04 MUTCD Traffic Controls for School Zones

This chapter sets forth standards and guidance for the use of school zone signage, pavement markings and related devices throughout the State of New Jersey. This guide is based upon the standards and guidance presented in the 2023 Manual on Uniform Traffic Control Devices (11th Edition). The recommendations include typical solutions that are generally applicable, keeping in mind the unique needs of each school environment. The location of signage and distances relative to the school grounds noted here should be considered "best practice." This chapter ends with a series of tables that act as easily accessible resources regarding school zone signage and traffic control devices.

Standard Signage and Pavement Markings for School Zones

The following signs and pavement markings are recommended for use in school zones. School warning signs and any supplemental plaques used in association with these warning signs shall have a fluorescent yellow-green background with a black legend and border unless otherwise noted. Refer to the 2023 MUTCD for full guidance. A PDF of the manual is available at https://mutcd.fhwa.dot.gov/pdfs/11th_Edition/mutcd11theditionhl.pdf.

School Zone Sign Assembly (MUTCD Section 7B.02)

This sign assembly should be used on all approaches that enter a school zone. Guidance on the placement of school zone sign assembly is found in MUTCD Section 7B.02 (Placement examples for school zone signage are shown in figures 7B-2 through 7B-5). This sign is an assembly of two signs and includes the School sign (S1-1) and the SCHOOL Marker sign (S4-3P) below (it is noted that the SCHOOL Marker is optional). The marker sign should always be used to distinguish this warning sign from the School Crossing sign assembly. The downstream end of a designated school zone may be identified with an END SCHOOL ZONE (S5-2) sign.

Many jurisdictions also find it beneficial to use this sign to advise road users that they are approaching a school that is adjacent to a highway or where additional care is needed, even if no school crossing is involved and the speed limit remains unchanged. This is permissible.



S1-1

S4-3P

School Zone Sign Assembly

School Crossing Sign Assembly (MUTCD Section 7B.03)

This sign assembly is used to identify a crosswalk that is not protected by a stop or yield sign or a traffic signal. This sign is used primarily within the reduced school speed zone and/or along established school walking routes and/or where a significant student crossing exists. The School Crossing sign assembly consists of a School sign (S1-1) supplemented with a diagonal downward arrow (W16-7P) plaque pointing left or right at the crosswalk, depending on where the sign is installed. Guidance on the placement of the school crossing sign assembly can be found in the MUTCD Section 7B.03, Figure 7B-2. When used outside of the reduced school speed zone, this sign must be accompanied by the School Advance Crossing sign assembly.



S1-1



W16-7P

School Crossing Sign Assembly

School Advance Crossing Sign Assembly (MUTCD Section 7B.03)

This sign assembly is used exclusively in conjunction with the School Crossing sign assembly as a means of advanced warning. This sign assembly is only used when the school crosswalk exists outside of the posted reduced school speed zone, and therefore acts in lieu of the School Zone sign assembly in those areas. This sign assembly should precede the School Crossing sign assembly in each direction by enough distance to allow a motorist to stop before the crosswalk. For example, a motor vehicle traveling on a level surface at a rate of 30 miles per hour (mph) will need approximately 200 feet to stop before a crosswalk. This distance will change depending on speed and roadway conditions. See Table 2C-3 in the MUTCD for advanced placement guidelines.



S1-1



W16-9P

School Advance Crossing Sign Assembly

Marked Crosswalk (MUTCD Section 7C.01)

MUTCD recommends that crosswalks should be marked at all intersections on established routes to school where there are substantial conflicts between motorists, pedestrians, and bicyclists. Due to their visibility and durability, high-visibility crosswalk styles, including longitudinal bar, ladder, and bar pair are preferred over other styles. Marked crosswalks in school zones which are not protected by signalization or stop control should always be accompanied by the School Crossing sign assembly. Additional protection may include in-street crosswalk signs, refuge islands, raised crosswalks and/or flashing beacons.

Marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and either:

- The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT (average daily traffic) of 12,000 vehicles per day or greater; -or-
- The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.

