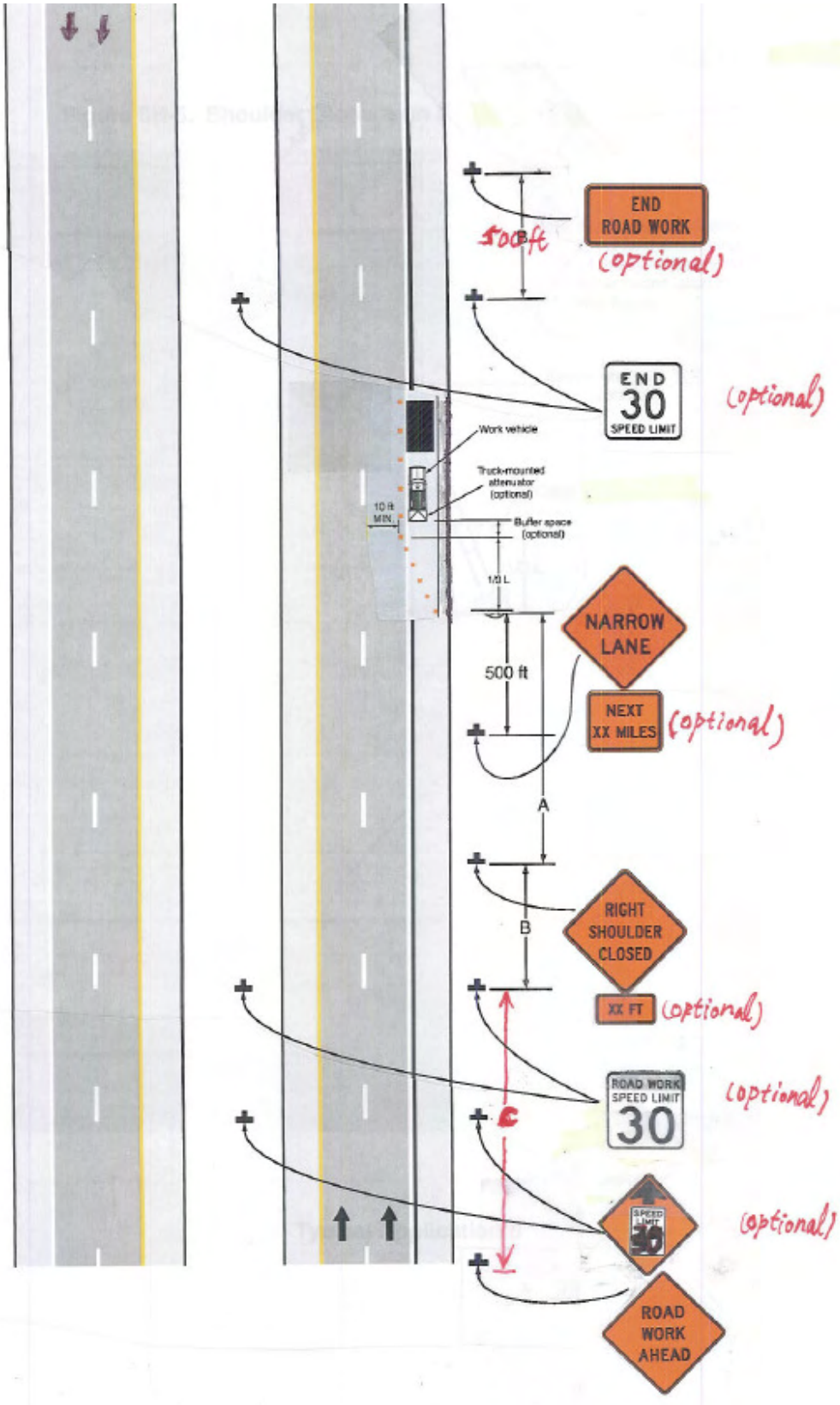
Standard:

6. Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.

7. Shadow and work vehicles shall display high-intensity rotating, flashing, oscillating, or strobe lights.

8. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

Figure 6H-106(CA). Shoulder Work with Minor Encroachment on High Speed Highways (TA-106(CA))



Attachments:

CODE NO.	SIZE	BORDER WIDTH	MARGIN WIDTH	LETTER SIZE & SERIES LINE 1	LINE 2	LINE 3	LINE 4	LINE 5	HOLE CENTERS	HOLE DIA.	CORNER RADIUS	REFLECTORS NO.	REFLECTORS SIZE
SPEC.	20X36	3/8	3/8	4-D	4-D						1-1/2		

WHITE BACKGROUND WITH RED & BLACK BORDER AND SYMBOL.

REMARKS

PILOT CAR - BLACK ON WHITE
DO NOT PASS - RED ON WHITE

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

APPROVED:

TRAFFIC ENGINEER

DATE REVISION

DRAWING NO. SCALE

C25R

Black on Yellow
30" x 30"
5" Series D letters

Use in advance of a point where a surveying party is working in or closely adjacent to the roadway. This sign is also available in a rectangular shape for use on a small portable easel when frequent moving of the sign is desirable.

C26R

Black on White
36" x 18"
5" Series C letters

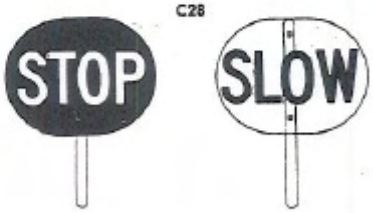
Use in a conspicuous position on the rear of a vehicle used for guiding controlled one-way traffic through or around a road construction or maintenance project. A flagman will be used on every approach to a project when a pilot car is used.

C27R

Black on Yellow
24" x 24"
4" Series D letters
(Also available in
36" x 36" size)

Use in advance of open trenches in or adjacent to the roadway.

C28



White on Red and
Black on Yellow
14" x 11" elliptical shape
5" Series C letters
Not reflectorized

For use by flagmen.

C21

Black on Orange
48" x 48"
7" Series C letters

Available with 500 FT, 1000 FT, 1500 FT or AHEAD on the third line. Use in advance of a point where traffic is confined to one lane for a single direction of travel. This sign will not be used where traffic in both directions must use the same single lane.

C22

Black on Orange
30" x 30"
5" Series D letters

Use in advance of minor maintenance or public utility operations for the protection of men working in or near the roadway. This sign is also available in a rectangular shape for use on a small portable easel when frequent moving of the sign is desirable.

C23

Black on Orange
30" x 30"
5" Series C letters

Use in advance of maintenance or minor construction projects in the roadway. This sign is also available in a rectangular shape for use on a small portable easel when frequent moving of the sign is desirable.

C24

Black on Orange
30" x 30"
4" Series C letters

Use in advance of maintenance or minor construction operations involving the shoulder, where the traveled way remains unobstructed. This sign is also available in a rectangular shape for use on a small portable easel when frequent moving of the sign is desirable.

C25

Black on Orange
30" x 30"
5" Series D letters

Use in advance of a point where a surveying party is working in or closely adjacent to the roadway. This sign is also available in a rectangular shape for use on a small portable easel when frequent moving of the sign is desirable.

C26

Black on White
36" x 18"
5" Series C letters

Use in a conspicuous position on the rear of a vehicle used for guiding controlled one-way traffic through or around a road construction or maintenance project. A flagman will be used on every approach to a project when a pilot car is used.

C21

Black on Orange
48" x 48"
7" Series C letters

(The 36" x 36" size may also be used.)

May be used with 500 FT., 1000 FT., 1500 FT. or AHEAD on the third line. Use in advance of a point where traffic is confined to one lane for a single direction of travel. This sign will not be used where traffic in both directions must use the same single lane. (See Supplemental Signing, Page 5–8.)

C22

Black on Orange
30" x 30"
5" Series D letters

(The 24" x 24" size may also be used.)

Use in advance of minor maintenance or public utility operations for the protection of men working in or near the roadway.

C23

Black on Orange
30" x 30"
5" Series C letters

(The 24" x 24" size may also be used.)

(The 48" x 48" size may also be used.)

May be used in advance of maintenance or minor construction projects in the roadway. (See Supplemental Signing, Page 5–8.)

C24

Black on Orange
30" x 30"
4" Series C letters

Use in advance of maintenance or minor construction operations involving the shoulder, where the traveled way remains unobstructed.

C25

Black on Orange
30" x 30"
5" Series D letters

(The 24" x 24" size may also be used.)

May be used in advance of a point where a survey party is working in or closely adjacent to the roadway. (See Supplemental Signing, Page 5–8.)

C26

Black on Orange
36" x 18"
5" Series C letters

Use in a conspicuous position on the rear of a vehicle used for guiding controlled one-way traffic through or around a road construction or maintenance project. A flagman shall be used on every approach to a project when a pilot car is used.

C27

Black on Orange
24" x 24"
4" Series D letters

(The 36" x 36" size may also be used.)

Use in advance of open trenches in or adjacent to the roadway. The 36" x 36" size should be used on high speed highways.

12-6 TTC policy change for Part 6F and 6H of the CA MUTCD

Recommendation:

Caltrans recommends adding policy for REDUCE SPEED AHEAD sign. Add notes where advisory speed plaques are used.

Agency Making Request/Sponsor: Caltrans – Don Fogle

Background:

During the 2009 MUTCD adoption process Mr. Steve Pyburn of FHWA made various comments. Some were accepted during the adoption process and some are identified as beyond the scope of the adoption process and need to be reviewed as CTCDC Agenda items. Here is a list of those policy changes.

Mr. Pyburn suggested use a sign called "REDUCE SPEED AHEAD" sign. Such a sign does not exist in Federal nor California standard signs. This sign need to be created before added to Typical Applications in Part 6H.

In many 6H figures the word "(optional)" appeared next to Advisory Speed (W13-1) plaques. Mr. Pyburn suggested to cross out the word "(optional)" and replace it with text "(where required)"

Based on the comments received from FHWA, Caltrans recommends the CA MUTCD policies to be added and changed as below.

Proposal:

Section 6F.109(CA) REDUCE SPEED AHEAD C45(CA) Sign
Option:
Where Advisory Speed (W13-1) plaque is used, a REDUCE SPEED AHEAD (C45(CA)) sign maybe placed in advance of it.

This sign will be added to Figure 6F-101(CA) and Table 6F-1(CA)

Notes for Figure 6H-7 6H-7(CA) —Typical Application 7
Road Closure with a Diversion
Support:
1. Signs and object markers are shown for one direction of travel only.
Standard:
2. Devices similar to those depicted shall be placed for the opposite direction of travel.

3. Pavement markings no longer applicable to the traffic pattern of the roadway shall be removed or
obliterated before any new traffic patterns are open to traffic.
4. Temporary barriers and end treatments shall be crashworthy.
Guidance:
5. If the tangent distance along the temporary diversion is more than 600 feet, a Reverse Curve sign, left first,
should be used instead of the Double Reverse Curve sign, and a second Reverse Curve sign, right first, should be placed in advance of the second reverse curve back to the original alignment.
6. When the tangent section of the diversion is more than 600 feet, and the diversion has sharp curves with
recommended speeds of 30 mph or less, Reverse Turn signs should be used.
7. Where the temporary pavement and old pavement are different colors, the temporary pavement should start
on the tangent of the existing pavement and end on the tangent of the existing pavement.
Option:
8. Flashing warning lights and/or flags may be used to call attention to the warning signs.
9. On sharp curves, large arrow signs may be used in addition to other advance warning signs.
10. Delineators or channelizing devices may be used along the diversion.
11. If the tangent distance along the temporary diversion is less than 600 feet, additional One-Direction Large Arrow (W1-6)
and Chevron Alignment (W1-8) signs may be used.
12. When recommended speeds are the same for each curve, one Double Reverse Curve (W24-1) sign may be used,
instead of two Reverse Curve (W1-4) signs, in advance of the first curve.
Support:
13. Use crash cushions, wherever applicable.

