TEXAS TRANSPORTATION COMMISSION

ALL Counties

MINUTE ORDER

ALL Districts

The Texas Transportation Commission (commission) finds it necessary to adopt amendments to §25.1, relating to Uniform Traffic Control Devices, to be codified under Title 43, Texas Administrative Code, Part 1.

The preamble and the adopted amendments, attached to this minute order as Exhibits A and B, are incorporated by reference as though set forth verbatim in this minute order, except that they are subject to technical corrections and revisions, approved by the General Counsel, necessary for compliance with state or federal law or for acceptance by the Secretary of State for filing and publication in the *Texas Register*.

IT IS THEREFORE ORDERED by the commission that the amendments to §25.1 are adopted and are authorized for filing with the Office of the Secretary of State.

The executive director is directed to take the necessary steps to implement the actions as ordered in this minute order, pursuant to the requirements of the Administrative Procedure Act, Government Code, Chapter 2001.

Submitted and reviewed by:

Carol K. Rawson, P.E.

Director, Traffic Operations Division

Recommended by:

Executive Director

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Minute Number | Date Passed

Adoption Preamble

The Texas Department of Transportation (department) adopts amendments to §25.1, concerning Uniform Traffic Control Devices. The amendments to §25.1 are adopted with changes to the proposed text as published in the July 15, 2011 issue of the Texas Register (36 TexReg 4544).

EXPLANATION OF ADOPTED AMENDMENTS

Under Transportation Code, §544.001, the Texas Transportation Commission (commission) is required to adopt a manual for a uniform system of traffic control devices. The statute further states that the manual must be consistent with the state traffic laws and to the extent possible conform to the system approved by the American Association of State Highway Transportation Officials. The edition of the manual that is currently effective is the 2006 Revision 1 version.

The Texas Manual on Uniform Traffic Control Devices (MUTCD) is revised periodically to maintain substantial conformance with the National MUTCD to allow use of a single manual for local, state, and Federal-aid highway projects. The National MUTCD defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets and highways open to public travel. The National MUTCD is published by the Federal Highway Administration (FHWA) under Title 23,

Code of Federal Regulations, Part 655, Subpart F. The 2011 version of the Texas MUTCD is available online at the department's website, www.txdot.gov. The National MUTCD is available online at www.fhwa.dot.gov.

Amendments to §25.1 adopt the 2011 Texas MUTCD by reference. The FHWA completed amendments to the National MUTCD in 2009 and Texas is required to incorporate these changes into the state manual by January 15, 2012. The department worked with FHWA to allow some variations from the National MUTCD. Due to the implementation deadline, the department determined that it would be best for the purposes of these rules to post the manual for public review and inspection with the language recommended for the variations, even though the variations had not yet been approved by FHWA. This provided interested individuals the opportunity to comment on the department's recommended language as compared to the language in the National MUTCD.

The FHWA accepted the department's language for three of the issues in a previously issued opinion letter dated June 2, 2010 (2C.06 Horizontal Alignment Warning Signs) and a letter to the department dated July 27, 2011 (Section 2C.63 Object Marker Design, and Section 2D.43 Street Name Signs). Therefore, the language proposed in the Texas MUTCD on those issues remains the same.

As to the other three issues, the FHWA required changes to the Texas MUTCD, as described in this paragraph. 1) Section 2C.07 Horizontal Alignment Signs - The FHWA did not approve a proposed exception to the use of some warning devices at horizontal curves if reflective raised pavement markers were used and, therefore, the footnote in Table 2C-5 reverts back to language in the National MUTCD. 2) Section 2E.37 Exit Gore Signs – The FHWA required that the full-size exit gore sign be included in the Texas MUTCD. The department had originally proposed to remove this sign from the manual. 3) Overhead Down Arrows for Option Lane Exits in Chapter 2E Guide Signs-Freeways and Expressways - The FHWA allowed the Option Lane Down Arrow to remain in the Texas MUTCD if language is added specifying that they may not be used for new or reconstructed facilities. The department added this requirement to the language.

Amendments to §25.1 remove the existing language in subsection (a) concerning public inspection of a copy of the Texas MUTCD at the Secretary of State's Office. As part of the rule process, the department filed a copy of the manual with the Secretary of State and the public had access it at the Secretary of State's Office; additionally, the department provided access to the manual for inspection. The Texas MUTCD was available for review on the department's web site and at the department's Traffic

Operations Division office at 150 East Riverside Drive in Austin, Texas.

Amendments at adoption include an update to the building address for the Traffic Operations Division.

COMMENTS

The proposed amendment was published in the July 15, 2011 issue of the Texas Register (36 TexReg 4544). Written comments on the proposed amendments were received from Ms. Jennifer Shepard, of the Alliance for I-69 Texas; Mr. Wesley M. Burford, P.E., of the Central Texas Regional Mobility Authority (CTRMA); Mr. Douglas D. Hawthorne, of Texas Health Resources; Ms. Shelley Tobey, RN, MS, CENP, of Texas Health Presbyterian Hospital Flower Mound; Ms. Dinah S. Welsh of Texas EMS Trauma & Acute Care Foundation; Ms. Denise Rose, J.D., of the Texas Hospital Association; Mr. David Hauser of Light Guard Systems, Inc.; Mr. Richard Gumtau, P.E., of the Texas Engineering Extension Service; Ms. Natalie Bettger of the North Central Texas Council of Governments (NCTCOG); Dr. Gene Hawkins; Mr. Howard McCann, P.E., of the Texas Engineering Extension Service; and Mr. Ronnie Bell, P.E., of the City of Austin.

The department conducted a public hearing in Austin on August 29, 2011 on the proposed amendment. The department received

comments at the public hearing from Mr. Jeff Royston and Ms. Dinah S. Welsh of the Texas EMS Trauma & Acute Care Foundation.

Comment: The Alliance for I-69 Texas provided a written comment and Mr. Jeff Royston provided an oral comment at the public hearing supporting the inclusion of the state's name on interstate shield signs in Texas. Additionally, Mr. Royston provided a copy of a letter from U.S. Senator David Vitter to the United States Department of Transportation Secretary Ray LaHood requesting that the language in the National MUTCD be revised to indicate that inclusion of the state name in the interstate shield is the preferred design.

Response: The department concurs with these comments and will include the language from the National MUTCD that allows the option of including the state name within the interstate shield in Section 2D.11.04.

Comment: The CTRMA provided a comment Supporting the department's addition of language providing Guidance for "Pay by Mail" tolling signage in Section 2G.16 and suggests additional language be added to the Texas MUTCD clarifying this type of video tolling in more detail.

Response: The department declines to address "Pay by Mail"

tolling in more detail because this is a relatively new concept using technology that is continuously being refined and improved.

Comment: The CTRMA provided a comment supporting the department's addition of language allowing the word "Toll" within route markers instead of a separate plaque in Section 2F.13.04.

Response: The department concurs with this comment and maintains this language in the Texas MUTCD.

Comment: CTRMA suggests the "Express Lane" definition in Section 2G.16 remain unchanged from the National MUTCD and that toll plaques be incorporated in a manner that reduces significant changes in signing if a toll policy change related to High-Occupancy Vehicle lanes (HOV) is implemented after opening of the facility.

Response: The department declines to accept this suggestion. The department developed definitions to clearly distinguish the difference between "Toll Lanes" (a facility where all users are charged a toll) and "Express Lanes" (a facility where not all users are charged a toll). These definitions were based on research from the Texas Transportation Institute and concurrence

with the Texas Division of FHWA. The definitions were developed and have been in place in Texas for several years.

Comment: The CTRMA provided a comment that there is a conflicting message on the signs for a toll facility in Figure 2G.21A. An "HOV 2+ NO TOLL" sign included at the entry point to the toll lane in the figure contradicts with the definition of a toll lane which says all users are charged a toll.

