

DEPARTMENT OF TRANSPORTATION

DIVISION OF SAFETY PROGRAMS

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a California Way of Life.*

May 13, 2021

Docket Management Facility
US Department of Transportation
1200 New Jersey Ave S.E.
West Building Ground Floor Room W12-140
Washington, DC 20590-0001

Re: Federal Docket No. FHWA-2020-0001
National Standards for Traffic Control Devices

To whom it concerns:

The California Department of Transportation (Caltrans) would like to provide comments on the proposed changes to the 11th Edition of the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) in order to better address the safety needs of all roadway users, particularly for people walking, biking, and riding transit, as well as to support the Department's departure from the status quo to the Safe System approach.

In addition to our enclosed detailed comments and suggestions, Caltrans requests the Federal Highway Administration (FHWA) review the following high-level recommendations for consideration in the revised MUTCD:

1. Support Multimodal Approaches

Caltrans recommends the current proposed draft MUTCD be examined for revisions from a multimodal perspective to better reflect the needs of people walking, biking, and riding transit. Future updates to the MUTCD should be informed by a more robust stakeholder input process that represents a balanced view of roadway users' needs and should occur with more frequency and regularity to ensure it reflects the latest state of the practice.

The following high-level modifications will greatly improve the current version for those who travel on foot, by bike, or on transit:

- **Greater emphasis on providing multimodal facilities for people of all ages and abilities—including youth, seniors, and people with disabilities.** For

example, pedestrian signal indications are not required at existing or new traffic signals, but redundant motor vehicle signals are required, even at urban intersections. The current draft should be thoroughly vetted to ensure that standards and guidance do not bias and overprioritize the movement of people driving over people walking, biking, and riding transit.

- **Greater flexibility to implement bicycle, pedestrian, and transit facilities** (e.g. red transit lanes, mid-block crossings, basic crosswalks, etc.) without the requirement of an automobile-oriented engineering studies. Caltrans recommends that if engineering studies will be required for multimodal facilities, these studies should focus on evaluating the safety and mobility needs of people walking, biking, and riding transit, rather than centering the analysis on the convenience of people driving.
- **Flexibility on the experimentation process for traffic control devices at high-injury locations.** Caltrans recommends that the MUTCD give engineers and roadway owners the flexibility to develop and introduce traffic control devices at high-injury locations where no existing traffic control device is determined to be sufficient. Right now, the MUTCD prohibits all new devices, and requires a restrictive experimentation process with Federal permission that is granted or denied without an FHWA site visit.
- **Greater flexibility to implement “innovative” multimodal design elements,** such as colorful crosswalks that can be important place-making features on main streets and may help contribute to active transportation mode shift. While the MUTCD may not wish to endorse these types of treatments, Caltrans recommends the draft not prohibit them when supported by local communities, as there is no current evidence these treatments negatively impact safety.
- **Revise Autonomous Vehicle (AV) Sections.** The new Part 5 on AVs, as drafted, inappropriately places AVs at the top of a new modal hierarchy. Key language from Part 5, such as lane markings and edge line width for high-speed roads, can be integrated into existing sections (e.g., Part 3 (Markings) or Part 2 (Signs)). Where AV technology is discussed, Caltrans recommends revising to place a greater emphasis on prioritizing the safety of vulnerable road users first and foremost.

2. Advance a Safe System Approach

For the first time ever, the National Transportation Safety Board (NTSB) has identified protecting vulnerable road users using a Safe System approach as a top priority (see 2021-2022 NTSB Most Wanted List of Transportation Safety

Improvements). The NTSB states this approach should address all aspects of traffic safety including road users, vehicles, speeds, roads, and post-crash care; and acknowledges that proven safety countermeasures to protect those walking and biking are being underutilized. Caltrans' 2020-2024 Strategic Plan is committed to shifting to a Safe System approach and doubling down on proven safety countermeasures. Caltrans recommends the MUTCD address and incorporate NTSB identified need for protecting vulnerable road users using a Safe System approach.

Additionally, Caltrans recommends revisions to the language in the Target Road Users section (Part 1, Section 1.A.03) that requires bicyclists and pedestrians to be "reasonable and prudent", "alert and attentive" and function in a "lawful manner." To emphasize these requirements while also implementing a Safe System approach, we recommend an added reference to the necessity for collective action by all, including road users.

3. Re-visit Speed Management Practices

A growing body of research and best practice demonstrates that speed limits should be set using a Safe System approach rather than based on the speed of free-flowing traffic. Accordingly, Caltrans recommends the proposed draft MUTCD integrate the 2017 NTSB recommendations for a Safe System approach and re-evaluating the use of the 85th percentile rule for determining speeds.

4. Changeable Message Signs Usage

FHWA proposes to limit the use of Changeable Message Signs for emergencies, by restricting the use to only declared states of emergency when there is an imminent threat to the general population. Generic security or personal safety messages shall not be displayed when there is no context of a declared state of emergency or known imminent national security threat. This limits the states' ability to use safety messages on Changeable Message Signs for emergencies such as drought, wildfire, and Covid-19 related messages.

Additionally, FHWA prohibits the usage of highway fatalities statistics and terminology that may not be easily understood by the general population on Changeable Message Signs. Flexibility should be allowed in usage of these messages as they are derived from larger traffic safety campaigns. Caltrans plans to continue displaying the term "intexticated" and "fatality numbers", as messages on Changeable Message Signs.

5. Alternative Fuels

FHWA proposes to remove alternative fuel businesses from Specific Service Sign programs since having alternative fuels under the GAS logo sign panel creates confusion. The proposed MUTCD does not provide an alternative new category or sign to include alternative fuel businesses in the Logo Program. Caltrans recommends that alternative fuel charging businesses still be included in Specific Service Sign programs by renaming the GAS category to FUEL and/or adding another logo panel category to represent alternative fuels. The edits to the MUTCD will help California meet its goal to put 5-million Zero-Emission Vehicles on the road by 2030.

If you have any questions on these comments, please contact Mr. Gurinderpal (Johnny) Bhullar, CA MUTCD editor and CTCDC executive secretary, at (916) 662-2397, or by email at <johnny.bhullar@dot.ca.gov>.

Sincerely,



RACHEL CARPENTER
Chief Safety Officer
Chief, Safety Programs Division

Attachment:
Caltrans Comments on National MUTCD Revisions

c: Toks Omishakin, Director, California Department of Transportation
Vince Mammano, Division Administrator, FHWA California Division
Cory Binns, Deputy Director, Maintenance and Operations, California Department of Transportation
Monica Kress-Wooster, Deputy Division Chief, Traffic Safety, Division of Safety Programs, California Department of Transportation
Gurinderpal S. Bhullar, Chief, Traffic Control Devices and Legal Liaison Branch, Office of Safe Systems and Devices, Division of Safety Programs, California Department of Transportation

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Comments on Docket No. FHWA-2020-0001 (RIN 2125–AF85) National Standards for Traffic Control Devices; the Manual on Uniform Traffic Control Devices for Streets and Highways; Revision

PART 1 GENERAL

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
General		YES		General Comment: Usage of impractical vs. impracticable, practical vs. practicable. Are these terms interchangeable? If so, suggest staying with one rather than varying usage throughout the manual.
1A.02 – Traffic Control Devices		YES		Page 2, Line 19 suggest rephrasing F. Messages displayed on changeable message signs for America’s Missing: Broadcast Emergency Response (AMBER) alerts, homeland security information during declared states of emergency and public service announcement (PSA). (see Chapter 2L of this Manual for specific provisions and limitations).
1A.03 – Target Road Users		YES		Page 2, Line 38: replace, “, <i>including bicyclists</i> ”, add “ <i>and micromobility devices</i> ”.
1A.03 – Target Road Users	NO	YES		Agree with the concept of defining target road users for the MUTCD, but current language is problematic (p. 2, Lines 37-46). The current language assumes all road users will be “alert and attentive” and “functioning in a lawful manner” but this precludes a variety of users that may not meet this definition, including elderly persons, disabled persons, and children. This section should use more inclusive language and cater to the “all ages and abilities” user of the roadway, with an understanding that even those not operating in the manner described in this paragraph should still be considered by the provisions of the MUTCD.
1A.05 – Relations to Other Publications		YES		In line 40, page 4, the references from ITE are outdated.
1B.04 – Issuance of Official Rulings Related to this Manual	YES			Page 7, After Line 34: consider adding a reference to Section 1B.09 which discusses instructions on submitting requests for interpretations or rulings on MUTCD.
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Add “micromobility devices - lightweight vehicles propelled either by humans or electric motor, including but not limited to bicycles, e-bikes, pedelec, scooters, e-scooters, skateboards, e-skateboards”.

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Page 15, item 2, rephrase definition: a device designated to assist the pedestrian who has visual, <u>hearing</u> , or physical disabilities in activating the pedestrian phase.
1C.02 – Definitions of Words and Phrases Used in this Manual	NO	NO	YES	Page 16, item 20, 21, 22 & 25 - The definitions of Bicycle, Bicycle Facilities, Bicycle Lane, and Bikeway in Paragraphs 20, 21, 22, and 25 make it unclear how scooter users of other types of micromobility device (motorized or non-motorized) users are defined and subsequently how traffic control device issues related to these users should be addressed.
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Page 16, item 21, rephrase definition: a general term denoting improvements and provisions that accommodate or encourage the use of micromobility devices, including parking and storage facilities, and shared roadways not specifically defined for <u>micromobility devices</u> .
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Page 16, item 22, rephrase definition: a portion of a roadway that has been designated for preferential or exclusive use of <u>micromobility devices</u> by pavement marking and, if used, signs.
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Page 16, item 23, rephrase definition: a signal face that displays only bicycle symbol signal indications, that exclusively controls a <u>micromobility device's</u> movement from a designated bicycle lane or from a separate facility such as a shared use path, and that displays signal indications that are applicable only to the <u>micromobility device's</u> movement.
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Page 16, item 25, rephrase definition: a generic term for any road, street, path, or way that in some manner is specifically designated for <u>micromobility device</u> travel, regardless of whether such facilities are designated for exclusive use for <u>micromobility devices</u> or are to be shared with other transportation modes.
1C.02 – Definitions of Words and Phrases Used in this Manual	YES	YES		Page 23, item 132. Mix-Used Alignment: Define BRT acronym. LRT clearly defined throughout manual, but none found for BRT.
1C.02 –	NO	NO	YES	Page 24, item 154 - The definition of Pedestrian in Paragraph 154 does not clarify what other types of micromobility road users who are not on Bicycle should be considered.

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Definitions of Words and Phrases Used in this Manual				
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Page 24, item 154, rephrase definition: a person on foot, <u>in a human-powered or electric driven wheelchair or with other walking aides.</u>
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Page 27, item 197, rephrase definition: A vehicle operator, bicyclist, <u>micromobility devices user</u> , or pedestrian, including persons with disabilities within the highway or on a site roadway open to public travel.
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Page 27, item 198, rephrase definition: that portion of a highway improved, designed, or ordinarily used for vehicular travel and parking lanes, but exclusive of the sidewalk, berm, or shoulder even though such sidewalk, berm, or shoulder is used by persons riding <u>micromobility devices</u> . In the event a highway includes two or more separate roadways, the term roadway as used in this Manual shall refer to any such roadway separately, but not to all such roadways collectively.
1C.02 – Definitions of Words and Phrases Used in this Manual		YES		Page 31, item 264, rephrase definition: Pedestrians, <u>micromobility devices</u> , ridden or herded animals, vehicles, streetcars, and other conveyances either singularly or together while using for purposes of travel any highway or site roadway open to public travel.
1C.02 – Definitions of Words and Phrases Used in this Manual	NO	NO	YES	Page 32, item 282 - Paragraph 282 defines Warrant and states "the fact that a warrant for a particular traffic control device is met is not conclusive justification for the installation of the device." Clarify if conclusive or not conclusive for non-installation when warrant is not met.

PART 2 SIGNS

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
2A.08 – Word Messages		YES		Page 45, Line 29, Strike Heading "Section 2A.08 Maintaining Minimum Retroreflectivity". The section has been moved to Section 2A.21, need to strike old heading.

