Meeting Agenda
Marking Technical Committee
National Committee on Uniform Traffic Control Devices
January 19-20, 2011 – Arlington, VA

Draft agenda as of January 16, 2011
See MTC website at http://ceprofs.civil.tamu.edu/ghawkins/MTC.htm

I. Call to order (Gene Hawkins)
   A. Self introductions
   B. Distribution of attendance rosters (each day)

II. Committee business
   A. Approval of June 2010 minutes (see MTC website)
   B. Report from the Edit Committee (Mike Hare)
   C. Report from traffic control on private property task force (Jim Ellison, Jim Kalchbrenner, Zoubir Ouadah, and Steve McDonald)
   D. Report from other NCUTCD committees (if applicable)

III. MTC contribution to Research Committee (David Woodin)
   A. Task force to identify research needs related to markings

IV. Discussion: proposed changes to crosswalk markings
   A. Developed by Kay Fitzpatrick, Tom Grant, and Jim Ellison (see Attachment A for proposed language)
      1. Question: can different patterns be used on different approaches to the same intersection?
   B. Background
      1. Technical Brief:
   C. Need to also discuss use of crosswalk markings in parking areas and the impact of changes on that

V. Discussion: markings issues for parking areas and other privately owned sites open to public travel
   A. Stall markings
   B. Crosswalk design
   C. Centerline patterns
   D. Use of STOP and YIELD word markings

VI. Discussion on impact of increasing width of normal line on width of wide line
   A. Correspondence from Scott Wainwright (see Attachment B for excerpts of letters):
      1. Please see attached letter from FL DOT and reply letter from FHWA, specifically the issue on “wide” lines. When FL went to 6 inch lines as their standard statewide practice years ago, they didn’t increase their “wide” lines (such as channelizing lines at gores and wide solid lines at a lane drop) from 8 inches to 12 inches. So now in FL, wide lines aren’t 2x their normal lines width. FL thinks that’s OK, especially since they supplement their 8 inch lines with RRPMs. This situation might exist in some other states that have gone to 6 inches as their
“normal” line width, but I think most that have gone that way have upped their wide lines to 12 inches. FL DOT says it would have to consider going back to 4 inches as their standard normal line rather than encounter the expense of increasing their 8 inches lines to 12 inches.

2. What does MTC think about this issue? Does MTC have a recommendation for either an interpretation or a language change in the MUTCD?

VII. Consideration of ZigZag markings (see Virginia DOT study posted on MTC website)
   A. FWHA response to VDOT: You should be aware that it is unlikely that zig-zags would be considered for addition to the MUTCD based on this one experimental project. Typically, we want to see results from more widespread experimentations in different regions of the US, and certainly at more than just 2 locations. However, your experiment is a very good basis for other States and local highway agencies to consider initiating their own experimentation requests to FHWA, and your evaluation plan could be a model for them. To that end, I hope VTRC and/or VDOT’s Traffic Engineering Division will widely publicize this report, perhaps via TRB’s e-Newsletter, an ITE Journal article, etc. When you do so, I would request that you highlight that this is an experimental device and that other agencies considering using it will need to request FHWA experimentation approval.

VIII. Planning for the next edition of the MUTCD (circa 2015)
   A. FHWA list of future issues for Part 3
   B. List of proposed changes not adopted in the 2009 MUTCD

IX. Review prepared material on Part 3 reorganization

X. Presentations (scheduled at various times to accommodate speakers’ schedules)
   A. None scheduled at present

XI. New Business
   A. To be identified

XII. Meeting wrap-up
   A. Review minutes of current meeting
   B. Prepare agenda for next meeting
   C. Schedule potential web conferences to address markings issues
   D. Adjourn
Attachment A: Proposed Changes to Crosswalk Markings

Note: Highlight indicates explanation for proposed changes

Section 3B.18 Crosswalk Markings

Support:
01 Crosswalk markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops.
02 In conjunction with signs and other measures, crosswalk markings help to alert road users of a designated pedestrian crossing point across roadways at locations that are not controlled by traffic control signals or STOP or YIELD signs.
03 At non-intersection locations, crosswalk markings legally establish the crosswalk.

