



# Infrastructure Glossary

Mini  
saferoutes.vermont.gov  
Guide

## WHAT'S IN THIS MINIGUIDE?

This VT Safe Routes to School (SRTS) MiniGuide describes the signs, pavement markings, and other types of infrastructure that are typically used in a school zone. Knowing what to look for in a school zone can help you identify what may be missing.

Infrastructure includes signs and pavement markings that alert drivers to conditions in the area, for example, the presence of pedestrians and bicyclists in a school zone. It also includes facilities such as sidewalks, curb ramps, and bike lanes. VTrans and your municipality or road foreman manage infrastructure. However, you can talk to these organizations if you notice safety issues, such as faded crosswalks, or ideas for infrastructure, such as a new sidewalk. Remember that all infrastructure for pedestrians must be compliant with the Americans with Disabilities Act (ADA) or have an accessible alternative.

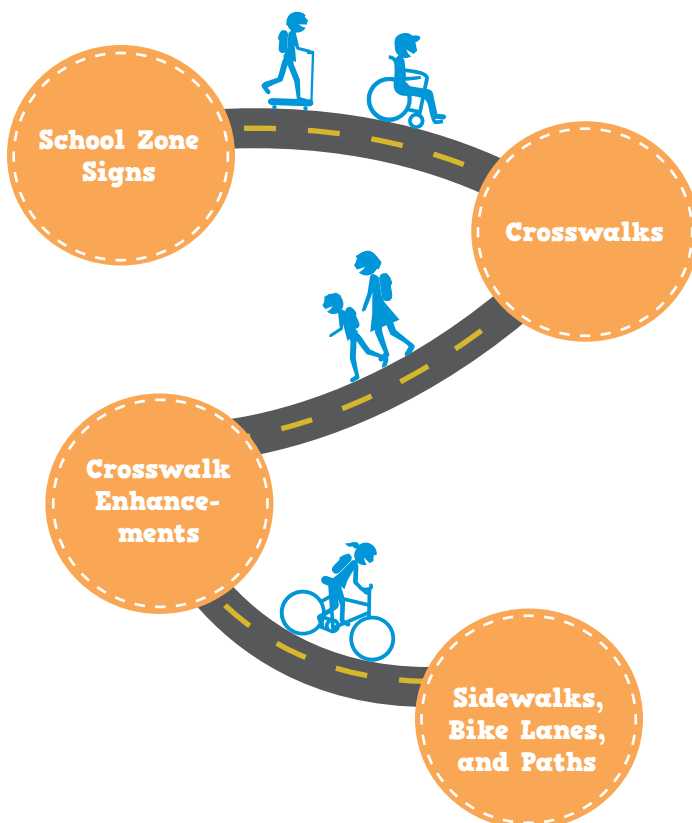
### What is it?

This guide will help to understand the terms used by engineers and what to look for on your walk audit. Document your findings in your school travel plan. If you have infrastructure needs, follow the steps in the VTrans Bicycle and Pedestrian Program Guide [🔗](#) or contact your municipality or selectboard for next steps.

### Why is it important?

Appropriate infrastructure increases safety for everyone, especially vulnerable users like walkers and bikers. “School zones” warrant special attention because of the high number of children in the area.

## INFRASTRUCTURE TYPES



## RESOURCES PREVIEW


The following sources contain further guidelines and details.

- **Manual on Uniform Traffic Control Devices (Part 7: Traffic Control for School Areas)** [🔗](#)
- **VTrans Pedestrian and Bicycle Facility Planning and Design Manual** [🔗](#)
- **VTrans Bicycle and Pedestrian Program Guide** [🔗](#)
- **VTrans Guidelines for Pedestrian Crossing Treatments** [🔗](#)
- **VTrans Guidelines for the Use of Radar Speed Feedback Signs on the State Highway System** [🔗](#)

