



DATE: March 2, 2022
TO: Bryan White, Village of Fairport
FROM: Thomas Miller, P.E., PTOE, LaBella Associates
RE: Crosswalk Best Practices

INTRODUCTION

LaBella Associates has been retained to provide engineering services related to the installation of crosswalks at mid-block (uncontrolled) locations within the Village of Fairport. The purpose of this document is to provide design guidance and “best practices” for the Village to use when evaluating potential locations and installing new crosswalks.

This document includes guidance on where to locate new crosswalks, how to implement new crosswalks, and enhanced treatments that are available for use. It also provides references to state and national standards related to crosswalks. It is noted that agencies periodically review and update design standards, and the information within this document may be subject to future revisions as state and national standards evolve.

All figures referenced herein are included at the end of the document.

WHERE TO LOCATE CROSSWALKS

The term “mid-block” refers to a pedestrian crossing at a location where traffic is not otherwise required to stop or yield. In general, it is preferred to have pedestrian crossings at *controlled* locations (signalized or stop sign-controlled intersections) to ensure that conflicting traffic is stopped while a pedestrian is crossing the street. However, mid-block locations may be effective under the right site and pedestrian usage conditions.

The following criteria should be considered when evaluating potential locations for new mid-block crosswalks.

1. The crosswalk should provide a logical pedestrian connection between pedestrian-oriented destinations or routes.

The location should have existing pedestrian usage or reasonable expectation of future usage if development is planned. The crosswalk should connect existing pedestrian routes as directly as possible, considering other factors discussed herein; pedestrians may not go far out of their way to use a marked crosswalk. Examples of pedestrian-oriented destinations include parks, schools, transit stops, and commercial, assembly or service-oriented buildings.

2. Low travel speeds, low traffic volumes and narrow width are preferred on the street being crossed.

Streets should have a speed limit of 30 mph or less. There is no exact traffic volume threshold, but lower-volume streets present fewer conflicts for pedestrians. Two-lane streets are preferred to minimize pedestrian crossing time. On wider streets, or where shoulders / parking lanes are present, curb extensions (“bump-outs”) or raised medians could be considered to shorten pedestrian crossing distance.

3. The location should have adequate stopping sight distance and clear sight lines for both drivers and pedestrians.

Approaches to the crosswalk location should have at least the minimum stopping sight distance per the AASHTO *Policy on Geometric Design of Highways and Streets* (“Green Book”), which is based on the speed limit. Current stopping sight distance design values are as follows:



Table 1: AASHTO Stopping Sight Distance

Design Speed	Stopping Sight Distance Design Value
20 mph	115 ft
25 mph	155 ft
30 mph	200 ft
35 mph	250 ft

Clear sight lines should be maintained to maximize visibility of pedestrians approaching and using the crosswalk. This may involve clearing vegetation along the road, restricting parking in the vicinity of the crosswalk, or installing curb extensions. The location should have adequate lighting for visibility of pedestrians at night.

4. Determine if there are any safety concerns that should be addressed.

The crash history should be reviewed to determine if there have been pedestrian-related crashes within the past three to five years, or if safety concerns are present. Crash reports may indicate if there are any geometric deficiencies or visibility issues that should be corrected prior to installing a crosswalk or indicate that a location is not suitable for a crosswalk.

5. Evaluate site constraints for new ramps and sidewalk connections.

The crosswalk needs to be connected to the adjacent pedestrian facility network. At some locations, new sidewalk connections and ramps will be required. Potential site constraints should be evaluated, including but not limited to: underground and overhead utilities / utility poles, catch basins / manholes, steep grades, and areas with limited right-of-way.



HOW TO IMPLEMENT CROSSWALKS

Crosswalks should be implemented using a combination of pavement markings, signage, and connections to adjacent pedestrian facilities. Figure 1 depicts a standard mid-block crossing installation:

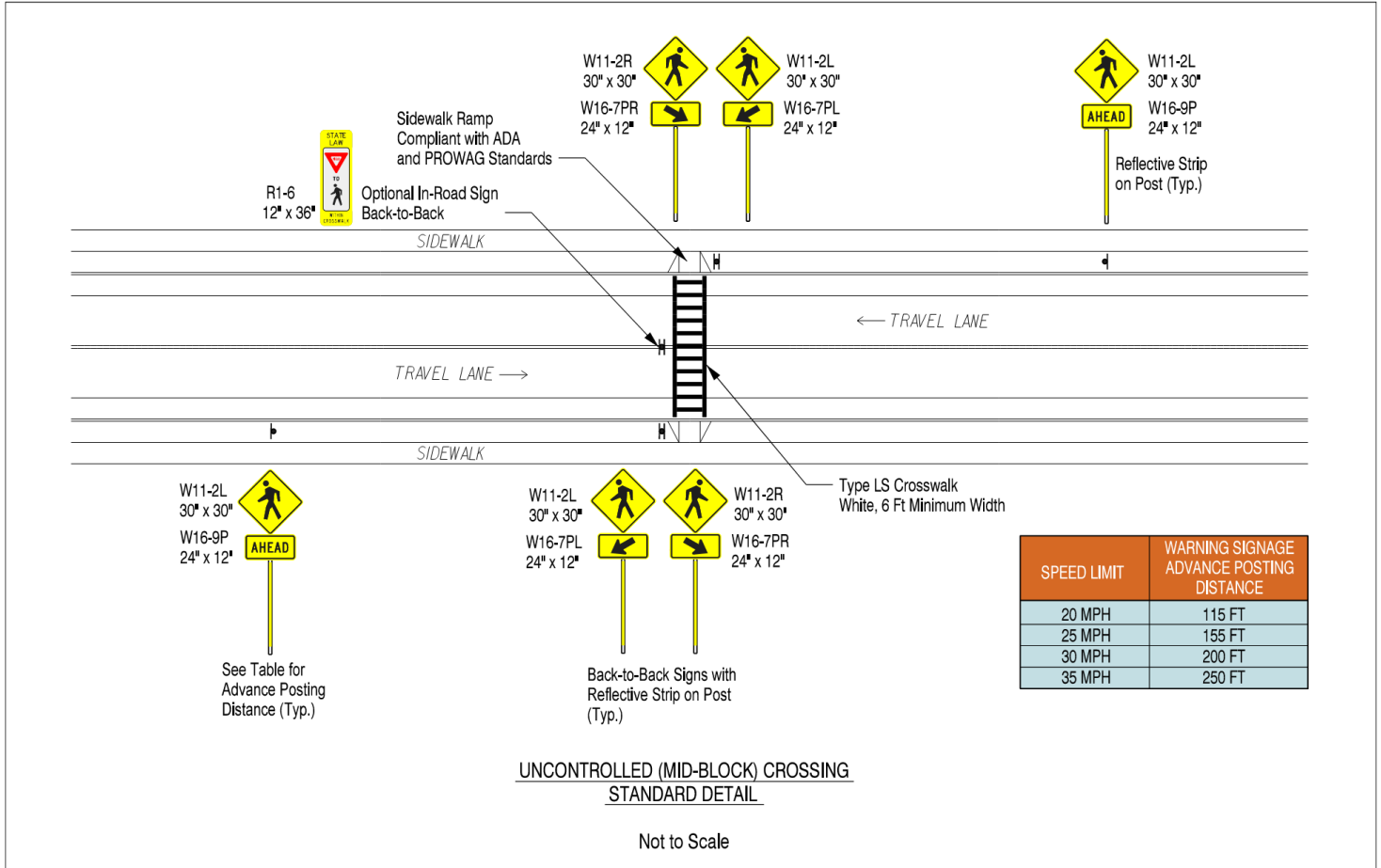


Figure 1: Mid-block Crossing Standard Installation



1. Signage

The following signage should be installed as part of the crosswalk installation:

- Pedestrian Warning signage (MUTCD W11-2) and Diagonal Downward Arrow (W16-7P) at the crossing, on both sides of the road (back-to-back). Arrows and the pedestrian graphic in the signage should be facing towards the crossing.
- Pedestrian Warning signage (W11-2) and Ahead sign (W16-9P) in advance of the crossing, posted at a distance based on the speed limit or observed operating speed.
- (Optional) In-road Yield to Pedestrians in Crosswalk sign (R1-6) installed at the center of the road near the crosswalk.
- Near schools or along established school routes, the School Crossing sign (S1-1) should be used in place of the Pedestrian Warning sign (W11-2) at the crossing and advance warning locations.

Signage should be installed per the current Manual on Uniform Traffic Control Devices (MUTCD) and New York State Supplement with regard to legend, size, color, and mounting height / offset.

