

TRAFFIC AND SAFETY INFORMATIONAL SERIES

FREQUENTLY ASKED QUESTION #20

WHEN ARE STOP SIGNS AND TRAFFIC SIGNALS APPROPRIATE FOR INTERSECTIONS?

Traffic control devices are intended to safely assist and guide drivers. Some people may believe that various types of traffic problems would be solved by the addition of a stop sign or traffic signal. Some would even like a traffic signal or a stop sign to be placed at every intersection. However, in some circumstances the absence of a stop sign or traffic signal actually provides for a safer situation.

According to on the *Manual on Uniform Traffic Control Devices* (MUTCD), traffic control devices should meet five basic requirements:

- Fulfill a need
- Command attention
- Convey a clear, simple meaning
- Command respect of road users
- Give adequate time for a proper response

WHAT IS THE APPROPRIATE USE AND PLACEMENT OF A STOP SIGN?

A stop sign is a regulatory sign used to stop traffic at a certain location. It consists of a red octagon with a white border and large white letters that read “STOP” (Figure 1). At multiway stop intersections where all approaches are required to stop, a small plate is placed below the stop sign to inform drivers of the all-way stop condition.



FIGURE 1 Stop sign

Because stop signs inconvenience drivers, they should only be used where they are strictly warranted. The MUTCD states that a stop sign may be warranted where one or more the following conditions exists:

1. A less important road intersects a main road and application of the normal right-of-way rule would not be expected to provide reasonable compliance with the law.
2. A street is entering a through highway or street.
3. The intersection is in a signalized area but is itself unsignalized.
4. A combination of high entering traffic volumes, a restricted view, or a problematic crash history indicates the need for control by a stop sign.

Conversely, the use of a stop sign should be avoided in certain locations. Before the use of a stop sign is considered, a less restrictive method, such as the use of a yield sign, should first be considered.

WHAT DETERMINES THE PLACEMENT OF A MULTIWAY STOP SIGN?

A multiway stop sign may improve safety at an intersection. Normally, multiway stop control is used at the intersection of two roads that contain similar traffic volumes. Three-way stop control is used at intersections that have only three approaches (e.g., a T-intersection). According to the MUTCD, the warrants for placing a multiway stop sign are as follows:

1. Traffic signals are justified, and a multiway stop sign is an interim measure that can be installed quickly to control traffic while arrangements are made for the signal installation.
2. Five or more crashes have occurred over a 12-month period that are correctable by a multiway stop sign. Such accidents include right- and left-turn collisions as well as right-angle collisions.
3. The intersection meets the following criteria for minimum traffic volumes: (a) The vehicular volume entering the intersection from the major street approaches averages at least 300 vehicles per hour for any eight hours of an average day; and (b) the combined vehicular, pedestrian, and bicycle volume from the minor street approaches averages at least 200 units per hour for the same eight hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but (c) if the 85th percentile approach speed of the major street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the above requirements.

WHAT DETERMINES THE PLACEMENT OF A TRAFFIC SIGNAL?

The warrants for the placement of traffic signals are found in the MUTCD. For traffic signal warrants, refer to Traffic and Safety Informational Series Frequently Asked Question #15, What Is the Harm in Installing an Unwarranted Traffic Control Device?

WHY CAN'T A TRAFFIC SIGNAL BE PLACED AT EVERY SCHOOL CROSSING?

The fifth MUTCD warrant for traffic signalization (Section 4C.06) explains traffic signal placement with regard to school crossings. If a traffic study shows that the frequency and adequacy of gaps in the traffic flow are insufficient to allow schoolchildren to cross safely, then a traffic control signal may be warranted. When a traffic control signal is installed entirely because of this warrant, the MUTCD notes the following:

- If installed at an intersection or major driveway location, the signal should also control the minor street or driveway traffic, should be traffic actuated, and should include pedestrian detection.
- If installed at a non-intersection crossing, the 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 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.
- If installed within a signal system, the signal should be coordinated with others in the vicinity.

When the gaps in the traffic flow at a school crossing are sufficient for schoolchildren to cross safely, the addition of a traffic control device may not be necessary. A crossing guard or a school crossing sign at the crosswalk with warning signs on the approaches can also help control traffic during peak traffic flow times.