

# Chapter 3: MUTCD Traffic Control 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 2009 Manual on Uniform Traffic Control Devices with Revisions Number 1 and 2 incorporated (MUTCD). The recommendations are typical solutions that should be applied, 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.”

## 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 2009 MUTCD for full guidance. A PDF of the manual is available at [mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf\\_index.htm](http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm).

### School Zone Sign Assembly (MUTCD Section 7B.08)

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 2C.4, Table 2C-4. This sign is an assembly of two signs and includes the SCHOOL Marker sign (S4-3P) below the School sign (S1-1).

The marker sign should always be used to distinguish this warning sign from the School Crosswalk sign assembly. The downstream end of a designated school zone may be identified with an END SCHOOL ZONE (S5-2) sign.

Many local 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 Crosswalk Sign Assembly**  
(MUTCD Section 7B.12)

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 Crosswalk sign assembly consists of a School sign (S1-1) supplemented with a diagonal downward arrow (W16-7P) plaque. Guidance on the placement of the school crosswalk sign assembly can be found in the MUTCD Section 2A.16, Figure 2A-3. When used outside of the reduced school speed zone, this sign must be accompanied by the School Advance Crossing sign assembly.



S1-1



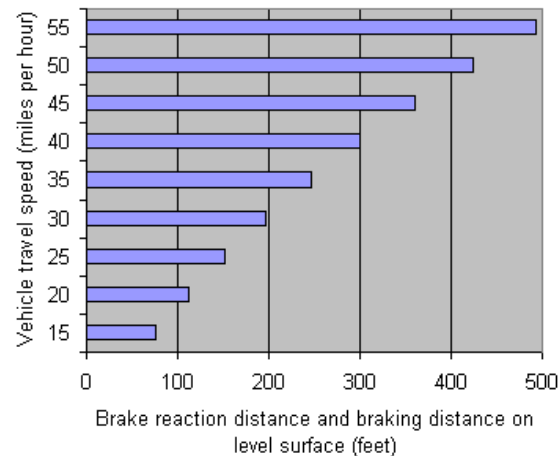
W16-7P

School Crosswalk Sign Assembly

**School Advance Crossing Sign Assembly**  
(MUTCD Section 7B.11)

This sign assembly, while often misapplied, is used exclusively in conjunction with the School Crosswalk 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 Crosswalk 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-4 in the MUTCD for advanced placement guidelines.

**Stopping Sight Distance**



Source: National Center for Safe Routes to School



S1-1



W16-9P

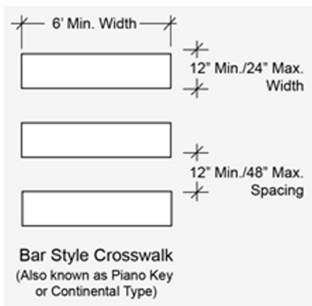
School Advance Crossing Sign Assembly

## Marked Crosswalk (MUTCD Section 7C.02)

All designated pedestrian crossings within a school zone and along established school walking routes should be marked with a bar style crosswalk (also known as piano key or continental type). This is preferred over the formerly conventional use of “zebra” stripes, due to its visibility and durability. Marked crosswalks not protected by signalization or stop control should always be accompanied by the School Crosswalk sign assembly. Additional protection may include in-street crosswalk signs, refuge islands, raised crosswalks and/or flashing beacons.

