06 Crossing the Street

Whether walking or rolling, a student's journey to school will more than likely require crossing one or more streets. This chapter discusses design treatments that improve safe street crossing.

Introduction

Per the Safe Routes to School Guide, maintained by the National Center for Safe Routes to School (saferoutesinfo.org), the development of safe crossings for children is guided by several principles, including:

1. Establish or identify good crossing locations.
2. Reduce crossing distances.
3. Provide crossings that are direct, so that children with physical and visual impairments can easily negotiate them.
4. Use appropriate traffic controls such as marked crosswalks, traffic signals, and warning signs or flashers.
5. Slow motor vehicle speeds.

This chapter covers treatments and practices that can be used to provide safer street crossings within school zones, including marked crosswalks, curb ramps, Hardened Center Lines, and other pedestrian safety features.

INSTRUCTIONS FOR DRIVERS REGARDING PEDESTRIAN SAFETY

The 2025 New Jersey Driver's Manual emphasizes that pedestrians are the most vulnerable roadway users and that motorists are responsible for maintaining pedestrian safety while safety is a shared responsibility.

Relative to pedestrians in crosswalks, New Jersey motorists must:

- Stop for pedestrians in marked crosswalks.
- Watch for pedestrians when turning on red.
- Obey speed limits.
- Be sure not to block or park in crosswalks.
- Keep the vehicle's windshield clean for maximum visibility.
- Always be alert for pedestrians.
- Be aware of areas where pedestrians are most likely to appear (near schools, town centers, residential neighborhoods, parks).
- Never pass another vehicle that has stopped for a pedestrian.
- Stop for all pedestrians in a crosswalk even if they began crossing with a proper signal and they are still in the crosswalk when the signal changes.

The New Jersey Safe Passing Law

The New Jersey Safe Passing Law, effective March 1, 2022, requires drivers to change lanes when passing pedestrians, bicyclists, or other vulnerable road users whenever possible; if changing lanes is unsafe or impractical, motorists must slow to 25 mph and provide at least four feet of passing distance.

Marked Crosswalks

A crosswalk is a designated area for pedestrians to cross a roadway. It can be:

- The part of the roadway at an intersection that aligns with the lateral lines of sidewalks on opposite sides.
- Any portion of a roadway marked as a pedestrian crossing with pavement lines, possibly enhanced by different textures, styles, or colors.
- Marked crosswalks are an essential tool for helping pedestrians move safely, conveniently, and predictably across roadways. A marked crosswalk can benefit pedestrians by directing them to cross at locations where appropriate traffic control, such as traffic signals or school crossing guards, are currently located or can be located in the future. It should be noted, however, that marked crosswalks, in and of themselves, do not slow traffic or reduce pedestrian crashes. In most cases, marked crosswalks should be used in conjunction with other pedestrian safety devices such as pedestrian signals or signage to increase visibility and driver awareness. Refer to Chapter 4 of this document for MUTCD standards on marked pedestrian crosswalks.

General guidelines include:

- Marked crosswalks should be designed to minimize crossing distances and should be straight to make them easier for people with visual impairments to navigate.
- The decision to mark a crosswalk at an uncontrolled location should be guided by an engineering study. Factors considered in the study should include:
  1. Total number of approach lanes,
  2. The presence of a median,
  3. The distance from adjacent signalized intersections or other controlled crossings,
  4. Projected pedestrian and bicyclist volumes,
  5. Pedestrian and bicyclist paths of travel,
  6. Pedestrian ages and abilities,
  7. Pedestrian and bicyclist delays,
  8. Location or frequency of public transit stops,
  9. Average daily traffic (ADT),
  10. Speed limit or the 85th-percentile speed,
  11. The horizontal and vertical geometry of the crossing location,
  12. The possible consolidation of multiple crossing points,
  13. The availability of street lighting, and
  14. Other appropriate factors.