Response: The department concurs with this comment and will remove the contradictory legend from the sign in Figure 2G-21A.

Comment: The CTRMA provided a comment regarding the use of the "LEFT LANE" panel at the bottom of a guide sign as discussed in Section 2G.10. The CTRMA suggests use of a "LEFT" plaque at the top of the sign instead.

Response: The department believes no change is necessary to accommodate the comment. Section 2G.10.27 allows either the "LEFT LANE" panel or the "LEFT" plaque when an entry point is on the left-hand side of the general-purpose lanes.

Comment: The CTRMA provided a comment relating to Figure 2G-22T and the use of an "EXIT ONLY" panel observing that language in Section 2G.10 does not allow use of the word "EXIT" on signs for

entry points to preferential lane.

Response: The department concurs with this comment and will replace the "EXIT ONLY" panel in Figure 2G-22T with the panel used in the National MUTCD which consists of the word "ONLY" with a downward arrow. This change will allow the department to also use the word "ENTRANCE" instead of "ACCESS" for preferential lane entry points which is consistent with the National MUTCD. This change will result in modifications to Section 2G.10 and several figures in Chapter 2G (Figures 2G-2, 2G-5 through 2G-10, 2G-13, 2G-15, 2G-18, 2G-21T, 2G-21TA, 2G-22T, 2G-23T, 2G-24T, and 2G-24TA).

Comment: The CTRMA provided a comment recommending that language be added to the Texas MUTCD to allow flexibility in the placement of guide signs and dynamic message signs and to allow deviations from the requirements for the legend on guide signs to meet project specific intentions.

Response: The department declines to accept this recommendation since language exists in Section 1A.09.03 that specifically allows a decision to use a particular device at a particular location to be made on the basis of either an engineering study or the application of engineering judgment.

Comment: Four written comments and one oral comment were received from the medical community supporting the requirement in Sections 2I.02 and 2I.03 that hospitals "licensed under Chapter 241 of the Texas Health and Safety Code" be eligible for signing.

Response: The department concurs with these comments and the definitions for hospital remains the same as in the proposed version.

Comment: The Texas Hospital Association and the Texas EMS Trauma & Acute Care Foundation provided written comments suggesting that language be added to the Texas MUTCD specifically stating that a "TRAUMA CENTER" plaque be used with the hospital symbol sign in Section 2I.03.04 when a hospital is officially designated as a Texas Trauma Facility.

Response: The Texas MUTCD does not prevent the "TRAUMA CENTER" plaque from being displayed with the hospital symbol sign (a white "H" on a blue background). Therefore, a change is not required.

Comment: The Texas Hospital Association and the Texas EMS Trauma & Acute Care Foundation provided written comments suggesting elimination of the Emergency Medical Services (EMS) symbol (also

known as the "Star of Life") sign in Section 2I.02 since it "traditionally represents paramedics, ambulances, or other EMS personnel." Ms. Dinah S. Welsh of Texas EMS Trauma & Acute Care Foundation also provided oral comments at the public hearing expressing this same viewpoint.

Response: The department declines to accept this suggestion. The Texas MUTCD provision is consistent with the National MUTCD regarding the EMS symbol sign. The EMS symbol has been in the National MUTCD since the 1970s when it was originally registered under the Trademark Act of 1946 by the National Highway Traffic Safety Administration. Section 2I.02, paragraph 16 requires that the EMS symbol sign must be supplemented by a plaque identifying the type of services provided. The intent of the department is to use the hospital symbol sign for qualified hospitals and the EMS symbol sign with the "EMERGENCY MEDICAL CARE" text plaque for qualified free-standing emergency medical care facilities. Because of its designation as a plaque, the "EMERGENCY MEDICAL CARE" text plaque must be used in conjunction with a parent sign, such as the EMS symbol sign. The department will keep the current Emergency Medical Services (EMS) symbol sign in the Texas MUTCD, as it is in the National MUTCD, until another symbol for those types of service is developed. Before a new symbol may be considered for use on public roads, it must be approved by the FHWA and the FHWA requires that a symbol must

be clearly understood by the general public before it will approve its use. The department welcomes the collaboration of the medical community and FHWA to develop, evaluate, and implement a new symbol for emergency medical services.

Comment: Mr. David Hauser submitted a written comment regarding a provision in Section 4N.02, paragraph 09 allowing a yellow light to be visible to pedestrians on a crosswalk to indicate that the In-Roadway Warning Lights (IRWL) are in fact flashing after they are activated. He cited a "false sense of security for pedestrians" as a reason not to allow the optional yellow light and provided a letter from the Director of the City and County of Honolulu Department of Transportation Services concurring with this position.

Response: The department declines to accept this suggestion. The department believes this is an issue that should be addressed by the FHWA and the National Committee on Uniform Traffic Control Devices (NCUTCD) after additional research and analysis is conducted to determine if there is a safety issue.

Comment: Mr. Hauser provided a comment strongly suggesting that a paragraph be added to Chapter 4N of the Texas MUTCD stating that "the IRWL's signal modules be installed above grade level so as not to become obscured by dirt, gravel, muddy water, or

other road debris that is nearly always present on roadways."

Response: The department declines to accept this suggestion. This is an installation issue that should be addressed by the manufacturer of the device when giving installation instructions to purchasers of the device.

Comment: Written comments regarding Part 6 of the Texas MUTCD were submitted by Mr. Richard Gumtau of the Texas Engineering Extension Service. Mr. Howard McCann of the Texas Engineering Extension Service also submitted a letter supporting Mr. Gumtau's comments and suggested that the department give full consideration to his submitted recommendations.

Comment: Mr. Gumtau provided a comment that Table 6C-l is confusing because people often use the posted speed column for sign spacing on all highways without looking at the bottom line for expressways or freeways. Mr. Gumtau suggests having one table titled "Conventional Road Suggested Sign Spacing" and another table titled "Expressway and Freeway Suggested Sign Spacing." This suggestion also applies to Table 6H-3. This comment was restated in writing by Mr. McCann along with his own similar observations of students' understanding of the subject matter in training courses he has taught.

Response: The department does not agree that the columns are confusing but has revised Tables 6C-1 and 6H-3 to make the last row larger to draw more attention to the expressway and freeway spacing requirements.

Comment: Mr. Gumtau provided a comment that the asterisks below Table 6C-l (Suggested Advance Warning Sign Spacing) are confusing. He notes that for the single asterisk, he considers the "ROAD WORK AHEAD" to be the beginning of the advanced warning and tells his students that this sign should be at least 1,500 feet in advance of the work area for those speeds. Students question if the contractor identification, obey warning signs, work zone speed signs, etc. would be the first sign. The double asterisk is mute because all Typical Applications show 1 mile advanced warning. The commenter suggests that the wording for the single asterisk explanation be revised to "Distances between signs should be increased to have the ROAD WORK AHEAD sign provide at least 1,500 feet of advanced warning" and that the wording for the double asterisk be "Distances should be adjusted so that the ROAD WORK AHEAD sign provides at least 1/2 mile of advanced warning." This comment was also restated in writing by Mr. McCann.

Response: The department concurs with these comments and will add relevant references to the footnotes. The first footnote

for Table 6C-1 is from Section 6C.04, paragraph 07 and the second is from Section 6C.04, paragraph 05. These references will address the spacing issue.

Comment: Mr. Gumtau recommends that Figure 6C-2 be titled "Tapers and Buffers for Multi-lane Roads" because the one-lane, two-way taper is not shown on this figure and has some distinctive differences.