Figure 3C-1. Crosswalk Markings

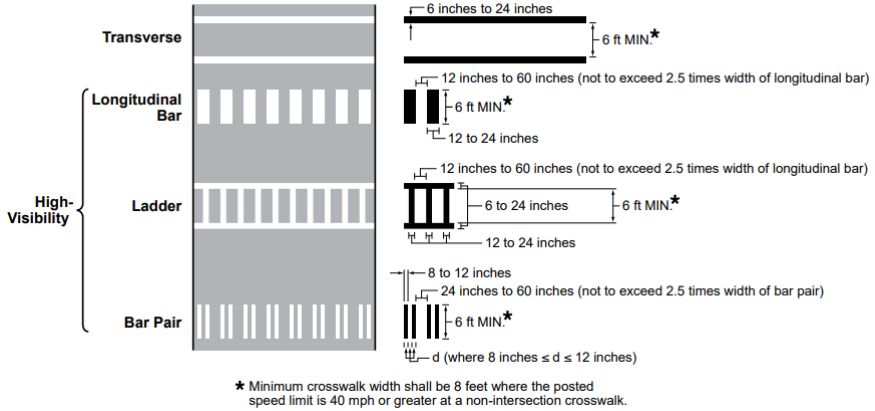


Image: MUTCD 11th Edition

School Sign Assembly



S1-1

The School Area Sign warns road users that they are approaching a school area. A School Area may include school buildings or grounds, a school crossing, or school-related activity adjacent to the roadway.



S4-3P =

School Zone Assembly, used to warn road users that they are approaching a designated school zone (**note, as stated earlier, the SCHOOL marker is optional**).



W16-9P =

School Advance Crossing Assembly, used to warn road users that they are approaching a crossing where school children cross the roadway



W16-7P =

School Crossing Assembly, used to warn approaching road users of the location of a crossing where school children cross the roadway

DISTRACTED DRIVING IN SCHOOL ZONES

Distracted driving (including talking or texting on cell phones, general cell phone use, utilizing the vehicle display for GPS for navigation or listening to music, eating) around schools can adversely impact safety for children walking and bicycling to school and influence parent decisions about how children will get between home and school. Research indicates that the probability and severity of a crash taking place are strongly influenced by driver attention. Various studies have documented an almost six times greater risk when dialing a phone and 23 times greater risk when texting. Other studies show that using a cell phone while driving delays your reaction time as much as having a blood alcohol concentration of .08, the legal limit for drunk driving.

Distractions draw driver attention off the road and away from the primary task of driving. This lengthens reaction time and puts pedestrians, bicyclists, drivers and passengers at greater risk. Research from Safe Kids USA shows that one out of every six drivers in school zones is distracted by the use of cell phones, eating, drinking, smoking, reaching behind, grooming and reading. The study, "Characteristics of Distracted Drivers in School Zones: A National Report," consisted of more than 40,000 observational road-side surveys conducted by local Safe Kids researchers in 20 locations across the United States. Use of electronics (such as cell phones, smartphones and other devices) was the leading category of distraction while driving, at 9.8%.

Findings from the study include:

- The majority of distracted drivers were observed during the afternoon school zone hours as compared to the morning hours.
- Distracted drivers appeared more frequently in school zones without flashing lights and in school zones that had a daily traffic volume of 10,000 or more cars.
- Drivers of larger vehicles such as sports utility vehicles, pickup trucks, and minivans were more distracted than car drivers.

The study also found that having a law on the books may somewhat decrease the prevalence of distracted driving. The study, which covered communities in 15 states, showed that those states with laws regulating cell phone or hand-held electronic device use in a vehicle were 13% less likely to have distracted drivers in school zones. New Jersey law bans the use of hand-held devices and texting for all drivers (N.J.S.A. 39:4-97.3). Hands-free cell phone use is also prohibited for bus drivers and novice drivers. New Jersey defines novice drivers as those under the age of 21 with a GDL or a provisional license.