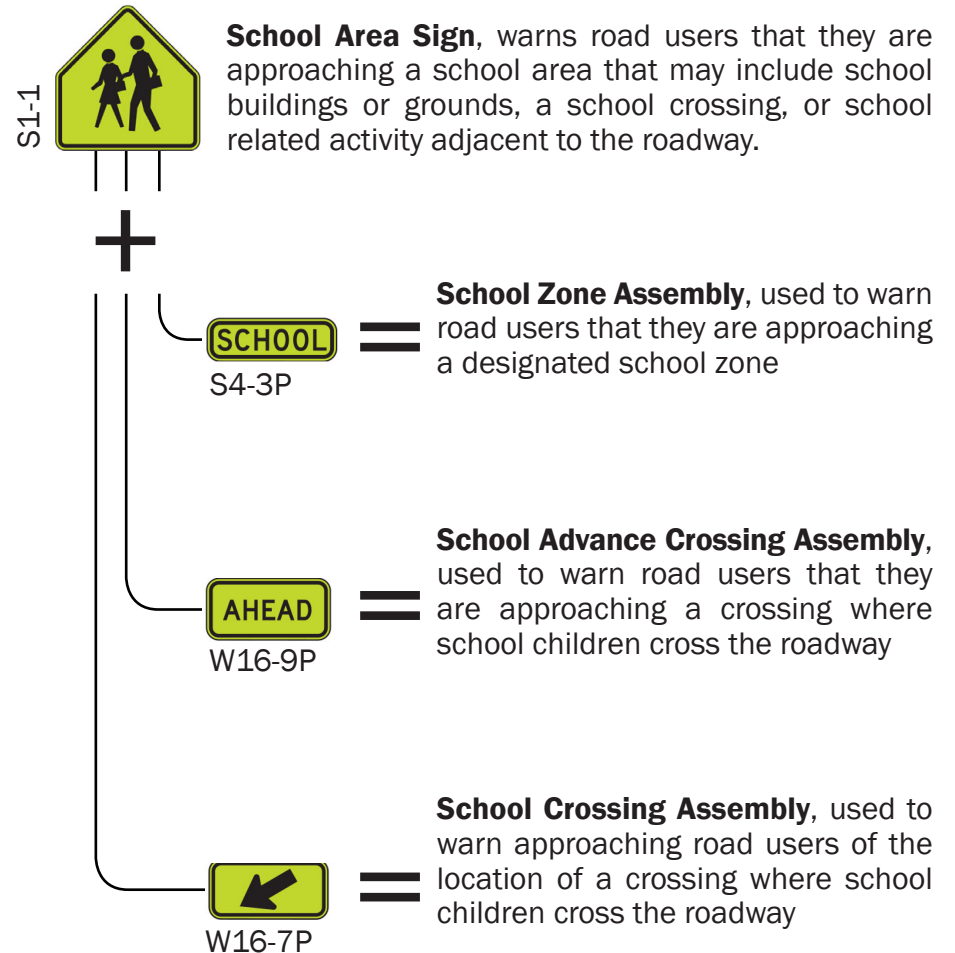
Marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways where the speed limit exceeds 40 mph and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



Bar style crosswalk in Hoboken, NJ.  
Image: The RBA Group

## School Sign Assembly



## Distracted Driving in School Zones

Distracted driving (including talking or texting on cell phones, using GPS for navigation, eating, and listening to music) 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.

Distracted driving draws 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, PDAs and Smartphones) was the leading category of distraction while driving at 9.8 percent.

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 percent 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.



Source: MyParkingSign.com

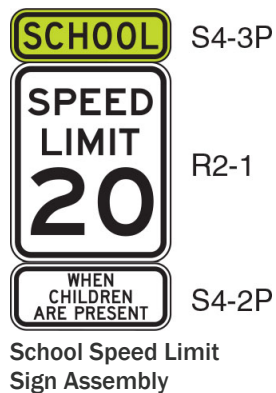
## Resources

- Safe Kids USA, “Characteristics of Distracted Drivers in School Zones: A National Report,” 2009 [www.safekids.org/research-report/distracted-drivers-school-zones-national-report-2009](http://www.safekids.org/research-report/distracted-drivers-school-zones-national-report-2009)
- National Center for Safe Routes to School, “Getting Results: SRTS Programs That Reduce Speeding and Distracted Driving,” [www.saferoutesinfo.org/sites/default/files/resources/srts\\_gettingresults\\_drivingbehavior\\_0.pdf](http://www.saferoutesinfo.org/sites/default/files/resources/srts_gettingresults_drivingbehavior_0.pdf)
- Official US Government Website for Distracted Driving, [www.distraction.gov/](http://www.distraction.gov/)
- Strayer DL, Drews FA, Crouch DJ. (2006). “A comparison of the cell phone driver and the drunk driver.” Hum Factors. 2006; 48: 381-91. [www.distraction.gov/download/research-pdf/Comparison-of-CellPhone-Driver-Drunk-Driver.pdf](http://www.distraction.gov/download/research-pdf/Comparison-of-CellPhone-Driver-Drunk-Driver.pdf)

## Optional Signs & Pavement Markings for School Zones

### School Speed Limit Sign Assembly and END SCHOOL SPEED LIMIT Sign (MUTCD Section 7B.15)

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).