Standard:
04 When crosswalk markings are used, they shall consist of solid white lines that mark the crosswalk. The lines shall not be less than 6 inches or greater than 24 inches in width.

Support:
04.1 Crosswalk markings are comprised of one of several crosswalk patterns, such as those illustrated in Figure 3B-19: two transverse lines, continental, ladder, bar pairs, diagonal, and double continental.
• Paragraph added to introduce types of crosswalk marking patterns.
• Bar pairs added because several states/cities (e.g., Seattle, Dallas) are now using them and recent FHWA study found similar detection distances to continental and bar pairs (http://www.fhwa.dot.gov/publications/research/safety/pedbike/10067/10067.pdf).
• Double continental added because discussed in Maryland’s Ped/Bike Guide, Virginia Guidelines for the Installation of Marked Crosswalks, and Salt Lake City’s “Crosswalk Marking Policy”.

Option: Paragraph 13 and first sentence of 14 moved to start of section where marking patterns are defined.
13 For added visibility, the area of the crosswalk may be marked with high visibility crosswalk markings, which consist of white diagonal lines at a 45-degree angle to the line of the crosswalk or white longitudinal lines parallel to traffic flow as shown in Figure 3B-19. Definition for high visibility crosswalk markings needs to be added to appropriate section.

14 When diagonal or longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted.

Guidance:
05 If two transverse lines are used to mark a crosswalk, the gap between the lines should not be less than 6 feet. If diagonal or longitudinal lines are used without transverse lines to mark a crosswalk, the crosswalk should be not less than 6 feet wide.

06 Crosswalk Transverse crosswalk lines, if used on both sides of the crosswalk, should extend across the full width of pavement or to the edge of the intersecting crosswalk to discourage diagonal walking between crosswalks (see Figures 3B-17 and 3B-19).
At locations controlled by traffic control signals or on approaches controlled by STOP or YIELD signs, crosswalk **markings** should be installed where engineering judgment indicates they are needed to direct pedestrians to the proper crossing path(s).

Crosswalk **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. The engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.

New marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and either:

A. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or

B. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.

Option: Remainder of 14 moved here to start the information regarding where to use high visibility markings.

14.1 The high visibility crosswalk This type of marking may be used at locations where substantial numbers of pedestrians cross without any other traffic control device, at locations where physical conditions are such that added visibility of the crosswalk is desired, or at places where a pedestrian crosswalk might not be expected.

Support: Chapter 4F contains information on Pedestrian Hybrid Beacons. Section 4L.03 contains information regarding Warning Beacons to provide active warning of a pedestrian’s presence. Section 4N.02 contains information regarding In-Roadway Warning Lights at crosswalks. Chapter 7D contains information regarding school crossing supervision.

Guidance:

Because non-intersection pedestrian crossings are generally unexpected by the road user, warning signs (see Section 2C.50) and high visibility crosswalk markings (such as continental, bar pairs, or ladder markings, examples shown in Figure 3B-19revised) should be installed for all marked crosswalks at non-intersection locations and adequate visibility should be provided by parking prohibitions.

- The new text adds high visibility markings for non-intersection locations. Recent FHWA study found that continental and bar pairs are seen at longer distances compared to two transverse lines (about twice the distance during daytime conditions)(see: http://www.fhwa.dot.gov/publications/research/safety/pedbike/10067/10067.pdf).

Option:

14.1.1 A crosswalk marking consisting of two transverse lines may be used at a non-intersection location where engineering judgment determines that they would be adequate at the given location.

- Engineering judgment permits use of two transverse lines at non-intersection locations when appropriate.