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
2B.16 – All-Way Stop Control Warrant D: 8-Hour Volume (Vehicle, Pedestrians, Bicycles)	NO	NO	YES	Emphasis on installing an all way stop control should be based on all road users, not just the convenience of vehicles. Additional criteria may include land use and presence of vulnerable roadway users such as children, disabled, and elderly populations.
2B.19 – Yield Here To Pedestrians Signs and Stop Here For Pedestrians Signs (R1-5 Series)	NO	NO	YES	Agree with Yield Here to Pedestrian (R1-5) signs for mitigating scenarios mentioned. Consider also allowing R1-5 signs at single-lane approaches (in certain environments such as highway/freeway interchanges) where additional emphasis may be needed to mitigate other factors such as speed and vertical/horizontal sight distance.
2B.19 – Yield Here To Pedestrians Signs and Stop Here For Pedestrians Signs (R1-5 Series)	NO	NO	YES	Agree with Yield Here to Pedestrian (R1-5) signs for mitigating scenarios mentioned. There is also a need for a sign that indicates a requirement to yield for bicyclists in crosswalks at trail/bike path crossings or other similar locations. This can be achieved by adding two additional options for this sign: 1) to include the bicycle symbol in addition to the pedestrian symbol; 2) to only include the bicycle symbol.
2B.21 – Speed Limit Sign (R2-1)	YES	YES		Page 74, Line 31 and 32: Consider adding verbiage to allow engineering judgement to eliminate locations when signal spacings are less than 1 mile, such as downtown locations where signals are 500 feet spacing or less. (i.e. “If the signal spacing is less than 1 mile, the speed study should be at approximately the middle of the segment, <u>unless free flow speeds cannot be practically measured. In instances where closely spaced traffic signals occur, the speed study should be conducted beyond the limits of the outermost traffic signals.</u> ”)
2B.21 – Speed Limit Sign (R2-1)	YES	YES		Page 76, Caltrans proposes to specifically add bike/ped safety in separate bullet “E”. E. Bicyclist and pedestrian safety Line 10: Caltrans proposes to add a guidance or support language to allow for a traffic survey to retain the existing speed limit (or revert to one determined in a prior traffic survey) unless a registered engineer determines that significant design changes have been made to the roadway since completion of the last traffic survey with the specific intent of increasing the safe operating speed. Currently, if a speed survey shows that vehicle operating speeds have increased, agencies must raise the posted speed limit even if the roadway design has not changed, contributing to speed creep over time.

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				<p>Line 12: Caltrans proposes to increase the reduction allowance for posted speed limits to allow greater deviations from the 85th percentile speed. Suggested classes of locations where the posted speed may be reduced further:</p> <ul style="list-style-type: none"> • High Injury Networks (HIN). States would identify specific locations with high crash concentrations; identify corridor-level segments with a pattern of crash reoccurrence; and be able to be stratified by mode. • Areas adjacent to land uses and types of roadways that have high concentrations of vulnerable road users (e.g., pedestrians, bicyclists, scooter users, transit users, seniors, children). <p>Lines 13-17: Caltrans supports this added “Support” language.</p> <p>Item #67 - Caltrans supports FHWA comments in item #67 “FHWA also retains reference to the setting of speed zones in broad terms, thereby allowing agencies to establish detailed criteria based upon national guidance or based upon research, outside the MUTCD.”</p> <p>Item #67 –FHWA comments for item #67 “In addition to providing comment on this proposed change, FHWA also requests comment on the following additional recommendations of the NTSB report: (1) Removal of the 85th percentile speed as a consideration in setting speed limits regardless of the type of roadway (this recommendation was based in part on the assumption that that the 85th percentile speed can increase over time as a result of the posted speed limit); and (2) the requirement to use an expert system to validate a speed limit that has been determined through engineering study. Commenters are also requested to address likely outcomes if one or more of the other recommendations in the report, such as increased automated enforcement, were not implemented in conjunction with the speed-setting recommendations outlined in the report”.</p> <p>Response for the above item #67 comments:</p> <p>Caltrans supports incorporating the NTSB recommendation on removal of the 85th percentile speed.</p> <p>Caltrans will support the use of an expert system as a recommendation, not requirement.</p> <p>Caltrans supports use of automated speed enforcement i.e. speed safety cameras, to supplement existing law enforcement personnel.</p> <p>Page 77, Lines 1-2, Caltrans supports the change from “Standard” to “Guidance” for additional Speed Limit signs.</p> <p>Page 77, Lines 24-31, Caltrans supports the revisions to these “Option” and “Standard” paragraphs.</p>


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				Page 78, Lines 24-28, Caltrans supports the revisions to LED requirements for variable speed limit legends.
2B.26 & others – Movement Prohibition Signs (R3-1 through R3-4, R3-18, and R3-27)	YES		NO	Agree with getting rid of the R6-4 signs at roundabouts, particularly at rural roundabouts. Using a W1-6 large arrow will provide better visibility for someone approaching the roundabout.
2B.47 & 2B.48 – DO NOT ENTER sign (R5-1) & WRONG WAY Sign (R5-1a)		YES		Is there a provision where ‘DO NOT ENTER’, ‘WRONG WAY’ is also place on the pavement adjacent to the posted signage?
2B.47 thru 2B.49 (pertaining to WRONG WAY & DO NOT ENTER traffic control applications in Various Sections & Figures in Part 2 & Part 3) For example, 2B.47, 2B.48 & 2B.49, 2E.59, 3B.23, 3B.24, 3B.31 (Figures 2B-13 thru 2B-20, 3B-21 & 3B-22, 3B-29)	NO			As roundabouts continue to gain popularity, they are being used at some locations near freeway interchanges and at exit ramp termini. The standard DO NOT ENTER and ONE WAY sign and striping packages do not seem to be applicable for roundabouts due to the differing configurations. Roundabout geometrics discourage a wrong way movement, flexibility in the use of these signs and markings should be provided. If they are needed, then they should be revised to make them applicable to roundabout locations. Specific questions or concerns: <ol style="list-style-type: none"> 1. A DO NOT ENTER sign on the left of the off-ramp could block visibility of a car or bike circulating in the roundabout if placed too close to roundabout. Can we just use one sign on the right side of the ramp? If so, which direction should it face? 2. Are the R3-1 “NO RIGHT TURN” signs needed? If so, where do you put them in relation to all the other roundabout signs? 3. If it’s a one-lane ramp, then fishhook arrows are optional. Does that mean we use a Type V near the ramp terminus instead? Would that be confusing?
2B.59 – Traffic Signal Pedestrian and Bicycle Actuation Signs (R10-1 through R10-4, and		YES		In line 44, page 106, add a new R10 sign for touchless APS which uses a motion sensor to activate the APS. The touchless APS still has a button with vibrotactile feature.

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R10-24 through R10-26)				
2B.60 – Traffic Signal Signs (R10-5 through R10-30)	NO	YES		Disagree that the LEFT TURN YIELD TO Bicycles (R10-12b) sign shall be limited to applications where the conflicting bicycle movement would be unexpected in direction, location, or some other quality that would run counter to the expectation of a turning motorist. (p. 108, Lines 24-30). May want to consider allowing this signage to be used in areas where one may expect to see high volume of bicyclists, in addition to the other applications described here. A “turning vehicles yield to pedestrian sign” may be used where “conditions may warrant additional emphasis to drivers turning at a signalized intersection where potential pedestrian conflicts may not be readily apparent” (p. 109, Line 3-5). Could the LEFT TURN YIELD TO Bicycles sign not be used in a similar manner?
2B.60 – Traffic Signal Signs (R10-5 through R10-30)	NO	NO	YES	Agree with inclusion of a LEFT TURN YIELD TO Bicycles sign to applications where conflicting bicycle movement would be unexpected by a turning motorist. There is also a need to include a RIGHT TURN YIELD TO Bicycles Sign for places where a conflicting bicycle movement would be unexpected by a turning motorist.
2C.01 – Function and Application of Warning Signs	NO			Page 119, Line 20. Warning beacon paragraph struck through. Does this mean that warning/flashing beacons will no longer be allowed to supplement warning signs? If this is the case, there are several sections in MUTCD that indicate warning beacons can supplement warning signs (i.e. 2C.11, 2C.36, 2C.38, 4J.02, etc.).
2C.07 – Horizontal Alignment Signs (W1-1 through W1-5, W1-11, W1-15)	NO			Request to add sign. Location scenario would be like an exit ramp and very close frontage road included in a single roundabout. Truck coming off the ramp would essentially be making a U-turn to turn right onto the frontage road, and there isn't always enough spacing between the ramp and the frontage road to provide for this. In this case, special signage is required to direct the trucks to go around the roundabout in order to make their turn. Requesting a sign to address this situation in the MUTCD to avoid using the experimentation request process every time these signs are used. See photo below as an example of this sign request: 

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2C.10 – One-Direction Large Arrow Sign (W1-6)	NO	NO	YES	Concerned about the proposal to eliminate the combo supplemental horizontal alignment/advisory speed signs. These signs are used extensively in Caltrans district as a countermeasure. Caltrans is updating the curve warning signs to comply with the current MUTCD and it appears we will have to change them again. Have there been any studies showing that the new large arrow/speed plaque are better than the existing combo signs?
2C.11 – Truck Rollover Sign (W1-13)		YES		If not already considered for the 'Truck Rollover Sign', should a speed warning sign accompany this signage to provide the trucker a better understanding of the approach curve?
2C.59 – Advisory Speed Plaque (W13-1P) and Confirmation Advisory Speed Plaque (W13-1aP)	NO	NO	YES	Page 148, lines 47-48 & page 149, lines 1-16: FHWA proposes to delete the language that specifies the ball-bank indicator criteria and now refers to the Traffic Control Devices Handbook (ITE, 2013). Caltrans has spent a lot of resources adding/replacing curve warning signs to comply with the Manual. If the Traffic Control Device Handbook uses different criteria other than what is stated in the current MUTCD, so we have concerns about having to replace these items again.
2D.09 – Numbered Highway Systems	NO	NO	YES	Page 162, line 23: FHWA proposes language that states Interstate route renumbering shall be approved by FHWA. CA MUTCD Section 2D.09, paragraph 10 requires AASHTO's approval for renumbering a route, not FHWA's approval.
2E.23 – Advance Guide Signs (E1 Series)	NO	NO	YES	Page 212, lines 20-25: FHWA proposes language that is not consistent with FHWA Ruling No. 2(09)-150(I) – Position of Exit Number and LEFT Exit Plaques, dated March 6, 2019. CA MUTCD Revision 6 will reflect the new changes to comply with the FHWA ruling, and we are in the process of replacing the plaques. The FHWA ruling states that the EXIT plaques must be placed above and abutting the top of the sign panels.
2E.41 – Design of Freeway and Expressway Diagrammatic Guide Signs for Option Lanes	YES			Minor textual change in proposed text alternative. Prefer the proposed text to the alternative proposal of deletion of entire section as maintains engineering discretion to use these types of signs and an anchor for legacy usage/minor interchange.
2G.19 – Guide Signs for Priced Managed Lanes	YES	YES		Define what is meant by "basic toll rate" on bullet #4 on Figure 2G-20.
2G.20 –	YES	YES		Clarify the statement found on page 276, lines 32-33 which says, "When the part-time travel on a shoulder is limited to certain classes of vehicles, the

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Signs for Part-Time Travel on a Shoulder – General				signing is similar to that for preferential lanes.” Based on this information, the R3-11 series of signs is to be used in these instances. What would be in the top lines of legend on the R3-11 series of signs? Would it be “SHOULDER”? “RIGHT SHOULDER”?
2G.20 – 2G.24 – – Signs for Part-Time Travel on a Shoulder – General	YES			New section: text is clear. Seems fine. If must allow (dangerous) use of shoulders as lanes better to have uniformity. (personal opinion) For 2G.22, IMO this warning sign should be a standard in CA MUTCD if we adopt rather than guidance.
2G.21 – Regulatory Signs and Plaques for Part-Time Travel on a Shoulder	YES	YES		It appears the Part-Time Travel on Shoulder only discussed that shown in Figure 2G-32 for the right shoulder only. There is no proposal and illustration for Left Shoulder Use. District 5 is piloting a five (5) mile Part-Time Left Shoulder Use in the vicinity of City of Pismo Beach. The sign package was presented to the CTCDC and revised to the final version and are intended to be installed along the median of the freeway when the project is scheduled to open by 2026. This sign package is designed to go with the Lane-Use Control Signal, Red “X” and Green “□” arrow, no yellow arrow is use in this project. This version allows the part time operation more flexibility without specifying the periods of operation. It’s a hybrid between a fixed period and a variable period. Please see attached, the sign package layout and sequencing as proposed. The R4-17 and R8-7 are to follow this sign package as shown in Figure 2G-32 (Sheet 1 of 4).
2I.15 – Signing for Truck Parking Availability (D9-16b through D916e)	NO	YES		Disagree – General: Truck parking availability is a relatively new information service. Only a handful of states and a small number of private truck parking facilities have deployed truck parking availability systems. Before finalizing rules about how truck parking availability information is presented to drivers, more time should be taken to gain experience and get feedback from wider demographics of both the trucking community who use the information and public and private sector organizations that generate and provide truck parking availability information.
2I.15 – Signing for Truck Parking Availability (D9-16b through D916e)	NO	YES		Disagree – Change white to amber “ . . . shall include a changeable message element with a white amber changeable legend on a black opaque 3 background. . . .” -The preference among four state DOTs (CA, AZ, NM and TX) that make up the I-10 Connected Corridor Coalition that because of the east-west