Option:

14. The REDUCE SPEED AHEAD (C45(CA)) sign may be used after ROAD WORK AHEAD sign.

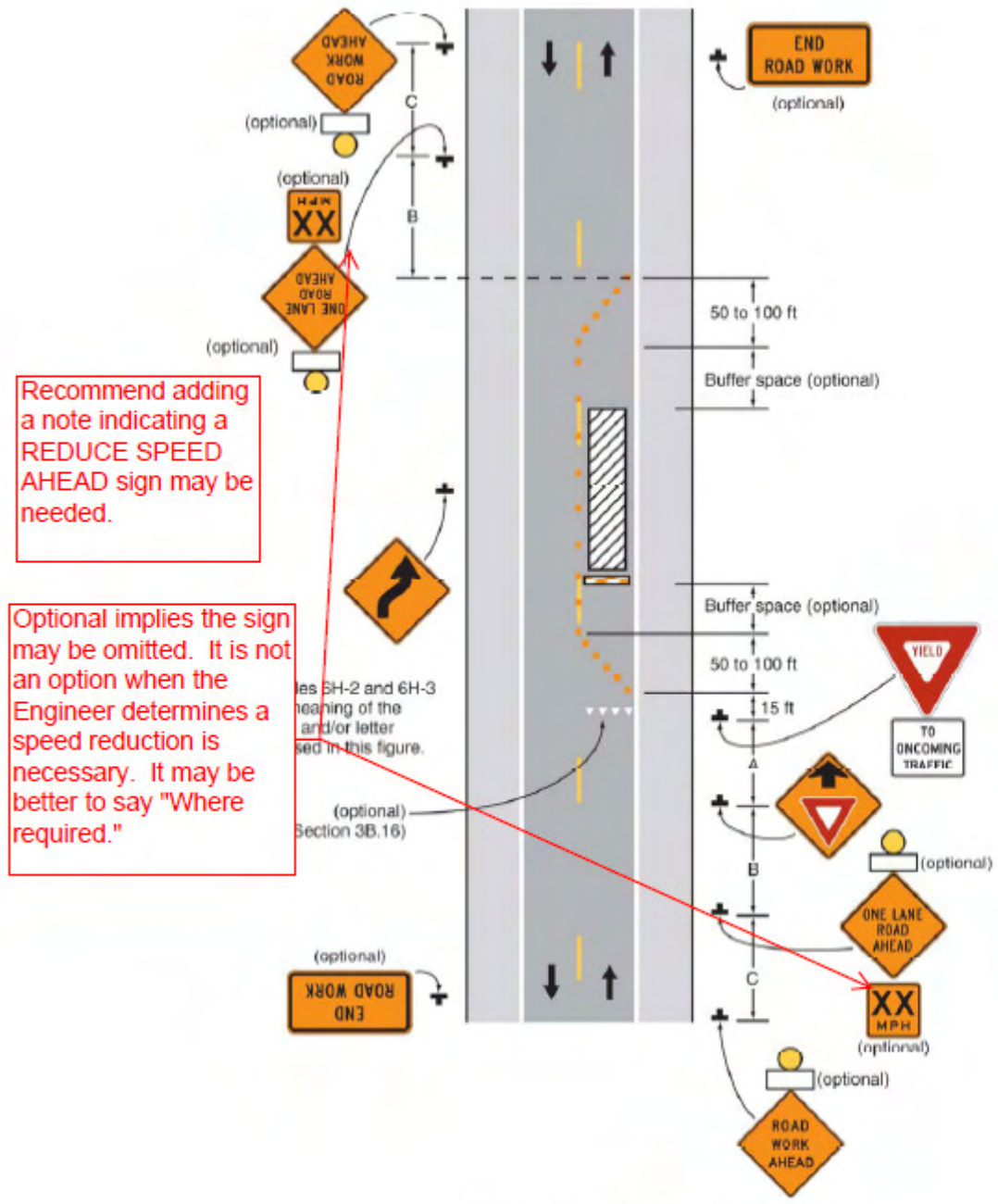
Notes for Figure 6H-11—Typical Application 11
Lane Closure on a Two-Lane Road with Low Traffic Volumes

Option:
1. This TTC zone application may be used as an alternate to the TTC application shown in Figure 6H-10 6H-
10(CA) (using flaggers) when the following conditions exist:
a. Vehicular traffic volume is such that sufficient gaps exist for vehicular traffic that must yield.
b. Road users from both directions are able to see approaching vehicular traffic through and beyond the worksite and have sufficient visibility of approaching vehicles.
2. The Type B flashing warning lights may be placed on the ROAD WORK AHEAD and the ONE LANE ROAD AHEAD signs whenever a night lane closure is necessary.
Standard:
3. The approach to the side that is not closed shall be visible (for a distance equal to the safe passing sight distance for that approach) to the driver who must yield or stop.
Support:
See Section 3B.02 and 6C.15.

Option:

4. The REDUCE SPEED AHEAD (C45(CA)) sign may be used after ROAD WORK AHEAD sign.

Figure 6H-11. Lane Closure on a Two-Lane Road with Low Traffic Volumes (TA-11)



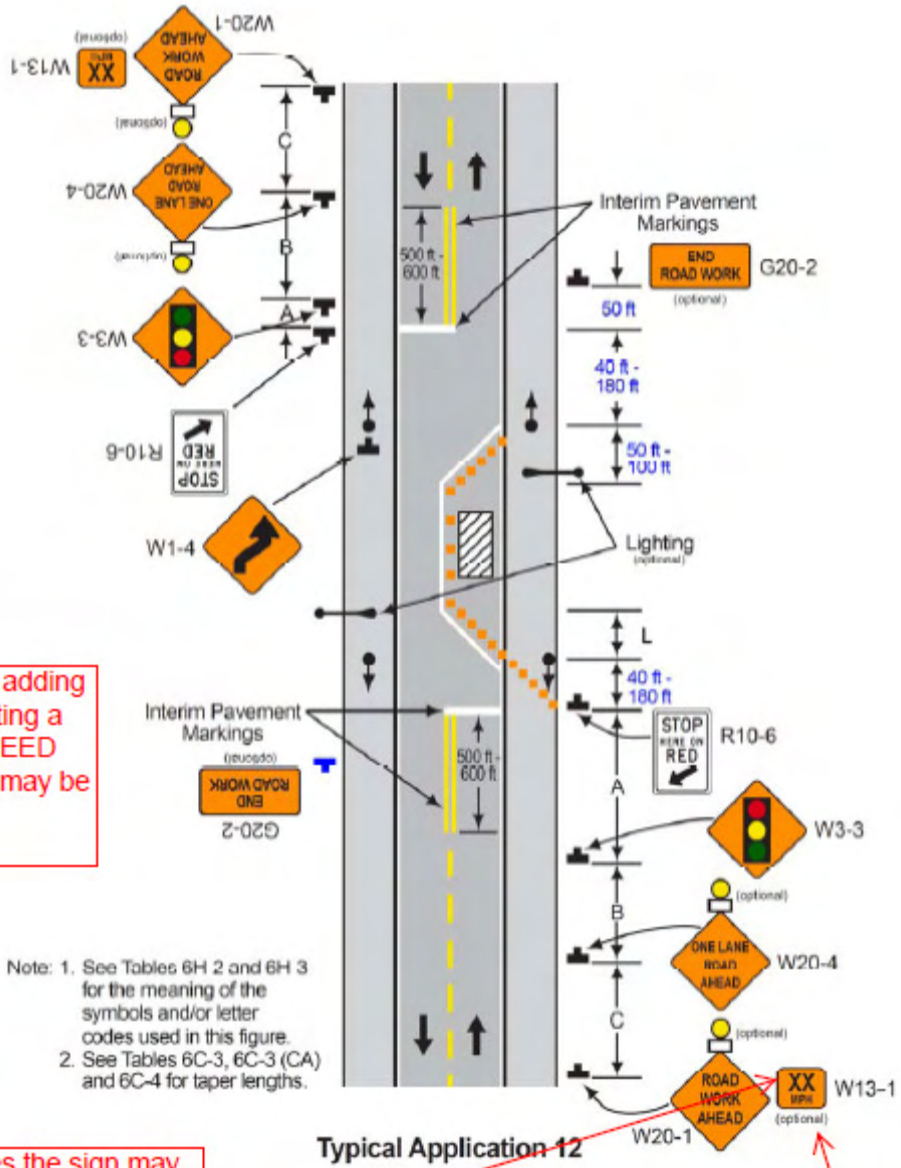
Typical Application 11

Notes for Figure 6H-12 —Typical Application 12
Lane Closure on a Two-Lane Road Using Traffic Control Signals
Standard:
1. Temporary traffic control signals shall be installed and operated in accordance with the provisions of
Part 4. Temporary traffic control signals shall meet the physical display and operational requirements
of conventional traffic control signals.
2. Temporary traffic control signal timing shall be established by authorized officials. Durations of red
clearance intervals shall be adequate to clear the one-lane section of conflicting vehicles.
3. When the temporary traffic control signal is changed to the flashing mode, either manually or automatically, red signal indications shall be flashed to both approaches.
4. Stop lines shall be installed with temporary traffic control signals for intermediate and long-term closures. Existing conflicting pavement markings and raised pavement marker reflectors between the
activity area and the stop line shall be removed. After the temporary traffic control signal is removed,
the stop lines and other temporary pavement markings shall be removed and the permanent pavement markings restored.
5. Safeguards shall be incorporated to avoid the possibility of conflicting signal indications at each end of
the TTC zone.
Guidance:
6. Where no-passing lines are not already in place, they should be added.
7. Adjustments in the location of the advance warning signs should be made as needed to accommodate the
horizontal or vertical alignment of the roadway, recognizing that the distances shown for sign spacings are
minimums. Adjustments in the height of the signal heads should be made as needed to conform to the vertical alignment.
Option:
8. Flashing warning lights shown on the ROAD WORK AHEAD and the ONE LANE ROAD AHEAD signs
may be used.
9. Removable pavement markings may be used.
Support:
10. Temporary traffic control signals are preferable to flaggers for long-term projects and other activities that
would require flagging at night.
11. The maximum length of activity area for one-way operation under temporary traffic control signal control is
determined by the capacity required to handle the peak demand.

Option:

12. The REDUCE SPEED AHEAD (C45(CA)) sign may be used before ROAD WORK AHEAD sign.

Figure 6H-12 (CA). Lane Closure on Two-Lane Road Using Traffic Control Signals (TA-12)



Note: 1. See Tables 6H 2 and 6H 3 for the meaning of the symbols and/or letter codes used in this figure.
2. See Tables 6C-3, 6C-3 (CA) and 6C-4 for taper lengths.

Typical Application 12

Recommend adding a note indicating a REDUCE SPEED AHEAD sign may be needed.

Optional implies the sign may be omitted. It is not an option when the Engineer determines a speed reduction is necessary. It may be better to say "Where required."

To be consistent with other situations, should the speed plaque be with the W20-4?