Response: The department declines to adopt this recommendation. Figure 6C-2 was adopted without modification from the National MUTCD. While the figure depicts a multilane road, some of the tapers and buffers could apply to two-lane, two-way roadways. It would be misleading to accept the recommended figure title. Figure 6C-3 does, however, contain the distinctive "one-lane, two-way traffic taper." The department will, therefore, add a Note to Figure 6C-2 stating "See Figure 6C-3 for an example of a one-lane, two-way traffic taper not shown here."

Comment: Mr. Gumtau provided a comment that Section 6C.06 reads like it pertains to all activity areas, but it pertains mostly to multilane roads. The buffer or safe stopping distance in front of the work space on a two-lane, two-way road is not an Option. It is Guidance and this section needs to identify the difference.

Response: The department disagrees with this comment and declines to make the requested revisions. Section 6C.06 discusses "Activity Areas," which include the work space, traffic space, and buffer space. Two-lane, two-way roadways have each of these and longitudinal buffers can be applied as a safety strategy in front of work spaces, at the edge of a road, or on shoulders as shown on Figures 6C-2 and 6C-3, and on Figures 6H-6, 11, 13, 16, and 18.

Comment: Mr. Gumtau recommends that Section 6C.06, paragraph 10 be changed from an Option to a Guidance statement to give errant drivers an opportunity to avoid a head-on crash. A single line of channelizing devices between opposing vehicles in the same lane is not a safe temporary traffic control (TTC).

Response: The department agrees with the intent of the recommendation to form traffic islands with the longitudinal buffer space when separating opposing road user flows. The language in Section 6C.06, however, is adopted without modification from the National MUTCD. Buffer islands as described are shown on the Typical Applications (Figures 6H-24, 31, and 32).

Comment: Mr. Gumtau provided a comment that Tables 6C-4 and 6H-4

confuse students when they are working on one-lane, two-way problems. The only column on these tables that applies to one-lane, two-way situations is the column on tangent spacing of devices. He recommends adding the words "for Multi-Lane Roads" to the title of the table, identify the taper length heading as merging taper lengths, and defining W as the width of the offset or lane. Mr. Gumtau recommends reducing Figure 6C-2 to 3/4 of a page and placing Texas MUTCD Table 6C-4 below it to place multi-lane information on one page.

Response: The department declines to accept this recommendation. The department notes that some information in Table 6C-4 applies to one-lane, two-way scenarios and, therefore, it would be misleading to rename the table as Multi-Lane Roads. In the department's opinion it is more appropriate to keep Tables 6C-3 and 6C-4 on the same page as they both relate to tapers, with Table 6C-3 referring to Table 6C-4 for necessary information to calculate various taper lengths.

Comment: Mr. Gumtau recommends that Section 6C.08, paragraph 07 include a statement that multiple merging tapers should have at least a 2L tangent between them and adjoining merging and shifting tapers should have at least 1/2L tangent between them. These tangent sections are only shown on Figures 6H-37, 6H-39, etc.

Response: All Typical Applications that have multiple lane closures or closures combined with shifts on multilane roadways (Figures 6H-32, 37, 39, and 45) contain a tangent section between the tapers, as suggested. The department will add a Guidance statement to Section 6C.08 requiring the tangent.

Comment: Mr. Gumtau provided a comment that Section 6C.08, paragraph 05 only applies to merging, shifting, and shoulder tapers or the tapers related to "L." It does not apply to the downstream and two-lane, two-way tapers and the line should be stated so to avoid confusion.

Response: The department concurs with this comment and will clarify the statement in Section 6C.08, paragraph 05 by adding the text "merging, shifting, or shoulder" before the term "taper."

Comment: Mr. Gumtau provided a comment that Section 6C.08, paragraph 09 states that shifting tapers should have a length of approximately 1/2L, but Table 6C-3 says at least 1/2L. He asks if the shifting taper is "approximately" 1/2L or a "minimum" of 1/2L. Mr. Gumtau suggests that the Texas MUTCD needs to avoid these differences which confuse users and invite lawyers to make issues.

Response: The department concurs and will modify the language in Section 6C.08, paragraph 09 to indicate a distance of "at least" 1/2L.

Comment: Mr. Gumtau provided a comment that Section 6C.08, paragraph 13 says that devices should be spaced at approximately 20 feet in a downstream taper. He notes that a 50 foot taper and 20 foot spacing does not make an identifiable taper. He recommends that this line state "devices spaced in 5 equal spaces."

Response: The department declines to adopt any changes related to this comment. The language the comment refers to is adopted from the National MUTCD without modification. It is the opinion of the department that a downstream taper should not be defined by a minimum number of channelizing devices as the taper width and length may vary. While a single lane taper of 50 feet may result in only 3 channelizing devices, this should be sufficient to indicate to motorists that the lane is open to travel.

Comment: Mr. Gumtau provided a comment that Section 6C.08, paragraph 15 regarding a one-lane, two-way taper should be revised. He recommends that this line state "devices spaced in 5 equal spaces."

Response: The department declines to adopt any changes related to this comment. The language the comment refers to is adopted from the National MUTCD without modification. It is the opinion of the department that a downstream taper should not be defined by a minimum number of channelizing devices as the taper width and length may vary. While a single lane taper of 50 feet may result in only 3 channelizing devices, this should be sufficient to indicate to motorists that the lane is open to travel.

Comment: Mr. Gumtau recommends that on Figure 6C-3 that the buffer space before the downstream taper be eliminated. He notes that Figure 6H-10 does not show this buffer and the difference between the two figures can be confusing. Mr. Gumtau suggests that the downstream taper should be identified as Optional. He adds that without the Optional identification, users often think that it is required.

Response: The department concurs that Figure 6H-10 does not specify a downstream buffer and, therefore, it is not required. The department will label the downstream buffer in Figure 6C-3 as Optional. Alternatively, it is not clear whether the downstream taper in Figure 6H-10 is Optional since it is not labeled as such in the National MUTCD. Allowing it to be Optional in the Texas MUTCD would make it less prescriptive than

the National MUTCD. It is the opinion of the department that a good practice for this type of temporary traffic control is to use channelizing devices to guide motorists back to the appropriate lane downstream of the lane closure and, therefore, no change will be made to the downstream taper in Figure 6H-10.

Comment: Mr. Gumtau provided a comment that Figure 6C-3 is confusing. He recommends that this figure be reduced to 3/5 size with an appropriate table of information below it and placed on a page opposite Figure 6C-2 and titled "Tapers and Buffers for One-way, Two-lane Traffic Control."

Response: Figure 6C-2 was adopted without modification from the National MUTCD. While the figure depicts a multilane road, some of the tapers and buffers could apply to two-lane, two-way roadways, so it would be misleading to change to the recommended figure title and the department declines to adopt this recommendation. Figure 6C-3 does, however, contain the distinctive "one-lane, two-way traffic taper." The department will, therefore, add a Note to Figure 6C-2 stating "See Figure 6C-3 for an example of a one-lane, two-way traffic taper not shown here."

Comment: Mr. Gumtau provided a comment that Section 6C.13 requires the "PILOT CAR FOLLOW ME" sign to be mounted on the

rear of a vehicle. He notes that in work zones this sign is often mounted on the tailgate of small pickups. The 2006 Texas MUTCD required signs on vehicles to be 4 feet above the road. With the sign on the tailgate, the only driver that can see the sign is the first driver behind the pilot car vehicle. He recommends that the best place for the sign is to be hinged to the top of a vehicle and supplemented with flashing lights or rotating lights allowing for more than the driver of the first vehicle to see the sign and allow the owner to fold down the sign when not in use. Mr. Gumtau notes that Section 6F.58 says that this sign shall be mounted in a conspicuous position on the rear of the vehicle. The sign on the tailgate of a pickup is only conspicuous to the first driver. He recommends that both sections of the Texas MUTCD require the sign to be mounted on the vehicle at a minimum height of 7 feet and not specify the rear of the vehicle.