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				orientation of the I-10 corridor and how sunlight is shining directly in the eyes of drivers going EB early in the day and WB late in the day, that an amber changeable legend on a black opaque background provides more contrast and will likely be more legible. -Also, most if not all the TPIMS truck parking availability signs in the MASSTO TPIMS deployment sites are using amber changeable message signs on a black opaque background.
2I.15 – Signing for Truck Parking Availability (D9-16b through D916e)	NO	NO	YES	Disagree – Change FULL to LOW “. . . that displays on the number of parking spaces currently available at each location or the legend FULL LOW.” -There is currently a nationwide truck parking shortage where many regions, especially in and around urban areas and places where there are large or multiple facilities that generate truck trips – ports, railheads, logistics and distribution centers, etc. Since it will likely take decades to construct enough parking spaces in the areas where they are needed, it would be better to err slightly on the side of saying there are (potentially) spaces when a lot is full to ensure the maximum use of the safest truck parking areas/spaces. -There are almost always unauthorized (non-designated) areas at both private and public truck parking facilities (rest areas) where there is room for trucks to park. It would be better to use the word “LOW” rather than “FULL” on the signs to maximize the full parking capacity (both striped and unauthorized) as it is generally safer for trucks to be parked in a designated parking facility rather than on shoulders, on and off-ramps, frontage roads etc. Outside of a truck parking facility, there is more chance of higher or high-speed collisions to occur especially on freeway shoulders and off-ramp shoulders. -At most California Safety Roadside Rest Areas, there are areas where a significant number of additional trucks can park outside of striped truck parking spaces. At some locations, the unauthorized parking spaces equals or exceeds the number of striped spaces. The word LOW builds in a way to account for parking in those unauthorized locations. -Discussions with private truck stop operators is overwhelmingly in favor of not using the word FULL or indicating that there is no parking available. Private truck stop operators that we spoke with had non-striped excess

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				<p>capacity that they could utilize when the normal striped parking spaces were full.</p> <p>-A vehicle strikes a truck parked in an unauthorized location (outside of a parking facility) approximately once every day in California and on average there are more than 25 fatalities every year (pre-COVID) from vehicles hitting parked trucks at those unauthorized locations.</p> <p>-Truck parking availability systems that monitor and or count trucks are relatively new to ITS and have a general error rate of around 5% (or 95% accuracy). Using the word LOW rather than Full provides some wiggle room for error or inaccuracies throughout the system.</p>
2I.15 – Signing for Truck Parking Availability (D9-16b through D916e)	NO	NO	YES	<p>Disagree – Delete “ . . . The parking facilities displayed on the sign should be no more than 60 miles from the sign location.”</p> <p>-Parking facilities in the Southwest United States are many times spaced further apart than 60 miles. While the information on the signs will change, it is better to provide more information than less. If the next facility and or the one after that is close to capacity, then a driver will have some (maybe better) information to make a decision about when and where to stop.</p>
2J – Specific Service Signs	NO	NO	YES	<p>The proposed Amendment to Chapter 2 (Specific Service Signs) addresses alternative fuels and proposes to remove alternative fuels from the qualifications for a GAS business identification sign panel ----- this would appear to harm locations where alternative fuels are available at the same locations where gas is located. As the focus for the Administration is to promote alternative fuel and clean energy, this section appears to cater to the gas industry.</p>
2J.01 – Eligibility	NO	NO	YES	<p>Agree that GAS business identification sign panel should not represent alternative fuels, but I do not agree with excluding alternative fuel signs from the “Specific Service Signs” Section. It’s important to specify alternative fueling services because (1) alternative fuels are rare in comparison to gas; and (2) alternative fueling services are particularly rare in rural areas vs. urban.</p>
2J.01 & 2J.02 – Eligibility & Application	NO	NO	NO	<p>Page 303, line 39 and page 304, lines 37-38: FHWA proposes to remove alternative fuel businesses from Specific Service Signs programs since having alternative fuels under the GAS logo sign panel creates confusion. The proposed MUTCD does not provide a new category or sign to include alternative fuel businesses in the Logo Program.</p>

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				<p>The CA MUTCD renamed the GAS category to FUEL to address this confusion. This change allows for the FUEL category to encompass gasoline and alternative fuel businesses. The CA MUTCD reads, “To qualify for a GAS FUEL logo sign panel...” The CA MUTCD also added an Electric Vehicle logo sign panel in addition to the Fuel, Food, Lodging, and Camping sign panels. Sign Eligibility requirements for the EV logo sign panels are also included in the CA MUTCD. Both changes to the MUTCD allow for alternative fuel businesses to participate in our Specific Service Sign program.</p> <p>In 2018, California passed Executive Order B-48-18 which highlights the importance of zero-emission vehicles (ZEVs) in reducing greenhouse gases and other harmful vehicle emissions. Executive Order B-48-18 calls for State entities to work with the private sector and all appropriate levels of government to put at least 5-million ZEVs on California roads by 2030, and to spur the construction and installation of 200 hydrogen fueling stations and 250,000 ZEV chargers, including 10,000 direct current fast chargers, by 2025. Installation of signage directing consumers to charging and fueling stations supports these goals and improves public confidence that charging and fueling are available.</p> <p>Caltrans recommends that alternative fuel charging businesses still be included in Specific Service Sign programs by renaming the GAS category FUEL and/or adding another logo panel category for zero-emission vehicles. The edits to the MUTCD will help California meet its goal to put 5-million ZEVs on the road by 2030.</p>
2J.01 – Eligibility	NO	NO	YES	<p>Page 303, lines 12-13: FHWA proposes to expand where the specific service signs may be placed. The California Logo program is exclusively for freeways in rural areas in California. The proposed FHWA language contradicts California Streets and Highways Code, Division 1, Chapter 1, Article 3, Section 101.7. Including Specific Service Signs on conventional highways increases the risk of sign pollution, which may breed disrespect for other regulatory, warning, and guide signs. Caltrans recommends that Specific Service Signs only be placed on freeways in rural areas.</p>
2L.01 – Description of Changeable Message Signs	YES	YES		<ul style="list-style-type: none"> Agree with the addition of a paragraph to the Support statement clarifying that a CMS is a traffic control device and this chapter is not stand-alone reference for CMS. While CMS could be a toll to communicate to a large audience, its primary purpose is to convey travel related message to the motorist and therefore it is a traffic control device.

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				<ul style="list-style-type: none"> • In Support P02 change the “permanent and portable changeable message signs” to “fixed and portable changeable message signs.” • Agree with modification to Support P02. • Agree with relocating Standard P03 to Section 2L.02. • Agree with modifications to Standard P04. • Agree with adding a new Standard paragraph prohibiting information other than inventory or maintenance related from being displayed on the message display itself or on the exterior housing of a fixed or portable CMS.
2L.02 – Applications of Changeable Message Signs	NO	NO	YES	Disagree on the limitation of declared state of emergency messages based on the need for an imminent threat. By definition, emergencies are declared due to the severity of a threat to the state. Messages could be used to minimize the threat regardless of the timing. CMS should be able to be used during states of emergency as proclaimed by the governor such as but not limited to droughts, wildfires, and COVID-19.
2L.02 – Applications of Changeable Message Signs		YES		In line 51, page 317: replace “ <i>should not</i> ” with “ <i>may</i> ”.
2L.02 – Applications of Changeable Message Signs		YES		In line 52, page 317: replace “ <i>AMBER alert messages should be kept as brief as possible and display only that information which will direct road users to another source, such as broadcast or highway advisory radio, for detailed information about the alert</i> ” with “ <i>AMBER alert messages should be kept as brief as possible and display only information provided by the federal law enforcement and local law enforcement agencies</i> ”.
2L.02 – Applications of Changeable Message Signs			YES	In line 1, page 318: delete “ <i>Other information, such as detailed descriptions of persons, vehicles, or license plate numbers, should not be displayed in an AMBER alert message on a CMS</i> ”.
2L.02 – Applications of Changeable Message Signs		YES		In line 22, page 318: replace, “ <i>Messages with obscure or secondary meanings, such as those with popular culture references, unconventional sign legend syntax, or that are intended to be humorous, should not be used as they may be misunderstood or understood only by a limited segment of road users and require greater time to process and understand.</i> ” with “ <i>Messages with obscure or secondary meanings should not be used unless coordinated with a widespread public information campaign since the message may be misunderstood or understood only by a limited segment of road users and require greater time to process and understand.</i> ”

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2L.02 – Applications of Changeable Message Signs	NO	YES		<ul style="list-style-type: none"> • Agree with relocating Standard P3 to Section 2L.02 and revising it as shown. • Agree with clarification on the types of messages to be displayed on CMS to ensure uniformity. • Agree with the addition of “<i>traffic safety campaign messages</i>” to Option P02. • Disagree with charging existing Option P2 to Guidance. Leaving it as Option P02 gives States the flexibility to use these types of messages. • Agree with new Guidance Statement that CMS should not be used in place of Static Guide sign messages. • Agree with deleting Support P01 Item D. • Disagree with changes to existing Support P01 first sentence. It contradicts earlier modification to Option P02, which allows traffic safety campaign messages. The first sentence should be changed to “The purpose of changeable message sign is to provide traffic regulatory, warning, or guidance message as follows:” • Support P01 Item B should be “<i>Warning of adverse travel conditions due to weather</i>”, which would cover weather such as fog, dust, etc., which may not directly impact roadway. • Agree with changing existing Guidance P03 to Standard to require agencies to have a policy on Fixed CMS. • Agree with adding a policy on Portable CMS similar to Fixed CMS and including it in Standard. • Agree with including recommendations on content for AMBER alerts to ensure consistency and uniformity. • Disagree with not allowing the display of description of persons, vehicles, or license plate number for AMBER alert messages. States should have the ability of displaying details such as description of person(s), vehicle type license plate number, when known. This information allows other motorists to identify and report immediately. Directing road users to another source, such as broadcast or highway advisory radio for detailed information will deter motorists from recognizing and reporting on AMBER alert incidents. • Disagree with the limitation of “alert” messages to AMBER alert as Standard. It should be an Option statement. Orange (highway worker hit) or Blue (when law enforcement office is hit) alert should be allowed because these two groups of people work on the highway. • Agree with revising Support P04 to clarify examples.

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
				<ul style="list-style-type: none"> • Agree with adding new Guidance and Standard paragraphs regarding appropriate use of traffic safety campaign messages on CMS. • Agree with prohibiting messages with obscure meaning but disagree with prohibiting messages that are humorous, play on words or popular cultural references for safety campaign messages. Recent research conducted by Virginia Tech indicates that messages that are humorous or witty are remembered longer than standard messages. Agree that the messages should not have the potential to be misunderstood. • Agree with the statement but disagree with including this in Standard. The statement should be included in Option. Safety campaign messages are intended to modify driver behavior in longer term, and regular but non-frequent messaging will help modify driver behavior. In general, driver or human behavior is the biggest contributor in crashes. • Traffic safety campaign messages displayed on CMS should not be limited to be part of an active coordinated safety campaign. Because it is traffic safety related campaign, it should be allowed to display traffic safety related messages independently and not be required to be part of a multi-media coordinated effort. • Agree to add Standard, Guidance, Option, and Support statements regarding the use of messages related to evacuation, homeland security or emergency information. • Agreed with adding guidance statement on penalties or enforcement in conjunction with CMS message displayed.
2L.03 – Legibility and Visibility of Changeable Message Signs	YES			<ul style="list-style-type: none"> • Agree with adding Guidance statement with regards to minimum size requirement as the static version of those signs. • Agree with adding a figure illustrating an example.
2L.04 – Design Characteristics of Messages	NO	YES		<ul style="list-style-type: none"> • Agree with title change. • Agree with adding a new Standard paragraph requiring PCMS used as an arrow board to be considered as an arrow board. • Agree with adding a new Standard paragraph requiring all message displays follow the same design and display principles found in the MUTCD for other traffic control signs. • Agree with Guidance provided on warning beacons. All messages on the CMS, a traffic control device, are important and selected messages should not be emphasized by using warning beacons. If it is done so, other messages will be ignored.