Notes for Figure 6H-32 6H-32(CA) —Typical Application 32
Half Road Closure on a Multi-Lane, High-Speed Highway
Standard:
1. Pavement markings no longer applicable shall be removed or obliterated as soon as practical. Except for intermediate-term and short-term situations, temporary markings shall be provided to clearly delineate the temporary travel path. For short-term and intermediate-term situations where it is not feasible to remove and restore pavement markings, channelization shall be made dominant by using a very close device spacing.
Guidance:
2. When paved shoulders having a width of 8 feet or more are closed, channelizing devices should be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the traveled way.
3. Where channelizing devices are used instead of pavement markings, the maximum spacing should be 1/2 S feet where S is the speed in mph. The spacing of channelizing devices should not exceed the maximum distances shown in Table 6F-101(CA). Refer to Section 6F.63 for spacing of channelizing devices.
4. If the tangent distance along the temporary diversion is less than 600 feet, a Double Reverse Curve sign should be used instead of the first Reverse Curve sign, and the second Reverse Curve sign should be omitted.
Option:
5. Warning lights may be used to supplement channelizing devices at night.
6. A truck-mounted attenuator may be used on the work vehicle and/or the shadow vehicle.
Support:
7. See Section 6F.106(CA) for use of the Slow For The Cone Zone (SC19(CA) and SC20(CA)) Signs.
Guidance:
8. All advance warning signs should be placed so that the path of travel for bicycles is not blocked, while maintaining visibility for road users.
9. If bicyclists are able to use the shoulder throughout the TTC zone, the Bicycle Crossing (W11-1) sign should be used and the SHARE THE ROAD (W16-1P) plaque should be omitted.
10. The speeds used for the shoulder taper calculations should be of bicyclists in the project vicinity or if a special event such as a bike race, the expected speed of bicyclists approaching the TTC zone.
11. If bicyclists are sharing the traveled way lanes with motorists, speed reduction countermeasures should be used to reduce traffic speeds in the TTC zone. Refer to Sections 6C.01 and 6D.03.
12. When existing accommodations for bicycle travel are disrupted or closed in a long-term duration project (see Section 6G.02) and the roadway width is inadequate for allowing bicyclists and motor vehicles to travel side by side, the Bicycle Crossing (W11-1) sign and the SHARE THE ROAD (W16-1P) plaque should be used to advise motorists of the presence of bicyclists in the travel way lanes.

Option:

13. The REDUCE SPEED AHEAD (C45(CA)) sign may be used after ROAD WORK AHEAD sign.

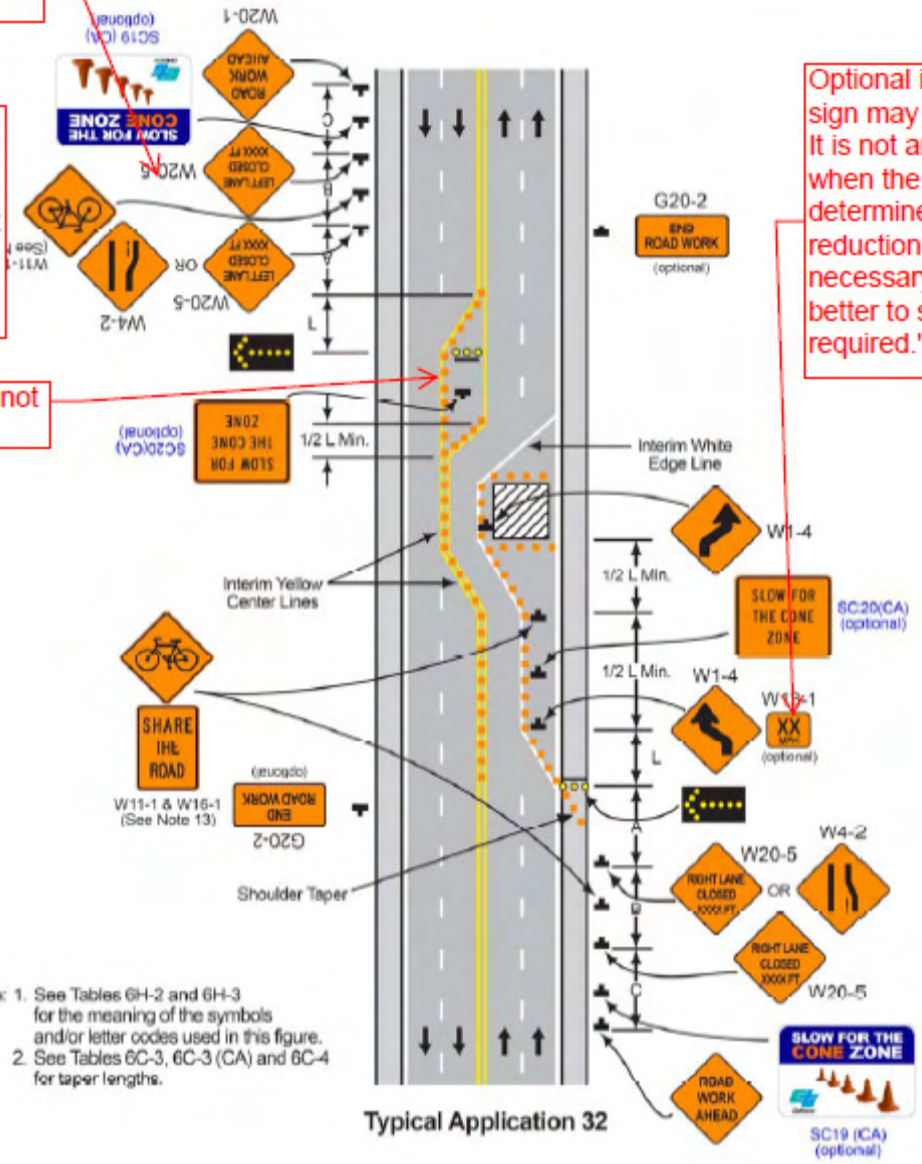
Figure 6H-32 (CA). Half Road Closure on a Multilane, High-Speed Highway (TA-32)

Should there be a speed plaque in this direction.

Federal figure has extra B distance, pushing the first warning sign farther upstream

This distance is not specified.

Optional implies the sign may be omitted. It is not an option when the Engineer determines a speed reduction is necessary. It may be better to say "Where required."



Note: 1. See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.
2. See Tables 6C-3, 6C-3 (CA) and 6C-4 for taper lengths.

Typical Application 32

Notes for Figure 6H-36 6H-36(CA) —Typical Application 36
Lane Shift on a Freeway

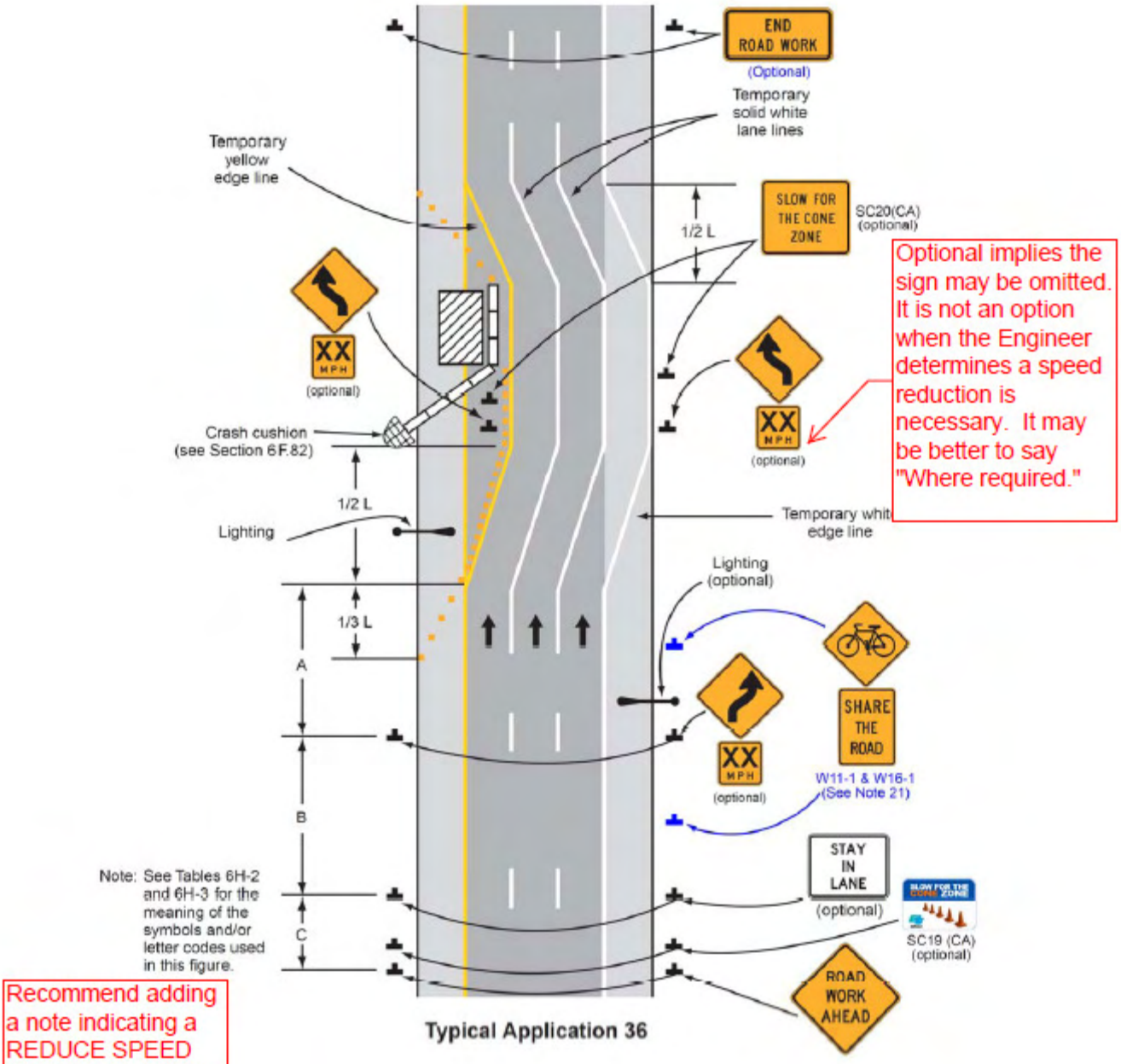
Guidance:
1. The lane shift should be used when the work space extends into either the right-hand or left-hand lane of a
divided highway and it is not practical, for capacity reasons, to reduce the number of available lanes.
Support:
2. When a lane shift is accomplished by using
(1) geometry that meets the design speed at which the permanent highway was designed,
(2) full normal cross-section (full lane width and full shoulders), and
(3) complete pavement markings, then only the initial general work-zone warning sign is required.
Guidance:
3. When the conditions in Note 2 are not met, the information shown in the typical application should be employed and all the following notes apply.
Standard:
4. Temporary traffic barriers, if used, shall comply with the provisions of Section 6F.85.
5. The barrier shall not be placed along the shifting taper. The lane shall first be shifted using channelizing devices and pavement markings.
Guidance:
6. A warning sign should be used to show the changed alignment.
Standard:
7. The number of lanes illustrated on the Reverse Curve signs shall be the same as the number of through lanes available to road users, and the direction of the reverse curves shall be appropriately illustrated.
Option:
8. Where two or more lanes are being shifted, a W1-4 (or W1-3) sign with an ALL LANES (W24-1cP)
plaque (see Figure 6F-4) may shall be used instead of a sign that illustrates the number of lanes. The Reverse Curve (W1-4) sign shall be used instead of the Reverse Curve (W1-4a & W1-4b) signs which shows the
number of lanes.
Option:
9. Where more than three lanes are being shifted, the Reverse Curve (or Turn) sign may be rectangular.
Guidance:
10. Where the shifted section is longer than 600 feet, one set of Reverse Curve signs should be used to show the
initial shift and a second set should be used to show the return to the normal alignment. If the tangent distance along the temporary diversion is less than 600 feet, a Double Reverse Curve sign should be used instead of the first Reverse Curve sign, and the second Reverse Curve sign should be omitted. Use the Reverse Curve (W1-4) signs for both locations instead of the Double Reverse Curve (W24-1) sign.
11. If a STAY IN LANE sign is used, then solid white lane lines should be used.
Standard:
12. The minimum width of the shoulder lane shall be 10 feet.
13. For long-term stationary work, existing conflicting pavement markings shall be removed and temporary markings shall be installed before traffic patterns are changed.
Option:
14. For short-term stationary work, lanes may be delineated by channelizing devices or removable pavement
markings instead of temporary markings.
Guidance:

15. If the shoulder cannot adequately accommodate trucks, trucks should be directed to use the travel lanes.
16. The use of a barrier should be based on engineering judgment.
Option:
17. Type C Steady-Burn warning lights may be placed on channelizing devices and the barrier parallel to the
edge of the pavement for nighttime lane closures.
Option:
18. Detail 11 (see Figure 3A-102(CA)) may be used instead of the temporary solid white lane line, which is shown in Figure
6H-36(CA).
Support:
19. See Section 6F.106(CA) for use of the Slow For The Cone Zone (SC19(CA) and SC20(CA)) Signs.
Guidance:
20. All advance warning signs should be placed so that the path of travel for bicycles is not blocked, while maintaining
visibility for road users.
21. When existing accommodations for bicycle travel are disrupted or closed in a long-term duration project (see Section
6G.02) and the roadway width is inadequate for allowing bicyclists and motor vehicles to travel side by side, the Bicycle
Crossing (W11-1) sign and the SHARE THE ROAD (W16-1P) plaque should be used to advise motorists of the presence of bicyclists in the travel way lanes.
22. Except for short durations and mobile operations, when a highway shoulder is occupied and bicyclists would be sharing
a lane with vehicular traffic, as a result of the TTC zone, speed reduction countermeasures should be used to reduce traffic speeds in the TTC zone. Refer to Sections 6C.01 and 6D.03.
23. Except for short durations and mobile operations, when a highway shoulder is occupied and bicyclists would be sharing
a lane with vehicular traffic, as a result of the TTC zone, before narrowing the outside lane other measures such as widening the outside shoulder to allow bicyclists and motor vehicles to travel side by side through the TTC zone should
be considered.
24. If traffic volumes make it feasible, the two left lanes should be merged into one lane to avoid using the shoulder as a
traveled way lane and allowing continued use for emergency purposes and bicycle travel.
25. When existing accommodations for bicycle travel are disrupted or closed in a long-term duration project (see Section
6G.02) and the roadway width is inadequate for allowing bicyclists and motor vehicles to travel side by side, a separate
path should be considered for bicyclists.

Option:

26. The REDUCE SPEED AHEAD (C45(CA)) sign may be used after ROAD WORK AHEAD sign.

Figure 6H-36 (CA). Lane Shift on Freeway (TA-36)



Typical Application 36

Optional implies the sign may be omitted. It is not an option when the Engineer determines a speed reduction is necessary. It may be better to say "Where required."

Recommend adding a note indicating a REDUCE SPEED AHEAD sign may be needed.

Notes for Figure 6H-37—Typical Application 37
Double Lane Closure on a Freeway
Standard:
1. An arrow board shall be used when a freeway lane is closed. When more than one freeway lane is closed, a separate arrow board shall be used for each closed lane.
Guidance:
2. Ordinarily, the preferred position for the second arrow board is in the closed exterior lane at the upstream
end of the second merging taper. However, the second arrow board should be placed in the closed interior
lane at the downstream end of the second merging taper in the following situations:
a. When a shadow vehicle is used in the interior closed lane, and the second arrow board is mounted on the
shadow vehicle;
b. If alignment or other conditions create any confusion as to which lane is closed by the second arrow board; and
c. When the first arrow board is placed in the closed exterior lane at the downstream end of the first merging taper (the alternative position when the shoulder is narrow).
Option:
3. Flashing warning lights and/or flags may be used to call attention to the initial warning signs.
4. A truck-mounted attenuator may be used on the shadow vehicle.
5. If a paved shoulder having a minimum width of 10 feet and sufficient strength is available, the left and adjacent interior lanes may be closed and vehicular traffic carried around the work space on the right-hand
lane and a right-hand shoulder.
Guidance:
6. When a shoulder lane is used that cannot adequately accommodate trucks, trucks should be directed to use
the normal travel lanes.
Standard:
7. 3 cones or 2 Type II barricades shall be placed transversely across each closed lane at end of each merging
taper and every 2000 feet throughout the lane closure.
8. On freeways, maximum spacing of channelizing devices shall be 50 feet in advance warning and transition areas, 100 feet in activity and termination areas (see figure 6C-1).
Guidance:
9. LANE CLOSED C30(CA) sign should be placed every 2000 feet throughout the lane closure adjacent to the open lane
within the closed lane.
Support:
10. For State highways, see Department of Transportation's Standard Plan T10. See Section 1A.11 for information regarding this publication.

Option:

11. The REDUCE SPEED AHEAD (C45(CA)) sign may be used after ROAD WORK AHEAD sign.

Notes for Figure 6H-39—Typical Application 39

Median Crossover on a Freeway

Standard:

1. Channelizing devices or temporary traffic barriers shall be used to separate opposing vehicular traffic.

2. An arrow board shall be used when a freeway lane is closed. When more than one freeway lane is closed, a separate arrow board shall be used for each closed lane.

Guidance:

3. For long-term work on high-speed, high-volume highways, consideration should be given to using a temporary traffic barrier to separate opposing vehicular traffic.

Option:

4. When a temporary traffic barrier is used to separate opposing vehicular traffic, the Two-Way Traffic, Do Not Pass, KEEP RIGHT, and DO NOT ENTER signs may be eliminated.

5. The alignment of the crossover may be designed as a reverse curve.

Guidance:

6. When the crossover follows a curved alignment, the design criteria contained in the AASHTO "Policy on the Geometric Design of Highways and Streets" (see Section 1A.11) should be used.

7. When channelizing devices have the potential of leading vehicular traffic out of the intended traffic space, the channelizing devices should be extended a distance in feet of 2.0 times the speed limit in mph beyond the downstream end of the transition area as depicted.

8. Where channelizing devices are used, the Two-Way Traffic signs should be repeated every 1 mile.

Option:

9. NEXT XX MILES Supplemental Distance plaques may be used with the Two-Way Traffic signs, where XX is the distance to the downstream end of the two-way section.

Support:

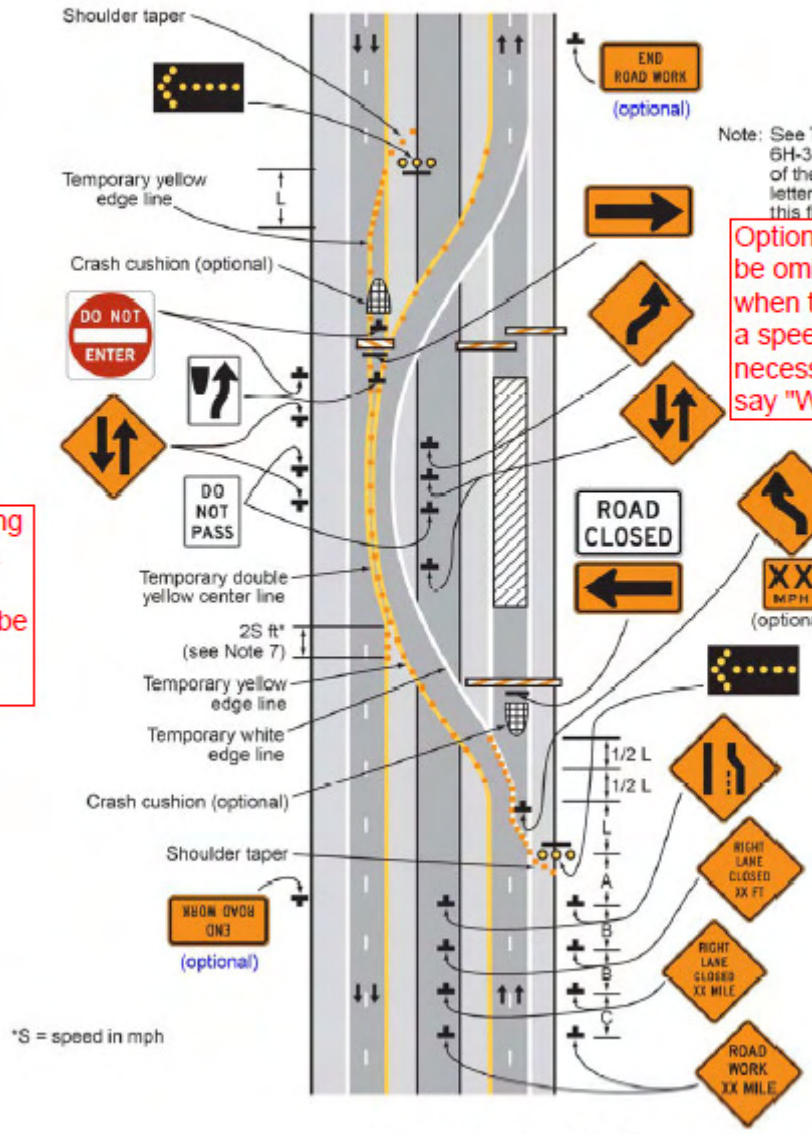
10. When the distance is sufficiently short that road users entering the section can see the downstream end of the section, they are less likely to forget that there is opposing vehicular traffic.

11. The sign legends for the four pairs of signs approaching the lane closure for the non-crossover direction of travel are not shown. They are similar to the series shown for the crossover direction, except that the left lane is closed.

Option:

12. The REDUCE SPEED AHEAD (C45(CA)) sign may be used after ROAD WORK AHEAD sign.

Figure 6H-39. Median Crossover on a Freeway (TA-39)



Typical Application 39

Optional implies the sign may be omitted. It is not an option when the Engineer determines a speed reduction is necessary. It may be better to say "Where required."

Recommend adding a note indicating a REDUCE SPEED AHEAD sign may be needed.

Notes for Figure 6H-43—Typical Application 43
Partial Exit Ramp Closure

Guidance:
1. Truck off-tracking should be considered when determining whether the minimum lane width of 10 feet is
adequate (see Section 6G.08).

Standard:
2. The RAMP NARROWS (W5-4) sign and ON RAMP (W13-4P) plaque shall not be used in California. The ROAD
NARROWS (W5-1) sign or NARROW LANE(S) (C12(CA)) sign, as appropriate, shall be used instead. See Sections 2C.19 and 6F.102(CA).

Guidance:
3. For planned partial ramp closure, consideration should be given to closing the entire exit ramp. Refer to Department of
Transportation's Standard Plan T14. See Section 1A.11 for information regarding this publication.

