The STOP (R1-1) Sign and Supplemental Devices

Proper Placement, and Only When Necessary, Are Essential

Figure 1. A properly installed STOP(R1-1) sign stop line, and crosswalk.

Motorists must always stop at a STOP (R1-1) sign. Moreover, motorists and pedestrians expect them to stop. Proper placement is essential to inform road users and to preserve respect for the most important of traffic signs. User respect is also maintained by installing STOP signs only when necessary.

This article describes how municipalities should install STOP and supplemental signs and pavement markings. It also discusses using STOP signs to control speed.

First a note about the Manual on Uniform Traffic Control Devices (MUTCD). It governs traffic control devices with standard, guidance, and option statements of practice. In this article the words "shall" or "required" are used for standard statements, "should" or "recommend" for guidance, and "may" or "permitted" for option.

Sign and Marking Installation

Figure 1 shows one of three STOP signs at a T-intersection. It illustrates a properly installed set of traffic control devices.

The STOP sign has the required white on red retroreflective sheeting and standard letters. It is 30 by 30 inches, the required size for conventional roads. It is located on the right side of the traffic lane, and as close as practical to the intersection. The lateral offset (measured from the road or shoulder edge to the near edge of the sign) is 6 feet, the required minimum.

The almost 6 foot mounting height (measured from the pavement edge to the bottom of the sign) exceeds the required 5 foot minimum for "rural districts." The MUTCD requires 7 feet "where parking or pedestrian movements occur" to reduce the risk of pedestrians hitting the sign. In this instance, the sign height and distance off the sidewalk achieves this purpose.

The 3-Way (R1-3) supplemental plaque is required where STOP signs control all approaches. In Figure 1 it is in poor condition and should be replaced. It shall be 12 by 6 inches, white letters on a red background, and retroreflective. It may have a mounted height a foot less than the STOP sign.

The painted stop line is properly installed. It is the required solid white line extending across the approach lane. As recommended it is 12 to 24 inches wide with similar spacing, and is placed where the road user should stop. Being 4 feet in advance of the crosswalk, it conforms to the NHDOT Standard. (Without a marked crosswalk, the stop line should be placed at the desired stopping point, and between 4 and 30 feet from the nearest edge of the intersecting travel way.)

The crosswalk shown is the MUTCD Standard. The crosswalk lines are the required white stripes between 6 and 24 inches wide with similar spacing. They are the recommended 6 feet (at least) in length. (Two other layouts are permitted; see MUTCD Figure 3B-15.)

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The Stop Ahead (W3-1a) sign is required where a STOP sign is not visible for a sufficient distance for motorists to respond. MUTCD Table 2C-4 provides recommended distances. For the 35 mph road in Figures 1 and 2, the recommendation is 150 feet. At that distance the illustrated STOP sign is visible, but the W1-3a is still permitted. With the foliage and unexpected need to stop, the

Figure 2. A properly installed Stop Ahead (W3-1a) sign.

Stop Ahead sign is probably a good idea. The Stop Ahead sign, at 160 foot from the STOP sign, exceeds the recommended warning to motorists.

The W3-1a sign in Figure 2 is of the required size (30 x 30 inches), color (yellow with black and red symbols) and offset (greater than 6 feet). Here too, the 6 foot mounting height is adequate. The MUTCD permits mounting on a utility pole.

This illustrates that more traffic control devices than the R1-1 are usually needed. All devices must be properly installed and maintained for motorist and pedestrian safety.

The STOP Sign as Speed Control

The MUTCD recommends STOP signs only when one of four conditions exists (Section 2B.05). It also states that "STOP signs should not be used for speed control." The illustrated STOP sign, however, has that purpose. After a car struck a child, residents petitioned for a 20 mph speed zone. The Town Council was reluctant to set such a low speed limit. Instead, it directed the STOP sign be installed.

Municipal officials often face similar decisions. They must balance resident wishes against more effective, but also more expensive, ways to calm traffic. In the Figures 1 and 2 example, residents are generally happy with the STOP sign. Perhaps they don't appreciate that the road might not be significantly safer with it.

The Institute of Traffic Engineers (ITE) analyzed studies of speed before and after unwarranted STOP signs. They found that motorists reduced speed only a short distance before such a STOP sign. Midblock speeds decreased slightly on average and in a few cases increase. Within several hundred feet past a STOP sign, many cars travel as fast as if no sign existed. Moreover, as motorists accelerated from the sign, they had reduced ability to stop for an emergency.

Vehicle acceleration also increases air pollution. In addition, overuse decreases motorist respect for this important sign. While the author took the Figures 1 and 2 pictures, 17 cars rolled through the STOP signs; one came to a complete stop. This is consistent with studies that show less than 10 percent of drivers actually stop for unwarranted STOP signs.

Speed humps, rounded raised areas placed across the road, can be effective speed control measures if properly designed and spaced. ITE has a recommended design for a 12-foot long speed hump, 3 to 4 inches high. The design speed is 15 to 20 miles per hour. Shorter humps act like speed bumps, which are no longer used due to many lost liability suits.

Speed hump spacing depends on the desired midpoint speed. For example, a 200 to 250 foot spacing is needed to have an average 20 mph midpoint speed. They cost from $2000 to $2500 each.

Speed tables, essentially long speed humps, are usually 22 foot long with a textured material on the flat section. Fire departments usually prefer them to speed humps. They slow the traffic less than speed humps.

Other speed control measures include narrowing parts of the road or deflecting traffic with chokers or islands. Some have been successful, and many have failed. One reason for failure is residential objection. These measures slow traffic by inconveniencing motorists. Residents, who drive the roads frequently, are most inconvenienced.

Sources

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