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				<ul style="list-style-type: none"> Disagree with the proposal to change the letter heights based on the type of CMS. The letter height should be based on the speed of travel and how quickly the entire message (one or two phase) can be read and comprehended by the driver. The CMS letter size determination should be similar to a traffic sign letter size determination. The subject is also covered under Section 2L.03. Agree with the proposal move the requirement from Guidance to Standard only if it is applicable to colored CMS. While the latest CMS can accommodate multiple colors not all the States will have all of their CMS capable of multiple colors. States may have both full color and mono color CMS for a long time and therefore the language should be modified to state that if the CMS is capable of displaying multiple colors, then the traffic control device colors must be used. Agree with the proposal to delete the last sentence of Support P17 a replace it with visual examples to drive the point of encouraging the use of new technologies. Agree with making sure the resolution is sufficient to ensure clarity of symbols for road users' instant recognition.
2L.05 – Message Length and Units of Information	NO	YES		<ul style="list-style-type: none"> Agree with the proposal to revise Standard P04 to clarify that each phase may be understood by itself and conveys the same meaning regardless of the sequence it is read. Agree with deleting Standard P05 and combining the content with Standard P01 in Section 2L.04. Agree with moving P08 from guidance to option, but there must be a limit on the number of signs to be use and the spacing between the signs, if not, this could become a distraction to drivers. Disagree with moving Guidance P09 to Standard because while Section 1A.15 has most commonly used abbreviations, the lists are not exhaustive. There may be other abbreviations that are understandable and acceptable. Agree with adding a Support paragraph that provides reference to tables that list examples of message construction.
2L.06 – Frequency of Display of Messages	YES	YES		<ul style="list-style-type: none"> Agree with adding a new section on Frequency of Display of Message with proposed Support and Guidance paragraphs. The topic of frequency of display of message is relevant and important, States should be allowed to decide how long or how frequent a message should be displayed on a CMS in a particular area. The potential for habituation is a risk in areas were the same people always see the same message or if the message

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				does not change. If there is research/data that demonstrates that there is an optimum frequency of display of messages, it would be helpful to use that data to come up with the guidance.
2L.07 – Travel Time Messages	NO	YES		<ul style="list-style-type: none">• Agree with the proposal to add a new Section 2L.07 on travel time messages. Disagree with the Guidance and Option limitation on the number of messages. Display of three travel times, one per line has not been an issue. Destination, distance, and time should not be an informational load. Majority of road users will be familiar with the destination rather than exit number. The use of exit number can still be an Option.
2L.08 – Traffic Safety Campaign Messages	YES			<ul style="list-style-type: none">• Agree with the proposal to add a Standard paragraph that requires real time traffic control message to have primacy over safety campaign messages.
2L.09 – Location of Permanent Changeable Message Signs	YES	YES		<ul style="list-style-type: none">• Agree to retitle and renumber Section 2L.06 and add a Support paragraph on factors to consider before deciding on the location of the CMS.• Should change the term “Permanent” to “Fixed”, so that it can be abbreviated to FCMS. The abbreviation for Portable Changeable Message signs is PCMS.

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PART 3 MARKINGS

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
3A.02 – Materials	NO	NO		Page 336, Line 15. Define “Marking systems”. Difficult to understand the context of paragraph. Writing style when previously paragraph 2 was simpler and clearer to understand. Reconsider re-writing to similar style as previous version.
3A.04 – Functions, Widths, and Patterns of Longitudinal Pavement Markings	YES	YES	NO	Page 337, Line 43. Suggest specifying maximum width for discernable space separating the parallel lines, i.e. “should not exceed <u>more than half the width of the traffic line</u> that which is necessary to be recognized...” (3” space for 6 inch stripe, 4” space for 8” stripe, etc.).
3A.04 – Functions, Widths, and Patterns of Longitudinal Pavement Markings	NO	YES		At page 337. Line 25, the text states: “D. A dotted lane line provides <i>warning</i> of a downstream change in lane function.” The term “warning” seems to imply that a change in lane function is dangerous to the user. Propose using the phrase “ <i>advanced notice</i> ” in lieu of “warning.”
3B.04 – Yellow Pavement Markings for Reversible Lanes	NO	NO	YES	FHWA proposes to indicate that 6-inch wide lines are to be used for freeways, expressways, and ramps, as well as for other roadways with speed limits greater than 40 mph and that 4- to 6-inch lines are to be used for all other roadways. Caltrans uses 6-inch wide lines for normal width stripes on all State highways. Caltrans proposes the use of 6-inch wide normal lines for all speeds on all roadways.
3B.05 Fig. 3B-7 – Pavement Markings for Two-Way Left-Turn Lanes	NO	NO	YES	Do not agree with “Two-way left-turn lane markings should not extend to intersections”. Certain low volume cross streets lend themselves very well to a two-way left-turn lane because it gives the vehicles a refuge area when making a left onto a busy multi-lane major street.
3B.06 –	YES	YES	NO	Page 343, Line 23, Add colon “:” at end of sentence.

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White Lane Line Pavement Markings				
3B.21 – Word Pavement Markings	NO	NO	YES	<p>FHWA proposes to delete existing Section 3B.21 because they are not traffic control devices.</p> <p>The California Highway Patrol patrols certain highways with both helicopters and fixed-wing aircraft. The purpose of the patrol is to monitor traffic, provide motorist assistance and initiate appropriate enforcement action. In order to make the air patrol effective, the California Highway Patrol and Caltrans have agreed upon markings and sign shown in Figure 3B-105(CA) in the CA MUTCD.</p>
3B.25 – Chevron and Diagonal Markings	NO	NO	YES	<p>FHWA proposes to change existing the Option paragraph into separate Guidance paragraphs for chevron and diagonal markings to recommend the intended applications for each. FHWA based this on NCUTCD CAV Task Force and Automated Driving Systems Task Force joint recommendations that were approved by the Markings Technical Committee in June 2019. Caltrans requires chevron markings in gore areas of Entrance Ramps and Exit Ramps.</p> <p>Caltrans recommends that FHWA use a standard statement to require chevron markings in gore areas.</p>
3B.25 – Chevron and Diagonal Markings	YES			<p>Page 364, Line 29. Suggest adding a distance range, or specific spacing based on roadway speed (i.e. 50'-100' for 45 MPH or greater, 25' for 45 MPH or less), for longitudinal spacing of chevrons or diagonal line markings. Leaving it to engineering judgement will result in inconsistent spacings for various speeds. There should be a basic starting point or guidance for engineers to use.</p>
3B.25 – Chevron and Diagonal Markings	YES			<p>Page 364, Line 35. Caltrans has adopted 6-inch stripes, not sure if we have equipment to comply with previous 4" standard. May need to adjust standard in CA MUTCD version.</p>
3B.31 & 3C.11 – Markings for Diamond Interchange with	NO	NO	YES	<p>Figure 3B-29 and Figure 3C-3 are missing. MUTCD proposes a new concept, but the detailed Figures for this Section are missing.</p>

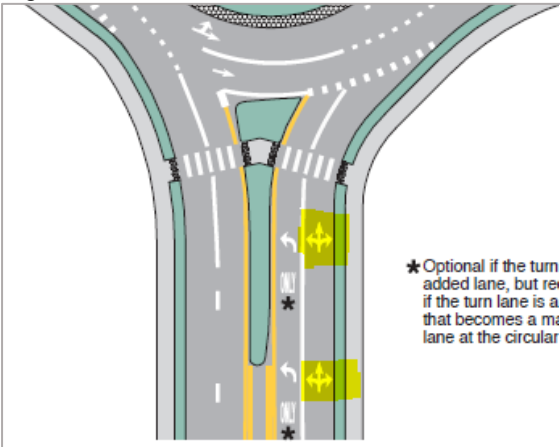
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Transposed Alignment Crossroad				
3C.01 – General	NO	NO	YES	Disagree with the concept that “ <i>Crosswalk lines markings should not be used indiscriminately. An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign</i> ” (p. 369, Lines 4-6). This requirement for an engineering study before the installation of any crossing not at a stop, yield or traffic signal seems onerous. If engineering studies will be required, then they should instead focus on providing key criteria to evaluate the safety and mobility needs of people walking, biking, and riding transit, rather than centering the analysis on the convenience of individuals driving.
3C.04 – Basic Crosswalks	NO	NO	YES	Disagree with the concept that an engineering study should be performed to stripe a basic crosswalk marking (p. 370, Lines 31-40). Additionally, the criteria for such an engineering study is focused more on the legal need to provide a crosswalk at a certain location, rather than the crossing needs of those walking. As suggested in the previous comment, if engineering studies will be required, then they should focus on providing key criteria to evaluate the safety and mobility needs of people walking, biking, and riding transit, rather than centering the analysis on the convenience of individuals driving.
3C.04 – Basic Crosswalks	NO	NO	YES	Page 370, lines 33-34 and 40. Section 3C.04 provides that “ <i>basic crosswalk markings may be used if an engineering study determines that establishing a crosswalk would be beneficial to: D. Fulfill a legal need to mark the crosswalk.</i> ” What is this legal need? How does it arise? Is it in a statute? Is it the result of a court ruling or a lawsuit? What is the purpose of this statement? What does it add? How does an engineering study determine that a crosswalk would be beneficial to fulfill a legal need to mark the crosswalk? Propose deleting paragraph D; it adds no value.
3C.11 – Crosswalks at Diamond Interchanges with a Transposed Alignment Crossroad	YES			Agree with the language that crossings for pedestrians at diamond interchanges be located where pedestrian desire lines have been demonstrated or established (p. 373, Lines 24-25). Also agree that the most direct pedestrian paths should be provided (p. 373, Lines 26-27).

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3C.11 – Crosswalks at Diamond Interchanges with a Transposed Alignment Crossroad	YES	YES		<p>p.373, line 24-25. What are “pedestrian desire lines?” Is this a typo? Or an engineering term? Are these locations where pedestrians have demonstrated the need or desire to have a crosswalk? Suggested rephrasing: “where pedestrians have demonstrated the need or desire for a crosswalk.”</p> <p>p. 373, line 26. “The most direct pedestrian paths should be provided to <i>minimize pedestrians whom may cross</i> outside of crosswalks where drivers are less likely to expect them.” This is an awkward sentence. Suggested phrasing: “The most direct pedestrian paths should be provided to <i>reduce the likelihood of pedestrians crossing outside of crosswalks</i> where drivers are less likely to expect them.”</p>
3D.02 – White Lane Line Pavement Markings for Roundabouts	YES	YES		<p>Page 375, line 19. The word “roundabouts” needs to be deleted. It is not part of a sentence.</p>
3D.06 – Arrow Pavement Markings for Roundabouts	NO	NO	YES	<p>Section 3D.06 P2 states, “<i>On two-lane approaches to circular intersections, where the left-hand lane on the approach is for left turns, lane use arrow pavement markings should not be used in the right-hand lane containing the optional movement.</i>”</p> <p>Should the pavement marking be removed on the below Figure, bottom-Right Lane?</p> 

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3D.06 – Arrow Pavement Markings for Roundabouts	NO	NO	YES	Section 3D.06 (page 376, line 43) states, “ <i>If lane-use arrow pavement markings are used within the circulatory roadway of multi-lane roundabouts, normal lane-use should be used, with an oval symbolizing the central island.</i> ” How do we add an oval? Adding a Figure will make this statement clearer.
3E.01 – General	YES	YES		Page 378, line 7. “priced managed lanes” should read “price-managed lanes”.
3E.03 – Preferential Lane Word and Symbol Markings	YES	YES		Page 381, line 26. “priced managed lane” should read “price-managed lane”.
3E.04 – Markings for Part-Time Travel on a Shoulder	NO	NO	YES	FHWA adds a new Section for markings for part-time travel on a shoulder during peak hours. Will the dashed line pattern differ between on-ramps and off-ramps? In comparing Figure 3E-5 A and B to C, it seems like the dashed line pattern is different.
3F.03 – Pavement Word and Symbol Markings	YES	YES		Page 385, line 10. The line reads: “where physical conditions or preclude the use of the markings.” The word “or” should be deleted.
3H.03 – Aesthetic Treatment in Crosswalks	NO	YES		Disagree with the language that “aesthetic treatments within crosswalks should only be used on roadways with a speed limit of 30 mph or less (p. 390, Lines 26-27). This would preclude the use of these types of aesthetic treatments within crosswalks from many areas on the state highway system, including Main Street locations, that are often 35-40 mph. Allowing these treatments on roadways up to 40 mph would be more inclusive of potential uses on the state highway system, unless there is a strong safety justification for only using them on 30 mph and below.
3H.03 – Aesthetic Treatment in Crosswalks	NO	NO	YES	Disagree with concept that crosswalks be devoid of “pictographs, symbols, multiple color arrangements” (p. 390, Lines 36-37) and that crosswalks should not be designed to encourage road users to “loiter in the crosswalk” or “engage in the pattern”. This precludes the use of colorful or “art crosswalks”. These types of crosswalks can be important place-making features for Main Street locations and may help to contribute to walking/biking mode shift. While the MUTCD may not wish to endorse

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				these types of treatments, it should not be prohibiting and preventing these types of treatments identified, prioritized, and supported by local communities—especially when there is no evidence that these types of treatments negatively impact safety.
3H.04 – Yellow-Colored Pavement	NO	YES	NO	Purpose of yellow-colored pavement is unclear based on proposed text in Section 3H.04.
3H.06 – Green-Colored Pavement for Bicycle Facilities	YES			Agree with the inclusion of certain bicycle, pedestrian and transit elements that previously received interim approval, including the use of green paint for bikeways and the use of red paint for transit lanes (p. 392-393).
3H.06 – Green-Colored Pavement for Bicycle Facilities	NO	NO	YES	Disagree with the requirement of an engineering study to determine where red transit lanes can be placed (p. 392). This requirement seems onerous. If engineering study is required, it should focus on the mobility and safety of those utilizing transit, rather than vehicular operations.
3H.06 – Green-Colored Pavement for Bicycle Facilities	YES	YES		Page 392, line 25. The line reads: “shall not be used instead of dotted lines <i>used</i> to extend a bicycle lane.” The second “used” needs to be deleted.
3I.01 – Channelizing Devices	YES	YES		Page 395, line 6-7. The line reads: “such as cones, tubular markers, vertical panels, <i>and drums</i> , barricades may be used . . .” The words “and” and “drums need to be switched so the sentence reads: “vertical panels, drums and barricades may be used.”
3J.02 – Approach-End Treatment	YES	YES		Page 397, line 24-25. The sentence reads: “The ends of islands first approached by traffic <i>should be provided</i> an approach-end treatment, or curb markings, or both.” Would read better as follows: “The ends of islands first approached by traffic <i>should have</i> an approach-end treatment . . .” or “ <i>should be marked with</i> . . .”
3J.07 – Curb Extensions Designated by Pavement Markings	YES			Agree with the language that “Diagonal markings or colored pavement should be used within the marked curb extension to emphasize that the area is outside of the street” (p. 400). The “painted bulb-out” has been used as a cost-effective alternative where concrete curb-extensions cannot be installed. Colorized pavement adds an additional layer of visibility for the pedestrian utilizing these types of facilities.