Option:

4. The REDUCE SPEED AHEAD (C45(CA)) sign may be used after ROAD WORK AHEAD sign.

Notes for Figure 6H-105(CA)—Typical Application 105(CA)
Lane Shift on Road with Low Traffic Volumes

Guidance:
1. The lanes on either side of the center work space should have a minimum width of 10 feet as measured from the near
edge of the channelizing devices to the edge of pavement or the outside edge of paved shoulder.
2. All advance warning signs should be placed so that the path of travel for bicycles is not blocked while maintaining visibility for road users.

Standard:
3. Workers in the roadway shall wear high-visibility safety apparel as described in Section 6D.03.

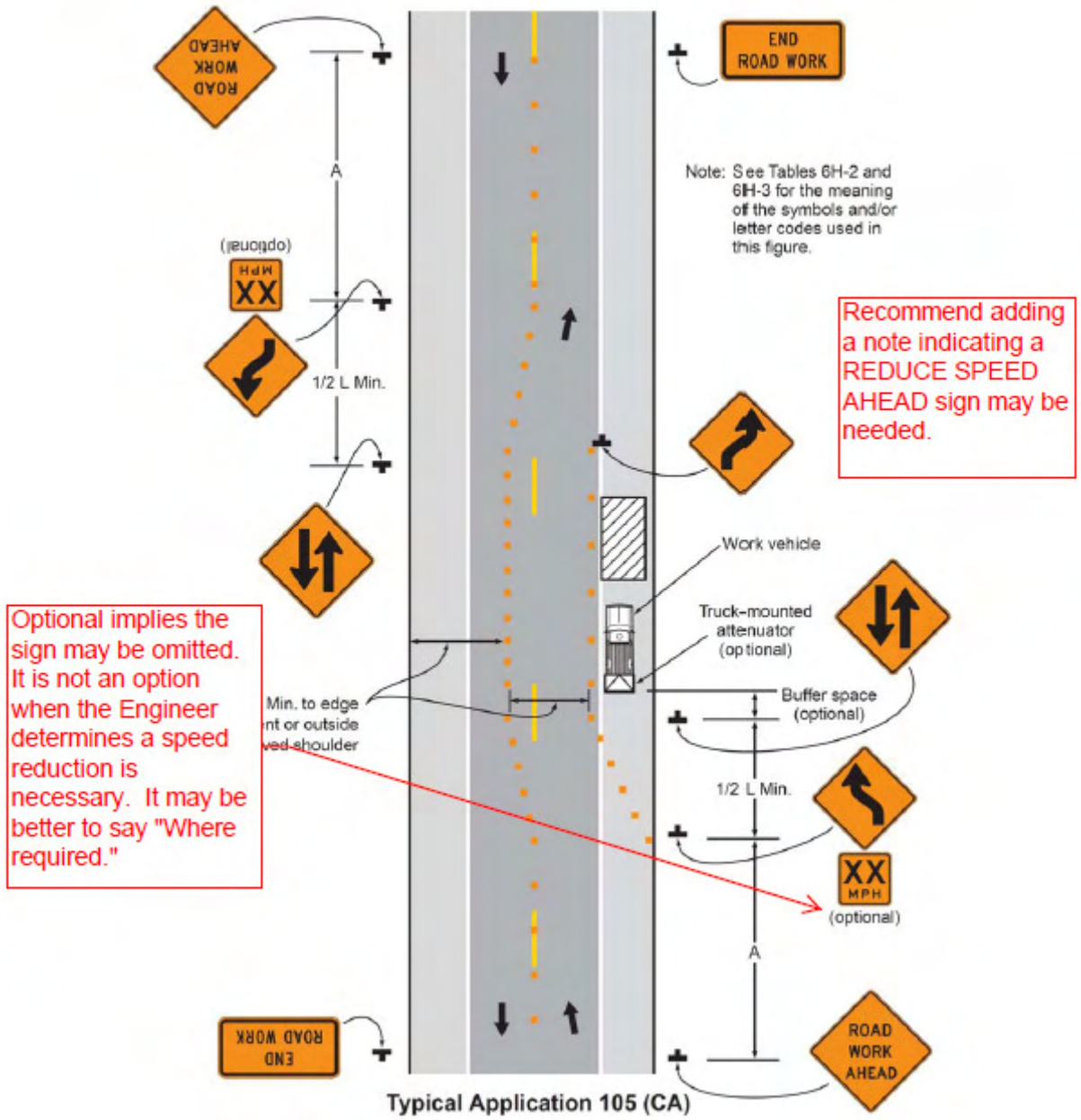
Option:
4. Flashing warning lights and/or flags may be used to call attention to the advance warning signs.
5. If the closure continues overnight, warning lights may be used on the channelizing devices.
6. A lane width of 9 feet may be used for short-term stationary work on low-volume, low-speed roadways when motor vehicle traffic does not include longer and wider heavy commercial vehicles.
7. A work vehicle displaying high-intensity rotating, flashing, oscillating, or strobe lights may be used instead of the channelizing devices forming the tapers or the high-level warning devices.
8. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

Standard:
9. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.
10. Notes 6 and 7 shall not be applicable for State highways. Note #1 shall be used instead for State highways

Option:

11. The REDUCE SPEED AHEAD (C45(CA)) sign may be used after ROAD WORK AHEAD sign.

Figure 6H-105 (CA). Work on Side of Road With Low Traffic Volumes (TA-105 (CA))



Typical Application 105 (CA)

12-7 TTC policy change on use of audible warning devices for sidewalk closure.

Recommendation:

Caltrans recommends Policy changes for Part 6D

Agency Making Request/Sponsor: Caltrans –Don Fogle

Background:

During the 2011 CA MUTCD drafting process Caltrans has received the following comments regards to making CA MUTCD to be incompliance with ADA laws and regulations.

Mr. Michael S. Nunez from Disability Rights Advocates provided the following comments on Part6.

2. The California MUTCD Should Require that California Governments Use Audible Alerts to Direct Pedestrians to Routes When Pedestrian Walkways are Blocked by Construction

Section6 d.01 of the CA MUTCD should require that when construction barricades completely prevent use of a particular pedestrian walkway such as a sidewalk, audible alert devices be used to redirect visually impaired pedestrians to alternate routes. The current draft of the California MUTCD is ambiguous regarding whether this practice is required See 6d.01; 6f.02; 6f.13. Using audible alerts to redirect pedestrian traffic in this manner is required by federal and state law, and recent tests of available technology established that satisfying such a requirement is entirely feasible.

Federal and state law require use of audible alerts to redirect pedestrians around blocked sidewalks when all pedestrian traffic is diverted. Sidewalks are programs of state and local governments. Barden v. City of Sacramento, 292 F.3d 1073, 1074 (9th Cir. 2002). As such, they are subject to requirements of Title ll of the ADA and similar California state law. When barricades are placed on sidewalks that completely prevent use of the sidewalks such that pedestrian traffic is diverted to alternate routes, an audible alert is necessary to redirect visually impaired pedestrians to such alternate routes. Such alternate routes may be temporary pedestrian routes marked by barricades or may be situations where all pedestrians are directed to cross the street at a corner and use the sidewalk on the other side of the street. Typically such directions to pedestrians are given by placement of visual signs. But these visual signs do not provide pedestrians who are blind or low vision with the essential information that is provided to sighted pedestrians. Hence, where barricades fully prevent the use of a sidewalk, state and local governments must set up audible alerts to satisfy their obligations under Title ll of the ADA, Section5 04 of the Rehabilitation Act, and California state law.

The current draft of the MUTCD is inadequate since it fails to provide blind and low vision pedestrians with the same level of access as provided to sighted pedestrians when a sidewalk is closed and a visual sign only is posed directing pedestrians to the other side of the street. Too often, a blind or low vision pedestrian will not be aware of the sidewalk closure until he or she has traveled part-way down the sidewalk and then discovers through barricades that the sidewalk is closed. The blind or low vision pedestrian must then try to figure out what is going on with regards to closure of the pedestrian routes using whatever cues may be available or by asking other people who may pass by what is the nature of the closure. The blind or low vision pedestrian will then typically have to backtrack to the beginning of the block in order to cross the street

and try to use the alternate route. An audible alert will avoid this unequal treatment by providing the blind or low vision pedestrian with information in an audible format about a sidewalk closure at the same point where a sighted person is given this information - usually at the beginning of the block rather than midway down.

An audible alert is also useful to provide effective communication when pedestrian traffic is being diverted into a temporary alternate route such as a barricaded pathway within the street. Although construction barricades should be used in such situations that provide a continuous cane-detectible edge to the temporary route, an audible alert will provide additional information that explains to blind and low vision pedestrians the nature and extent of the change in the pedestrian route. Construction barricades are not always designed and constructed in a sufficient manner to provide the cane-detectible warning for the full

length of the temporary route. Providing an audible alert in addition to the detectible barricades is an important safety measure.
Lmplementing this proposed requirement is entirely feasible. In June, the American Traffic Safety Association ('ATSA") conducted a test of the Empco-light 400ML, an audible alert device that verbally directs pedestrians to alternate routes when a passing pedestrian triggers its motion sensor. The test was successful, and it demonstrated that currently available technology can be used to redirect visually impaired pedestrians around sidewalk barricades.

Mr. Richard Skaff from Designing Accessible Communities provided the following comments on Part6.

5. Signs required for construction zones – Flat signs that have been required to designate construction zones for pedestrians have never provided equal information for pedestrians who are blind and those with limited vision. There are now “speak out” sign systems available (the Empco-Lite Model 400ML-http://www.empco-lite.com/barricade/ADA-Lite.htm) that must be required and used when construction in the public right-of-way causes temporary changes to the regular public path-of-travel and a temporary path-of-travel.
6. When temporary paths-of-travel cause temporary paths of travel to be created, and either end of that temporary path-of-travel end in a vehicle way, the temporary use of detectable warning material must be used to warn blind and pedestrians with limited vision that they are entering a vehicle way.

Attachments: Emails from Mr. Michael S. Nunez, Mr. Richard Skaff, and Ms. Christine Calabrese.

Proposal:

Section 6D.02 Accessibility Considerations

Support:

01 Additional information on the design and construction of accessible temporary facilities is found in publications listed in Section 1A.11 (see Publications 12, 38, 39, and 42).

Guidance:

02 *The extent of pedestrian needs should be determined through engineering judgment or by the individual responsible for each TTC zone situation. Adequate provisions should be made for pedestrians with disabilities.*

Standard:

03 **When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Where pedestrians with visual disabilities normally use the closed sidewalk, a barrier that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk , and audible information devices shall be used to provide audible information.**

Support:

04 Maintaining a detectable, channelized pedestrian route is much more useful to pedestrians who have visual disabilities than closing a walkway and providing audible directions to an alternate route involving additional crossings and a return to the original route. Braille is not useful in conveying such information because it is difficult to find. Audible instructions might be provided, but the extra distance and additional street crossings might add complexity to a trip.