In New Jersey, responses to distracted driving include:

- Engineering: Focusing on lower speed limits and enhancing the use of traffic-calming measures.
- Enforcement: Increasing enforcement of driving laws and using new technology to support enforcement efforts.
- Education and Encouragement: Raising public awareness and promoting programs that encourage Safe Routes to School.
- Policy: Developing model policies and prioritizing school zones within programs such as Target Zero.

Resource:

- Safe Kids USA, "Characteristics of Distracted Drivers in School Zones: A National Report"
- National Center for Safe Routes to School, "Getting Results: SRTS Programs That Reduce Speeding and Distracted Driving."

Optional Signs and Pavement Markings for School Zones

School Speed Limit Sign Assembly and END SCHOOL SPEED LIMIT Sign (MUTCD Section 7B.05)

This sign assembly is used where a reduced school speed limit zone has been established. The School Speed Limit assembly is placed at or as near as practical to the point where the reduced school speed limit zone begins. However, the School Zone sign assembly must be installed in advance of the first School Speed Limit sign assembly. In addition, the downstream end of a designated reduced speed school zone should be identified with an End School Speed Limit sign. A standard Speed Limit sign showing the speed limit for the section of highway that is downstream from the authorized and posted reduced school speed limit zone may be mounted on the same post above the END SCHOOL SPEED LIMIT sign (S5-3).



School Speed Limit Sign Assembly



End School Speed Limit Sign

Warning Beacons (MUTCD Section 4S.03)

Warning Beacons can be used to call attention to a School Speed Limit sign assembly or a School Zone sign assembly. Flashing yellow beacons are one of the most effective safety improvements a school can make, as they have been shown to decrease vehicle speeds an average of five to seven miles per hour in school zones. The "When Flashing" marker should be used if the sign is automated with a flashing beacon. If not automated with a beacon, the marker sign should read "When Children are Present." Signs that list school times may be too small and complex to be comprehended by a passing driver and don't take into account variations in school hours for holidays and other circumstances.

This system is most effectively applied to arterial and/or multi-lane roadways where drivers would not otherwise note school zone signage due to traffic conditions, speed of travel, and competing signage. The flashing lights should be timed to correspond to school arrival and dismissal times. Warning beacons may also be used with the School Crossing Sign Assembly or School Advance Crossing Sign Assembly.

ALTERNATIVES TO THE "WHEN CHILDREN ARE PRESENT" MARKER

The "When Children Are Present" marker (S4-2P) shown in the image to the left is sometimes substituted with:

- When Flashing;
- Fines Higher;
- Specified days/times.





RRFB with school zone sign in Washington Township High School, NJ. Image: Cross County Connection TMA

Pavement Word, Symbol, and Arrow Markings (MUTCD Section 7C.02)

This pavement marking should be used as an additional warning where vehicle speeds are a concern. It should be placed in proximity to reduced school speed zones or School Speed Limit sign assemblies. These markings are most effective on single lane local or collector streets, where they are visible from a distance and not obscured by heavy vehicle traffic. This application offers a cost-effective alternative to flashing beacons and may be more appropriate in a residential environment where flashing beacons may not be desirable.



"Slow School" pavement markings on Glenwood Avenue in East Orange, NJ.

In-Street Crosswalk Signs (MUTCD Section 7B.03)

The In-Street Pedestrian Crossing (R1-6a) sign or the In-Street School Children Crossing (R1-6c) sign may be used at mid-block crosswalks that are not protected by stop signs or signalization. If the In-Street Pedestrian Crossing (R1-6a) sign is used at a school crossing, a 12 x 4-inch SCHOOL (S4-3P) plaque may be mounted above the sign. The sign is placed on the yellow centerline immediately adjacent to (not within) the crosswalk. It should be placed on the side of the crosswalk from which most vehicles approach or as geometry permits. They are more effective on unsignalized two-lane low-speed streets than on multi-lane high-speed streets. They can be easily damaged and need to be reset or replaced when struck. When portable in-street signs are used for school crossings, they should be monitored by a school official or school crossing guard.