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PART 4 HIGHWAY TRAFFIC SIGNALS

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
4A.05 – Meanings of Bicycle Symbol Signal Indications		YES		Edit section to include micromobility devices and users.
4C.05 – Warrant 4, Pedestrian Volume	NO	YES	NO	Warrant 4, Pedestrian Volume should add language regarding land use and user information as considerations for engineering study criteria. Pedestrian excessive delay should be defined for time spent accessing another crossing and distance.
4D.03 – Provisions for Bicycles		YES		In line 49, page 423, replace, " <i>Bicyclists</i> " with " <i>Micromobility Users</i> ".
4D.03 – Provisions for Bicycles		YES		In line 1, page 424, replace, "bicycle" with " <i>micromobility devices</i> ".
4D.07 – Longitudinal Positioning of Signal Faces	YES			P. 428 Line 2. Agree makes more sense as Guidance.
4D.08 – Mounting Height of Signal Faces	YES			P. 428 Line 39: CAMUTCD and CT Standards require 17-foot clearance. However, the MUTCD "at least 15 feet ..." language keeps us from conflicting. P. 429 Line 6. Agree. Makes more sense as Guidance.
4G.01 – Flashing Operation of Traffic Control Signals – General		YES		P. 461 Line 18: Can the wording "automatic means" be changed to something like "automatic circuitry"? P. 461 Line 25: Can't find where this language came from? Struck out section 4I.07 doesn't exist in the CAMUTCD.
4H.01 – Use of Bicycle Signal Faces		YES		Glad you put this Chapter to provide guidance. This will help develop and implement policy for controlled bicycle movements and incorporate a timing phase for bicycles in traffic controllers/ software..

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
4H.04 – Bicycle Signal Signs		YES		In section 4H.04, page 465, include a "Bicycle advance signs (). The sign must be installed between 100 feet to 150 feet from a signalized intersection.
4I.06 – Pedestrian Intervals and Signal Phases	NO	YES		Agree with the concept of adjusting signal timing to accommodate pedestrians who walk slower or are in a wheelchair (p. 474, Lines 18-19), however, there may be other scenarios in which a longer crossing time is needed, such as areas within proximity to a school, retirement community, nursing facility, etc. Areas in close proximity to these types of facilities may want to consider defaulting to a longer crossing time.
4J.02 – Design of Pedestrian Hybrid Beacons	YES			Agree with the removal of minimum spacing language for installation of hybrid beacons and focus on the need for site distance considerations instead (p. 477, Lines 19-21).
4K.01 – General		YES		In line 36, page 480, rephrase, "When used, accessible pedestrian signals shall be used in combination with pedestrian signal timing. The accessible pedestrian signals in an intersection shall all use the same type of pedestrian detector technology.
4K.01 – General		YES		In line 44, page 480, rephrase, At locations where it is not necessary for pedestrians to push a push button detector or receive a WALKING PERSON signal indication, pedestrian push buttons and near field communication (NFC) should be used to activate the accessible pedestrian signals and to provide information in non-visual formats to assist pedestrians with visual disabilities.
4L.02 – Design of Rectangular Rapid Flashing Beacons		YES		P. 488,, Line 18: Paragraph X? needs to be clarified by adding the relevant paragraph #.
Figure 4L-1 – Example of Post-Mounted RRFBs Installed to Face Only One Direction of Travel at Intersections		YES		P. 488 Line 30: Recommend "If the RRFB indications are so bright that they cause excessive ...".

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
with Two Crosswalks on an Uncontrolled Approach				
4T.04 – Operation of Lane-Use Control Signals	YES			The proposed change to the guidance for section 4T.04 allows for greater flexibility in the placement of lane-use control signal faces and indications, which will result in context-sensitive design solutions.
4U.01 – Application of In- Roadway Warning Lights				<p>What is the basis of the decision to allow for in-roadway warning lights to be placed at a height greater than 3/4 of an inch? How will this affect pedestrians? Will it create a potential tripping hazard? Is there a limitation on height? In other words, although the lights may be above 3/4 of an inch, should there be a limit to height – like 1 inch or 1.25 inches?</p> <p>The stated goal of providing agencies with additional flexibility is good, but there should be guidance in this section.</p>

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PART 5 TRAFFIC CONTROL DEVICES FOR LOW-VOLUME ROADS AUTOMATED VEHICLES

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
5A.01 – Purpose and Scope		YES		<p>Suggest the following rewording:</p> <p>The purpose of this Chapter is to provide agencies with general considerations for vehicle automation as they assess their infrastructure needs, prepare their roadways for automated vehicle (AV) technologies, and to support the safe deployment of automated vehicle technology <u>based on research, data and proven traffic control devices to create standards and guidance that protect all users of the roadway and accommodate mixed-fleet use of the roadway.</u></p> <p>This Chapter provides an overview of foundational AV technology terminology, key principles, considerations for traffic control device selection, and topics for agencies to consider. The MUTCD does not address standardizing several areas that might be important to AV technologies such as digital infrastructure, geometric road design, setting maintenance levels for all traffic control devices, and setting minimum condition levels for paving materials.</p> <p>It is important for early implementers of automated vehicles to understand the ramifications of traffic control devices in a mixed fleet environment and to consider the needs of both human and machine led road users. Partial automation technologies are already commercially available in the vehicle fleet and are operating under current infrastructure conditions. The overall effectiveness of the automation is impacted by the uniformity and consistent application of the highway infrastructure, including traffic control devices.</p>
5A.01 – Purpose and Scope		YES		<p>The following sentence is very confusing and should be reworded: “The lack of tolerance of DAS for non-uniformity in traffic control device design and application is a limiting factor of current DAS sophistication, i.e. DAS has limited ability to interpolate across gaps in traffic control device cues to the vehicle in the following situations:”</p> <p>Section D – missing a semi-colon at the end of the phrase Section E – either spell out etcetera or delete it</p>

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
				<p>Remove the first sentence after section F – “These and other challenges might limit the functionality of DAS making them less effective or functional.” As it contradicts the next sentence.</p> <p>Suggest modifying the next sentence -- “The uniform design and consistent application of standardized traffic control devices supports the functionality of DAS technology in many situations” by adding “with an understanding as to the limitations in DAS technology currently.”</p> <p>Disagree with the various references to maintenance practices in this section and within the MUTCD. The standards for traffic control devices, including conspicuity, size, placement, configuration and so on all, encompass standards for maintenance to follow and provide objection criteria for use. For example, a sign that is “faded” or has a reduced level of conspicuity due to age should be replaced, regardless of whether the sign is used by a human vehicle operator or a DAS. Thus, maintenance practices related to the replacement of the faded sign are to be followed regardless of the presence of DAS. To the extent this section is referring to striping and roadway markings, there are standards and guidance for the replenishment of such markings without regard for the use of the roadway by a human vehicle operator or a DAS.</p> <p>The use of the phrase “good traffic control maintenance practices” is imprecise, leads to confusion and places a burden on an agency to determine what “good” actually means. The Agency’s Traffic Control Operations Manuals and Maintenance Manuals will address maintenance policies for traffic control devices, including signs, striping and markings.</p> <p>Disagree with restatement of the use of “engineering judgment” that considers the human vehicle operator and DAS technology. The consideration of HVO and DAS should be within section 1D.03 of the manual.</p> <p>Under Guidance, section C, which states “Temporary or emergency traffic control, to the extent practical, is planned in advance using devices that comply with the provisions of this Manual and following policies designed to ensure uniformity throughout the site and across jurisdiction.” is misplaced and not appropriate with practices designed “to support AV technologies</p>

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
				during maintenance and infrastructure improvements". This section should be removed or relocated.
5A.02 – Overview of Connected and Automated Vehicles		YES		<p>In line 21, page 510, replace "roadside infrastructure" with "State and local government ITS field elements"</p> <p>Or</p> <p>Eliminate references to connected vehicles in section 5A.02 since connected vehicles and automated vehicles are not the same and unrelated. Delete "Connected" in the title of the section and delete the first paragraph of the section (line 21 to 26).</p>
5B.01 – Signs		YES		<p>The last sentence. "The illuminated portion of electronic-display signs using LEDs should have a standard refresh/flicker rate. <u>The refresh rate of the LEDs should be greater than 200 Hz</u> to be easier for the camera to detect."</p> <p>Should be made consistent with refresh rates for LEDs throughout the MUTCD. If there is not consistency, and 200 Hz is appropriate for DAS, then that would be applicable for ALL LED displays.</p>

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PART 6 TEMPORARY TRAFFIC CONTROL

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
Part 6	YES			Agree, with #462, vague terms should be eliminated as they cause confusion and misinform users on the appropriate standards or guidance.
Part 6	YES			Agree, all citations to the ADA and its regulations are proper citations that accurately reflect the statute or regulation listed.
6A.01 – General		YES		The temporary traffic control for low-volume rural and special purpose roads will generally be minimal, recognizing the lower speeds and traffic volumes. <u>While a limited number of signs, maintenance vehicle warning flashers, or a single flagger could be adequate for most situations, engineering judgment should be used to determine the appropriate TTC.</u>
6A.02 – Fundamental Principles of Temporary Traffic Control		YES		This sentence – “When the roadway capacity is reduced due the lane closures, the demand will exceed the available capacity and result in either a lengthy stopped or slow moving queue of vehicles that may extend past the normal signs shown in the typical advance warning area.” Assumes the TTC plan has not considered the reduced capacity and accommodated for it in the TTC. This sentence should be deleted. The next sentence is an adequate reflection of the process to be followed for a TTC.
6A.03 – TTC Devices			YES	Do not agree with the elimination of references to the applicable standard of crashworthiness when referencing Crashworthiness. In this case, the current MASH standards should be identified and listed (along with any other applicable standards) to provide guidance on what the MUTCD defines as crashworthy. Since the MUTCD does not set crashworthiness standards, references to “MUTCD crashworthiness provisions” can (and will) lead to confusion, incongruous standards, and inconsistent application of “crashworthy” TTC Devices.
6A.04 – Crashworthiness of TTC Devices	NO	NO	YES	FHWA proposes to delete existing language for NCHRP 350. California has further info on MASH Criteria. California defines Category 1, 2, and 3 for the crashworthiness of TTC devices. Disagree with removal of references related to Crashworthiness, NCHRP 350 and MASH terminologies and criteria. These references are useful and

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
				relevant, especially for devices still in service that complied with previous NCHRP 350 standards. Their removal would potentially lead to confusion.
6D.02 – Qualifications of Flaggers	NO		YES	<p>FHWA proposes to delete language from the Standard (page 538, lines 23-27) that is redundant with the “Standard Highway Signs and Markings” book.</p> <p>Caltrans does not agree with this deletion. Those performing Temporary Traffic Control using STOP/SLOW paddles look for guidance on the size and dimensions in Part 6 of the MUTCD, not the “Standard Signs and Markings” book.</p>
6D.05 – Flagger Procedures	YES			Under “Options” the phrase “in certain conditions” should be defined or examples provided. Without that, the vagueness of the phrase will lead to inconsistent application of STOP/STOP or SLOW/SLOW that can cause confusion to the roadway user.
6E.03 – Flag Transfer Method	NO		YES	Caltrans proposes to delete Section 6E.03 – Flag Transfer Method (Page 542, lines 33-42). Does anyone still use this procedure? If not, this Section should be deleted.
6E.04 – Pilot Car Method	YES	YES		<p>Standard Statement, Page 575, line 44 states: AFADs shall meet the crashworthy performance criteria contained in Section 6A.04.</p> <p>Caltrans proposal is to change the language from a Standard to a Guidance statement or delete the Standard completely.</p> <ol style="list-style-type: none"> 1. The Safety Eligibility Letter WZ – 245 from the FHWA dated Nov. 27, 2007 regarding 2) crash testing of Category IV trailer-mounter devices states <i>Crash testing will not be required for work zone Category IV trailer-mounted devices</i>. The 1993 NCHRP Report 350 "Recommend Procedures for the Safety Performance Evaluation of Highway Safety Features" was the first to provide guidance for testing of temporary/portable work zone traffic control devices. When the FHWA adopted Report 350 we did not require crash testing for arrow boards, changeable message signs, portable traffic signals, and other trailer mounted devices commonly used in work zones. We believed the state-of-the-art in design of these devices was not to a point where it would be cost effective to mandate a fully crashworthy design. Neither did we know if they were causing numerous or severe injuries in work zone crashes. To require them to be redesigned, or to be shielded with a temporary barrier to prevent collisions could cause agencies to reevaluate their desire to use these helpful and conspicuous devices.

