National Committee on
Uniform Traffic Control Devices

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Item Number: 25B-SIG-01

NCUTCD PROPOSAL FOR CHANGES TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

COMMITTEE / TASK FORCE:	Signals Technical Committee
ITEM NUMBER:	25B-SIG-01
TOPIC:	Traffic Control Signals at Midblock Pedestrian Crosswalks
ORIGIN OF REQUEST:	NCHRP Project 03-141, Report 1030 released February 2023
AFFECTED SECTIONS OF MUTCD:	1C.02, 4A.08, 4C.05, 4D.01, 4H.02, and 4I.06

DEVELOPMENT HISTORY:
Approved by Signals TC: 06/12/2025
Concurrence from Edit Committee: 06/28/2023
Approved by NCUTCD Council: .....

This is a proposed change to the MUTCD that has been developed by a technical committee, joint committee, or joint task force of the NCUTCD. The NCUTCD is distributing this to its sponsoring organizations for review and comment. Sponsor comments will be considered in revising the proposal prior to NCUTCD Council consideration. This proposal does not represent a revision of the MUTCD and does not constitute official MUTCD standards, guidance, options, or support. If approved by the NCUTCD Council, the recommended changes will be submitted to FHWA for consideration for inclusion in a future MUTCD revision. The MUTCD can be revised only through the federal rulemaking process.

SUMMARY:
Sponsors, please note that a similar, but far more complex, proposal numbered 24B-SIG-01 and titled “Midblock Pedestrian Signals (MPS)” was distributed to and commented upon by sponsors in the fall of 2024. The Signals Technical Committee reviewed those comments and, as a result, has withdrawn the previous proposal and developed this new proposal which is significantly simplified and therefore more understandable.

This proposal is to revise various sections of the MUTCD to add a new optional way of operating traffic control signals at midblock pedestrian crosswalks. The operation features an optional display of flashing red indications to the major street during all or part of the pedestrian clearance interval (flashing orange hand) for the crosswalk. The proposal is a result of review of the NCHRP report 1030 (research project 03-141) “Safety at Midblock Pedestrian Signals (2023).” The research confirmed the safety and efficiency benefits of the new optional type of operation of traffic signals at midblock pedestrian crosswalks.

DISCUSSION:

NCHRP research project 3-141 was conducted by Texas A&M Transportation Institute pursuant to a research problem statement developed by the Signals Technical Committee in June 2019. The purpose of the research was to evaluate the safety effectiveness of a new type of operation of traffic control signals at signalized midblock crosswalks. The new operation features the display of flashing red signal indications (rather than steady red) to the main street during all or part of the pedestrian clearance interval displayed for the crosswalk. The new operation is intended to reduce unnecessary vehicular delay at such locations. [The NCHRP study refers to the new operation as MPS (midblock pedestrian signals), however that is too broad a term. Signals that are typically referred to by practitioners as "midblock pedestrian signals" have been used for many decades at midblock crosswalks. These are compliant with the MUTCD because they display steady red to the main street during all of the pedestrian phase. The new operation studied is really only a special type of operation of a signal at a midblock crosswalk.]

The research found, in general, that the Crash Modification Factors (CMF) for the new operation in this study (see Table below) are similar to the CMFs previously identified for the Pedestrian Hybrid Beacon (PHB). The PHB also displays flashing red indications to the main street during the pedestrian clearance interval, but the main street indications are "dark" during periods between servicing of pedestrian actuations.

Crash Type	**MPS Crash Modification Factor, NCHRP 3-141**	**AZDOT PHB Crash Modification Factor**
All crash types, Fatal and Injury (FI)	.660	.748
Pedestrian crashes, FI	.554	.550
Rear-end crashes, FI	.686	NA

It is important when comparing the CMFs for the MPS to the PHB to note the characteristics of the sites included in each study. The study notes: "The MPS sites all have 2-legs (non-intersection or midblock) while only 21 percent of the PHB sites included in the September 2019 Arizona Department of Transportation (ADOT) study had 2-legs. The MPS is appropriate for locations with only 2-legs (non-intersection or midblock) while the PHB is appropriate for locations with 3 or 4-legs."