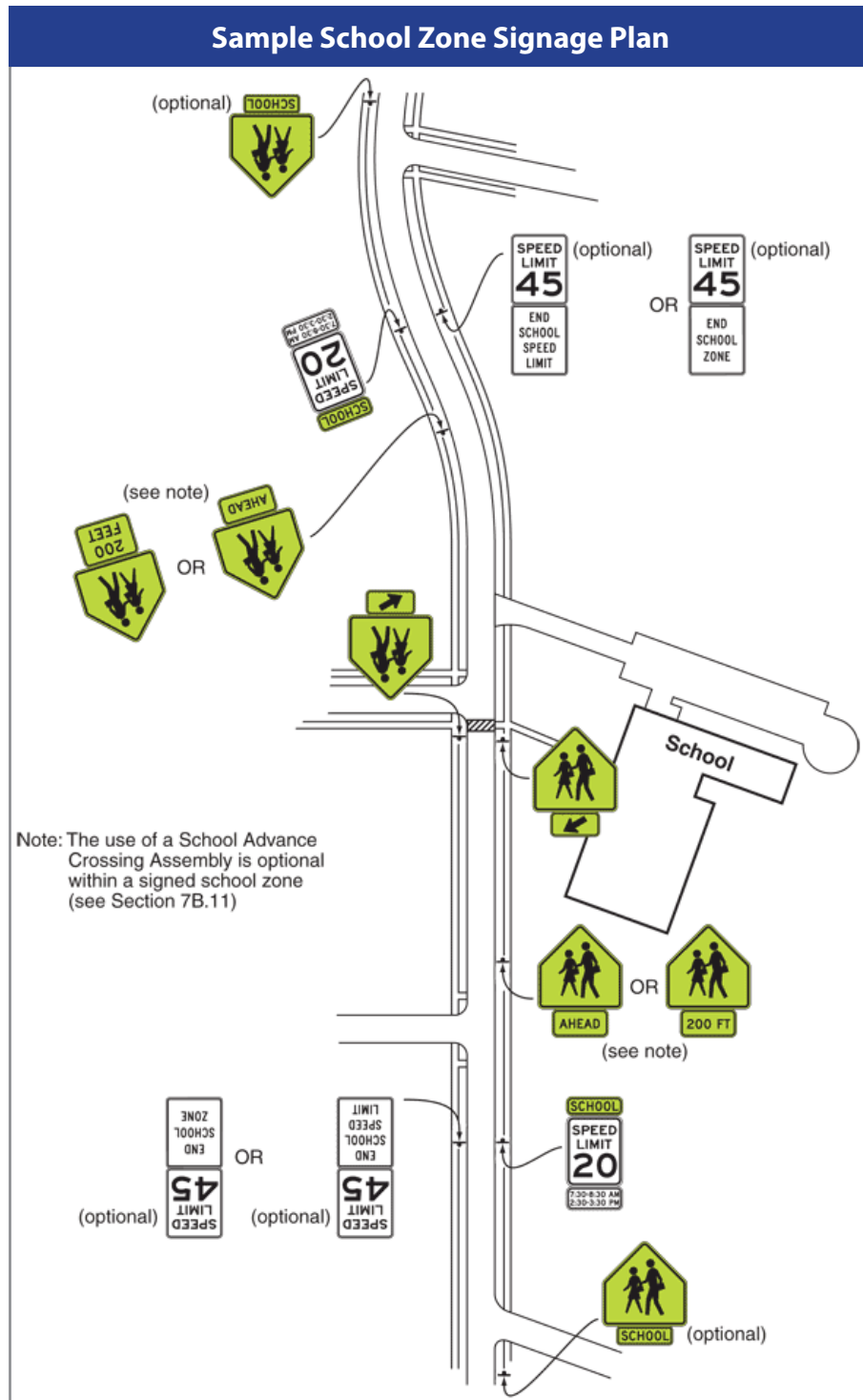
Click this icon [🔗](#) to access the listed resource.

## School Zone

A school zone is defined by the *Manual for Uniform Traffic Control Devices* (MUTCD) [\[link\]](#) as a “designated roadway segment approaching, adjacent to, and beyond school buildings or grounds, or along which school related activities occur.”

School zones are typically shown with this sign:  with more specific information such as “AHEAD” or “200 FEET” indicated beneath the sign.

This figure below from the MUTCD shows an example of where to place signs in a school zone. Note that the example signs in the MUTCD often show school speed limits at 20 MPH, but the minimum speed limit by VT statute is 25 MPH.



## School Zone

The agency that owns and maintains the street (either VTrans or the local municipality) determines the boundaries of a designated school zone. Factors that they will consider when designating a school zone include:

1. Traffic Speeds
2. Common Routes to School

See Chapter 7B in the MUTCD [\[link\]](#) and Section 3.1 in the *VTrans Guidelines for Pedestrian Crossing Treatments* [\[link\]](#) for additional information.

### School Zone Ahead Sign



#### Description

Sign that alerts road users that they are approaching a school zone with a reduced speed limit.

#### Details / Placement

Used where the speed limit is reduced by at least 10 miles per hour or engineering judgment determines that advance notice is appropriate (such as areas with steep hills or limited visibility). All school related signs must have a fluorescent yellow-green background.