UNMARKED CROSSWALKS

Crosswalks exist at all legs of all intersections but not every crosswalk is marked with painted lines. In fact, most are unmarked. In New Jersey, the driver of a vehicle must **stop and stay stopped** for a pedestrian crossing the roadway within any marked crosswalk, and they shall **yield** the right-of-way to a pedestrian crossing the roadway within an unmarked crosswalk at an intersection (N.J.S.A. 39:4-36(a)).



Pedestrians crossing at an unmarked crosswalk in Trenton, NJ. Image: VTC

- According to the 2023 MUTCD guideline, marked crosswalks alone (without other substantial treatments) should not be installed across uncontrolled roadways where the speed limit exceeds 40 miles per hour or:
  - The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an average daily traffic (ADT) of 12,000 vehicles per day or greater;
  - 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;
  - At a mid-block crosswalk where the posted speed limit is 40 mph or greater, the minimum width of the crosswalk shall be 8 feet. School-related crosswalks should be 10 to 15 feet wide or wider at crossings with high numbers of students.

Crosswalks located in school zones should be checked annually before the start of the school year. If necessary, fresh paint, inlay tape, or thermoplastic should be applied and other improvements made to keep the crosswalks in good condition. Although initially more costly than paint, both inlay tape and thermoplastic are more cost effective in the long run. Inlay tape is recommended for new and resurfaced pavement, while thermoplastic may be a better option on rougher pavement surfaces. Both inlay tape and thermoplastic are more visible and less slippery than paint when wet.



High-visibility crosswalk in New Brunswick, NJ. Image: VTC



High-visibility crosswalk in Haviland Avenue Elementary School, NJ. Image: Cross County Connection TMA

Curb Ramps

Curb ramps provide pedestrians with a means of negotiating changes in elevation between the sidewalk and roadway. This is especially important for people using wheelchairs, strollers, walkers, crutches, handcarts, and pedestrians who have trouble stepping up and down high curbs. Per the Accessible Design Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), curb ramps must be installed at all intersections and at mid-block locations to access on-street accessible parking spaces, where provided, and at all new passenger loading zones.

PROWAG guidelines state that curb ramps should be perpendicular wherever possible, where each corner has two ramps installed perpendicular to the face of the curb (vs. a single ramp facing diagonally into the intersection). In doing so, the curb ramps lead directly along the line of travel, guiding pedestrians into the crosswalk rather than into the middle of the intersection. This design is especially desirable for pedestrians with those with visual impairments.



Intersections should have two perpendicular, ADA-compliant curb ramps per corner as shown in the above image from Asbury Park, NJ. Image: VTC

Curb ramps and crosswalks should be clear of obstacles, and removal of conflicting elements should be prioritized. No new poles, utilities, or other impediments should be placed in curb ramp return areas. When a corner is retrofitted with new curb ramps, the crosswalk markings may have to be moved so that the curb ramp fully aligns within the crosswalk.

Chapter §305 of PROWAG requires detectable warning surfaces to consist of raised truncated domes in a square or radial grid pattern.



Diagonal curb ramps are undesirable, as they force pedestrians into the intersection and are more difficult for people with visual impairments to determine the correct crossing location and travel direction. Image: VTC

Parking Restrictions

In New Jersey, parking is not permitted within 50 feet of a stop sign or within 25 feet of a crosswalk, unless a curb extension exists at the crosswalk (N.J.S.A. 39:4-138). According to the National Center's Safe Routes to School Guide, restricting parking at corners will improve visibility of the crossing for both drivers and pedestrians. The Guide states that, at a minimum, 30 feet should be kept clear in advance of marked crosswalks to help pedestrians and drivers see each other better. While distances greater than 30 feet are generally better, parking restrictions have to be balanced with the need of the motorists. For example, if parking is severely restricted or completely removed near schools, motorists may ignore all parking restrictions.



School days parking restrictions.