The Signals Technical Committee has reviewed the NCHRP Report's findings and concurs that the proposed new option for operating traffic control signals at midblock pedestrian crosswalks provides a level of safety effectiveness comparable to PHB and is more appropriate than PHB for 2-leg locations. Accordingly, this proposal includes changes to various sections in the MUTCD to implement the research and make the new operation optionally usable by jurisdictions. The proposed changes are discussed by section, as follows:

Section 1C.02:

A definition of the term "midblock", approved by the Edit Committee, is added. This term is used throughout the MUTCD, not just in Part 4, but has never been defined and has been subject to various interpretations by MUTCD users. This definition will remove the uncertainty and add clarity.

Section 4A.08:

Existing paragraph 06 of this section prohibits the use of STOP signs in conjunction with the operation of any signal except in certain conditions. Two exceptions, items A and B, are currently specified. A third exception, item C, is added to account for the proposed new Option being added in Section 4D.01 paragraph 09c (see separate discussion of that section below.)

Also, existing item B is revised to clarify that an engineering study is necessary to determine whether an extremely low-volume minor street or driveway located within or adjacent to a signal controlled location (such as a single home residential driveway opposite the stem of a T-intersection) does not require separate traffic signal control because an extremely low potential for conflict exists.

Section 4C.05:
This section describes Warrant 4, the Pedestrian Volume warrant, which provides pedestrian volume criteria for installing a traffic signal at a midblock crosswalk. The proposal adds a new Option paragraph 08a to allow the criteria for justification of a PHB as stated in Section 4J.01 to be used as an alternative warrant for a traffic signal at a midblock crosswalk that displays flashing red indications to the main street during all or part of the pedestrian clearance interval.

Like a PHB, the new optional midblock crosswalk signal operation that displays flashing red during the pedestrian clearance interval results in less vehicular delay than a traditional midblock pedestrian signal, which displays steady red during that interval, and thus (as noted in the NCHRP study) allowing use of the PHB warrant criteria is appropriate.

Section 4D.01:
Proposed revisions to this section relate to the issue of "half-signals." Placement and operation any traffic control signal to facilitate pedestrian crossings at an intersection with a side-street STOP-controlled approach, without signalizing the side street, is known as a "half-signal." This type of operation has been a continuing issue of safety concerns, especially to pedestrians, and has been covered critically by news media. Half-signals were specifically disallowed by FHWA in 1987 and all existing were to be removed or converted to a conforming design by 12/31/1996. See the summary of FHWA Official Ruling 4-8 dated 3/9/1987 reproduced below.

Details for Request 4-8

Request Type:	Change
Requesting Agency:	City of Seattle
State:	WA
Date of Request:	7/26/1974
Topic:	Use of Half-Signals at School Crossings (Sg-44)
Affected Portions of 2009 MUTCD:	Section 4D.34
FHWA Ruling:	1/24/1980 – Proposed in Notice of Proposed Amendments to allow use as an Optional alternative to full signalization, contrary to recommendations of NCUTCD. 3/9/1987 – Denied change due to lack of definitive research addressing the issue of credibility of the green signal indication, and set a date of 12/31/1996 for all existing half-signals to be removed or converted to conforming signal designs.

In the full Official Ruling, FHWA cited three reasons why Half-Signals are not permitted in the MUTCD which were:

"1. Motorists on the minor road, facing the inability to cross the major stream of traffic, could utilize the pedestrian signal, may not come to a complete stop, and not give adequate attention to pedestrians crossing the street.

2. Left-turning vehicles from the minor road that enter the intersection because they see that major road traffic is stopped could potentially become trapped in the intersection as the signal changes back to green. In this situation, there would be no clearance interval for the minor road traffic.

3. Half-Signals violate driver expectancy with vehicles on the minor stop sign controlled leg making left turns in front of drivers who see a green ball from the traffic signal on the major road."

The FHWA did not follow up that Official Ruling with the normal process of making a change to the MUTCD to add the prohibition. In 2006, in response to continuing questions from jurisdictions unaware of the 1987 ruling asking why half-signals cannot be used, FHWA reaffirmed their 1987 ruling by posting the question on the MUTCD website as a Frequently Asked Question (FAQ) and provided this answer: "They violate the provisions of the MUTCD, should not be installed, and any existing should be removed. That position was taken in 1987, after much discussion at the National Committee over a period of years, and it remains in effect. There were and are many reasons for the decision, some of which include the unexpected conflict between the basic meaning of a green signal on the major street and vehicles from the stop-controlled approach crossing or turning across their paths".