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
				https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/workzone/pdf/wz245.cfm 2. Arrow Board (AB), Portable Changeable Message Sign (PCMS), portable traffic signal, and other trailer mounted are not required for crash testing. 3. AFADs can function as a temporary signal. 4. Can be on the shoulder and near the edge of the traveled lane delineated with channelizers/ cones just Arrow Boards and PCMS as long as they are activated. AFADs are relatively lighter in weight compared to AB and PCMS.
6E.04 & 6H.37 – Pilot Car Method		YES		For Section 6E.04 (page 543, lines 4-5) and Section 6H.37 (page 559, lines 3-5), Caltrans suggests adding a sign that reads PILOT CAR DO NOT PASS that can be placed on vehicles that are guiding one-way vehicular traffic through a TTC zone. The revised sections should read: “The PILOT CAR FOLLOW ME (G20-4) sign, or the PILOT CAR DO NOT PASS (RXX) sign...”. California’s PILOT CAR DO NOT PASS sign specifications can be found here: https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/signs/r/r115-a11y.pdf
6F.02 – Sign Placement		YES		Caltrans suggests changing the Standard (page 545, lines 31-32) to a Guidance. The barricades we use do not always allow for the sign to rest on the bottom of the barricade 1’ above the pavement. Government purchasing requirements do not allow for consistent purchase of devices that meet this Standard. Field Maintenance does not always have the ability to affix a sign to a barricade at a certain height, especially in an emergency.
6F.02 – Sign Placement			YES	The support statement is being eliminated because NCHRP 350 is no longer the standard, but there is a replacement standard – MASH – and it should be listed where the standard listed directly above refers to the need to have “Signs and sign supports used together SHALL be crashworthy.” Provide the current guidance or there is an increased risk of the use of outdated, non-crashworthy signs and sign supports being used.
6H.22 – Shoulder Work Signs (W21-5, W21-5a, W21-5b)		YES		For the Standard (page 555, lines 5-7), Caltrans suggests adding a sign that reads “SHOULDER WORK AHEAD” to warn road users of work taking place in the shoulder.

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
				California's SHOULDER WORK AHEAD sign specifications can be found here: https://dot.ca.gov/-/media/dot-media/programs/safety-programs/documents/signs/c/f0018722-c24-a11y.pdf
6K.01 – Channelizing Devices – General	NO	NO	YES	FHWA proposes to change the existing standard, which states devices that have lost a significant amount of their retroreflectivity and effectiveness shall be replaced, to a guidance because “significant amount” is not defined. Caltrans proposes to keep this statement as a Standard and define “Significant amount” in a support statement.
6K.02 – Pedestrian Channelizing Devices	NO	NO	YES	For the Guidance (page 567, lines 23-24), Caltrans recommends adding Figures to show the details.
6L.03 – STOP/SLOW Automated Flagger Assistance Devices	NO	NO	YES	Caltrans proposes to remove “strobe light.”

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PART 7 TRAFFIC CONTROL FOR SCHOOL AREAS

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
7A.03 (Section deleted) School Crossing Control Criteria	NO	YES		Agree with deleting existing section 7A.03 School Crossing Criteria, provided the following sentence precedes P2 when relocated to Section 7D.01: “When students attempt to cross the street during inadequate gap, the creation of sufficient gaps needs to be considered to accommodate the crossing demand.” This serves as an introduction as to a recommended method for determining the frequency and adequacy of traffic stream gaps.
7B.01-7B.07 – SIGNS	NO	YES		Agree with consolidating 7B.01-7B.07 into one section numbered and titled, “Section 7B.01 Design of School Signs.” However, the following two sentences should be added in this new section: “The sign dimensions prescribed in the sign size tables in the various Parts and Chapters in this Manual and in the “Standard Highway Signs and Markings” book (see Section 1A.11) shall be used unless engineering judgment determines that other sizes are appropriate. Where engineering judgment determines that sizes that are different than the prescribed dimensions are appropriate for use, standard shapes and colors shall be used and standard proportions shall be retained as much as practical.” To prevent redundancy, agree with deleting Standards and Guidance covered in Section 2A.11 provided the afore-stated two sentences are added to the new Section 7B.01.
7B.02 – School Area Signs and Plaques	NO	YES		Because Section 7B.08 states, “It is important and sometimes legally necessary to mark the beginning and end points of these designated school zones so that the road user is given proper notice,” installation of “optional signs” should not be optional. Thus, substitute “may” with “shall”.
7B.06 – School Speed Limit Signs and Plaques	NO	YES		Agree - Retitle Section 7B.06 (existing Section 7B.15) “School Speed Limit Signs and Plaques” is much clearer than the current title and encompasses both sections expeditiously. Agree – Changing Standard P3 in existing Section 7B.15 to Guidance, prevents financial burdens plus it emphasizes the use of engineering judgment.

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
				<p>Agree – Revising existing Guidance P7 to recommend that the maximum beginning point of a reduced school speed limit zone in advance of school grounds is 500 feet. This creates uniformity among states and municipalities. Also, this is based on the results of research conducted on Speeds in School Zones, which lends it more credence.</p> <p>The proposed new Guidance paragraph to clarify that duplicate plaques for fines should be omitted if other traffic violations in addition to exceeding the speed limit are subject to higher fines based on Official Ruling No. 7(09)–3(I), should be written in simple and easy to comprehend terms.</p>
7B.12 (Section Deleted) School Crossing Assembly	NO	YES		<p>Agree – Installation of School Crossing assembly on approaches controlled by a STOP or YIELD would have a positive effect on the safety of school children and would also guide road users. However, allowing a School Crossing Assembly on Yield approaches to roundabouts and channelized right turn lanes controlled by a Yield sign might create traffic bottlenecks as well as confusion to drivers. It violates the expectancy of drivers.</p> <p>Agree – Changing options P4, P5, and P6 will clarify the application of In-Street Pedestrian Crossing sign, as they go from describing two sign options to one.</p> <p>Changing option P8 from “signalized locations” to “controlled approaches” may cause some confusion, and dependent upon subjective interpretation as to what “controlled approaches” are. If the wording will be changed, then defining “controlled approaches” in this section might be helpful.</p>
7D.01 – Qualifications of Adult Crossing Guards	NO	NO	YES	Existing Section 7D.02 includes more than just “qualifications” and as such, the title should stay as is, “Adult Crossing Guards.”
7D.02 – Operating Procedures for Adult Crossing Guards	NO	YES		<p>Agree - Incorporating the existing Standard from existing Section 7D.04 is more complete.</p> <p>Instead of proposing to add a Standard requiring that the STOP paddle comply with the provisions for a STOP/SLOW paddle and provide a reference to Section 6D.02 for information, just include the contents of 6D.02 in this section. Otherwise, it gets more confusing.</p>

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
				Deleting options P4 and P5 and Standard P6 regarding the flashing lights greatly reduces redundancy, as the information is contained in Section 6E.03. However, a reference to Section 6E-03 might be beneficial.

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PART 8 TRAFFIC CONTROL FOR RAILROAD AND LIGHT RAIL TRANSIT GRADE CROSSINGS

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
8A.02 – Highway-LRT Grade Crossings	NO	YES	YES (IN PART)	<p>Agree - Proposing a new section numbered and titled, “Section 8A.02 Highway-LRT Grade Crossings,” comprised of existing P8 through 12 of Section 8A.01.</p> <p>Agree with revising Item B to highlight that LRT has the right-of-way over other road users at grade crossings and intersections in a semi-exclusive alignment. It is easier to control a motor vehicle/bicycle/pedestrian versus a LRT. It would promote safety for all users.</p> <p>Disagree with Item C highlighting that LRT does not have the right-of-way over other road users at grade crossings and intersections in a mixed-use alignment. Instead of providing clarity, it would provide confusion to users of the road. I believe most road users assume LRT usually has the right-of-way as it is more challenging to maneuver LRT. Even though in theory, the description would be clear, in practice, it would just create more confusion.</p> <p>Agree with the remaining FHWA proposals in this Section.</p>
8A.03 – Use of Standard Devices, Systems, and Practices at Grade Crossings	NO	YES		<p>Agree - In Section 8A.03 (existing Section 8A.02), retitling, “Use of Standard Devices, Systems, and Practices at Grade Crossings,” creates a more general concept. Also, requiring that Diagnostic Team shall reach a determination through consensus, documented in an engineering study, promotes uniformity, and incorporates advances in technologies and operational practices; thus, ultimately improving and promoting safety and efficiency. It would also allow for standard system of traffic control devices applicable for specific grade crossings.</p> <p>Agree - A new Option statement that general maintenance activities or minor operational changes to the grade crossing traffic control system that do not have a negative impact on the overall operation of the traffic control system can be made without a Diagnostic Team. However, this would necessitate a clearly described distinction as to what is considered general maintenance activities or minor operational changes. Otherwise, it would be up to subjective interpretation, which could create confusion and lack of uniformity.</p> <p>Agree – Adding a new Guidance paragraph to recommend that the Diagnostic Team distributes the determination made regarding traffic control system at a grade crossing to the Diagnostic Team members. This would</p>

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Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
				aided documentation of decisions made, promote better recordkeeping, and keep all Team members updated. It would serve as a reliable resource.
8A.05 – Engineering Studies at Grade Crossings	NO	YES		<p>Agree – Provided that P2 of existing Section 8A.02 substitutes “highway agency” with “highway agency or authority with jurisdiction,” and also, that Appropriate State and local organizations in P5 of existing Section 8A.03 are identified.</p> <p>Agree with a new Guidance statement recommending the factors to be considered in the determining which traffic control devices are appropriate to install at a grade crossing. This will provide direction and insight for those determining traffic control devices.</p>
8A.06 – Uniform Provisions	NO	YES		<p>Agree - In Section 8A.06 (existing Section 8A.04), a new Guidance paragraph regarding raised median islands installed supplemental to an automatic gate to discourage road users from driving around a lowered gate should be added after P2.</p> <p>Agree – Adding a Guidance statement discouraging the use of two-way center left turn lanes in the immediate vicinity of grade crossings and recommending other treatments is acceptable, provided the “other treatments” are clearly identified and described. However, if two-way left turn lanes at grade crossings are extremely problematic, and the agency is aware of it, then perhaps it should propose it as a mandatory measure and not just a guidance.</p>
8A.08 – Adjacent Grade Crossings	NO	YES		Agree – However, if one of the missions is to promote uniformity and a more concise manual, references to other manuals may cause confusion and be time consuming for the reader. If the information in Part 3.1.11 of the “AREMA Communications & Signals Manual” is not lengthy, this language should be included in the MUTCD.
8A.09 – Grade Crossings Elimination	NO	YES	YES (IN PART)	<p>Agree – The majority of Section 8A.05 - Grade Crossing Elimination is reasonable and appears to be appropriate.</p> <p>Disagree - Deletion of a Guidance paragraph recommending engineering studies indicating that potential grade crossing elimination should be conducted for every grade crossing, seems absurd and unreasonable. The deletion opens the door to lawsuits against the agency for lack of</p>

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				engineering studies; especially when prior manuals contained this paragraph. Eliminating these engineering studies would be taking a step back in operational practices and opening the door to future lawsuits resulting from crashes and congestion that could have been prevented with appropriate engineering studies.
8A.12 – Grade Crossings Within or In Close Proximity to Circular Intersections	NO	NO	YES	If agencies are provided with more flexibility in the engineering study and design of grade crossings near circulation intersection, there must be specific standards, guidelines, and procedures as to how the engineering studies and designs are conducted. This is for standardization purposes.
8A.14 – Temporary Traffic Control Zones	NO	YES		<p>Agree – If information that currently does not exist in the manual would be added to Section 8A.14, then it would be beneficial. However, if the Guidance paragraph regarding temporary traffic control zones that extend over grade crossings equipped with automatic gates provides the same information as the existing information, then it would be redundant and should not be added.</p> <p>Agree - Adding a new Guidance paragraph recommending the preparation of a traffic control plan when traffic is detoured over an existing grade crossing with passive warning, would allow an analysis of traffic safety during detours.</p>
8B.02 – Sizes of Grade Crossing Signs	NO	YES		Agree – Clarification that the sizes shown in Table 8B–1 are minimum sizes will provide clarity as to requirements of the sign size. Changing the minimum required size of a Yield sign at multilane conventional road grade crossings from 48"× 48" to 36"× 36" is acceptable if the smaller size is as visible as the larger sign to the road user.
8B.03 – Grade Crossing (Crossbuck) Sign (R15-1) and Number of Tracks Plaque (R15-2P) at Active and	NO	YES	YES (IN PART)	Agree – In Section 8B.03, upgrading an existing Option to a Standard Grade Crossing (Crossbuck) Sign (R15–1) and Number of Tracks Plaque (R15–2P) at Active and Passive Grade Crossings, to require a minimum of one Crossbucks sign on each highway approach to a gated highway-LRT grade crossing on a semi-exclusive alignment, will provide users with a better understanding as to the reason the gate is present.

