ATTACHMENT NO. 1

Part 4 Revisions Approved by the NCUTCD Council on 1/20/06

New alternative to traffic signal control in Section 4B.04

The MUTCD currently states, "Since vehicular delay and the frequency of some types of crashes are sometimes greater under traffic signal control than under STOP sign control, consideration should be given to providing alternatives to traffic control signals even if one or more of the signal warrants has been satisfied." The Signals Technical Committee felt that another alternative needed to be added encouraging the use of pedestrian refuge islands or curb extensions.

This action was approved by the Council of the NCUTCD at the General Session on January 20, 2006. The resulting text was as follows (added text shown as red underlined):

Section 4B.04 Alternatives to Traffic Control Signals

Guidance:

Since vehicular delay and the frequency of some types of crashes are sometimes greater under traffic signal control than under STOP sign control, consideration should be given to providing alternatives to traffic control signals even if one or more of the signal warrants has been satisfied.

Option:

These alternatives may include, but are not limited to, the following:

A. Installing signs along the major street to warn road users approaching the intersection;

B. Relocating the stop line(s) and making other changes to improve the sight distance at the intersection;

C. Installing measures designed to reduce speeds on the approaches;

D. Installing a flashing beacon at the intersection to supplement STOP sign control;

E. Installing flashing beacons on warning signs in advance of a STOP sign controlled intersection on major- and/or minor-street approaches;

F. Adding one or more lanes on a minor-street approach to reduce the number of vehicles per lane on the approach;

G. Revising the geometrics at the intersection to channelize vehicular movements and reduce the time required for a vehicle to complete a movement, which could also assist pedestrians;

H. Revising the geometrics at the intersection to add pedestrian median refuge island(s) and/or curb extension(s).

I. Installing roadway lighting if a disproportionate number of crashes occur at night;

J. Restricting one or more turning movements, perhaps on a time-of-day basis, if alternate routes are available;

K. If the warrant is satisfied, installing multiway STOP sign control;

L. Installing a roundabout intersection; and

M. Employing other alternatives, depending on conditions at the intersection.

Revisions to walking speeds in Section 4E.10

The Pedestrian Task Force of the Signals Technical Committee proposed revised text for Section 4E.10 to address two different issues:

1. Concern raised by the Public Rights-of-Way Access Advisory Committee that the pedestrian walking speed of 4 ft/sec in the 2003 MUTCD (and preceding editions) did not appropriately address the needs of the disabled community as they relate to safe crossing of streets at signalized intersections.

2. Concern raised by various organizations (including ITE and AAA) that the pedestrian walking speed of 4 ft/sec in the 2003 MUTCD (and preceding editions) did not appropriately address the needs of senior citizens as they relate to safe crossing of streets at signalized intersections.

The information presented at the January 2005 meeting by the Texas Transportation Institute (TTI) concerning pedestrian crossing technologies provided a reasonably large sample size and good analysis relating to the speed of pedestrians and was used as the basis of setting the pedestrian walking speed at 3.5 ft/sec, which is approximately a 15th percentile walking speed. The same TTI research also concluded that 3.0 ft/sec was the 15th percentile walking speed for senior citizens.

The Signals Technical Committee discussed pedestrian walking speed issues at length. It was felt that changes to the current MUTCD guidance were appropriate to address the above-cited concerns and to address operational alternatives available through current technology.

The Signals Technical Committee took the following four actions related to this topic:

1. Modify the walking speed used to calculate the pedestrian clearance time and include it as a Standard rather than Guidance as in the current MUTCD.

2. Delete the existing Guidance statement that is being upgraded to a Standard in Item 1. Also, for consistency with the walking speed included in the prior recommendation, change the existing Guidance statement to note that a walking speed of less than 3.5 ft/sec (rather than 4 ft/sec) should be used to determine the pedestrian clearance time at locations where pedestrians who walk slower than normal or pedestrians who use wheelchairs routinely use the crosswalk.

3. Add a new Guidance statement recommending that the total crossing time provided be calculated using a walking speed of 3 ft/sec and be based on the pedestrian crossing from the location of the pedestrian detector or, if none, from a point 6 feet from the curb face. The total crossing time includes the walk interval and the pedestrian clearance time.

   If the total crossing time calculated using the 3 ft/sec Guidance is longer than the sum of the pedestrian clearance interval (as calculated using the 3.5 ft/sec Standard) and the walk interval, the walk interval should be increased. It was noted that, for most applications on streets that are less than 100 feet wide, the walk time plus the pedestrian clearance time (as calculated using the 3.5 ft/sec Standard) will meet or exceed the recommended total crossing time, especially when the pedestrian detectors are located near the ramp and curb.