Response: The department declines to make the suggested changes to Section 6C.13. The requirement from the 2006 Texas MUTCD for the pilot car sign to be 4 feet above the road has not been added to the 2011 Texas MUTCD due to the limited visibility of the sign. The department has concerns, however, that requiring the sign to be 7 feet above the road may result in the sign obscuring high intensity lighting required on the vehicle.

Comment: Mr. Gumtau provided a comment that in Section 6D.01, paragraph 19 closely spaced channelizing devices should be adequate to separate pedestrians from vehicles and that the recommended barrier is excessive and an unnecessary cost. He notes that in many places where there is no TTC zone, only a curb separates vehicles from pedestrians and that paragraph 26 of Section 6D.01 adequately covers this issue.

Response: The department declines to make the recommended change. Section 6D.01, paragraph 19 provides Guidance that "consideration should be given" to using barriers to separate vehicles from pedestrians whenever pedestrian paths are rerouted closer to vehicle paths. Section 6D.01, paragraph 26, however, provides Guidance that "If a significant potential exists for vehicle incursion..."pedestrians should be rerouted or barriers used. This could be a situation where there is some type of geometric alignment with or without pedestrian paths being rerouted closer to vehicle paths that raise concern for vehicle incursion. It is the department's opinion that, while the statements are similar, they address different situations.

Comment: Mr. Gumtau suggests that in Section 6D.03, paragraph 4 needs to be duplicated in Chapter 6I and paragraphs 05, 06, 07, and 08 moved to Chapter 6I. He notes that most emergency responders will only look to Chapter 6I for Guidance and it

contains nothing on safety apparel.

Response: The department concurs and will add language to the end of Section 6I.01, paragraph 07 indicating that the requirements for High Visibility Apparel are contained in Section 6D.03.

Comment: Mr. Gumtau provided a comment that Section 6E.08, paragraphs 01 and 03 should explicitly state that these conditions apply when automated flagging assistance devices, traffic signals, a single flagger, or self regulating TTC methods are used. He recommends that all figures showing these TTC methods need to be redone to show these important distances. These distances are important to allow protection to workers and road users.

Response: The department concurs that, similar to the location of a flagger station, sufficient sight distance is necessary for other self regulating devices such as temporary signals and YIELD signs. The department will add a statement indicating the required sight distances to the Notes page for Figures 6H-10, 6H-11, 6H-12, 6H-13, 6H-14, 6H-16, and 6H-18.

Comment: Mr. Gumtau provided a comment that Figure 6F-2 contains two pictures that need to be updated. He notes that the sign

stand in the upper right has been in the manual for several years and does not appear to be crashworthy because of the A bracing while the truck in the lower left is obviously an older model vehicle. He recommends that both pictures be replaced with modern pictures.

Response: The department declines to accept this recommendation. The graphics in Figure 6F-2 are contained in the National MUTCD and serve their intended purpose of sign mounting examples.

Comment: Mr. Gumtau recommends adding in Section 6F.04, paragraph 03 a reference to the American Traffic Safety Services Association's Quality Guidelines for Work Zone Traffic Control Devices booklet as a guide to be used for maintenance evaluations of signs and other devices.

Response: The department concurs and will add a reference to the publication in Section 6F.04.

Comment: Mr. Gumtau submitted a comment that in Section 6F.22A, paragraph 02 the example provided is not consistent with Note #7A for Figure 6H-21. He recommends that examples need to be for four or more lanes.

Response: The department concurs that the example given in

Section 6F.22A, paragraph 02 is not consistent with the sign usage in Figure 6H.21. Therefore, the last sentence in Section 6F.22A, paragraph 02 will be deleted.

Comment: Mr. Gumtau provided a comment that Figure 6F-6 shows different caution modes of the arrow boards. The original caution mode was the horizontal bar. Mr. Gumtau notes that a psychologist convinced FHWA that the bar confused drivers because they thought that there should be an arrow on one end or the other of the horizontal bar. FHWA made the four-corner flash the national standard, but added the horizontal bar a short time later due to state DOT comments. The 2000 National MUTCD contained only the four-corner flash, but the first revision added the horizontal bar. Now the National MUTCD shows both, plus the alternating diamond as a caution mode. He believes that the alternating diamond mode will confuse drivers because of the left-right movement of the diamonds. Mr. Gumtau notes that the four-corner flash offers the least eye catching ability and the alternating diamonds is the most confusing. That leaves the horizontal bar as the best choice of the three. He believes that a descending horizontal bar with the bars getting shorter would be a great eye catcher and the downward movement of the bars would indicate for drivers to slow down.

Response: The department agrees with the comment about possible

confusion regarding the horizontal bar to indicate "caution" and it was not included as an Option in the Texas MUTCD. The remaining two operating modes currently permitted by FHWA to depict caution are the "four-corners" and the "alternating diamonds." The department agrees that the four-corners mode offers the least visibility and conspicuity. The alternating diamonds, however, flash back and forth (not left to right) and provide twice the number of lamps illuminated (8 versus 4) during each flash as the four-corners mode. Any other flash mode to depict "caution" must be approved by FHWA before it can be used.

Comment: Mr. Gumtau notes that Section 6F.70, paragraph 04 is not in agreement with Note #5 for Figure 6H-34. He requests that either paragraph 04 should be changed to a standard or Note #5 be changed to Guidance.

Response: The department declines to make this change to language adopted from the National MUTCD without modification. It is the department's opinion that Section 6F.70, paragraph 04 and Note #5 for Figure 6H-34 do not conflict. Section 6F.70, paragraph 04 does not allow temporary traffic barriers to be used for a merging taper except in a low-speed urban area application. While Note #5 for Figure 6H-34 does not allow a barrier to be placed along a merging taper, the figure does not

depict a low-speed urban area. This is evident by the sign spacing shown in both directions (1 mile of advance warning in the direction of the closure and 1,500 feet from the Road Work Ahead in the other would indicate speeds of 55 mph or higher). Additionally, several of the Typical Applications specifically state the application applies to facilities that are low-speed or facilities in urban area. It is these types of facilities to which Section 6F.70, paragraph 04 would apply.

Comment: Mr. Gumtau provided a comment that Sections 6F.72 and 6F.75 should be deleted or at least limited to lower speed, short sections of traffic control because of lawsuits due to these devices on high speed roads and because of the limits discussed in the North Carolina report on the use of temporary raised islands that was issued in the early 1980's. These devices are 4-inch curbs. Curbs and high speed traffic are not a safe combination.

Response: The department declines to accept this change to language that was adopted from the National MUTCD without modification. Section 6F.72 limits the height of temporary lane separators to 4 inches. The FHWA has developed a crash-test procedure specifically for these devices. Some of the approved devices are less than 2 inches high and have been designed specifically for high-volume, high-speed roadways. The

manufacturer's recommendation for the application of specific devices should be consulted before they are considered for use.

Comment: Mr. Gumtau recommends that all distances shown on the Typical Applications be proportional to all other distances shown on the same drawing. In addition, he notes that some of the drawings of signs with advisory plaques below them have the word "Optional" below them and others have the word "Optional" beside the advisory plaque which may be confusing. He recommends that all Optional items on the Typical Applications have the word "Optional" beside the item when there is the possibility of confusion.

Response: The Typical Applications in Section 6H are not engineering drawings, but illustrations intended to present information clearly on a small page format. Clustering some devices proportionally on illustrations that are not to scale could in some cases cause more confusion due to the spacing of advance warning signs. These graphics are part of the National MUTCD. However, the department will relocate the word "Optional" in Figures 6H-4, 6H-10, 6H-11, 6H-12, 6H-32, 6H-39, and 6H-46 so that placement of the word is consistent.

Comment: Mr. Gumtau provided a comment that the Typical Applications in Section 6H need to be drawn in accordance with

the instructions in the earlier sections of Part 6 of the Texas MUTCD. He further notes that several of his comments relate to this deficiency.