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Passive Grade Crossings				<p>Agree - Revising existing Paragraph 5 will decrease the risks for road users and provide uniformity for multitrack crossings that would accommodate road users' expectancy. Thus, it would improve safety for road users.</p> <p>Agree – Revising existing Paragraph 5 to require the Number of Tracks plaque below the Crossbuck sign where there are two or more tracks at a grade crossing, regardless of the presence of automatic gates, is necessary to reduce confusion in road users and unnecessary risks. It would improve visibility as well and create uniformity for multitrack crossings that would accommodate the expectancy of the road user.</p> <p>Disagree with revising Paragraph 7 to reduce the requirement for retroreflective white material on the back of the Crossbuck sign to apply only to passive grade crossings. This is an inexpensive extra safety measure that should continue to be used; especially, in light of signals or warning lights suddenly malfunctioning.</p> <p>Agree – New Standard paragraphs regarding minimum lateral clearance between the edge of the Crossbuck sign and the face of a vertical curb, edge of traveled way, and/or edge of paved or surfaced shoulder, will promote consistency with Figure 8B-3 and Paragraphs 6, 7, and 8 of existing Section 8C.01.</p> <p>Disagree - A new Guidance statement recommending the Crossbuck sign to be at least 12 feet from the center of the nearest track. It should not be a Guidance but a Standard, so that the dimensions on Figure 8D-2 are formalized.</p> <p>Agree – A new Guidance paragraph recommending the mounting height to the center of Crossbuck signs to be approximately 9 feet and an Option to adjust the height based on local conditions and to accommodate signs below the Crossbuck sign, provided they do not affect the expectations of road users. Also, a minimum height should be provided, so there is uniformity and is more objective.</p>
8B.04 – Crossbuck Assemblies with	YES		YES (IN PART)	<p>Agree – With (1) the recommendation of the use of a STOP sign at the Crossbuck Assembly where a passive grade crossing is located at the stem of a T-intersection with inadequate clear storage area between the tracks</p>

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YIELD or STOP Signs at Passive Grade Crossings				<p>and the parallel roadway, and that if a STOP sign is installed, consideration should also be given to installing a YIELD sign at the highway intersection; (2) the requirement that a Yield sign and TO TRAINS (R15–9P) supplemental plaque when Crossbuck Assemblies are used within the limits of a highway-highway intersection controlled by a traffic control signal not interconnected with the grade crossing and not preempted by the approach of rail traffic; (3) the prohibition of the use of a Stop sign with the Crossbuck Assembly in this situation; (4) revising existing Paragraph 10 regarding YIELD and STOP sign mounting heights on Crossbuck Assemblies to require at least 5 feet in rural areas and at least 7 feet in areas where parking or pedestrian movements are likely to occur; and (5) the clarification of the lateral clearances from a curb or edge of traveled way.</p> <p>These proposals would provide practitioners and the manual with consistency and additional information for crossings. Ultimately, they would improve and promote the safe and efficient utilization of roads that are open to public travel.</p> <p>Disagree - With revising the existing Standards regarding the vertical strip of retroreflective white material on a Crossbuck support to clarify that a white retroreflective strip wrapped around a round support satisfies the requirement as long as the round support has an outside diameter of at least 2 inches. Instead of providing clarity regarding the requirements of the white retroreflective strip, it would create inconsistency in message and placement of the tape, and would violate the expectancy of the road user, resulting in a more unpredictable response.</p>
8B.05 – Use of STOP (R1-1) or YIELD (R1-2) Signs without Crossbuck Signs at Highway-LRT Grade Crossings	NO	YES		<p>Agree – However, if there's an engineering study that determines that passive devices would provide adequate control, then the manual should be amended to include said passive devices, so as to maintain consistency and uniformity.</p>
8B.08 – TRACKS OUT OF SERVICE Sign (R8-9)	NO	YES		<p>Agree – The proposal in Section 8B.08 TRACKS OUT OF SERVICE Sign (R8–9) allowing warning signs such as Low Ground Clearance Crossing (W10–5) and Skewed Crossing (W10–12) to be left in place after tracks are taken out of service to warn road users about physical roadway conditions that are still present is appropriate provided that the signs be removed and</p>

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				<p>not forgotten once conditions have changed. Otherwise, these signs become old, forgotten, and bottom line, a liability to the agency.</p> <p>Agree – with two new Standards requiring that Emergency Notification System (I-13) signs be retained at grade crossings that are out of service until the tracks are removed or covered. This would ensure a contact number is available for road users to reach is there's a safety concern.</p>
8B.16 – Low Ground Clearance Grade Crossing Sign (W10-5)	NO	YES		Agree – However, it should not be an option, but a standard for the safety of road users.
8C.06 – Dynamic Envelope Markings	NO	YES	YES (IN PART)	<p>Agree - In Section 8C.06 Dynamic Envelope Markings, the deletion of the Support statement describing dynamic envelope markings because the definition is covered in Part 1, is acceptable, provided that reference is made to this in this Section. It's more comprehensive this way, and easier for the reader to follow.</p> <p>Disagree – The revision of the existing Standard statement to allow dynamic envelope markings to be up to 24 inches wide might cause confusion to road users' expectations. If they're accustomed to markings being a certain size and enter a jurisdiction where the size has been altered, they might not know what it represents. The size should be the same and standard to create uniformity. Too much is left up to the agencies to determine by revising this Standard statement. Studies to improve visibility and provide easier maintenance should be conducted, and then implemented by all the same way.</p> <p>Agree – With adding a new Option paragraph and allowing white crosshatching lines to be placed on the highway pavement within the dynamic envelope as a supplement to the 4-inch normal solid white lines and in areas adjacent to the dynamic envelope where vehicles are not intended to stop or stand. This together with a figure with examples providing agencies with additional options, will serve to discourage vehicles from stopping in the approach to the dynamic envelope. Thus, increasing safety for road users.</p>

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8D.01 – Introduction	YES		YES (IN PART)	<p>Agree - Section 8D.01 Introduction will be beneficial to provide adequate vertical clearance in the vicinity of the tracks, and to formalize the dimensions shown in Figure 8D-2. This will increase visibility for road users, making it safer.</p> <p>Disagree – With elimination of the Support statement in existing Paragraph 15 regarding LRT typical speeds through semi-exclusive and mixed-use alignment because the statement is the only one that provides a specific speed in this section. Without it, Paragraph 16 would be irrelevant as 16 states, “when LRT speed is cited in this Part, it refers to the maximum speed at which LRT equipment is permitted to traverse a particular grade crossing.” Without the speeds stated in Paragraph 15, no other mention of specific speeds is made here. Also, it’s important to know the speeds in which LRT typically operate through grade crossings in semi-exclusive and mixed-use alignments.</p>
8D.02 – Flashing-Light Signals	NO	YES		<p>Agree – With Section 8D.02 Flashing-Light Signals, adding a Guidance statement, and an accompanying Support statement regarding the placement of the Number of Tracks plaque with respect to the flashing-light backgrounds, as well as the Crossbuck sign. Also, with adding a Guidance paragraph recommending that if flashing-light signals are used, at least one pair of flashing lights should be provided for each approach lane of the roadway. Finally, with a Guidance to provide uniform flashing light signals across the roadway. These three will promote uniformity and standardization in flashing light signals, which in turn, will promote the safe and efficient utilization of the roads as road users travel between jurisdictions. They also address the expectation of the road user, resulting in a more predictable response.</p> <p>Disagree with the following – not the concepts but that they are being “recommended” and not “mandated.” Guidance paragraphs recommending that where the storage distance for vehicles approaching a grade crossing is less than a design vehicle length, the Diagnostic Team should consider providing additional flashing-light signals aligned toward the movement turning toward the grade crossing. Also, disagree with the recommendation that the Diagnostic Team consider the use of additional flashing-light signals to provide supplemental warning to pedestrians. If the Diagnostic Team should consider providing additional flashing-light signals...then there’s a</p>

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				<p>reason for it. Diagnostic teams should take every measure to ensure the roads are as safe as reasonably possible. If these are optional, safe, and efficient utilization of roads open to public travel will be compromised.</p> <p>Agree - Deleting the last Standard statement in this section, as it is covered elsewhere. Avoids redundancy and compels efficiency.</p>
8D.03 – Automatic Gates	NO	YES		<p>Agree - In Section 8D.03 Automatic Gates, mandating a Standard requiring the width of the retroreflective sheeting on the front of the gate arm to be at least 4 inches. This would be beneficial for visibility and also uniformity.</p> <p>Agree – A Standard statement requiring that except for the continuously illuminated light at the tip of the gate, the left-most flashing gate light in each additional pair of lights flashes simultaneously with the left-hand light of the flashing-light signals, and the same with the righthand one. This would definitely provide not only uniformity in flashing patterns between the flashing-light signals and the flashing lights on the gate but would also decrease confusion for road users.</p> <p>Agree – With the location of the tip of the automatic gate arm when it is in the down position relative to the center of the nearest track, which would jive with the dimensions shown in Figure 8D–2. However, this should be standard and not recommended only. This would promote standardized location of the tip of the automatic gate arm. Likewise, the length, height, and position of the automatic gate arm, supporting the dimensions in Figure 8D-1 should be standard statements and not just recommendations. They would promote consistency and uniformity. Plus, they would be easily recognized by road users.</p>
8D.04 – Use of Active Traffic Control Systems at LRT Grade Crossings	NO	YES	YES (IN PART)	<p>Agree – “Section 8D.04 Use of Active Traffic Control Systems at LRT Grade Crossings” is a reasonable replacement for existing Sections 8C.03 and 8C.05. The title captures the essence of both existing sections.</p> <p>Disagree – With the different speeds offered in active traffic control system Standards for highway. Active traffic control systems with automatic gates should be required whether the maximum LRT operating speed exceeds 40 mph or is greater than 25 mph but less than 40 mph. For example, a road user (driver or pedestrian) will usually not be able to estimate the speed</p>

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				<p>difference between 35 and 40 mph, and will have an expectation that the automatic gate, for instance, will be present. If hypothetically, the LRT is traveling at 36 mph, it's possible and probable, the road user will expect the automatic gate, and if it is not there, a vehicle-train collision might occur – such as has been the recent trend. Uniformity is necessary here to increase the safety of road users and decrease accidents. The system of uniform traffic control devices must work in concert with the natural tendencies of the road user in the various high judgment situations that the road user will encounter.</p> <p>Agree – With a Guidance statement with a recommendation not to use a traffic control signal alone at locations that are not intersections and LRT speeds are above 20 mph. This would improve safety.</p>