### Warning Beacons (MUTCD Section 4L.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.” This marker is preferred over a sign that lists school times, as school hours vary from year to year, and the information is often too small and complex to be comprehended by a passing driver.

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 Crosswalk Sign Assembly or School Advance Crossing Sign Assembly.



Warning Beacon in Haddon Heights, NJ. Image: The RBA Group

### “Slow School” Pavement Markings (MUTCD Section 7C.03)

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. Image: The RBA Group

### In-Street Crosswalk Signs (MUTCD Section 7B.12)

The In-Street Pedestrian Crossing (R1-6a) sign or the In-Street Schoolchildren 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 that most vehicles approach from 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.



### Vertical Reflective Strip (MUTCD Section 2A.21)

This reflective strip should be used at stop controlled intersections that have crosswalks within the school zone and along school walking routes to call extra attention to the stop sign. Reflective fluorescent yellow-green strips may also be used on School Area signs. The strip shall be at least 2 inches in width and placed for the full length of the post from the sign to within 2 feet above the edge of the roadway. The color of the reflective strip must match the sign background, except that the color of the strip for the YIELD and DO NOT ENTER signs shall be red.



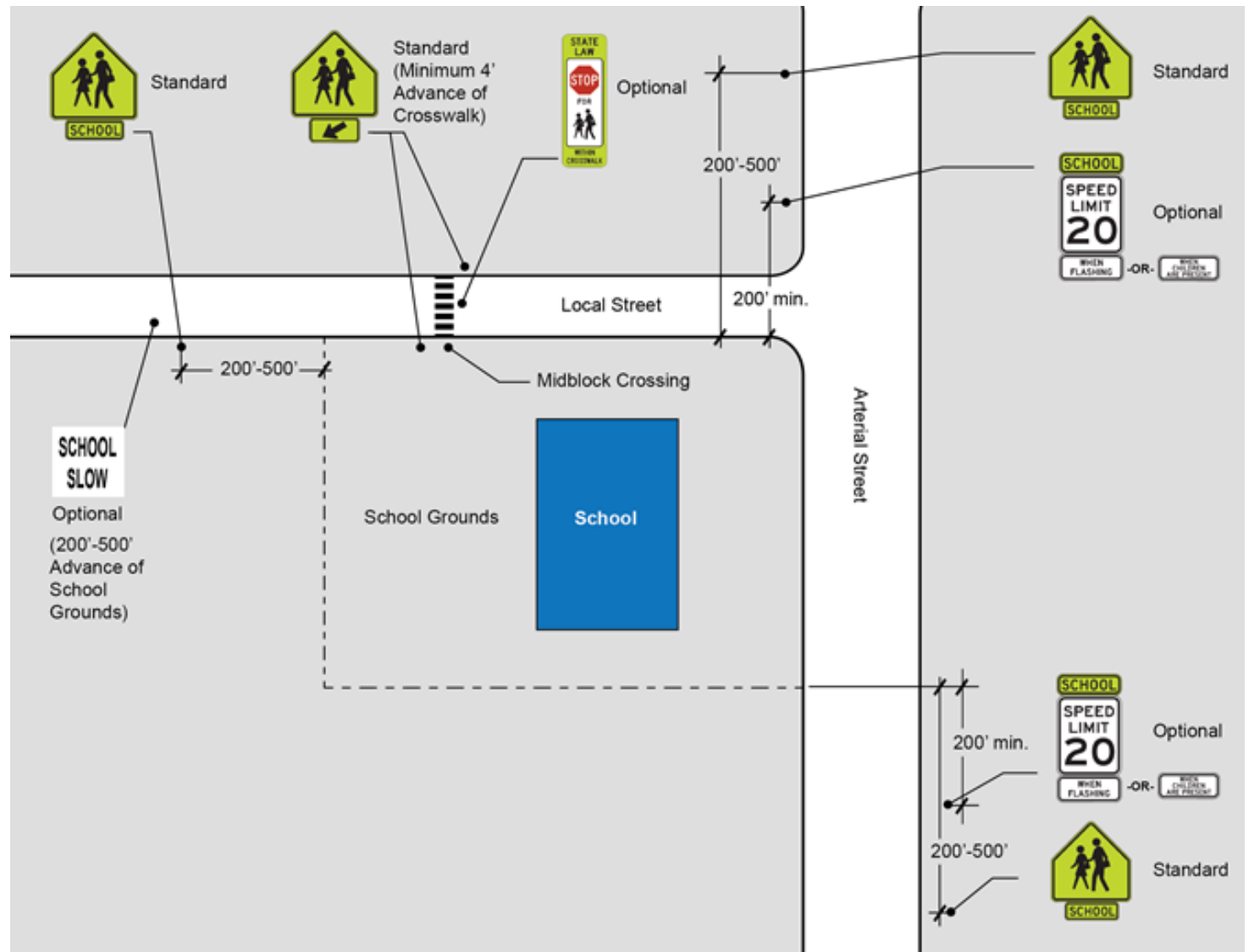
Reflective tape on stop sign post in Newark, NJ. Image: The RBA Group