Response: The department is not sure what this comment specifically refers to and cannot appropriately address the comment.

Comment: Mr. Gumtau provided a comment that Note #12 of Figure 6H-10 needs to be revised to suggest placing flaggers at intersections and communicating with driveway owners (users) about flagging operations in front of the driveways because this is common practice for contractors and requires fewer flaggers. He recommends that each resident should be contacted and that a cone should be placed near the left edge of the driveway to remind the residents of the operation.

Response: The department declines to accept this recommendation. Note #12 of Figure 6H-10 suggests a flagger should be used to monitor driveways and it is the department's opinion that the Note is appropriate as written. Placing a cone at a driveway is not a standard practice that the department has any history or research for the meaning of the application or the public understanding of the application.

Comment: Mr. Gumtau recommends that Figure 6H-10 as shown in the Texas MUTCD be revised according to the following: in Note #3 the "BE PREPARED TO STOP" sign should be deleted because it is in Note #5.

Response: The department declines to accept this recommendation and believes that no change is necessary. Note #3 allows the "BE PREPARED TO STOP" sign to be used. Note #6 provides Guidance on location of the sign if it is used. This format is used consistently throughout the manual when describing the application of traffic control devices.

Comment: Mr. Gumtau recommends that Figure 6H-10, as shown in the Texas MUTCD, be revised according to the following: the word "Optional" below the FLAGGER sign should be moved to the right side of the XX FEET supplemental plaque because it may be misconstrued that the FLAGGER sign is Optional (See Figures 6H-11 and 6H-13 for similar presentations).

Response: The department will relocate the word "Optional" in Figures 6H-4, 6H-10, 6H-11, 6H-12, 6H-32, 6H-39, and 6H-46.

Comment: Mr. Gumtau recommends that Figure 6H-10, as shown in the Texas MUTCD, be revised according to the following: a Note near the location of the closed lane flagger needs to mention

that the flagger should be located at a stopping distance from the work zone (Section 6E.08, paragraph 03 of the Texas MUTCD) and an appropriate Note placed on the left hand page.

Response: The department concurs with this comment and will add a statement to the Notes page for Figure 6H-10 regarding considerations of sight distance for locating a flagger station.

Comment: Mr. Gumtau recommends that Figure 6H-10, as shown in the Texas MUTCD, be revised according to the following: the Figure shows a 50 to 100 foot downstream taper which should be labeled as Optiona1.

Response: The department declines to accept this recommendation. There are questions about whether the downstream taper in Figure 6H-10 is Optional because it is not labeled as such in the National MUTCD. Allowing it to be Optional in the Texas MUTCD would make it less prescriptive than the National MUTCD. It is the opinion of the department that a good practice for this type of temporary traffic control is to use channelizing devices to guide motorists back to the appropriate lane downstream of the lane closure in this type of traffic control scenario.

Comment: Mr. Gumtau recommends that Figure 6H-10, as shown in the Texas MUTCD, be revised according to the following: the

Figure shows a 100 to 200 foot distance between the end of the downstream taper and the open lane flagger. This distance should be measured from the end of the tangent because not all road workers use a downstream taper. He recommends that this distance be shown as 1/2L from the beginning of the downstream taper or the end of the tangent channelizing devices because it is a shifting taper maneuver for drivers.

Response: The department declines to accept this recommendation. The National MUTCD does not show a dimension from the downstream taper to the open lane flagger. The 100 to 200 foot distance was added to the Texas MUTCD to ensure that traffic in the opposite direction is being stopped with adequate space for traffic departing the work zone to be able to move over. The location of the dimension is for additional safety. Additionally, the downstream taper is not shown as "Optional" in the figure.

Comment: Mr. Gumtau provided a comment that in Figure 6H-13, both buffer spaces should be drafted to the same length to prevent users from looking at the figure and thinking that one buffer is longer than the other. These buffers should be shown as recommended instead of Optional because they are in a Guidance statement in Section 6E.08, paragraph 03 or those distances shown as stopping sight distances. All the sign

spacing distances are the same and should be drawn to the same length.

Response: The department declines to accept the buffer space suggestion because it was adopted from the National MUTCD. The department also notes that the Typical Applications in Section 6H are not engineering drawings, but illustrations intended to present information clearly on a small page format.

Comment: Mr. Gumtau provided a comment that in Figure 6H-14, the distances from the flagger and the "STOP HERE ON RED" sign to the haul road are not consistent with Section 6E.08, paragraph 03 of the manual. The haul road is the work area and a buffer is recommended by the Texas MUTCD.

Response: The department declines to accept the buffer space suggestion because it was adopted from the National MUTCD.

Comment: Mr. Gumtau provided a comment that in Figure 6H-18 the buffer space is not Optional. It is recommended by Section 6E.08, paragraph 03.

Response: The department declines to accept the buffer space suggestion because it was adopted from the National MUTCD.

Comment: Mr. Gumtau provided a comment that in Figure 6H-21, the CW12-1 sign (double down angle arrows) violates the principle of positive Guidance because the sign invites center lane drivers to decide between the right and left lanes, but the channelization directs the center lane to the left lane.

Response: The department declines to accept this suggestion. The taper to the left is explained in the Notes so that right turn traffic will have less impact on through traffic. The use of the CW12-1 Double Arrow sign in this case is consistent with Section 2C.25 of the Texas MUTCD. The use of a flashing left arrow would cause right lane drivers to merge left unnecessarily and move motorists wishing to turn right into the wrong lane.

Comment: Mr. Gumtau provided a comment that Note #3 for Figure 6H-24 says that a buffer space may be used, but the figure does not show the buffer as Optional. Any time opposing traffic is in the same lane, a buffer should be recommended to reduce the possibility of head-on crashes. He recommends that this Note be changed from an Option to a Guidance statement.

Response: The department concurs with this comment and will change Note #3 in Figure 6H-24 from an Option statement to a Guidance statement.

Comment: Mr. Gumtau provided a comment that in Figure 6H-24 the shifting taper across the cross street is too short as shown. He notes that a 4-lane street should have a speed limit of 35 to 45 mph requiring a shifting taper of from 122.5 to 270 feet which is far greater than the width of the 2-lane cross street. He states that this visual message is not consistent with the manual requirements and this drawing must be redrawn to prevent a TTC exactly like the drawing.

Response: The representation of the shifting taper in Figure 6H-24 was adopted from the National MUTCD without modification. The strategy of shifting traffic at an intersection has been in Figure 6H-24 in the Texas MUTCD since 1996 and in the National MUTCD since at least 2000. It has never required the full shifting taper length to be required, possibly because this strategy is often used at stop-controlled or signal-controlled intersections or with other warning or regulatory signing needed to assist in reducing speed. The index to the Typical Applications (Table 6H-1) for work at intersections refers to "see Section 6G.13." Section 6G.13 contains Guidance that these intersection Typical Applications depict urban intersections on arterial streets and that additional warning signs should be used when anticipated speeds exceed 40 mph. The department will add a new Note under Support containing similar language. The department also notes that the Typical Applications in Section

6H are not engineering drawings, but illustrations intended to present information clearly on a small page format.

Comment: Mr. Gumtau provided a comment that in Figure 6H-27, the open lane flaggers are not the same distance from the downstream taper, as shown in Figure 6H-10, and the closed lane flaggers are not located the recommended distance from the work space.

Response: The department declines to accept this suggestion. The concept of Figure 6H-27 was adopted from the National MUTCD without modification. The figure is not intended to be similar to Figure 6H-10 since it is for control of traffic when work is within an intersection. Road users can be directed within the intersection by a flagger or a uniformed law enforcement officer, as stated in Note #2.