There is concern that some agencies have installed new signalized crosswalks in a way that makes them half-signals. Therefore, a new Support paragraph 09a is added to Section 4D.01 describe what a half-signal is and why it is not to be used. Also, new Standard paragraph 09b is added to specifically disallow the use of half-signals, and new Option paragraph 09c provides an exception to the prohibition based on an engineering study, but only if the side street or driveway traffic is prohibited and/or physically channelized to prevent side street traffic from crossing the major street and from turning left across the signal-controlled crosswalk. This type of treatment eliminates the relevant conflicts and has been successfully used by jurisdictions.

Section 4H.02:
Existing paragraph 03 prohibits the use of bicycle signal faces with the operation of a PHB. This is because of concerns about motorists not expecting late arriving higher-speed bikes during the flashing red vehicular signal displays of a PHB. With the addition of a new Option in Section 4I.06 (see below), traffic control signals at midblock crosswalks can now also have flashing red vehicular signal displays during the pedestrian clearance interval, so additional language is added to paragraph 03 to treat them identically to PHBs. It should be noted that the NCHRP study recommended that future research is needed to investigate how and whether to incorporate a bicycle signal with a signalized midblock crosswalk.

Section 4I.06:
Existing paragraph 02 requires the display of steady red indications to any conflicting vehicular movement that is approaching the intersection or midblock location perpendicular or nearly perpendicular to the crosswalk during the walk and pedestrian clearance intervals, except as allowed in Section 4J.03 for PHBs. An additional exception is added as Option Paragraph 02a of this section for a signalized midblock crosswalk, allowing the display of flashing red during all or part of the pedestrian clearance interval.

RECOMMENDED MUTCD CHANGES:

The following present the proposed changes to the current MUTCD within the context of the current MUTCD language. Proposed additions to the MUTCD are shown in blue underline and proposed deletions from the MUTCD are shown in ~~red strikethrough~~. Changes previously approved by NCUTCD Council (but not yet adopted by FHWA) are shown in green double underline for additions and ~~green double strikethrough~~ for deletions. In some cases, background comments may be provided with the MUTCD text. These comments are indicated by [bracketed white text in shaded green]. Deletions made by a technical committee, joint committee, or task force after initial distribution to sponsoring organizations are shown in ~~highlighted red strikethrough and sans-serif text~~. Additions made by a technical committee, joint committee, or task force after initial distribution to sponsoring organizations are shown in underline blue and sans-serif text.

PART 1
GENERAL

CHAPTER 1C. DEFINITIONS, ACRONYMS, AND ABBREVIATIONS USED IN THIS MANUAL

Section 1C.02 Definitions of Words and Phrases Used in this Manual

Standard:

01 **Unless otherwise defined in this Section, or in other Parts of this Manual, words or phrases shall have the meaning(s) as defined in the most recent editions of the "Uniform Vehicle Code," "AASHTO Transportation Glossary (Highway Definitions)," and other appropriate publications.**

02 **Where a term that is defined in this Section or elsewhere in this Manual has a different definition in another resource or in common use, the definition herein shall govern for purposes of the applicability of the provisions of this Manual.**

03 **The following words and phrases, when used in this Manual, shall have the following meanings:**

XX. Midblock –a location that is between consecutive intersections and neither within nor immediately adjacent to an intersection.

PART 4
HIGHWAY TRAFFIC SIGNALS

[Note: A number of paragraphs in the Part 4 Sections are omitted for brevity.]

CHAPTER 4A. GENERAL

Section 4A.08 Use of Signs at Signalized Locations

Standard:

06 **STOP signs shall not be used in conjunction with any highway traffic signal operation, except in ~~either of~~ the following cases:**

A. If the signal indication for an approach is a flashing red at all times, or

B. If a minor street or driveway is located within or adjacent to an area controlled by a traffic control signal, ~~but~~ and an engineering study determines it does not require separate traffic signal control because an extremely low potential for conflict exists, or

C. If a crosswalk located within or immediately adjacent to a minor driveway or street is signalized in accordance with the option in Paragraph 09c of Section 4D.01.

CHAPTER 4C. TRAFFIC CONTROL SIGNAL NEEDS STUDIES

Section 4C.05 Warrant 4, Pedestrian Volume

Guidance:

07 *If this warrant is met and a traffic control signal is justified by an engineering study, then:*

A. If it is installed at an intersection or major driveway location, the traffic control signal should also control the minor-street or driveway traffic, should be traffic-actuated, and should include pedestrian detection.

