

INSURANCE INSTITUTE FOR HIGHWAY SAFETY

April 26, 2000

The Honorable Kenneth R. Wykle
Administrator
Federal Highway Administration
400 7th Street, S.W.
Washington, D.C. 20590

**23 CFR Part 655
Revision of the Manual on Uniform Traffic Control
Devices; General Provisions, Markings, and Signals
Docket No. FHWA 1999-6575**

Dear Administrator Wykle:

The Federal Highway Administration (FHWA) has proposed an amendment to Part 4, "Signals," of the "Manual on Uniform Traffic Control Devices" (MUTCD) that would change the name of Section 4B.2 to "Basis of Installation or Removal of Traffic Control Signals," to reflect that the section addresses both the installation and removal of traffic control signals. The Insurance Institute for Highway Safety (IIHS) agrees that such a change is appropriate and supports this proposed amendment. It is important to inform transportation decision makers that traffic signals are not necessarily the safest method of traffic control, and in fact safety can be improved at some locations by removing traffic signals and implementing other forms of traffic control. For example, IIHS reported that when traffic signals were replaced by multiway stop control at urban intersections with relatively low traffic volumes, motor vehicle crashes were reduced by approximately 24 percent (Persaud et al., 1997). We also reported that when several intersections with traffic signals were converted to modern roundabouts, police-reported crashes were reduced by approximately 39 percent, and injury crashes were reduced by 76 percent (Persaud et al., 2000).

In Section 4D.6 of MUTCD, FHWA has proposed to add a new option to read: "A leading protected-only left-turn phase may be considered if there is not a sufficient number of acceptable gaps for the left-turning movement." IIHS reported that crashes involving left-turning movements occur in substantial numbers in urban areas and that collisions between left-turning vehicles and opposing traffic are among the most injury-producing type of urban crashes (Retting et al., 1995). We also reported distinct patterns and large numbers of left-turning crashes at specific intersections where often there is not a

sufficient number of acceptable gaps for the left-turning movement (Retting et al., 2000). The proposed addition as stated above does not go far enough to promote the use of protected-only, left-turning signal phasing at locations where "there is not a sufficient number of acceptable gaps for the left-turning movement." In such situations, by definition, the provision of protected signal phasing should be strongly recommended, not merely "considered."

Section 3B.9, "Stop and Yield Lines," states that stop and yield lines, where used, should be placed 4 feet in advance of crosswalks. Although the practice of placing stop lines 4 feet from crosswalks has been in place for some time and is widely followed, there is evidently no research basis for this standard. Based on extensive field observations of motor vehicle and pedestrian traffic at urban signalized intersections, IIHS reported that the relatively close placement of stop lines to crosswalks results in a large proportion of vehicles stopping in crosswalks (Retting and Van Houten, in press). This can endanger pedestrians because of the close proximity of vehicles and pedestrians. In the case of trucks and other large vehicles, stopping close to the crosswalk can prevent the driver from seeing pedestrians crossing directly in front of the vehicle. This visibility problem has in fact contributed to a pattern of fatal truck crashes, in which the driver proceeds when the light turns green and is unaware of pedestrians still in the crosswalk directly in front of the vehicle (Retting, 1993). When stop lines at a group of experimental urban signalized intersections were relocated from 4 to 20 feet from crosswalks, IIHS reported a large and significant decrease in the proportion of vehicles that stopped in the crosswalks (Retting and Van Houten, in press). In addition, there was an increase in the elapsed time of lead vehicles entering the intersections after onset of green signals, thus reducing the risk of right-angle crashes caused by red light running. We urge FHWA to re-evaluate and modify the standard placement of stop lines to allow for and even encourage their placement farther back than 4 feet from crosswalks at urban signalized intersections.

Under Section 4E.9, "Pedestrian Intervals and Phases," there is no mention of leading pedestrian interval (LPI) signal phasing -- a brief, exclusive signal phase dedicated to pedestrian traffic. LPI phasing is designed to allow pedestrians to get a head start and gain access to crosswalks prior to the release of motor vehicle traffic. This can be especially helpful at locations where large numbers of right-turning vehicles deter or delay pedestrians from crossing at the onset of the walk signal. IIHS reported significant reductions in pedestrian/motor vehicle conflicts at urban intersections where three-second LPI phasing was installed (Van Houten et al., in press). We recommend that Section 4E.9 of the revised MUTCD make reference to LPI

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signal phasing and encourage its use at intersections with high volumes of both motor vehicle and pedestrian traffic.

Section 3B.12, "Pavement Word and Symbol Markings," indicates that lane-use arrow markings often are used to provide guidance in turn bays where turns may or may not be mandatory. We suggest that the revised MUTCD also point out that lane-use arrow markings can be used to prompt drivers of through vehicles to be alert for turning vehicles in the same lane, in advance of intersections and driveways that experience frequent conflicts between through traffic and turning vehicles -- a potential source of rear-end crashes. IIHS reported reductions in such conflicts at several sites where lane-use arrow markings were tested for this purpose (Retting et al., 1997).

Finally, also under Section 3B.12, we recommend that FHWA consider adding a new pavement marking pattern. IIHS developed and tested a combination text/symbol pavement marking intended to provide better advance warning to drivers approaching sharp and/or crash-prone horizontal curves on rural two-lane roads. The marking consists of the word "SLOW" in 8-foot-high white letters, a white 8-foot-high curve arrow, and an 18-inch-wide white line perpendicular to the road at both the beginning and end of the text/symbol message. At the one site studied, IIHS reported significant speed reductions, especially in the proportion of drivers observed far in excess of the posted advisory speed (Retting and Farmer, 1998). The Pennsylvania Department of Transportation is planning to install such markings at a large number of rural curves to help evaluate potential crash benefits.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Retting". The signature is stylized and cursive.

Richard A. Retting
Senior Transportation Engineer

cc: Docket Clerk, Docket No. FHWA 1999-6575

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