Curb Extensions

Curb extensions narrow the roadway by providing an extension of the sidewalk area into the parking lane thereby reducing crossing distances and pedestrian exposure to motor vehicles. This design also brings pedestrians out from behind parked motor vehicles and helps pedestrians and drivers to better see each other. Smaller children who are often invisible behind parked motor vehicles and may take longer to cross the street would particularly benefit from curb extensions. For main streets, reducing the crossing time permits the green-light time for the major street traffic to be increased proportionately (AASHTO, 2024).

A curb extension also can slow turning vehicles and prevent drivers from illegally parking on or near a crosswalk. Curb extensions must be designed to accommodate drainage. There are cases where curb extensions may not be needed or desirable on every leg of an intersection, such as when the street is narrow, parking is not permitted, or the curb would interfere with a bicycle lane or the ability of fire trucks or other large vehicles to negotiate a turn (AASHTO, 2024).

On streets with on-street parking or shoulders, curb extensions can be used to extend the sidewalk or curb line into the parking lane or shoulder, which reduces the effective street width at the intersection.

Curb extensions can also:

- Reduce the crossing distance for both pedestrians and bicyclists.
- Slow right-turning motorists.
- Improve the sight distance and sightlines for pedestrians, bicyclists, and motorists.
- Create adequate space for curb ramps and landings where the existing sidewalk space is narrow.
- Provide additional storage space for pedestrians and bicyclists waiting to cross.
- Prevent parked cars from encroaching into the crosswalk area.
- Be composed of painted markings.



A mid-block stormwater curb extension example, Route 45 in Woodbury, NJ. Image: NJDOT



Curb extensions on River Street in Hoboken, NJ. Image: VTC



Painted curb extensions at the intersection of 2nd Street and Marin Boulevard in Jersey City, NJ. Image: VTC

Pedestrian Refuge Islands and Medians

Medians and islands help pedestrians cross streets by providing refuge areas that are physically separated from the automobile path of travel. A median separates opposing lanes of traffic, while an island is a protected spot within a crosswalk for pedestrians to wait to continue crossing the street or to board transportation such as a bus. Medians and islands reduce the crossing distance from the curb and allow pedestrians to cross during smaller gaps in traffic. Medians and islands are useful to pedestrians who are not able to judge distances accurately. Medians and islands also help people with slow walking speeds cross long intersections with short signal cycles. These benefits are especially important for children, who tend to cross streets more slowly and have less experience with crossings than adults. Because medians and islands separate traffic into channels going in specific directions, they require crossing pedestrians to watch for traffic coming in only one direction at a time.

Based on PROWAG R302.2.1 Medians and Pedestrian Refuge Islands' standard, the clear width of pedestrian access routes crossing medians and pedestrian refuge islands shall be 60 inches (1525 mm) minimum. For shared-use paths that cross medians and pedestrian refuge islands, the clear width must be at least 60 inches (1525 mm) or match the full width of the crosswalk, whichever is greater.