B. If it is installed at a non-intersection crossing, the traffic control signal should be installed at least 100 feet from side streets or driveways that are controlled by STOP or YIELD signs, and should be pedestrian-actuated. If the traffic control signal is installed at a non-intersection crossing, at least one of the signal faces should be over the traveled way for each approach, parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the crosswalk or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance, and the installation should include suitable standard signs and pavement markings.

C. Furthermore, if it is installed within a signal system, the traffic control signal should be coordinated.

Option:

08 The criterion for the pedestrian volume crossing the major street may be reduced as much as 50 percent if the 15th-percentile crossing speed of pedestrians is less than 3.5 feet per second (see Figures 4C-5 through 4C-8).

08a The criteria for Pedestrian Hybrid Beacons (see Section 4J.01 and Figures 4J.01 and 4J.02) may be used as an alternative warrant for a signalized midblock crosswalk that displays flashing red indications to the main street during all or part of the pedestrian clearance interval.

CHAPTER 4D. DESIGN FEATURES OF TRAFFIC CONTROL SIGNALS

Section 4D.01 General

Standard:

07 **A traffic control signal shall control traffic only at the intersection or midblock location where the signal faces are placed.**

Guidance:

08 *Midblock crosswalks should not be signalized if they are located within 300 feet from the nearest traffic control signal, unless supported by an engineering study or engineering judgment that indicates safe and efficient operation of the closely-spaced traffic control signals can be achieved.*

09 *Midblock crosswalks should not be signalized if they are located within 100 feet from side streets or driveways that are controlled by STOP signs or YIELD signs, unless supported by an engineering study or engineering judgment that considers restricting turning and crossing movements from the side street or driveway to eliminate conflicts with pedestrian and bicyclist movements.*

Support:

09a A pedestrian and/or bicycle actuated signal within or immediately adjacent to an intersection that displays traffic control signal indications to the main street only, leaving the cross street unsignalized and controlled only by STOP signs, is typically known as a half signal. Half signals are not approved for use due to the unexpected conflict between the basic meaning of a green signal indication on the major street and vehicles from the stop-controlled approach crossing or turning across their paths.

Standard:

09b Except as provided in Paragraph 09c of this Section, half signals shall not be used.

Option

09c A signalized pedestrian crosswalk may be located within or immediately adjacent to a minor driveway or street based on an engineering study, but only if the side street or driveway traffic is prohibited and/or physically channelized to prevent side street traffic from crossing the major street and from turning left onto the major street.

CHAPTER 4H. BICYCLE SIGNALS

Section 4H.02 Prohibited Uses of Bicycle Signal Faces

Standard:

01 Bicycle signal faces shall not be used to control conflicting bicyclist movements from perpendicular or nearly perpendicular directions.

02 Bicycle signal faces shall not be used for controlling any bicyclist movement that is sharing an approach lane with motor vehicle traffic.

03 Bicycle signal faces shall not be used in any manner with respect to the design and operation of a hybrid beacon or a signalized midblock pedestrian crosswalk. [It should be noted that the NCHRP study recommended that future research is needed to investigate how and whether to incorporate a bicycle signal with a signalized midblock crosswalk.]

CHAPTER 4I. PEDESTRIAN CONTROL FEATURES

Section 4I.06 Pedestrian Intervals and Signal Phases

Standard:

01 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 indications shall not be displayed. Except as provided in Paragraph 3 of Section 4J.03 and Paragraph 02a of this section, when the pedestrian signal heads associated with a crosswalk are displaying either a steady WALKING PERSON (symbolizing WALK) or a flashing UPRAISED HAND (symbolizing DONT WALK) signal indication, a steady red signal indication shall be shown to any conflicting vehicular movement that is approaching the intersection or midblock location perpendicular or nearly perpendicular to the crosswalk.

Option:

02a At a signalized midblock crosswalk, flashing red signal indications may be shown to the main street during all or part of the pedestrian clearance interval. If needed for extra emphasis, a CROSSWALK—STOP ON RED (symbolic circular red) (R10-23) or STOP ON STEADY RED – YIELD ON FLASHING RED AFTER STOP (R10-23a) sign may be installed facing each major approach.