Comment: Mr. Gumtau provided a comment that in Figure 6H-30 both buffer spaces should be drawn the same length to make the visual message and the text message the same.

Response: The department declines to accept this suggestion. Figure 6H-30 was adopted without modification from the National MUTCD and it is not intended to be to scale.

Comment: Mr. Gumtau provided a comment that Figure 6H-31 shows

the left side buffer space to be Optional. He states that because this is opposing traffic in the same lane, the buffer should be required or recommended.

Response: The department concurs with this comment and will change Note #9 from an Option statement to a Guidance statement.

Comment: Mr. Gumtau provided a comment that Optional buffer space shown in Figure 6H-32 should be recommended or required because opposing traffic is sharing the same lane. He notes that the 1/2L distances on this figure should be drawn to the same length to make the visual message the same as the technical message and that the 1/2L distance between the merging taper and the shifting taper is important but it is not discussed in the previous sections of the manuals. He notes that it is only shown on this figure and Figure 6H-39. Mr. Gumtau recommends that a Guidance statement be added to Section 6C.08 that recommends this 1/2L distance.

Response: The department concurs with this comment and will add a Guidance statement as Note #8 for Figure 6H-32 regarding the recommended use of a buffer space between opposing directions of vehicular traffic. Also, the figure is not intended to be drawn to scale and incorporating a tangent between tapers is addressed in the response to a previous comment.

Comment: Mr. Gumtau provided a comment that in Figure 6H-33 the 1,000, 1,600, and 2,600 foot distances are not drawn proportionally and the ROAD WORK 1 MILE sign is located at 5,200 feet, not 5,280 feet from the work ahead. In the National MUTCD, this sign is located at 5,140 feet, not 5,280 feet.

Response: The department declines to accept this suggestion. Figure 6H-33 is not intended to be drawn to scale. Also, the department has slightly modified the sign spacing distances from the National MUTCD to a number that is divisible by 40. The number 40 is the spacing of skip stripes on a roadway and individuals placing temporary traffic control devices often count the stripes to estimate distances. Additionally, signs must be visible to be effective so they are appropriately field adjusted so that they will not be obscured by trees or other signs resulting in distances not being exact.

Comment: Mr. Gumtau provided a comment that in Figure 6H-34 the buffer in front of the barrier is shown as Optional, but Note #5 on the opposite page requires devices and markings in front of the barrier. He states that this is an inconsistency and that the buffer should be required.

Response: The department declines to accept this suggestion.

Note #3 for Figure 6H-34 indicates that the use of a barrier should be based on engineering judgment. If a barrier is not used, the buffer space is Optional. If a barrier is used, as specified in Note #5, the lane closure devices and markings are to be in advance of the barrier which will result in a buffer space as shown in the figure. Therefore, no change is necessary to the Figure 6H-34.

Comment: Mr. Gumtau provided a comment that Figure 6H-36 is not drawn to scale and that this may open up practitioners to increased legal liability due to this inconsistency.

Response: The department declines to accept this suggestion and notes that these figures are not intended to be drawn to scale. Also, the department has slightly modified the sign spacing distances in the National MUTCD to a number that is divisible by 40. The number 40 is the spacing of skip stripes on a roadway and individuals placing temporary traffic control devices often count the stripes to estimate distances. Additionally, signs must be visible to be effective so they are appropriately field adjusted so that they will not be obscured by trees or other signs resulting in distances not being exact.

Comment: Mr. Gumtau notes that Figure 6H-37 shows a 2L distance between the two merging tapers and that this is the only place

that this distance appears in the manual. He suggests a Guidance statement be added to Section 6C.08 that recommends a 2L tangent distance between multiple merging tapers.

Response: All Typical Applications that have multiple lane closures or closures combined with shifts on multilane roadways (Figures 6H-32, 6H-37, 6H-39, and 6H-45) contain a tangent section as suggested between the tapers. The department will add a Guidance statement to Section 6C.08 requiring the tangent.

Comment: Mr. Gumtau provided a comment that he agrees with and supports the deletion of Figure 6H-38 in the Texas MUTCD because it is difficult to install and hazardous for the workers in the center lane.

Response: The department concurs with this comment.

Comment: Mr. Gumtau provided a comment that Figure 6H-39 is not drawn proportionally.

Response: The figure was adopted from the National MUTCD and it is not an engineering drawing, but an illustration intended to present information clearly on a small page format. The figure was never intended to be drawn to scale.

Comment: Mr. Gumtau provided a comment for Figure 6H-41 suggesting that the figure should mention that "EXIT SPEED ADVISORY" signs and "CURVE" signs may be necessary for the off ramp.

Response: The department concurs with this comment and will add an additional Note for Figure 6H-41 that states, while not shown on the figure, additional signs, such as "EXIT SPEED ADVISORY" and "CURVE," may be necessary for the exit ramp.

Comment: Mr. Gumtau recommends that Chapter 6I contain a section on safety apparel.

Response: The department concurs with this comment and will add a reference to Section 6I.01, paragraph 07 regarding high visibility safety apparel.

Comment: The North Central Texas Council of Governments (NCTCOG) provided a written comment on behalf of a MUTCD Working Group in the Dallas/Fort Worth region requesting the length of time in the definitions for the three general classes of incident duration be modified in Chapter 6I. The three classes of incidents consist of Major (more than 2 hours), Intermediate (30 minutes to 2 hours), and Minor (less than 30 minutes). The working group feels the length of time should be doubled in each

of the three classes to allow sufficient time to deploy the equipment specified in Chapter 6I.

Response: The department declines to accept this recommendation. The department discussed this issue with the Texas Division of the FHWA. The definitions are Support statements and they may be treated as goals for an agency or region to achieve in an attempt to reduce the negative impacts caused by incidents.

Comment: The NCTCOG provided suggested language regarding Section 6I.01, paragraph 09: "Responders arriving at a traffic incident...should initiate procedures to have the appropriate temporary traffic controls set up...."

Response: The department declines to accept this suggestion. The department discussed this issue with the Texas Division of FHWA and the intent of the Guidance statement is for any and all temporary traffic controls available to be used immediately, as appropriate.

Comment: Dr. Gene Hawkins provided a comment concerning Table 2E-4T and the omission of a column specifying the font size on overhead guide signs, which is shown in the National MUTCD in Table 2E.4.

Response: The department concurs with this comment. The department had reorganized Table 2E-4 from the National MUTCD in an attempt to simplify the information presented. The table was renumbered as Table 2E-4T in the Texas MUTCD but the requirements for the minimum letter or numeral sizes on freeway signs mounted overhead versus ground-mounted signs was inadvertently omitted. The department will clarify this difference by adding a footnote to Table 2E-4T indicating that only ground-mount signs at major interchanges are required to use the larger font.

Comment: Dr. Hawkins provided a comment about the requirements for a speed limit sign at the end of a school speed zone in Part 7. He indicated Figure 7B-3 shows the speed limit sign to be Optional but Figure 7B-5 does not.

Response: The department concurs with this comment. The intent of the department was to allow the speed limit sign to be Optional only when an "END SCHOOL ZONE" sign is used. This will be clarified in Figures 7B-3 and 7B-5.

Comment: Dr. Hawkins provided a comment about two railroad crossing "emergency notification" signs shown in Figure 8B-5 with no explanation regarding when to use which sign.

Response: The department included both signs because of conflicting requirements between state law, which requires a certain phone number on the R15-4 white background sign, and a Federal Railroad Administration proposed rule, which specifies a different phone number on the I-13 blue background sign. The department has requested clarification from the Texas Office of the Attorney General. Until this issue is clarified, both signs will remain in the Texas MUTCD.