R1-6a



R1-6c

Vertical Reflective Strip (MUTCD Section 2A.21 and 7B.01)

Reflective strips should be used at stop-controlled intersections that have crosswalks within the school zone and along school walking routes to call extra attention to stop signs. Reflective fluorescent yellow-green strips may be used on School Area signs. MUTCD Section 7B.01 notes that school warning signs (including the "SCHOOL" portion of the School Speed Limit sign and associated supplemental plaques) shall have a fluorescent yellow-green background and that signs used for school area traffic control shall be retro-reflective or illuminated.

The strip shall be at least 2 inches in width and placed for the full length of the post from the sign within 2 feet above the edge of the roadway. The color of the strip must match the sign background, except that the color of the strip for YIELD and DO NOT ENTER signs shall be red.



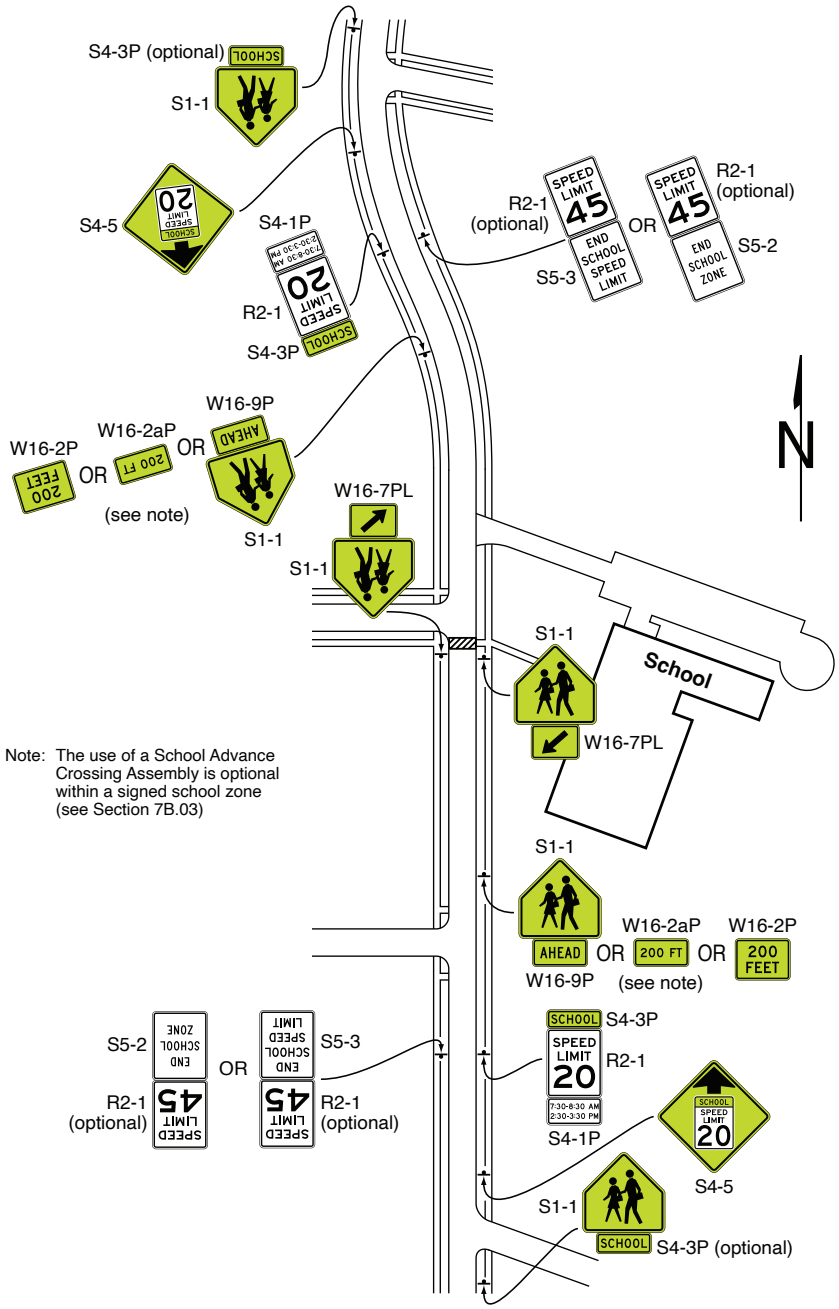
A stop sign with a reflective sign post strip next to a school sign with no reflective post strip in Hope, NJ.