Guidance:

05 *Because printed signs and surface delineation are not usable by pedestrians with visual disabilities, blocked routes, alternate crossings, and sign and signal information should be communicated to pedestrians with visual disabilities by providing audible information devices, accessible pedestrian signals, and barriers and channelizing devices that are detectable to pedestrians traveling with the aid of a long cane or who have low vision. When temporary paths-of-travel cause temporary paths of travel to be created, and either end of that temporary path-of-travel end in a vehicle way, the temporary use of detectable warning material should be used to warn blind and pedestrians with limited vision that they are entering a vehicle way.*

Support:

06 The most desirable way to provide information to pedestrians with visual disabilities that is equivalent to visual signing for notification of sidewalk closures is a speech message provided by an audible information device. Devices that provide speech messages in response to passive pedestrian actuation are the most desirable. Other devices that continuously emit a message, or that emit a message in response to use of a pushbutton, are also acceptable. signing information can also be transmitted to personal receivers, but currently such receivers are not likely to be carried or used by pedestrians with visual disabilities in TTC zones. Audible information devices might not be needed if detectable channelizing devices make an alternate route of travel evident to pedestrians with visual disabilities.

Guidance:

07 *If a pushbutton is used to provide equivalent TTC information to pedestrians with visual disabilities, the pushbutton should be equipped with a locator tone to notify pedestrians with visual disabilities that a special accommodation is available, and to help them locate the pushbutton.*

Attachments:

Michael Nunez
<mnunez@dralegal.org>
10/10/2011 01:14 PM

To <mutcdsupp@dot.ca.gov>
cc
bcc
Subject Comments on the draft Caltrans MUTCD

Good Afternoon,

I have attached Disability Rights Advocate's comments on the draft Caltrans MUTCD. I have provided the file in two different formats, MS Word and PDF. We request that you post both file formats on your web site so that screen reader users will be able to read our comments in the accessible MS Word format.

Thank You,


Michael DRA_Caltrans_MUTCD_Comments.pdf DRA Caltrans MUTCD comments_final.doc

October 9, 2010

California Department of Transportation
Attn: Johnny Bhullar
MUTCD Supplement Branch
MS-36 Office of Signs, Markings & External Support,
Caltrans, Division of Traffic Operations
P.O. Box 942874,
Sacramento, CA-94274-0001

Re: Comments on the Draft California Manual on Uniform Traffic Control Devices.

We write to strongly recommend that Caltrans adopt three revisions to the current draft of the California Manual on Uniform Traffic Control Devices ("MUTCD"). The changes discussed herein are required by law, are economically prudent, and are technically feasible. As such, Disability Rights Advocates hopes that Caltrans will adopt the changes discussed below.

Disability Rights Advocates ("DRA") is a non-profit legal center that works to advance the rights of people with disabilities. In particular, DRA works to ensure that people with disabilities obtain full and equal access to programs, services, and activities of government and private sector entities. Over its nearly twenty-year history, DRA has brought numerous successful legal challenges to physical and programmatic access barriers across California.

As an initial matter, DRA fully supports and incorporates herein comments that the California Council of the Blind submitted on June 30, 2011 to Caltrans regarding accessible pedestrian signals (APS) discussed in part 4 of the California MUTCD. In particular, DRA echoes CCB's objections to section 4e.09's suggestion that installation of APS should be considered only at intersections for which pedestrians have demanded APS. DRA agrees with the CCB that APS should be installed at all locations where both (1) pedestrians are legally permitted to cross the street, and (2) traffic signal lights are present. DRA's additional recommendations appear below.

1. The California MUTCD Must Require Installation of Accessible Pedestrian Signals Whenever a State or Local Agency Installs Pedestrian Countdown Signals

Caltrans should revise the California MUTCD to require that state and local governments install accessible pedestrian signals ("APS") whenever they install pedestrian countdown signals. An APS is a device that communicates information regarding the walking period at an intersection through audible and vibratactile means. Installing APSs and pedestrian countdown devices simultaneously is required by federal and state law, is fiscally responsible, and will ensure that the widest possible swath of the public can safely and independently enjoy use of sidewalks and streets.

Federal and state law requires that state and local governments install APS when they alter traffic lights by installing pedestrian countdown signals. Title II of the Americans with Disabilities Act ("ADA") requires state and local entities to ensure that "no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity. . ." 42 U.S.C. § 12132. The ADA also requires that state and local governments ensure accessibility when they alter preexisting facilities. Public safety is a program of state and local governments, and pedestrian signals are an essential component of the program of public safety. In addition, the installation of countdown signals constitutes an alteration to a preexisting facility. Pedestrian traffic signals that lack audible or vibratactile signaling do not provide visually impaired pedestrians with an equal opportunity to enjoy and benefit from sidewalks or the program of public safety. Because the presence of accessible pedestrian signals is required to ensure that visually impaired pedestrians can enjoy the benefits of sidewalks and state and local governments' public safety programs, state and local governments must install APS when they alter pedestrian walkways through the installation of countdown signals.

Programs of state and local governments that receive federal financial assistance also violate the Rehabilitation Act of 1973 where pedestrian signals that lack accessible signaling are components of those programs. The Rehabilitation Act requires that "[n]o otherwise qualified individual with a disability in the United States, as defined in section 705(20) of this title, shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance[.]." 29 U.S.C. § 794. The Act defines "program" as "all of the operations of public entities, including a department, agency, special purpose district, or other instrumentality of a State or of a local government." 29 U.S.C. § 794(b)(1)(A). Since regulating vehicular and pedestrian traffic is clearly an operation of state and local governments, the Rehabilitation Act mandates that people with disabilities receive full access to the benefits of pedestrian signals where those signals are established or maintained pursuant to programs receiving federal funding.

California state law has similar requirements, including California Civil Code sections 54 et. seq. and California Government Code sections 11135 et. seq.

In addition to complying with federal law, installing APS at the same time that governments modify other equipment at a particular street light makes economic sense. Installing APS and countdown signals at the same time avoids the unnecessary

duplication of costs that would arise from the need to arrange for two separate visits from field construction staff or contractors. Given the current need for fiscal austerity, requiring that state and local governments utilize this cost-saving strategy is responsible governance.

Furthermore, people with disabilities would benefit tremendously from the greater equality of access to sidewalks and streets that adopting this requirement would provide. In particular, expanding the presence of APS will enable people with visual impairments to safely cross many more streets, especially streets with which they are unfamiliar or which have traffic patterns that are difficult to assess audibly. Moreover, APS assist people with cognitive impairments and other individuals who are simply distracted to safely cross streets.

Given that installation of APS is required when state and local governments alter traffic lights, that installing APS and countdown signals at the same time makes economic sense, and that APS facilitate safe and independent travel for so many Americans, Caltrans should revise the MUTCD to require that state and local governments install APS whenever they install pedestrian countdown signals, even if this requirement would slow the rate at which countdown devices are installed.

2. The California MUTCD Should Require that California Governments Use Audible Alerts to Direct Pedestrians to Routes When Pedestrian Walkways are Blocked by Construction

Section 6d.01 of the MUTCD should require that when construction barricades completely prevent use of a particular pedestrian walkway such as a sidewalk, audible alert devices be used to redirect visually impaired pedestrians to alternate routes. The current draft of the California MUTCD is ambiguous regarding whether this practice is required. *See* § 6d.01; § 6f.02; § 6f.13. Using audible alerts to redirect pedestrian traffic in this manner is required by federal and state law, and recent tests of available technology established that satisfying such a requirement is entirely feasible.

Federal and state law require use of audible alerts to redirect pedestrians around blocked sidewalks when all pedestrian traffic is diverted. Sidewalks are programs of state and local governments. *Barden v. City of Sacramento*, 292 F.3d 1073, 1074 (9th Cir. 2002). As such, they are subject to requirements of Title II of the ADA and similar California state law. When barricades are placed on sidewalks that completely prevent use of the sidewalks such that pedestrian traffic is diverted to alternate routes, an audible alert is necessary to redirect visually impaired pedestrians to such alternate routes. Such alternate routes may be temporary pedestrian routes marked by barricades, or may be situations where all pedestrians are directed to cross the street at a corner and use the sidewalk on the other side of the street. Typically, such directions to pedestrians are given by placement of visual signs. But these visual signs do not provide pedestrians who are blind or low vision with the essential information that is provided to sighted pedestrians. Hence, where barricades fully prevent the use of a sidewalk, state and local governments must set up audible alerts to satisfy their obligations under Title II of the ADA, Section 504 of the Rehabilitation Act, and California state law.

The current draft of the MUTCD is inadequate since it fails to provide blind and low vision pedestrians with the same level of access as provided to sighted pedestrians when a sidewalk is closed and a visual sign only is posted directing pedestrians to the other side of the street. Too often, a blind or low vision pedestrian will not be aware of the sidewalk closure until he or she has traveled part-way down the sidewalk and then discovers through barricades that the sidewalk is closed. The blind or low vision pedestrian must then try to figure out what is going on with regards to closure of the pedestrian routes using whatever cues may be available or by asking other people who may pass by what is the nature of the closure. The blind or low vision pedestrian will then typically have to backtrack to the beginning of the block in order to cross the street and try to use the alternate route. An audible alert will avoid this unequal treatment by providing the blind or low vision pedestrian with information in an audible format about a sidewalk closure at the same point where a sighted person is given this information – usually at the beginning of the block rather than midway down.

An audible alert is also useful to provide effective communication when pedestrian traffic is being diverted into a temporary alternate route such as a barricaded pathway within the street. Although construction barricades should be used in such situations that provide a continuous cane-detectible edge to the temporary route, an audible alert will provide additional information that explains to blind and low vision pedestrians the nature and extent of the change in the pedestrian route. Construction barricades are not always designed and constructed in a sufficient manner to provide the cane-detectible warning for the full length of the temporary route. Providing an audible alert in addition to the detectible barricades is an important safety measure.

Implementing this proposed requirement is entirely feasible. In June, the American Traffic Safety Association ("ATSA") conducted a test of the Empco-Light 400ML, an audible alert device that verbally directs pedestrians to alternate routes when a passing pedestrian triggers its motion sensor. The test was successful, and it demonstrated that currently available technology can be used to redirect visually impaired pedestrians around sidewalk barricades.

3. Caltrans Should Not Permit Satisfaction of the Continuous Pedestrian Channeling Requirement Through Placement of a Series of Traffic Cones in a Continuous Line

The current draft of the MUTCD permits state and local government entities to satisfy the continuous channeling requirement by placing a series of orange traffic cones in a continuous line. *See* § 6d.01; § 6f.63; § 6f.64; § 6f.74. However, these cones are light weight, and other pedestrians or weather can easily move them. As a consequence, they do not reliably communicate the presence of construction to visually impaired pedestrians. Instead, Caltrans should require the use of a formal pedestrian channeling device with continuous top and bottom bars.

4. Summary of Recommendations

DRA strongly encourages Caltrans to adopt the following three key revisions to the Caltrans MUTCD.

a. Require that APS and pedestrian countdown signals be installed simultaneously.

b. Require that audible alerts such as the Empco-Light be used to redirect pedestrians around temporary sidewalk closures, and

c. Expressly forbid state and local government entities from satisfying the continuous barricade requirement through placement of a series of traffic cones in a continuous line.

Countless Californians with disabilities are counting on Caltrans to establish firm and responsible MUTCD guidelines that will ensure their access to city streets and sidewalks. Adopting these revisions would be an excellent first step toward achieving precisely that goal. Please do not hesitate to contact me at mnunez@dralegal.org with any questions or comments you have regarding this submission.