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PART 9 TRAFFIC CONTROL FOR BICYCLE FACILITIES

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested text in Comments	Disagree with concept	Comments
9B.11 – Bicycles Use Ped Signal (R9-5)	NO	NO	YES	Agree with Turning Vehicles Yield to Pedestrians (R10-15) sign to remind drivers who are making turns to yield to pedestrians. However, there is also a need to include bicycles on this sign to remind drivers who are making turns to yield to bicyclists when a Class I or Class IV facility is to the right of a vehicle travel lane. This can be achieved by adding two additional options for this sign: 1) to include the bicycle symbol in addition to the pedestrian symbol; 2) to only include the bicycle symbol. The Left Turns Yield to Bicycles (R10-12b) sign does not address right turns.
9B.19 – Bicycle Jughandle Signs (R9-24, R9-25, R9-26, and R9-27 Series)	YES	NO	NO	Bicycle Jughandle Signs (R9-24, R9-25, R9-26, and R9-27 Series): The R9-24 through R9-27 signs do not appear to be in the Figures documents.
9B.21 – LEFT TURN YIELD TO Bicycle Sign (R10-12b)	NO	YES	YES	LEFT TURN YIELD TO Bicycles Sign (R10-12b): The application of these signs is very limited. Expand allowed uses.
9E.01 – Bicycle Lanes	YES	YES	NO	Line 33-40 p. 767 – Clarification is needed to determine whether shoulders at interchanges can be used to accommodate bicyclists. Utilizing interchange shoulders to minimize conflicts between bicyclists and motorists may be beneficial. Clarify if bicycle lanes to the right of an edge line are considered shoulder as a bikeway.
9E.01 – Bicycle Lanes	NO	NO	YES	Disagree with concept of “A portion of travel way shall not be established as both a shoulder and a bike lane.” The proposed MUTCD language is inconsistent with the California Highway Design Manual (HDM). HDM shoulder standards would need to be revised, or a Design Standard Decision Document (DSDD) for non-standard shoulder widths will be needed when converting shoulders to bicycle facilities. Not allowing bike lanes to be considered shoulders for emergency purposes may greatly hinder our ability to install bike lanes in many locations where signing and striping assist in increasing awareness that cyclists are present in the area. The default may become using the Bicycles Use Shoulder Only sign if a DSDD cannot be obtained for non-standard shoulder widths. Use of the Bicycles Use Shoulder Only sign does not provide the same level of awareness and potentially same level of safety as class II bikeway treatments such as additional signing and striping including buffers and green markings.

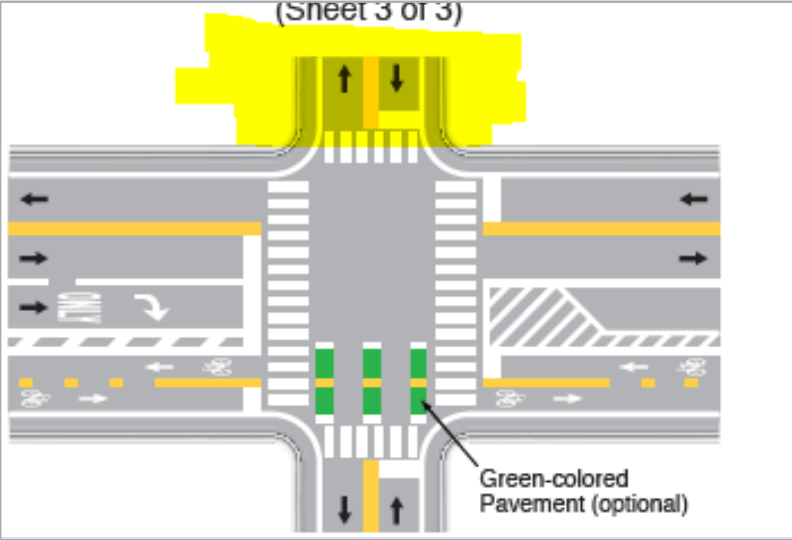
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9E.03 – Extensions of Bicycle Lanes through Intersections	NO	NO	YES	<p>The Standard (page 770, lines 21-22) states, “<i>Shared-lane markings or chevron markings shall not be used in bicycle lanes or bicycle lane extensions (see Section 9B.08).</i>”</p> <p>Caltrans recommends adding the following: “and shall not be used on shoulders or Separated Bikeways.”</p>
9E.04 – Bicycle Lanes at Driveways	NO	YES		<p>It is not clear if the proposal is intended to encompass all “driveways”, whether in private ownership or not. If so, proposal could be problematic, in that it could result in an excess of solid, alternating with dotted, lines in areas with frequency of driveways, potentially confusing bicyclists and/or motorists and diminishing the effectiveness of the markings.</p>
9E.05 – Bicycle Lanes at Circular Intersections	NO	YES		<p>Retains the concept of maintaining prohibition of bicycle lanes in circular intersections, but to the extent the new sections may be interpreted as sanctioning liberal use of bicycles on sidewalks, the myriad conflicts/risks inherent in such usage should be stressed. e.g., the AASHTO bicycle facilities development guide cited in the proposed text, sets forth in Ch. 3 a detailed list of potential risk issues presented by sidewalk bicyclists. Also, the AASHTO guide, given its publication year, does not address the presence of electric (often rental) scooters, but they should be referenced as well, as potential conflicts.</p>
9E.06 – Buffer-Separated Bicycle Lanes	NO	YES		<p>In Support section, change the two occurrences of “can reduce” to “may reduce”. The former carries a suggestion that without the buffer separation, accidents are foreseeable, whereas the “may” term lacks the same inference and is more aligned with the discretionary element of whether to employ the buffers or not.</p>
9E.06 – Buffer-Separated Bicycle Lanes	NO	YES	NO	<p>Contradictory statement. Paragraph 3, item B says, “A broken single white line along one or both edges of the buffer space where crossing is allowed, with a solid white line along the other edge of the buffer space.” If a broken white line is provided on both edges, then you can’t put in a solid white line along “the other edge” This is a shall, so needs to be clearer to avoid confusion and liability.</p>
Figure 9E-7 (3 of 3) – Example of Lane Markings for Separated Bicycle Lanes	NO	NO	YES	<p>For Figure 9E-7 (3 of 3), the direction of traffic arrows shows the wrong direction.</p>

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9E.07 – Separated Bicycle Lanes	NO	NO	YES	<p>The Guidance (page 772, lines 39-40) reads, “<i>BIKE LANE (R3-7) signing should be used where a separated bicycle lane may be confused for a general purpose lane.</i>”</p> <p>What is the purpose of sign R3-7 here? Also, we recommend moving this statement to Section 9D.</p>
9E.08 – Counter-Flow Bicycle Lanes	NO	YES		<p>Two consecutive sentences in the Support” section appear to contradict each other: “Counter-flow bicycle lanes are one-directional...” is followed by the next sentence stating, “Counter-flow bicycle lanes establish two-way traffic on a roadway.” Suggest verbiage in one or both sentences be modified to eliminate the appearance of being irreconcilable.</p>
9E.09 – Shared-Lane Marking	NO	YES		<p>Agree with the concept that “Shared-Lane Markings should not be placed on roadways that have a speed limit above 40 mph or more. (P. 775, line 12-13), however, this section should go further to specify where shared-lane markings are/are not appropriate. Caltrans contextual guidance recommends Class III facilities (shared-lane markings) under 30 mph where Design Year ADT is less than 5,000, except in rural developing corridors where a shoulder may be designated as a Class III. Would suggest this section provide more context on where Class III are appropriate, including vehicular volume levels, and underscore that Class III facilities are not appropriate for</p>

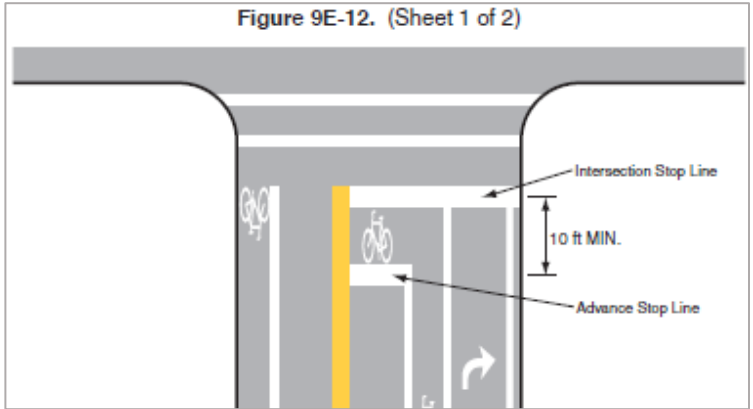
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				most all ages/abilities users except in very specific cases (i.e. low speed/low volume roadways).
Figure 9E-10 – Example of Two-Stage Bicycle Turn Box Locations in Intersections	YES	NO	NO	There appears to be an error in the figure with a right-turn arrow and through arrow in the middle of the intersection.
9E.10 – Shared-lane Markings for Circular Intersections	NO	YES		The Support section overemphasizes bicycle use on sidewalks, when both the title and the Federal Register notice description does not direct primary focus on sidewalk use. Also, the citation to the AASHTO publication infers that use of bicycles at circular intersections is somehow standard, but that is not the case. The AASHTO guidance, in addition to the potential risks it sets out in Ch. 3, referenced above, also contains cautionary language such as, “Utilizing or providing a sidewalk as a shared use path is undesirable... sidewalks generally are not acceptable for bicycling”. The AASHTO publication, in the section, “Designing for Bicyclists to Traverse Roundabouts on the Sidewalk” focuses primarily on bicycle ramps to and from the circular intersections, and very minimally on designing sidewalks for bicycle use. In sum, this section should be revised to accurately portray the AASHTO publication, and reference other shared uses (pedestrians, scooters, wheelchairs).
9E.11 – Two-Stage Bicycle Turn Boxes	NO	YES		<p>1. Recommend expanding the description of turn boxes and how they work. FHWA’s July 2017 Interim Approval regarding the boxes contains a much clearer background for “Support”: “[Two-stage bicycle turn boxes are] traffic control devices to facilitate alternative methods for bicyclists on the curb side of traffic to turn left (or right if the facility is located to the left of the general travel lanes) without either being able to merge across a physical barrier or facing a difficult merge across multiple lanes of potentially higher-speed traffic. The two-stage bicycle turn box might also encourage bicyclists to stay within on-street bicycle facilities rather than using the sidewalks and crosswalks around intersections, thus reducing conflicts with pedestrians.</p> <p>The two-stage bicycle turn box is an area set aside for bicyclists to queue to turn at a signalized intersection outside of the traveled path of motor vehicles and other bicycles. When using a two-stage bicycle turn box to make a left turn, a bicyclist would proceed on a green signal indication to the turn box on the right-hand side of the travel lanes, and then turn left within the turn box</p>

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				<p>and wait for the appropriate signal indication on the cross street to proceed. Two-stage bicycle turn boxes can also be used with a left-side bicycle facility to facilitate bicyclists turning right. In addition to mitigating conflicts inherent in merging across traffic to turn, two-stage bicycle turn boxes reduce conflicts between bicycles and pedestrians and separate queued bicyclists waiting to turn from through bicyclists moving on the green signal."</p> <p>2. The proposed text refers to Section 9B.17 as containing information on the related signing, but it is <u>Section 9B.18</u> that currently contains that information.</p>
9E.12 – Bicycle Boxes	NO	NO	YES	"At intersections where a discernible number of conflicts between vehicles turning across through bicycles in a bicycle lane has been demonstrated during the green interval of a signal, the bicycle box should not be used." Clarify intent/meaning of this text.
Figure 9E-12 – Example of an Intersection Bicycle Box	NO	NO	YES	The Figure does not have a title.
9E.12 – Bicycle Box	NO	NO	YES	<p>The Standard (page 17, line 13) reads, "<i>If used, green-colored pavement shall be used in the full limits of the bicycle box.</i>"</p> <p>What is meant by full limit? Caltrans recommends that 'full limit' is defined.</p> 
9E.13 – Shared-Use Paths	NO	NO	YES	The Guidance (page 778, lines 29-33) is deleted.

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				California feels that it is necessary to keep this Guidance. The note mentions that P3 is moving to Section 9E.17, but the Guidance does not exist in 9E.17.
9E.14 – Bicycle Route Pavement Markings	NO	YES		The term “overuse” should be defined. No comments on any other part.
9E.15 – Bicycle Detector Symbol	NO	NO	YES	<p>The Option (page 779, line 23) reads, “<i>The bicycle detector symbol (See Figure 9C-16) may be placed on the pavement...</i>”</p> <p>There is not a Figure 9C-16 provided in the Part 9 Combined Figures document. Does this Option refer to Figure 9E-16?</p>
9E.17 – Raised Devices				The phrase, “to supplement the presence of green-colored pavement” appears misplaced, or if it were intended, confusing. Recommend substituting “in order to differentiate the channelizing devices from the presence of green-colored pavement”.
Figure 9-7-2 Examples of Applications of Bicycle Jughandle Signs (Sheet 2 of 2)	NO	YES	NO	In the Examples of Applications of Bicycle Jughandle Signs, the intersection appears to have a diagonal crossing from the jughandle bike lane to the bike path. Clarify guidance on diagonal crossings for bike facilities through intersections in MUTCD text.