Guidance:
11.2 If the speed limit is greater than 35 mph at the non-intersection uncontrolled pedestrian crossing the crosswalk marking if used should not be less than 8 feet wide.

- The 35 mph speed limit value was selected to be consistent with the pedestrian signal warrant. It also considers the survivability of pedestrians when hit (pedestrian hit at 40 mph has an 85% chance of being killed, at 30 mph the likelihood goes down to 45% while at 20 mph the fatality rate is only 5% - UK DOT, Killing Speed and Saving Lives, London 1987).

- A review of state and selected city websites found the following locations discuss 8 ft or greater minimum crosswalk widths: Georgia; Oklahoma; South Dakota; Washington; Vermont; Oregon; Alaska; Utah; Arizona; Ohio; Portland, Maine; Wichita, Kansas; Boulder, Colorado; Broward County, Florida; Palm Beach County, Florida; Salt Lake City, Utah; Seattle, Washington; Phoenix, Arizona; Washington, DC. (ITE-TENC-109-01).

Support:
12 Section 3B.16 contains information regarding placement of stop line markings near crosswalk markings.

Option:
13 For added visibility, the area of the crosswalk may be marked with white diagonal lines at a 45-degree angle to the line of the crosswalk or with white longitudinal lines parallel to traffic flow as shown in Figure 3B-19.

14 When diagonal or longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted. This type of marking may be used at locations where substantial numbers of pedestrians cross without any other traffic control device, at locations where physical conditions are such that added visibility of the crosswalk is desired, or at places where a pedestrian crosswalk might not be expected. Paragraph 13 and 14 moved elsewhere.

Guidance:
15 If used, the diagonal or longitudinal lines within the continental, ladder, or diagonal markings should be 12 to 24 inches wide and separated by gaps of 12 to 60 inches. If used, a bar pair should consist of two 8 inch stripes separated by 8 inches to form a 24 inch wide bar pair. The bar pair should be 24 inches wide and separated by gaps of 24 to 60 inches. The design of the lines and gaps should avoid the wheel paths if possible, and the gap between the lines should not exceed 2.5 times the width of the diagonal, or longitudinal, or bar pair. Figure 3B-New shows examples for spacing of lines and gaps on a two-lane highway to avoid the wheel path.

- Text added to provide guidance on dimensions, especially for bar pairs.
- Figure 3B-New added to illustrate typical layout for spacing of markings to avoid wheel path.

Option:
16 When an exclusive pedestrian phase that permits diagonal crossing of an intersection is provided at a traffic control signal, a marking as shown in Figure 3B-20 may be used for the crosswalk.

Guidance:
17 Crosswalk markings should be located so that the curb ramps are within the extension of the crosswalk markings.

Support:
18 Detectable warning surfaces mark boundaries between pedestrian and vehicular ways where there is no raised curb. Detectable warning surfaces are required by 49 CFR, Part 37 and by the Americans with Disabilities Act (ADA) where curb ramps are constructed at the junction of sidewalks and the roadway,
for marked and unmarked crosswalks. Detectable warning surfaces contrast visually with adjacent walking surfaces, either light-on-dark, or dark-on-light. The “Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)” (see Section 1A.11) contains specifications for design and placement of detectable warning surfaces.

3B-17 should be redone to show continental, ladder, bar pairs, diagonal, or double continental at the non-intersection location rather than two transverse lines.