4. Delete an existing Option statement and replace it with a new Option statement noting that a walking speed of 1.2 m (4 ft) per second may continue to be used to calculate the pedestrian clearance time at locations where equipment is installed to permit pedestrians to request and receive a longer pedestrian clearance time.

These actions address the walking speed concerns of the Public Rights-of-Way Access Advisory Committee, ITE, and AAA. They also recognize that equipment is available to permit pedestrians to select longer walking times on an as needed or as desired basis.

These actions were approved by the Council of the NCUTCD at the General Session on January 20, 2006. The resulting text was as follows (added text shown as red underlined and deleted text shown as blue struckthrough):

Section 4E.10 <u>Pedestrian Intervals and Signal Phases</u>

Standard:

When pedestrian signal heads are used, a WALKING PERSON (symbolizing WALK) signal indication shall be displayed only when pedestrians are permitted to leave the curb or shoulder.

A pedestrian clearance time shall begin immediately following the WALKING PERSON (symbolizing WALK) signal indication. The first portion of the pedestrian clearance time shall consist of a pedestrian change interval during which a flashing UPRAISED HAND (symbolizing DONT WALK) signal indication shall be displayed. The second portion, if used, shall consist of the yellow change interval during which a steady UPRAISED HAND (symbolizing DON'T WALK) signal indication shall be displayed. The third portion, if used, shall consist of the red clearance interval (prior to a conflicting green being displayed), during which a steady UPRAISED HAND (symbolizing DONT WALK) signal indication shall be displayed.

If countdown pedestrian signals are used, a steady UPRAISED HAND (symbolizing DONT WALK) signal indication shall be displayed during the yellow change interval and any red clearance interval (prior to a conflicting green being displayed) (see Section 4E.07).

At intersections equipped with pedestrian signal heads, the pedestrian signal indications shall be displayed except when the vehicular traffic control signal is being operated in the flashing mode. At those times, the pedestrian signal lenses shall not be illuminated.

Guidance:

Except as noted in the Option immediately below, the pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the curb or shoulder ~~during~~ at the end of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of ~~1.2~~ 1.1 m (~~4~~ 3.5 ft) per second, to at least the far side of the traveled way or to a median of sufficient width for pedestrians to wait. [Note – this paragraph has been relocated]

Option:

~~Passive pedestrian detection equipment, which can detect pedestrians who need more time to complete their crossing and can extend the length of the pedestrian clearance time for that particular cycle, may be used in order to avoid using a lower walking speed to determine the pedestrian clearance time.~~ A walking speed of up to 1.2 m (4 ft) per second may be used to evaluate the sufficiency of the pedestrian clearance time at locations where equipment such as an extended pushbutton press or passive pedestrian detection has been installed to provide slower pedestrians an opportunity to request and receive a longer pedestrian clearance time. [Note – this paragraph has been relocated]

Guidance:

Where pedestrians who walk slower than ~~1.2~~ 1.1 m (~~4~~ 3.5 ft) per second, or pedestrians who use wheelchairs, routinely use the crosswalk, a walking speed of less than ~~1.2~~ 1.1 m (~~4~~ 3.5 ft) per second should be considered in determining the pedestrian clearance time. [Note – this paragraph has been relocated]

Except as noted in the Option below, the walk interval should be at least 7 seconds in length so that pedestrians will have adequate opportunity to leave the curb or shoulder before the pedestrian clearance time begins.

Option:

If pedestrian volumes and characteristics do not require a 7-second walk interval, walk intervals as short as 4 seconds may be used.

Support:

The walk interval itself need not equal or exceed the pedestrian clearance time calculated for the roadway width, because many pedestrians will complete their crossing during the pedestrian clearance time.

Guidance:

The total of the walk interval and pedestrian clearance time should be sufficient to allow a pedestrian crossing in the crosswalk who left the pedestrian detector (or, if no pedestrian detector is present, a location 1.8 m (6 ft) back from the face of the curb or from the edge of the pavement) at the beginning of the WALKING PERSON (symbolizing WALK) signal indication to travel at a walking speed of 0.9 m (3 ft) per second to the far side of the traveled way being crossed. Any additional time that is required to satisfy the conditions of this paragraph should be added to the walk interval.

~~Guidance:~~

Where the pedestrian clearance time is sufficient only for crossing from the curb or shoulder to a median of sufficient width for pedestrians to wait, additional measures should be considered, such as median-mounted pedestrian signals or additional signing.

Option:

The pedestrian clearance time may be entirely contained within the vehicular green interval, or may be entirely contained within the vehicular green and yellow change intervals.

On a street with a median of sufficient width for pedestrians to wait, a pedestrian clearance time that allows the pedestrian to cross only from the curb or shoulder to the median may be provided.

During the transition into preemption, the walk interval and the pedestrian change interval may be shortened or omitted as described in Section 4D.13.