### School Zone Sign



#### Description

Sign that indicates a school zone.

#### Details / Placement

Located at the beginning point of a school zone on the street off of which the school site is accessed. Often includes the "SCHOOL" pavement marking.

### School Zone Crossing Assembly



#### Description

When the school zone sign has a downward arrow beneath it, it is known as a "School Crossing Assembly" and is used to indicate a crosswalk in a school zone.

#### Details / Placement

Placed at a marked crosswalk in a school zone.

## Crosswalks

The agency that owns and maintains the street (either VTrans or the local municipality) determines where crosswalks should be located. Factors that they will consider when locating a crosswalk include:

1. Sight Distances
2. Traffic Volumes
3. Traffic Speeds

See Section 3.5.5 in the *Vermont Pedestrian and Bicycle Facility Planning and Design Manual* [🔗](#) for additional information.



### Description

An uncontrolled crosswalk is a marked crossing either between intersections or at an intersection where there is not a stop sign or a traffic signal to control approaching traffic. Like a controlled crosswalk, it is indicated by pavement markings and signs.

### Details / Placement

VTrans recommends a block pattern for good visibility and reduced wear from traffic. Crosswalks must start and end at an accessible pedestrian facility (sidewalk or paved path).



### Description

A controlled crosswalk is a marked crossing at an intersection where traffic is controlled by a stop sign or a traffic signal.

### Details / Placement

VTrans recommends a block pattern, as shown above, for good visibility and reduced wear from traffic. The block pattern is required for crosswalks on state highways. Crosswalks must start and end at an accessible pedestrian facility (sidewalk or path), including curb ramps.



### Description

Curb ramps provide a transition from the sidewalk to the street and include a detectable warning surface to alert users with visual impairments they are entering the street.

### Details / Placement

Required at either end of a crosswalk to provide access for people using wheelchairs or mobility devices and to assure compliance with the Americans with Disabilities Act (ADA). Also very helpful for younger bicyclists, and parents pushing strollers.

## Crosswalks

### Pedestrian Warning Sign



#### Description

Alerts road users to the presence of pedestrians. If used to warn motorists about the general presence of pedestrians, this sign is usually supplemented with “AHEAD” or “NEXT xx FEET.”

#### Details / Placement

This sign indicates that there are pedestrians in the area. To indicate a crosswalk, add a downward arrow pointing to the crosswalk. If the crosswalk is within a school zone, use the school sign shown on page 3 with a downward arrow.

## Crosswalk Enhancements

### In-street Crosswalk Sign



#### Description

In-street sign alerts road users to yield to pedestrians in the crosswalk. Appropriate at crossings with low compliance.

#### Details / Placement

Placed in the street on a flexible base at an uncontrolled crosswalk to draw motorists' attention to the crosswalk. See Section 5.3.1 of the *VTrans Guidelines for Pedestrian Crossing Treatments* [for](#) additional details as to correct use and placement of these signs.

### Rectangular Rapid Flashing Beacon



#### Description

A rapid flashing light that enhances the visibility of a pedestrian sign.

#### Details / Placement

Located at uncontrolled crosswalks where there are inadequate gaps for crossing or special emphasis is needed, such as at a school. See Section 5.3.4 of the *VTrans Guidelines for Pedestrian Crossing Treatments* [for](#) when and where to use these sign enhancements.

## Crosswalk Enhancements

### Pedestrian Hybrid Beacon / HAWK



#### Description

Pedestrian-activated signal that stops traffic when pedestrians need to cross.

#### Details / Placement

Used at mid-block crossings where there are inadequate gaps in traffic for pedestrians to cross safely as determined by an engineering study.

### Radar Speed Feedback Sign



#### Description

Dynamic sign that provides real-time feedback to drivers on their speed to bring awareness to speeding.

#### Details / Placement

There are permanent (installed on a sign post) and temporary (mounted on a trailer) options. For either option, VTrans has established conditions for where a speed feedback sign can be installed. For additional information, see the *Guidelines for the Use of Radar Speed Feedback Signs on the State Highway System* [link](#).

### Bulb-out / Curb Extension



#### Description

Extension of the sidewalk into the street designed to reduce crossing distance and help improve visibility for both drivers and pedestrians. Adequate width is usually a significant constraint, especially in areas that require 15' of clearance for snow plows.

#### Details / Placement

Typically placed at crosswalks on streets with high pedestrian volumes, on-street parking.

### Median Refuge / Pedestrian Refuge Island



#### Description

Crosswalk combined with a raised median or island that provides refuge from traffic.