Comment: Mr. Howard McCann of the Texas Engineering Extension Service submitted a written comment recommending that the ball-bank indicator criteria (values of 16, 14, and 12 degrees) for determining horizontal curve advisory speeds in Section 2C.08 be deleted and the criteria contained in the Procedures for Evaluating Speed Zones be used instead (values of 10, 12, and 14 degrees).

Response: The department declines to accept this recommendation. The department is phasing out the ball-bank indicator method from the Procedures for Evaluating Speed Zones manual. The ball-bank indicator criteria in the Texas MUTCD were adopted from the National MUTCD without modification. The FHWA's justification for the change in criteria was contained in a previous edition of the National MUTCD (Section 2C.36 of the 2003 edition) as follows: "A 10-degree ball-bank indicator

reading, formerly used in determining advisory speeds, is based on research from the 1930s. In modern vehicles, the 85th-percentile speed on curves approximates a 16-degree reading. This is the speed at which most drivers' judgment recognizes incipient instability along a ramp or curve."

Comment: Mr. McCann provided a comment recommending that the following Option statement be added to Section 5A.02: "Because of the wide nature of agricultural vehicles that may use narrow local rural bridges and roads, and because of the opportunity for vandalism that low traffic volumes provide, it is recognized that conventional object markers used on bridge ends, and other obstructions adjacent to the roadway, may be subject to frequent damage and/or vandalism. Under these conditions, other devices, including retroreflective sheeting, marking tapes, and sprays that provide warning and Guidance for road users, and enhance their safety and visibility, may be used to mark bridge ends and other obstructions adjacent to the roadway."

Response: The department declines to adopt the suggested language. The department consulted with the Texas Division of FHWA and it was determined that this type of language should not be included in the Texas MUTCD because it discusses general alternatives to object markers to mark obstructions adjacent to the roadway. The Texas MUTCD typically contains specific

requirements for traffic control devices and allows for variations based on engineering judgment or an engineering study.

Comment: Mr. Ronnie Bell of the City of Austin provided a comment that in the Introduction, paragraph 07 is listed as Guidance but it is not a "should" statement. Mr. Bell recommends that it should be listed as Support instead.

Response: The department declines to accept this suggestion. This language was used in previous versions of the Texas MUTCD and has been approved by the FHWA. The language provides notice of the statutory restrictions of placing a traffic control device in view of a highway without authority and provides Guidance that it may be removed without notice.

Comment: Mr. Bell provided a comment that in Section 1A.07, paragraph 01 the proposed new sentence is listed as a Standard but it is not in the form of a "shall" statement. As written, it appears to be Support.

Response: The department declines to accept this suggestion. This language was used in previous versions of the Texas MUTCD and has been approved by the FHWA.

Comment: Mr. Bell commented that Section 1A.09, paragraph 03 is a good addition providing needed flexibility for agencies.

Response: The department concurs with this comment.

Comment: Mr. Bell provided a comment that in Section 1A.10, paragraphs 03 and 15, the new sentences do not contain "shall." He notes that some editing is needed to be included as a Standard statement.

Response: The department declines to accept this suggestion. This language was used in previous versions of the Texas MUTCD and has been approved by the FHWA.

Comment: Mr. Bell provided a comment that in Section 2B.22A, paragraph 01 the second sentence of the proposed new text does not include "should" and should be edited to be a Guidance statement.

Response: The department concurs with this comment and will revise the language so that it reads as a Guidance statement.

Comment: Mr. Bell provided a comment that in Section 2B.29A, paragraph 02 the third sentence does not include "should" as written so it should not be included in a Guidance paragraph.

Response: The department concurs with this comment and will revise the language to make this statement read as a Support statement.

Comment: Mr. Bell provided a comment that in Section 2B.33, paragraph 02 the sentence, as modified by the deletion of "double," indicates that a solid white line prohibits lane changing. Section 3B.04 indicates a double white line prohibits lane changing but a solid white line discourages lane changing. Therefore, "double" should not be deleted from this paragraph if the intent is to prohibit lane changing.

Response: The department declines to accept this suggestion. The language in Section 2B.33, paragraph 02 is consistent with Figure 6H-36 and Note #11 for Figure 6H-36, which states that a solid line should be used. The department will, however, change the language in Section 2B.33, paragraph 02 from "prohibit" to "discourage" crossing the solid line.

Comment: Mr. Bell provided a comment that in Section 2B.40, paragraph 12 if the paragraph is deleted as proposed, the minimum height to the bottom of a "ONE-WAY" sign on the central island of a roundabout would be 7 feet. Due to the design of roundabouts, there should not be sign height and pedestrian

conflicts in the island as there should not be any pedestrian traffic in the central island. Section 2B.40, paragraph 11 permits the use of "ONE-WAY" signs in the central island instead of or in addition to Roundabout Directional Arrow signs. Section 2B.43 indicates that the height of Roundabout Directional Arrow signs should be at least 4 feet. Mr. Bell requests the retention of the sentence marked for deletion as the 4 foot mounting height (or an alternative height less than 7 feet) which he believes would provide for better visibility of the sign to approaching traffic.

Response: The department concurs with this comment and the language will be placed back into the Texas MUTCD.

Comment: Mr. Bell provided a comment on Section 2B.55, paragraph 01 noting that he believes state law (Transportation Code, §544.012(c) and §707.003(g)) requires that a sign be installed on all approaches to an intersection equipped with red-light cameras, even if one or more of those approaches do not have red-light cameras. Furthermore, he states that the sign prescribed by TxDOT for this application is the "PHOTO ENFORCED" sign. Accordingly, he notes that this paragraph should be changed to a Standard and reworded to parallel state law. Mr. Bell further states that the Option statement (paragraph 05) permits the use of a "SIGNAL AHEAD" warning sign with a "PHOTO

ENFORCED" plaque instead of the "PHOTO ENFORCED" sign. This Option would not preclude listing the "PHOTO ENFORCED" sign as a Standard. If the Option is used, is it intended that the warning sign and plaque combination be used on all approaches or is it considered acceptable to have this combination on some approaches and a "PHOTO ENFORCED" sign on other approaches to the same intersection?

Response: The department declines to accept these suggestions. The department has provided the types of signs necessary for a city to use a red light camera enforcement system. It is up to the city to determine the type and number of signs to use to allow enforcement of its program.

Comment: Mr. Bell provided a comment that Section 2B.58, paragraph 06 is included under the Option portion, but is not in the form of a "may" statement. Mr. Bell provides the following alternative wording for the department's consideration: "BRIDGE CLOSED (R11-2aT), RAMP CLOSED (R11-2bT), and STREET CLOSED (R11-2cT) may also be substituted for the ROAD CLOSED legend where applicable."

Response: The department concurs with this comment and will revise the language to a "may" statement.

Comment: Mr. Bell provided a comment that in Section 2B.68A, paragraph 03 the last sentence of the paragraph is Guidance as written and should have a Guidance heading.

Response: The department concurs that the sentence does not match the heading. The statement begins with "Care should be taken..." which is not standard language in the Texas or National MUTCD and its meaning is not clear. Therefore, the sentence will be deleted.

Comment: Mr. Bell provided a comment that the last sentence of Section 2C.27, paragraphs 03, 04, and 05, should be revised to be Guidance statements.

Response: The department concurs with this comment and will revise the language so that it reads as Guidance statements.

Comment: Mr. Bell provided a comment that in Section 2C.27, paragraph 06 only the second sentence is in Guidance format including the word "should." The other sentences should be revised to be Guidance statements.

Response: The department concurs with this comment and will revise the language so that it reads as a Support statement.

Comment: Mr. Bell provided a comment that the first sentence in Section 2C.27, paragraph 07 is an Option as written but it is listed under Guidance and that the second sentence in the paragraph is difficult to read. The commenter provides the following recommended language as an alternative: "In cases where more than one clearance is shown on a surface and it may therefore be difficult for a driver to recognize where the clearances are measured, the W12-3TP (downward arrow) plaque should be used with the arrow pointing to the point of signed clearance."