Pedestrian refuge islands and medians. Image: VTC

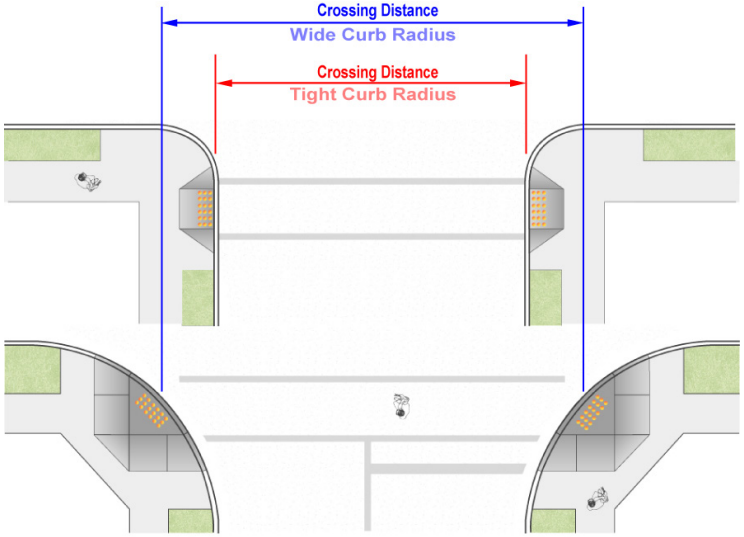


Pedestrian refuge islands and medians in South Park. Image: VTC

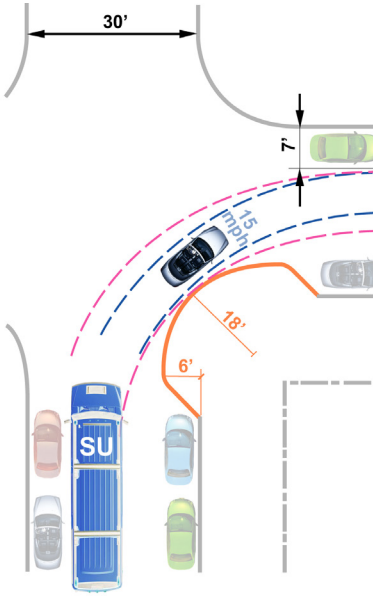
Tight Curb Radii

Reducing the curb radius "extends" the curb/sidewalk into the intersection. This design decreases the number of crash conflicts by reducing the speed of the turning vehicles and allows for the pedestrian to see and be seen. It also shortens the crossing distance so the pedestrian spends less time in the street with less exposure to conflicts with motor vehicles.

The Safe Routes to School Guide states that when designing curb radii, consider the area motor vehicles actually need when turning. In other words, the needs of all road users including pedestrians, bicyclists, buses, trucks and cars should be considered in designing or retrofitting corner turn radii. Instead of assuming that every corner needs to be cut back, look at other factors such as on-street parking and bicycle lanes to determine how much space a turning motor vehicle will need. The effective radius should take into account the width of parking lanes and bicycle lanes on both streets. Large trucks do not need to stay on their half of the street when turning onto local streets. There is no need to design for the largest vehicle that might ever use a street, especially for residential streets within neighborhoods.



Crossing Distance (Wider vs. Tighter Curb Radii).



Single Unit (SU) Truck Turning Radii vs. Personal Car Turning Radii.

Hardened Center Lines

Centerline and lane line hardening uses vertical or mountable elements placed along the centerline of two-way streets or lane lines on multi-lane streets to guide vehicles into a single receiving lane and discourage wide or high-speed turns. By slowing both left and right turns and encouraging near-90-degree turning movements, hardened centerlines reduce turning conflicts and improve safety at locations such as multi-lane streets, uncontrolled intersections or mid-block crossings, and areas with advanced stop bars.

These treatments can be implemented quickly using flexible materials such as rubber islands, modular speed humps, or delineator posts, or incorporated into constructed median or crossing islands in more permanent projects. However, flexible materials may require ongoing maintenance, and hardened elements must be carefully designed using swept-path analysis to ensure access for emergency vehicles, trucks and other large vehicles, especially where the hardened line extends through crosswalks and into intersections.



Hardened Center Lines in Jersey City, NJ. Image: Hudson County Complete Street Demonstration Project

Slow Turn Wedges

Left turns can increase the risk of pedestrian crashes. Slow-turn wedges are a traffic-calming treatment that uses posts placed within the intersection to force drivers to slow down and follow the proper path when making left turns. This type of traffic-calming device can only be installed at locations where a one-way road intersects with a two-way road or another one-way road.



Slow Turn Wedges in Brooklyn, NY. Image: The City of New York

Pedestrian and Bicycle Bridges and Underpasses

There are locations where a pedestrian bridge or underpass is the only way for pedestrians and bicyclists to safely cross the road, such as when children would otherwise be forced to cross freeways or major multi-lane arterial streets to get to or from school. According to the Federal Highway Administration's (FHWA) Designing Sidewalks and Trails for Access Guide, pedestrian bridges and underpasses are most efficient in areas where pedestrian attractions such as shopping centers, large schools, recreational facilities, parking garages and other activity centers are separated from pedestrian generators by high-volume and/or high-speed arterial streets.