Sign Placement

While the MUTCD provides guidance for the type of signage and its application, the placement of school zone signage is often dictated by standards set forth by state and local jurisdictions. New Jersey has no such standards; therefore the location of signs and distances relative to the school zone recommended here should be considered "best practice." Refer to the diagram for sign placement. Signs should be used judiciously, as over use may lead to driver noncompliance and excessive signs may create visual clutter.



Collingswood Middle and High School, NJ.



Example of Signing for a School Zone with a School Speed Limit and a School Crossing. Image: MUTCD 11th Edition

Signage Selection Matrix

Signs must be selected in response to the type of roadway and pedestrian crosswalk facilities located within proximity of a school. The following matrix should be used as a guide for signage options.

	Local or Collector Street	Arterial Street or Multi-Lane Street	Streets w/ Speed Limit 30 mph or above	Midblock Crosswalk within School Zone	Midblock Crosswalk Outside of School Zone
School Warning Sign (S1+S4-3P)	●	●	●		
Crosswalk Advance Warning Sign (S1+W16-9P)	○				●
School Crossing Sign (S1+W16-7P)				●	●
In-Street Crosswalk Sign (R1-6c)				○	○
School Speed Limit Sign (S4-3P + R2-1 + S4-2P) or (S4-4P)			●		
RRFB or Flashing Beacon		○	○		
Slow School Pavement Marking	○		○		
Oversized Signage		○	○		

● **Optional Application** ○ **Standard Application**

Size of School Signs (MUTCD Table 7B-1)

The sizes of signs and plaques to be used on conventional roadways in school areas shall be as shown in the table below. The sizes in the Conventional Road column shall be used unless engineering judgment determines that a minimum or oversized sign size would be more appropriate. The sizes in the Minimum column shall be used only where traffic volumes are low and speeds are 30 mph or lower, as determined by engineering judgment. The sizes in the Oversized column should be used on roadways that have four or more lanes with posted speed limits of 40 mph or higher. The sizes in the Oversized column may also be used at other locations that require increased emphasis, improved recognition or increased legibility.

Table 7B-1. School Area Sign and Plaque Sizes

Sign	Sign Designation	Section	Conventional Road	Minimum	Oversized
School	S1-1	7B.02	36 x 36	30 x 30	48 x 48
School Bus Stop Ahead	S3-1	7B.04	36 x 36	30 x 30	48 x 48
School Bus Turn Ahead	S3-2	7B.04	36 x 36	30 x 30	48 x 48
Reduced School Speed Limit Ahead	S4-5, S4-5a	7B.05	36 x 36	30 x 30	48 x 48
School Speed Limit XX When Flashing	S5-1	7B.05	24 x 48	—	36 x 72
End School Zone	S5-2	7B.02	24 x 30	—	36 x 48
End School Speed Limit	S5-3	7B.05	24 x 30	—	36 x 48
Yield (Stop) Here for School Crossing	R1-5a, R1-5c	7B.03	36 x 36	—	—
In-Street Ped or School Crossing	R1-6, R1-6a, R1-6b, R1-6c	7B.03	12 x 36	—	—
Overhead School Crossing	R1-9b, R1-9c	7B.03	90 x 24	—	—
Speed Limit (School Use)	R2-1	7B.05	24 x 30	—	36 x 48
Begin Higher Fines Zone	R2-10	7B.06	24 x 30	—	36 x 48
End Higher Fines Zone	R2-11	7B.06	24 x 30	—	36 x 48