Response: The department concurs and will adopt the language as suggested by Mr. Bell.

Comment: Mr. Bell provided a comment that the first sentence in Section 2C.27, paragraph 08 is not written as an Option. He provides the following possible alternative wording for the paragraph: "In cases where it is desired to warn motorists of a low clearance that will be encountered immediately downstream of a ramp, the clearance sign (W12-2) may be used along with the W16-7TP (diagonal arrow) or W13-4aTP (RAMP) plaque (see Figure 2C-5)."

Response: The department concurs and will adopt the language as suggested by Mr. Bell.

Comment: Mr. Bell provided a comment that the first sentence in Section 2C.32, paragraph 03 is not written as an Option. He provides the following possible alternative wording is recommended for the paragraph: "The LOOSE SAND (W8-7aT) sign (see Figure 2C-6) may be used to warn of a location where wind drifted sand may occasionally be encountered on the roadway or where blowing sand is a frequent hazard for drivers. It may also be used at locations where drivers parking off the shoulder of the highway, road, or street would probably encounter loose sand."

Response: The department concurs with this comment and will adopt the language as suggested by Mr. Bell.

Comment: Mr. Bell provided a comment that Section 2C.44A, paragraph 01 is listed as Guidance but appears to be intended as an Option.

Response: The department concurs with this comment and will revise the paragraph heading to be an Option statement.

Comment: Mr. Bell recommends that in Section 2C.46A, paragraph 02 the following alternative wording be used to eliminate the repetitive use of the term "restricted": "The use of this sign

should be limited to locations involving high approach speeds, restricted sight distances or a high number of crashes indicating a need for the sign."

Response: The department concurs with this comment and will revise the language as suggested by Mr. Bell.

Comment: Mr. Bell provided a comment that in Section 2C.49, paragraph 15 that the intent is either to prohibit (shall not) or to discourage (should not) installing a "WATCH FOR EMERGENCY VEHICLES" (W11-12T) sign if an emergency-vehicle traffic control signal is present. He notes that if this is the intent, the message is very subtle when written as an Option. He recommends revising to be either a Standard or Guidance statement depending on the desired degree and provides two possible alternative wordings as a Standard: 1) "The WATCH FOR EMERGENCY VEHICLES (W11-12T) sign, or a word message sign indicating the type of emergency vehicle (such as fire trucks or ambulances), shall only be used in advance of the emergency vehicle station when no emergency-vehicle traffic control signal is present." 2) "The WATCH FOR EMERGENCY VEHICLES (W11-12T) sign, or a word message sign indicating the type of emergency vehicle (such as fire trucks or ambulances), shall not be used in advance of the emergency vehicle station unless an emergency-vehicle traffic control signal is present."

Response: The department agrees with this comment and will adopt the first version recommended by Mr. Bell with some modifications. The statement will be an Option statement by replacing the word "shall" with the word "may" in Mr. Bell's recommendation to comply with the original intent of the language.

Comment: Mr. Bell provided a comment that Section 2E.06, paragraph 03 is written as Guidance but is listed under Support.

Response: The department concurs with this comment and will revise the header to a Guidance header.

Comment: Mr. Bell recommends that in Section 2H.02, paragraph 06 the proposed new sentence should be listed as Support noting that it is not written as an Option.

Response: The department agrees with this comment and will revise the language to read as an Option statement.

Comment: Mr. Bell provided a comment that Section 2H.05A, paragraph 02 is listed as an Option but is written as Support. Mr. Bell provides two versions of possible alternative language: 1) "Standard Option: 02 A cardinal direction auxiliary sign

shall not be required on the Texas Reference Marker assembly."
2) "Option: 02 A cardinal direction auxiliary sign may be omitted on the Texas Reference Marker assembly."

Response: The department concurs with this comment and will revise the language to the Option statement as suggested by Mr. Bell.

Comment: Mr. Bell provided a comment that in Section 2M.09A, paragraph 02 although the first sentence contains "should", it is actually a Support statement as written.

Response: The department concurs with this comment and will delete the Guidance header and replace it with a Support header.

Comment: Mr. Bell provided a comment that the last sentence of Section 2M.09A, paragraph 06 is not written as Guidance. It seems the intent is as a Standard. He recommends the following alternative wording: "Standard: Facilities shall be open to the general public to be eligible for traffic generator signing."

Response: The department concurs with this comment and will revise the language as suggested by Mr. Bell.

Comment: Mr. Bell recommends reformatting the language in

Sections 6F.18 through 6F.24B to bring it into agreement with the respective paragraph header.

Response: The department concurs with these comments and will revise the format to bring it into agreement with the paragraph header.

Comment: Mr. Bell provided a comment that Section 7B.10, paragraph 01 needs a Guidance header. It is a Guidance statement but has an Option header.

Response: The department concurs with this comment and will insert a Guidance header.

Comment: Mr. Bell provided a comment that the addition of the S6-1 sign in Section 7B.15, paragraph 01 is good because it removes the possible confusion that a ground-mounted S5-1 sign is required even if an S6-1 overhead is in place.

Response: The department concurs with this comment.

Comment: Mr. Bell provided a comment that in Section 7C.03, paragraph 04 the beginning or ending school zone marking has been used in Texas for some time but it is not included in the Federal MUTCD. Mr. Bell believes it is good to provide the

option for agencies to use if they wish. However, he believes the option to use a width from 12 inches to 18 inches, as is included in the 2006 Texas MUTCD, should be retained rather than listing only an 18 inch width. Mr. Bell also states that since the more important issue is to inform drivers of the beginning point rather than the ending point, he would like to see an Option included that, for divided roadways, the marking could be installed only across lanes with traffic approaching the zone.

Response: The department concurs in part with this suggestion and will revise the language to state 12-18 inches white transverse pavement markings may be used. The department does not agree with omitting the line when leaving a school zone and believes this is a safety issue. If a white transverse line is being used to mark the beginning of a school zone, it should also be placed for the end of the school zone and the Texas MUTCD retains this requirement.

STATUTORY AUTHORITY

The amendments are adopted under Transportation Code, §201.101, which provides the commission with the authority to establish rules for the conduct of the work of the department, and more specifically, Transportation Code, §544.001, which requires the commission to adopt a manual of uniform traffic control devices.

CROSS REFERENCE TO STATUTE

Transportation Code, Chapter 544.

SUBCHAPTER A. GENERAL

§25.1. Uniform Traffic Control Devices.

(a) The 2011 [~~2006~~] Texas Manual on Uniform Traffic Control Devices, [~~Revision 1, which is filed with this section and hereby incorporated by reference,~~] was prepared by the Texas Department of Transportation [~~as required by law~~] to govern standards and specifications for all [~~such~~] traffic control devices to be erected and maintained upon any street, highway, bikeway, public facility, or private property open to public travel within this state, including those under local jurisdiction, and is adopted by reference. Copies of the manual are available online through the Texas Department of Transportation web site, www.txdot.gov, and a copy is available for public inspection at the department's Traffic Operations Division office located at 118 East Riverside Drive, Austin, Texas [~~are on file for public inspection with the Office of the Secretary of State, Texas Register Division, James Earl Rudder State Office Building, 1019 Brazos St., Room 245, Austin, Texas 78701~~].

(b) This manual will be periodically updated. In the intervals between updates, standards contained in "Official Rulings on Requests for Interpretations, Changes, and Experimentation" to the United States Department of

Transportation's Manual on Uniform Traffic Control Devices for Streets and Highways will be inserted in this manual and may be used as interim standards.

(c) This manual is not intended to preclude the use of sound engineering judgment and experience in the application and installation of devices and particularly in those cases not specifically covered which must not conflict with the manual or other applicable state laws.