However, the benefits of bridges and underpasses must be weighed against their substantial costs, which can be $2 million or more. The convenience of bridges and underpasses should also be considered. They require the pedestrian to change elevation and expend energy, and they may require pedestrians and bicyclists to follow an indirect path. As a result, there may be some resistance to using them. Some schools station crossing guards at such facilities to ensure that students use them. Pedestrian Overpasses and Underpasses should also comply with the PROWAG, including section R203.7.



A pedestrian bridge connects Millburn Middle School with the athletic fields across Old Short Hills Road (CR 527). The bridge also serves as a gateway to downtown. Image: Bing Maps



A pedestrian bridge in Haddon Heights, NJ. Image: Cross County Connection TMA

Rectangular Rapid Flashing Beacons (RRFBs)

Rectangular rapid flashing beacons (RRFBs) are active warning devices used to alert motorists of crossing pedestrians at uncontrolled crossings. They remain dark until activated by pedestrians, at which point they emit a bright, rapidly flashing yellow light, which cautions drivers to stop. The Manual on Uniform Traffic Control Devices (MUTCD) suggests that RRFBs can significantly increase yielding rates over standard pedestrian warning signs, thereby increasing pedestrian safety.

RRFBs should be installed on both the right and left sides of the crosswalk, or in a median if available; however, because decreased effectiveness may result from overuse, RRFBs should be limited to locations with the most critical safety concerns, such as pedestrian and school crosswalks with uncontrolled vehicle approaches. RRFBs are now officially part of MUTCD 11th edition (Chapter 4L).



An RRFB in Collingswood, NJ.



An RRFB on Canal Point Blvd in West Windsor, NJ.



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

Pedestrian Hybrid Beacons

The pedestrian hybrid beacon [formerly referred to as the High intensity Activated crossWalK (or HAWK)] is a pedestrian-activated warning device located on the roadside or on mast arms over mid-block or unsignalized pedestrian crossings. The beacon head consists of two red lenses above a single yellow lens. The beacon head is "dark" until the pedestrian desires to cross the street. At this point, the pedestrian will push an easy-to-reach button that activates the beacon. After displaying brief flashing and steady yellow intervals, the device displays a steady red indication to drivers and a "WALK" indication to pedestrians, allowing them to cross a major roadway while traffic is stopped. After the pedestrian phase ends, the "WALK" indication changes to a flashing orange hand to notify pedestrians that their clearance time is ending. The hybrid beacon displays alternating flashing red lights to drivers while pedestrians finish their crossings before once again going dark at the conclusion of the cycle.

The pedestrian hybrid beacon is a potential solution for mid-block or unsignalized crossing locations where neighborhoods are located on the opposite side of a wide or busy street from a school. It is often difficult to get drivers to stop or yield to pedestrians at uncontrolled crossings on high volume, high speed, or multi-lane roadways, even if crosswalk markings and advance pedestrian warning signs are installed. At the same time, there may not be enough pedestrians crossing to warrant a full traffic signal. The warrants for the pedestrian hybrid beacon are much easier to meet, compared to the warrants of a full traffic signal.

Pedestrian hybrid beacons should only be used in conjunction with a marked crosswalk. In general, they should be used if gaps in traffic are not adequate to permit pedestrians to cross, if vehicle speeds on the major street are too high to permit pedestrians to cross, or if pedestrian delay is excessive. Transit stops and school locations may be good places to consider using the pedestrian hybrid beacon. Chapter 4J of the MUTCD contains a section on the pedestrian hybrid beacon and when and where it should be installed. Practitioners should follow the MUTCD guidelines.

Since the pedestrian hybrid beacon is a traffic control device many people are not yet familiar with, effort should be made to perform outreach to the public before implementation so there is no confusion about how the beacon operates and what drivers and pedestrians should do when encountering it.



Pedestrian Hybrid Beacon. Image: VTC