Plaque	Sign Designation	Section	Conventional Road	Minimum	Oversized
Time of Day X:XX to X:XX AM X:XX to X:XX PM	S4-1P	7B.06	24 x 12	—	36 x 18
When Children Are Present	S4-2P	7B.06	24 x 12	—	36 x 18
School	S4-3P	7B.02, 7B.05	24 x 9	—	36 x 12
When Flashing	S4-4P	7B.05, 7B.06	24 x 12	—	36 x 18
Days of Week Mon-Fri	S4-6P	7B.05	24 x 12	—	36 x 18
All Year	S4-7P	7B.02	24 x 12	—	30 x 18
Fines Higher	R2-6P	7B.06	24 x 18	—	36 x 24
Fines Double	R2-6aP	7B.06	24 x 18	—	36 x 24
$XX Fine	R2-6bP	7B.06	24 x 18	—	36 x 24
XX Feet (2-line)	W16-2P	7B.02, 7B.03	24 x 18	—	30 x 24
XX Ft (1-line)	W16-2aP	7B.02, 7B.03	24 x 12	—	30 x 18
Directional Arrow	W16-5P	7B.02, 7B.03	21 x 15	—	30 x 21
Advance Turn Arrow	W16-6P	7B.02, 7B.03	21 x 15	—	30 x 21
Downward Diagonal Arrow	W16-7P	7B.02, 7B.03	21 x 15	—	30 x 21
Ahead	W16-9P	7B.02, 7B.03	24 x 12	—	30 x 18

Notes: 1. Larger sizes may be used when appropriate
2. Dimensions are shown in inches and are shown as width x height
3. Minimum sign sizes for multi-lane conventional roads shall be as shown in the Conventional Road column

Image: FHWA MUTCD, 11th Edition, Part 7 (Traffic Control for School Areas)

OUTDATED MUTCD SIGNS COMMONLY FOUND IN SCHOOL ZONES

This table highlights traffic control devices that are no longer compliant with current MUTCD standards but may still appear in school zones. It includes examples of outdated signs, their typical usage scenarios, and the recommended modern replacements.

OLD TRAFFIC CONTROL DEVICE	USE SCENARIO	NEW TRAFFIC CONTROL DEVICE
 **S1-1 sign** yellow color	Vehicular approach to school zone or other area of heavy pedestrian movements of school children	 **S1-1 sign** with either “AHEAD” or “XXX FEET” plaque, fluorescent yellow-green color
 **S1-2 sign** yellow color (sign with depiction of crosswalk lines is no longer in MUTCD)	School crossing (crosswalk in school zone)	 **S1-1 sign** with downward-pointing arrow plaque, fluorescent yellow-green color

OLD TRAFFIC CONTROL DEVICE	USE SCENARIO	NEW TRAFFIC CONTROL DEVICE
 **W11-2 sign** Yellow color	Vehicular approach to crosswalk or other area of heavy pedestrian movements	 or **W11-2 sign** With either "AHEAD" or "XXX FEET" plaque, fluorescent yellow-green color
 **W11-2A sign** Yellow color (sign with depiction of crosswalk lines is no longer in MUTCD)	Crosswalk or other area of heavy pedestrian movements	 or **W11-2 sign** With downward arrow plaque, fluorescent yellow-green color, pointing left or right at the crosswalk

OLD TRAFFIC CONTROL DEVICE	USE SCENARIO	NEW TRAFFIC CONTROL DEVICE
 Round flashing signal indications (arrangements may vary) accompanying W11-2 Pedestrian sign, W11-15 Trail Crossing sign, or S1-1 School sign (This is still acceptable, however, RRFBs are an FHWA Proven Safety Countermeasure)	Pedestrian crossing, or school crossing, requiring augmentation by flashing signals	 **Rectangular Rapid Flashing Beacon ("RRFB")** With either W11-2 Pedestrian sign, W11-15 Trail Crossing sign, or S1-1 School sign
 Some agencies have installed these post-mounted (like typical traffic signs); this is not supported by MUTCD	"Stop For Pedestrians" vertical panel	 Sign is intended to be installed on a flexible stanchion within the pavement, at or near the crosswalk

OLD TRAFFIC CONTROL DEVICE	USE SCENARIO	NEW TRAFFIC CONTROL DEVICE
  	Crosswalk with warning of NJ state law requiring motorists to stop for (not "yield to") pedestrians in crosswalk	  