Sincerely,

Michael S. Nunez
Disability Rights Advocates

"Calabrese, Christine" <CCalabrese@oaklandnet.com>
10/07/2011 09:50 AM

To <mutcdsupp@dot.ca.gov>
cc California Department of Transportation <Darold_heikens@dot.ca.gov>, <richardskaff@designingaccessiblecommunities.org>
bcc
Subject RE: Comments - Draft California Manual on Uniform Traffic Control Devices 2011 - Section 6D

Dear Mr. Bhullar:

I am writing to express my individual but full support of Designing Access Communities' comments below. I strongly encourage CalTrans to adopt the suggested pedestrian access and safety enhancements in its Manual on Uniform Traffic Control Devices.

Sincerely
Christine Calabrese
ADA Programs Division Manager
City of Oakland, CA

Richard Skaff
<richardskaff @designingacce ssiblecommunities .org>
10/06/2011 09:05 PM
Please respond to <richardskaff@designingacces siblecommunities.org>

To <mutcdsupp@dot.ca.gov>
cc California Department of Transportation <Darold_heikens@dot.ca.gov>
bcc
Subject Comments - Draft California Manual on Uniform Traffic Control Devices 2011 - Section 6D

Johnny Bhullar
MUTCD Supplement Branch, MS-36
Office of Signs, Markings & External Support
Caltrans
Division of Traffic Operations
P.O. Box 942874
Sacramento, CA 94274-0001

The following are my brief comments relating to ***Section 6D.02 Accessibility Considerations*** of the draft California Department of Transportation Manual on Uniform Traffic Control Devices 2011 Draft.

1. Adjustment of the standard pedestrian walking speed from 4.0 feet per second to 3.5 feet per second. Most comments relate to the effect on traffic and not on the safety of pedestrians. Seniors and persons with disabilities as well as parents pushing baby strollers and many other pedestrians require additional time to cross signalized intersections. I strongly recommend that Cal Trans adopt a 3 feet per second standard.

2. Need for sidewalks on suburban streets – Not having sidewalks for pedestrians is a major safety issue facing many pedestrian in rural areas throughout California. Those who are put in danger by not having sidewalks include children, seniors and persons with disabilities. Having a 3 foot road shoulder does not provide the same level of safety as a 4

foot-wide defined sidewalk.

3, Roundabouts – The use of roundabouts creates an extremely dangerous path-of-travel in the public right-of-way for many pedestrians, especially blind pedestrians.

4. Pedestrian Signals – When new pedestrian signals are installed or modified, they must include the newly developed "speak-out" accessible pedestrian signals (not the old tweet or cheep models) with "finder" tones.

5. Signs required for construction zones – Flat signs that have been required to designate construction zones for pedestrians have never provided equal information for pedestrians who are blind and those with limited vision. There are now "speak out" sign systems available (the Empco-Lite Model 400ML - http://www.empco-lite.com/barricade/ADA-Lite.htm) that must be required and used when construction in the public right-of-way causes temporary changes to the regular public path-of-travel and a temporary path-of-travel.

6. When temporary paths-of-travel cause temporary paths of travel to be created, and either end of that temporary path-of-travel end in a vehicle way, the temporary use of detectable warning material must be used to warn blind and pedestrians with limited vision that they are entering a vehicle way.

Please call or email me if you have any questions about the comments within this email.

Thank you.

Richard Skaff, Executive Director
Designing Accessible Communities
P.O. Box 2579
Mill Valley, CA 94942
Voice/Fax: 415-388-7206
Cell: 415-497-1091
Email: richardskaff@designingaccessiblecommunities.org
Web: www.designingaccessiblecommunities.org

Cal Trans MUTCD Section 6D Comments - 10-5-2011.pdf

12-8 Adopt a new Section 2B.112 in to the CA MUTCD to add "MOVE OVER OR SLOW DOWN FOR STOPPED EMERGENCY & MAINTENANCE VEHICLES" sign

Recommendation: Adopt an established "MOVE OVER" Law fixed sign, used in Colorado, for use on California highways.

Proposal: Recommend adopting a new Section in the CA MUTCD, Section 2B.112

Requesting Agency/Sponsor: Caltrans

Background: Caltrans recently experienced 3 highway worker fatalities within a 48-day period between May and June 2011. In response to these fatalities, Caltrans launched a statewide media campaign on Monday, July 11, 2011 to generate awareness and to educate the traveling public of their responsibility to comply with the terms of the law. Changeable message signs were used to display the instructions to move over or slow down because it's the law. The implementation of a permanent highway sign describing the law to move over or slow down for stationary emergency or maintenance vehicles should be implemented immediately to educate the traveling public, encourage compliance with the law, and to promote highway safety. Implementing a regulatory sign that displays a move over or slow down message promotes awareness and reinforces the responsibility of the traveling public to comply with **Section 21809 of the California Vehicle Code**.

Link to Colorado DOT Regulatory sign spec's:
http://www.coloradodot.info/library/traffic/traffic-manuals-guidelines/fed-state-co-traffic-manuals/sign-library-files/colorado-supplement/regulatory.html

Per Colorado's Model Traffic Code:

712. Driving in highway work area.
(1) The driver of a vehicle shall yield the right-of-way to any authorized vehicle or pedestrian engaged in work upon a highway within any highway construction or maintenance work area indicated by official traffic control devices.
(2) The driver of a vehicle shall yield the right-of-way to any authorized service vehicle engaged in work upon a highway whenever such vehicle displays flashing lights meeting the requirements of section 214.

Definitions
(5) "Authorized emergency vehicle" means such vehicles of the fire department, police vehicles, ambulances, and other special-purpose vehicles as are publicly owned and operated by or for a governmental agency to protect and preserve life and property in accordance with state laws regulating emergency vehicles; said term also means such privately owned vehicles as are designated by the state motor vehicle licensing agency, necessary to the preservation of life and property, to be equipped and to operate as emergency vehicles in the manner prescribed by state law.
(6) "Authorized service vehicle" means such highway or traffic maintenance vehicles as are publicly owned and operated on a highway by or for a governmental agency the function of which requires the use of service vehicle warning lights as prescribed by state law and such other vehicles having a public service function, including, but not limited to, public utility vehicles and tow trucks, as determined by the department of transportation under section 42-4-214 (5). Some vehicles may be designated as both an authorized emergency vehicle and an authorized service vehicle.

Of note, regarding flashing lights (see Colorado's Model Traffic Code, Section 214):

214. Visual signals on service vehicles.

(1) Except as otherwise provided in this section, on or after January 1, 1978, every authorized service vehicle shall, in addition to any other equipment required by this Code, be equipped with one or more warning lamps mounted as high as practicable, which shall be capable of displaying in all directions one or more flashing, oscillating, or rotating yellow lights. Only yellow and no other color or combination of colors shall be used as a warning lamp on an authorized service vehicle; except that an authorized service vehicle snowplow operated by a general purpose government may also be equipped with and use no more than two flashing, oscillating, or rotating blue lights as warning lamps. Lighted directional signs used by police and highway departments to direct traffic need not be visible except to the front and rear. Such lights shall have sufficient intensity to be visible at five hundred feet in normal sunlight.
(2) The warning lamps authorized in subsection (1) of this section shall be activated by the operator of an authorized service vehicle only when the vehicle is operating upon the roadway so as to create a hazard to other traffic. The use of such lamps shall not relieve the operator from the duty of using due care for the safety of others or from the obligation of using any other safety equipment or protective devices that are required by this Code. Service vehicles authorized to operate also as emergency vehicles shall also be equipped to comply with signal requirements for emergency vehicles.
(3) Whenever an authorized service vehicle is performing its service function and is displaying lights as authorized in subsection (1) of this section, drivers of all other vehicles shall exercise more than ordinary care and caution in approaching, overtaking, or passing such service vehicle and, in the case of highway and traffic maintenance equipment engaged in work upon the highway, shall comply with the instructions of section 712.
(4) On or after January 1, 1978, only authorized service vehicles shall be equipped with the warning lights authorized in subsection (1) of this section.
(5) The department of transportation shall determine by rule which types of vehicles render an essential public service when operating on or along a roadway and warrant designation as authorized service vehicles under specified conditions, including, without limitation, vehicles that sell or apply chains or other equipment to motor vehicles necessary to enable compliance
with section 106.
(6) Any person who violates any provision of this section commits a class B traffic infraction.

District 7 article on CA's MOVE OVER law:
http://i80.dot.ca.gov/dist07/Publications/Inside7/story.php?id=428

Proposal:

Inclusion of MOVE OVER Law sign into the California MUTCD:

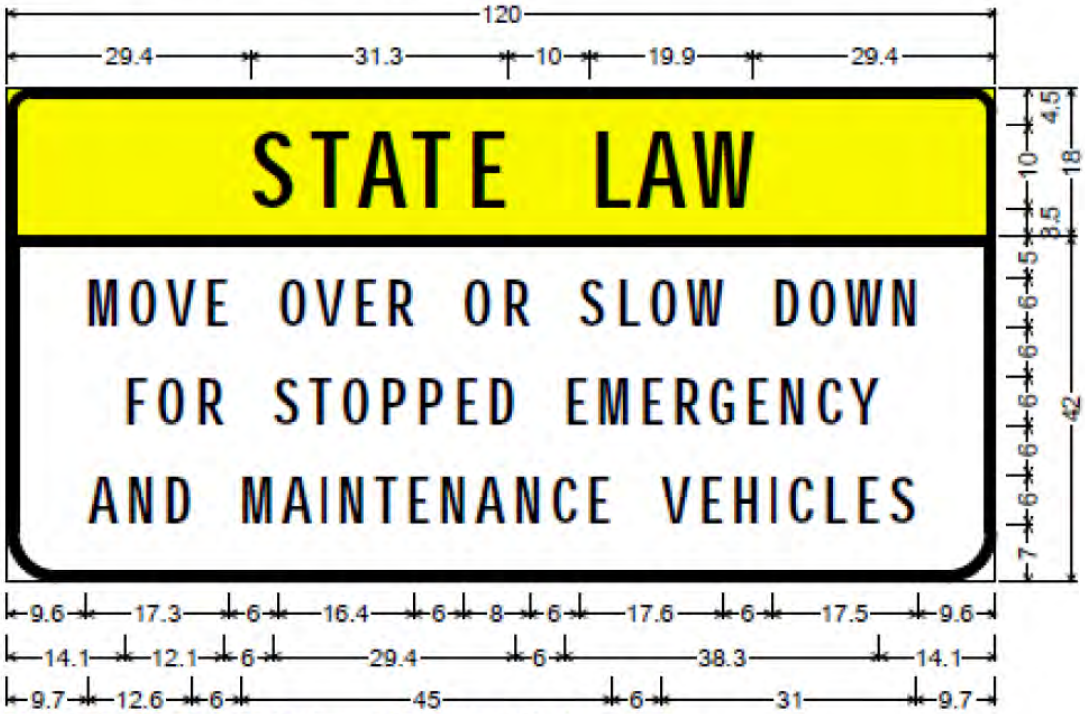
Section 2B.112 MOVE OVER OR SLOW DOWN FOR STOPPED EMERGENCY & MAINTENANCE VEHICLES sign

Option:

01 The MOVE OVER OR SLOW DOWN FOR STOPPED EMERGENCY & MAINTENANCE VEHICLES (RXX(CA)) may be used to inform road users of the State's MOVE OVER Law, CVC 21809. This sign may be used on freeway facilities.

(FREEWAY SIZE 120" x 60")

(FREEWAY SIZE 120" x 60")



MOVE OVER 36; 3.0" Radius, 1.0" Border, Black on Yellow;
"STATE LAW" C;
6.0" Radius, 1.3" Border, Black on White;
"MOVE OVER OR SLOW DOWN" C; "FOR STOPPED EMERGENCY" C;
"AND MAINTENANCE VEHICLES" C;

12-9 Request to Experiment with Yellow LED Border on Pedestrian Signal

Proposal: Request to authorize to conduct experiment with Yellow LED Border on Pedestrian Signal.