#### Details / Placement

Generally located on multi-lane streets or where traffic patterns make it difficult to cross due to a lack of gaps in traffic. Adequate width is usually a significant constraint, especially in areas that require 15' of clearance for snow plows.

## Crosswalk Enhancements

### Curb Radius Reduction



#### Description

Curb islands or extensions at intersection corners to sharpen the turning angle for vehicles. This effectively reduces speed while also reducing pedestrian crossing distances.

#### Details / Placement

Designs should include drainage considerations and truck turning movements. Landscaped options should include maintenance plans.

### Raised Crosswalk



#### Description

Crosswalk on top of elevated section of the roadway.

#### Details / Placement

A raised crosswalk can be more accessible for people with mobility devices, and serves as a traffic calming device by doubling as a speed table. Careful design is necessary to avoid drainage issues. Special pavement markings are necessary in addition to the usual crosswalk signs. Note that VTrans does not allow raised elements within roadways that they maintain.

## Sidewalks, Bike Lanes, and Paths

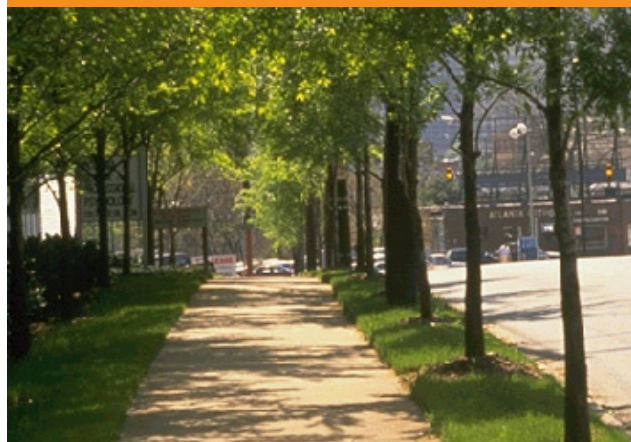
The agency that owns and maintains the street (either VTrans or the local municipality) determines the design and location of sidewalks and on-street bicycle lanes. Factors that they will consider when constructing or modifying a sidewalk or bike lane include:

1. Traffic Volumes
2. Traffic Speeds
3. Demand

Shared use paths are separate from the street, and often serve as town-wide recreation paths for the general public. In these cases, they are usually owned and maintained by the town, even when they cross other property via an easement. Factors to consider for a shared use path include terrain, rivers and streams, natural and cultural resources, and many more.

See Chapters 3, 4 and 5 in the *Vermont Pedestrian and Bicycle Facility Planning and Design Manual* [🔗](#) for additional information.

### Sidewalk



#### Description

Dedicated area for pedestrians adjacent to a roadway, with or without a landscaped buffer.

#### Details / Placement

Ideally, located on all streets with existing or potential pedestrian demand. Should be at least 5 feet wide and should connect to other pedestrian facilities, including paths, other sidewalks, crosswalks, etc.

### Shared Use Path



#### Description

Facilities for bicyclists, pedestrians, and other non-motorized users, that are separated from the roadway.

#### Details / Placement

Located in areas where non-motorized connections are desired (for example, a path from school to a park or local neighborhood) and feasible (for example, given property boundaries, terrain, and funding).

### Shoulder Striping



#### Description

Paved, striped shoulders can serve as pedestrian or bicycle facilities on rural roads where formal pedestrian or bicycle facilities are not feasible.

#### Details / Placement

Located on roadways without pedestrian facilities (with the exception of interstate highways where bicycles and pedestrians are prohibited). Widths depend on traffic speed, volume, and roadway type, and are determined by VTrans.

## Sidewalks, Bike Lanes, and Paths

### Bike Lane



#### Description

Designated space for bicycle travel in the roadway.

#### Details / Placement

When there is on-street parking, the lane should be a minimum of 5 feet wide, 6 feet preferred. When there is no on-street parking, the lane must be a minimum of 4 feet wide, 5 feet preferred. Additional width is recommended for streets with higher speeds.

### Buffered Bike Lane



#### Description

Bike lane with a painted buffer between bicycles and traffic.

#### Details / Placement

Typically located on a curbed street where there is a desire to provide greater separation between bicycles and vehicle traffic than standard bike lanes. The buffer shall be a minimum of 18 inches wide and marked with two solid lines. The buffer should have interior diagonal lines if 3 feet or wider. Additional guidance is available in the *National Association of City Transportation Officials Urban Bikeway Design Guide* [🔗](#).