See next page for proposed Figure 3B-19 Revised and Figure 3B-New
Figure 3B-19 Revised. Examples of Crosswalk Markings
Figure 3B-New. Example of Spacing for Continental Crosswalk Markings on Four
Attachment B: Letters Related to Width of Normal Line in Florida
See MTC website for actual full letters
The following presents excerpts from the letters that relate to width of markings (note these letters were created through OCR of the PDF letters and may contain some inaccuracies due to the OCR process)

Florida DOT letter to FHWA
Dear Administrator Mendez:
The purpose of this letter is to inform you about the concerns of the Florida Department of Transportation (FlDOT) with certain revisions that were made in the 2009 Manual on Uniform Traffic Control Devices (MUTCD) and to request that the Federal Highway Administration (FHWA) take steps to amend these revisions as soon as possible. The FOOT was not given the opportunity to review and comment on these important revisions before they were published. These changes were not proposed in the Notice of Proposed Amendment for the MUTCD published by the FHWA and these revisions were also not presented to the National Committee on Uniform Control Devices, which is the normal process for any proposed revision to the MUTCD. The following are the revisions that FOOT has concerns with and we feel could impact the safety of roadways or will impose a significant financial burden on the State of Florida.

Section 3A.06 Functions, Widths and Patterns of Longitudinal Pavement Marking, Section 3B.04 White Lane Line Pavement Marking and Warrants, and Section 3B.05 Other White Longitudinal Pavement Marking:
Some of the new Standards in Sections 3B.04, 3B.05 and 3B.06 did not follow the normal approval process and since FDOT was not given the opportunity to comment on the proposed changes, we request that these changes be rescinded. One of the main concerns for FDOT is that our standard normal white line pavement marking is 6-inches wide and the new 2009 MUTeD has a requirement that a "Wide Line" is at least twice the width of a normal line, therefore this now requires FDOT to use a 12-inch line at locations that we are currently using a 6-inch line. Also, these new Standards do not have any language to allow states that use raised-pavement-marking's every 40-feet or provide gore-chevron markings as an option to meet the new requirement. This new requirement will require an additional cost for both new construction and resurfacing projects. The FDOT has estimated that these new requirements will cost an additional $5,000 per interchange on every pavement marking project, which would be $3.75 Million every 7-10 years. Our understanding is that these new requirements were not based on any new safety related research, but on a survey of practice by states, therefore we request these changes be rescinded.

Portion of FHWA Response Letter:
Thank you for your letter of October 5 to Administrator Mendez requesting reconsideration of several adopted revisions to the 2009 edition of the Manual on Uniform Traffic Control Devices (MUTCD). You specifically asked that an amended Final Rule be issued that changes four specific provisions. These provisions deal with the definition of "Standard," Signing for freeway and expressway multi-lane exits with an option lane, longitudinal pavement markings, and signing for toll highways.
Another issue raised in your letter deals with the provisions for pavement markings. You state that certain Standard statements in Part 3 were adopted in the Final Rule without giving the public the opportunity to comment and request that these provisions be rescinded. The specific provision you reference is that the definition of a "wide" longitudinal line is twice the width of a "normal" longitudinal line. In fact, the definitions of "wide" and "normal" longitudinal lines did not change from the 2003 edition of the MUTCD. However, we intend to consult with the National Committee on Uniform Traffic Control Devices (NCUTCD) in the future on some of the technical issues you raise, such as the supplemental use of raised pavement markers and whether a "wide" line that is less than twice the width of a "normal" line would provide adequate visual impact in conveying the degree of restriction that wide lines are intended to convey. Depending on the outcome of these discussions with the NCUTCD, some of these issues might be addressed through an Official Interpretation or a proposed change to the MUTCD. Your letter also makes reference to the provisions of Sections 3B.04, 3B.05, and 3B.06 that require wide lines in certain conditions on freeways and expressways being adopted without giving the public the opportunity to comment. We have analyzed these provisions as they appear in the 2009 MUTCD and compared them with both the language proposed in the Notice of Proposed Amendments (NP A) and that of the 2003 MUTCD. With the sole exception of freeway route splits—which are just a special case of a lane drop-in all cases referenced, we have found that the provisions adopted in the 2009 MUTCD were, in fact, proposed in the January 2, 2008 NP A or were not changed from the 2003 MUTCD. Therefore, the FDOT and the general public were provided the opportunity to comment on those provisions.