Sponsor/Requesting Agency: Caltrans – Don Fogle

Background:
Caltrans has received approval from the FHWA, see approval letter dated December 10, 2011 on page?

Justification: See on the following pages.

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN JR., Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF TRAFFIC ENGINEERING & OPERATIONS
1657 RIVERSIDE DRIVE
P. O. BOX 496073
REDDING, CA 96049-6073
PHONE (530) 225-3229
FAX (530) 225-3299

Flex your power!
Be energy efficient!

December 1, 2011

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

Experimentation Request: 4(09)-13 (E) Yellow LED Border on Ped Signal – Caltrans

Thank you for your August 8, 2011 response providing conceptual approval to experiment with a modified pedestrian signal head that includes a yellow LED border. We feel that the additional information provided by the yellow border will benefit both vehicular traffic and pedestrians. The experiment would attempt to determine whether this modification, displayed from when a pedestrian call has been made until the pedestrian phase has ended, improves the yielding behavior of motorists turning left and right through the crosswalk.

As noted in your response, the next step in the experimentation process is to submit a fully developed evaluation plan to FHWA for review and approval. The following sections of this correspondence will provide background for the experiment and describe the plan to assess the effectiveness of the modified pedestrian signal head.

Problem Identification

Item No. 1: Vehicle-Pedestrian Conflicts

It is not uncommon to witness conflicts between vehicular traffic making right turns and pedestrians using the adjacent crosswalk at busy urban intersections with traffic signals. The conflict usually occurs because the motorist's attention is either directed straight ahead at the signal indications or to the left when watching for approaching side street traffic to perform a right-turn-on-red. Another factor is the visibility of the pedestrian. If the pedestrian is waiting on the same corner as the vehicle, he or she is possibly out of the motorist's direct line of sight and may not be noticed. When the two phases operate together, the motorist begins the right turn just as the pedestrian steps off of the curb into the crosswalk. The surprised motorist normally reacts by slamming on the brakes or swerving around the pedestrian.

The vehicle-pedestrian conflict described above could be reduced if the motorist were made aware that a pedestrian is going to use the crosswalk. The objective of this experiment is to determine whether the yellow LED border measurably improves the yielding behavior of motorists turning left and right through crosswalks.

Item No. 2: Pedestrian Compliance

Another problem that occurs at traffic signals is pedestrian compliance. Because pedestrians do not normally receive any kind of confirmation that the signal is going to serve them after pushing the walk-button, they sometimes become impatient and will look for an opportunity to cross the intersection before the walk indication is displayed. Similar to pushing a button that lights up when calling an elevator, the yellow LED border will let pedestrians know that their call has been received and the walk indication is imminent. Therefore, while evaluating the yellow LED border for vehicle-pedestrian conflicts, the experiment will also determine if the treatment improves pedestrian compliance.

Experimental Design

The recommended strategy to evaluate this device is to perform a before-after analysis at several intersections. In order to effectively evaluate the treatment, the intersections to be studied will need to have high volumes of vehicle traffic turning through busy crosswalks. Initially, the study would evaluate five intersections in the City of Redding, California. Caltrans, District 2 and the City of Redding would partner to carry out the before-after studies at the selected locations.

Each location will be observed using digital video recording equipment for the before and after conditions. Each condition will be observed for seven consecutive days, 24-hours per day. The data will be collected during good weather when pedestrian activity is high. Also, if the crosswalk to be studied is near a school, the data collection will be conducted while the school is in session.

A one month learning period will be provided after the modified pedestrian signal heads are installed at an intersection before the after-treatment data is collected. This will allow both motorists and pedestrians enough time to notice the yellow LED borders and gain an understanding of how they work.

Statistical Analysis

One of the objectives of the experimental design is to obtain a sample size large enough to satisfy statistical requirements. A minimum sample size of 30 is suggested when evaluating vehicle-pedestrian conflicts, and at least 50 pedestrians should be observed when performing pedestrian compliance studies (*Model Pedestrian Safety Program: User's Guide*, Report No. FHWA-RD-87-039). It is anticipated that the combined results for five locations, each observed for seven consecutive days before and after the device is installed, will produce enough data to satisfy these requirements.

For vehicle-pedestrian conflicts, the Measure of Effectiveness (MOE) will be the percentage of turning vehicles that yield to pedestrians using a crosswalk at a signalized intersection. For the purpose of this study, a "yield" will be defined as when a motorist does not initiate a left or right turn through a crosswalk until the pedestrian(s) has adequately cleared the conflict area.

The MOE for the second item, pedestrian compliance, will be the percentage of pedestrians who wait for the walk symbol before crossing the intersection.

A summary of the proposed evaluation plan is provided as an attachment.

Approvals

In order to proceed with this experiment, an approval from FHWA and the California Traffic Control Devices Committee (CTCDC) will be necessary. If FHWA is satisfied with this evaluation plan as submitted and provides its approval, the package will be presented to the CTCDC at the next scheduled meeting in February 2012. Pending these approvals, several pedestrian signal heads will be modified with the yellow LED borders to begin the evaluation plan in the Summer/Fall of 2012.

Should the results of this initial study indicate that the yellow LED border is effective in reducing vehicle-pedestrian conflicts and/or improving pedestrian compliance, a proposal will be made to the California Traffic Control Devices Committee (CTCDC) to open the experiment to other Caltrans districts and local agencies that are interested in participating. The results of these additional evaluations would ultimately be compiled into a final report and submitted to FHWA.

I look forward to your response regarding this experimentation request. Feel free to contact me if you have any questions or require more information. I can be reached at 530-225-3229 or via email at rob_stinger@dot.ca.gov.

Sincerely,

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

Attachment

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

U.S. Department
of Transportation
**Federal Highway
Administration**

DEC 12 2011

1200 New Jersey Avenue, SE
Washington, D.C. 20590

In Reply Refer To:
HOTO-1

Rob Stinger, P.E.
Chief, Traffic Engineering and Operations
District 2
California Department of Transportation
P.O. Box 496073
Redding, CA 96049-6073

Dear Mr. Stinger:

Thank you for your letter of December 1 requesting approval to experiment with the addition of a yellow LED border to a standard pedestrian signal head to enhance motorist awareness of the presence of a pedestrian waiting to cross and actually crossing at a signalized intersection and to improve pedestrian compliance. Your letter included an evaluation plan, as we had requested in our August 8 letter in response to your original letter. We note that the measures of effectiveness would be the percentage of turning vehicles that yield to pedestrians in the parallel crosswalk and the percentage of pedestrians who wait for the Walk signal before starting to cross.

We have reviewed your request and evaluation plan and we agree with it. Accordingly, your experiment is approved for a period not to exceed two years. Please submit interim status reports semi-annually and a final report with a complete evaluation after the data collection and analysis is complete.

As noted in our previous letter, this experiment has been assigned a number and title of "4(09)-13 (E) Yellow LED Border on Ped Signal – CalTrans." Please reference this number in your future correspondence. Also, please be aware of any State laws and/or directives covering the application of MUTCD provisions that may exist in California.

We would also like to point out that any other Caltrans districts or local jurisdictions that wish to experiment with this treatment will need to submit separate requests to experiment to this office.

Thank you for your interest in improving pedestrian safety. If we can be of further assistance on this matter, please feel free to contact Mr. Scott Wainwright of our MUTCD Team by e-mail at **scott.wainwright@dot.gov** or by telephone at 202-366-0857.

Sincerely yours,

Mark R. Kehrli
Director, Office of Transportation Operations

11-1 CA MUTCD 2012 (Letter to CTCDC and Substantial Conformance letter from FHWA)

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF TRAFFIC OPERATIONS
P.O. BOX 942873, MS-36
SACRAMENTO, CA 94273-0001
PHONE (916) 654-2352
FAX (916) 653-6080
TTY 711
www.dot.ca.gov

Flex your power!
Be energy efficient!

January 13, 2012

Mr. John E. Fisher
Chairman
California Traffic Control Devices Committee
P.O. Box 942874, MS-36
Sacramento, CA 94274-0001

Dear Mr. Fisher:

The California Department of Transportation (Department) has adopted the California Manual on Uniform Traffic Control Devices (CA MUTCD) 2012 edition to provide for uniform standards and specifications for all official traffic control devices in California. This action was taken pursuant to the provisions of California Vehicle Code Section 21400 and the recommendation of the California Traffic Control Devices Committee (CTCDC). The Department requested and has received a letter to confirm substantial conformance from the Federal Highway Administration (FHWA) for CA MUTCD 2012 edition. The revised document is available on the Internet at:

www.dot.ca.gov/camutcd

The revised CA MUTCD includes FHWA's 2009 MUTCD. The revision also includes all policies on traffic control devices issued by the Department since January 21, 2010, and other corrections and format changes that were necessary to update the previous documents. A draft version of the revised CA MUTCD was made available to the Department's district staff, local agencies and the general public for review and comment during the open public comment period, which began on August 9, 2010 and closed on October 10, 2011. The Department held five workshops with staff representing local agencies from April 14, 2010 to July 22, 2011 to discuss the revision and changes being incorporated. The CTCDC also reviewed the revised CA MUTCD at their October 20, 2011 meeting in Rancho Cordova and made a recommendation to the Department to adopt the new manual.

The Division of Traffic Operations is grateful to the CTCDC members and acknowledges their staff for providing invaluable time, support, guidance and direction in the development of this document.

If you have any questions, please contact Johnny Bhullar at (916) 654-7312 or by email at <Johnny.bhullar@dot.ca.gov.>

Sincerely,

ROBERT COPP
Chief
Division of Traffic Operations

c:
Devinder Singh, Executive Secretary, CTCDC

U.S. Department of Transportation
Federal Highway Administration

Federal Highway Administration
California Division

650 Capitol Mall, Suite 4-100
Sacramento CA 95814

January 12, 2012

IN REPLY REFER TO
HDA-CA

Mr. Malcolm Dougherty
California Department of Transportation
1120 N Street
Sacramento, CA 95814

Dear Mr. Dougherty:

I am writing in response to the December 27, 2011, letter from Robert Copp requesting a determination that the California Manual on Uniform Traffic Control Devices for Streets and Highways (CA MUTCD) be found to be in substantial conformance with the national Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition (2009 MUTCD).

In December 2009, The Federal Highway Administration published the 2009 MUTCD, which became effective on January 15, 2010. As required by 23 CFR 655.603, the State of California must revise the CA MUTCD to be in substantial conformance with the 2009 MUTCD. Our office has reviewed the proposed revisions to the CA MUTCD, to be published on January 13, 2012, and we find it to be in substantial conformance with the 2009 MUTCD.

We commend the effort of Caltrans to address a number of issues that have lead to this determination of substantial conformance. We look forward to continuing to work with Caltrans, local agencies, and the California Traffic Control Devices Committee in the future to continuously improve the quality of the CA MUTCD and implement traffic control devices that will enhance the safety of the state's roadways.

Should you have questions, please do not hesitate to contact Steve Pyburn, Senior Transportation Engineer, at (916) 498-5057 or steve.pyburn@dot.gov.

Sincerely,

For
Vincent P. Mammano
Division Administrator

7 Next Meeting

8 Adjourn