## 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 overuse may lead to driver noncompliance and excessive signs may create visual clutter.

Where practical, signs can be combined on one post to reduce sign clutter. Image: Minnesota Department of Transportation



Graphic: Fitzgerald & Halliday, Inc.

### 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
<b>School Warning Sign</b> (S1 + S4-3P)	●	●	●		
<b>Crosswalk Warning Sign</b> (S1+ W16-9P)					●
<b>Crosswalk Sign</b> (S1 + W16-7P)				●	●
<b>In-Street Crosswalk Sign</b> (R1-6C)				○	○
<b>School Speed Limit Sign</b> (S4-3P + R2-1 + S4-2P) or (S4-4P)			●		
<b>Flashing Beacon</b>		○	○		
<b>Slow School Pavement Marking</b>	○		○		
<b>Oversized Signage</b>		○	○		

● Optional Application    ○ Standard Application

Table: Fitzgerald & Halliday, Inc.



### Size of School Signs (MUTCD Section 7B.01)

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.

Sign	Sign Designation	Section	Conventional Road	Minimum	Oversized
School	S1-1	7B.08	36 x 36	30 x 30	48 x 48
School Bus Stop Ahead	S3-1	7B.13	36 x 36	30 x 30	48 x 48
School Bus Turn Ahead	S3-2	7B.14	36 x 36	30 x 30	48 x 48
Reduced School Speed Limit Ahead	S4-5, S4-5a	7B.16	36 x 36	30 x 30	48 x 48
School Speed Limit XX When Flashing	S5-1	7B.15	24 x 48	—	36 x 72
End School Zone	S5-2	7B.09	24 x 30	—	36 x 48
End School Speed Limit	S5-3	7B.15	24 x 30	—	36 x 48
In-Street Ped Crossing	R1-6, R1-6a, R1-6b, R1-6c	7B.11, 7B.12	12 x 36	—	—
Speed Limit (School Use)	R2-1	7B.15	24 x 30	—	36 x 48
Begin Higher Fines Zone	R2-10	7B.10	24 x 30	—	36 x 48
End Higher Fines Zone	R2-11	7B.10	24 x 30	—	36 x 48

Plaque	Sign Designation	Section	Conventional Road	Minimum	Oversized
X:XX to X:XX AM X:XX to X:XX PM	S4-1P	7B.15	24 x 10	—	36 x 18
When Children Are Present	S4-2P	7B.15	24 x 10	—	36 x 18
School	S4-3P	7B.09, 7B.15	24 x 8	—	36 x 12
When Flashing	S4-4P	7B.15	24 x 10	—	36 x 18
Mon-Fri	S4-6P	7B.15	24 x 10	—	36 x 18
All Year	S4-7P	7B.09	24 x 12	—	30 x 18
Fines Higher	R2-6P	7B.10	24 x 18	—	36 x 24
XX Feet	W16-2P	7B.08	24 x 18	—	30 x 24
XX Ft	W16-2aP	7B.08	24 x 12	—	30 x 18
Turn Arrow	W16-5P	7B.08, 7B.09, 7B.11	24 x 12	—	30 x 18
Advance Turn Arrow	W16-6P	7B.08, 7B.09, 7B.11	24 x 12	—	30 x 18
Diagonal Arrow	W16-7P	7B.12	24 x 12	—	30 x 18
Diagonal Arrow (optional size)	W16-7P	7B.12	21 x 15	—	—
Ahead	W16-9P	7B.11	24 x 12	—	30 x 18

- Note: 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.