Reflective strips may be used on the signpost for increased visibility. The reflective strip must match the color of the sign on the post.

2. Pavement Markings

High-visibility white pavement markings should be used to delineate the crossing. Type "LS" (combined transverse lines and bars) markings are required for mid-block crosswalks on State roads and are recommended for local roads as well. The minimum width of the crosswalk is 6 feet.

3. Sidewalk Connections and Ramps

The crosswalk should be connected to the adjacent pedestrian facility network with accessible ramps and sidewalk connections. Sidewalks and ramps must comply with Americans with Disabilities Act (ADA) and Public Right-of-Way Accessibility Guidelines (PROWAG).

ENHANCED TREATMENTS

Many enhanced treatments are available to improve safety and visibility at mid-block crossings, including the following:

1. Refuge Island / Median

An island or median is installed within the roadway to provide a safe space for pedestrians and separate the two directions of traffic. The pedestrian crossing can be completed in two shorter stages rather than waiting for an acceptable gap in both directions of traffic. The median provides traffic calming by narrowing the travel lane and can also act as a gateway feature with space for landscaping or decorative materials. This treatment is appropriate for most crossing locations.



Pedestrian Refuge Island



2. Curb Extension (“Bump-out”)

The curb is extended into the roadway, narrowing the travel lane and providing greater visibility and a shorter crossing distance for pedestrians. This treatment provides traffic calming and can also act as a gateway feature with low-growth landscaping or decorative materials. It is appropriate for most crossing locations.



Curb Extension (“Bump-out”)

3. Rectangular Rapid Flashing Beacon (RRFB)

A flashing beacon is installed at the crosswalk for increased visibility when pedestrians are crossing. The beacon is activated by a pushbutton and can be solar powered or connected to the power grid.

NYS DOT guidance to be used when considering the installation of RRFBs is summarized in Traffic Safety & Mobility Instruction (TSMI) 18-02. The guidance applies to State roads but may be used for local roads as well. The criteria include the following:

- Marked crosswalk.
- Minimum vehicular volumes along the roadway: 1,500 per day or 150 per hour.
- Minimum pedestrian volume thresholds of 20 pedestrians in any one hour, or 18 pedestrians per hour in any two hours, or 15 pedestrians per hour in any three hours, or 10 school-aged pedestrians traveling to / from school in any one hour.
- Stopping Sight Distance of 8 times the speed limit (minimum).
- 300 feet minimum to the nearest protected crossing, or 200 feet minimum in urban areas.
- Posted speed limit of 30 mph to 45 mph.
- Maximum number of lanes crossed: 4 lanes, or 5 lanes where raised median is present.



Rectangular Rapid Flashing Beacon



4. High Intensity Activated Crosswalk Beacon (HAWK)

A traffic signal is installed overhead to stop traffic while pedestrians are crossing. The signal includes solid red (traffic must stop and remain stopped) and flashing red (traffic must stop and may proceed when clear). This treatment is not commonly used in New York State and is most appropriate at high-volume pedestrian crossings such as a school crossing.



HAWK Signal

5. Raised Table Crossing

A raised speed table is installed at the crosswalk to slow traffic and elevate pedestrians for increased visibility. The crossing is elevated approximately four to six inches, allowing the pedestrian to cross at-grade with the adjacent sidewalk. The speed table may be constructed with asphalt, concrete or special paving materials. Design of the speed table needs to consider larger vehicles such as trucks or buses as well as maintaining proper drainage along the roadway.



Raised Crossing



REFERENCES

The following references have been used in preparation of this document. References and versions are subject to future updates and should be consulted periodically to verify design standards.

1. *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)*, 2009 Edition. Federal Highway Administration (FHWA).
2. *New York State Supplement to the Manual on Uniform Traffic Control Devices for Streets and Highways (2009 Edition)*. March 16, 2011. New York State Department of Transportation (NYSDOT).
3. Standard Sheet 685-01 (Pavement Marking Details). Effective Date January 1, 2019. New York State Department of Transportation (NYSDOT).
4. Traffic Safety & Mobility (TSMI) 18-02: Rectangular Rapid Flashing Beacons. Effective April 10, 2018. New York State Department of Transportation (NYSDOT).
5. *A Policy on Geometric Design of Highways and Streets*, 2018 Edition. American Association of State Highway and Transportation Officials (AASHTO).
6. *Urban Street Design Guide*. National Association of City Transportation Officials (NACTO).