Guidance for Installation of Pedestrian Crosswalks on Minnesota State Highways

Minnesota Department of Transportation
Metro Traffic Engineering

October, 2005

Background
Mn/DOT's overall mission includes the provision of safe and efficient transportation facilities not only for vehicles but also for pedestrians and bicyclists. Determining when and where to provide appropriate treatments such as marked crosswalks and pedestrian crossing warning signs is often complicated. Elements that can affect decisions on whether to install crossing treatments and what type include:

- posted speed of the roadway,
- volumes of vehicular and pedestrian traffic,
- number of travel lanes, geometry of the roadway at the crossing location,
- profile of pedestrian traffic (proportion of crosswalk use by elderly or children),
- type of roadway (local street or highway),
- setting (in town or isolated crossing).

All of the elements listed above can influence decision making on whether a crosswalk should be installed at a given location and if additional treatments to increase the safety of the crossing should be considered. The application of pedestrian crosswalks varies at all levels of government. One of the reasons for this variability is the different perspectives people have on the use and value of pedestrian crosswalks. While everyone is in agreement that pedestrian safety is an important issue, there often is disagreement on how to best achieve safe crossings. Not providing a uniform approach to pedestrian crossing treatments can create confusion for both motorists and pedestrians, resulting in a potential to lessen effectiveness of pedestrian crossings.

The objective of this guidance document is to establish a step-by-step procedure to evaluate the use of various pedestrian crossing treatments. This guidance is expected to produce a crosswalk program that meets both motorist and pedestrian expectations. Recent pedestrian research studies, existing crosswalk guidelines used by other governmental agencies, manuals on traffic control devices, and state statute were reviewed in order to establish this guidance document.

Decision-Making Process
The overall objective of the decision-making process is to determine where marked pedestrian crosswalks are appropriate and when additional treatments should be used. An engineering study should be completed to determine the necessity of a pedestrian crosswalk. The study should include the following detailed information:

- Geometrics
- Motorist site distance
- Traffic volume data including truck traffic and turning movements
- Daily pedestrian volume estimates
- Observation of site characteristics that could divert driver attention from the crosswalk
- Posted speed limit
- Crash history

Performing engineering analyses on potential crosswalk locations should result in a more uniform application of the use of pedestrian crosswalks.

Not all sites warrant a pedestrian crosswalk or a crosswalk with additional treatments. The following are possible outcomes that may result from non-uniform application, misuse, or overuse of crosswalk safety treatments.

- Noncompliance with traffic control devices.
  In general, a motorist's decision on whether to comply with a traffic control device message is related to how reasonable the driver perceives the intended message conveyed by the device. If the message is not regarded as reasonable, the likelihood of noncompliance with the device increases.

- Decrease in safety.
  Studies have demonstrated that in some circumstances installing pedestrian crosswalks without some other type of treatment such as signing, warning lights, etc. may not only be ineffective but could actually decrease the safety of crossing the roadway.

- Disregard of traffic control device.
  Overuse of a traffic control devices such as signs or striping can lead to a general disregard of the device. Drivers may start to ignore them creating a more hazardous situation.

The pedestrian crossing treatments included in this document were selected by Mn/DOT personnel based on their appropriateness for state highways and demonstrated support from completed studies. The criteria used by Mn/DOT to determine whether a crosswalk or additional crossing treatment should be installed at a given location are based on published studies and/or guidelines that have been established by other governmental agencies. Because there is continued research on pedestrian crossings, it is anticipated that these guidelines will likely be revised in the future.

Crosswalk Installation Guidelines

Mn/DOT has developed a flowchart (see Figure 1) to help decision makers determine whether or not a crosswalk is warranted. The following sections support the criteria contained in the flowchart. The following conditions must be met at all potential crosswalk locations:

- Adequate stopping sight distance for motorists
- Minimal truck traffic
- Minimal vehicle turning movements
- Minimal driver distractions

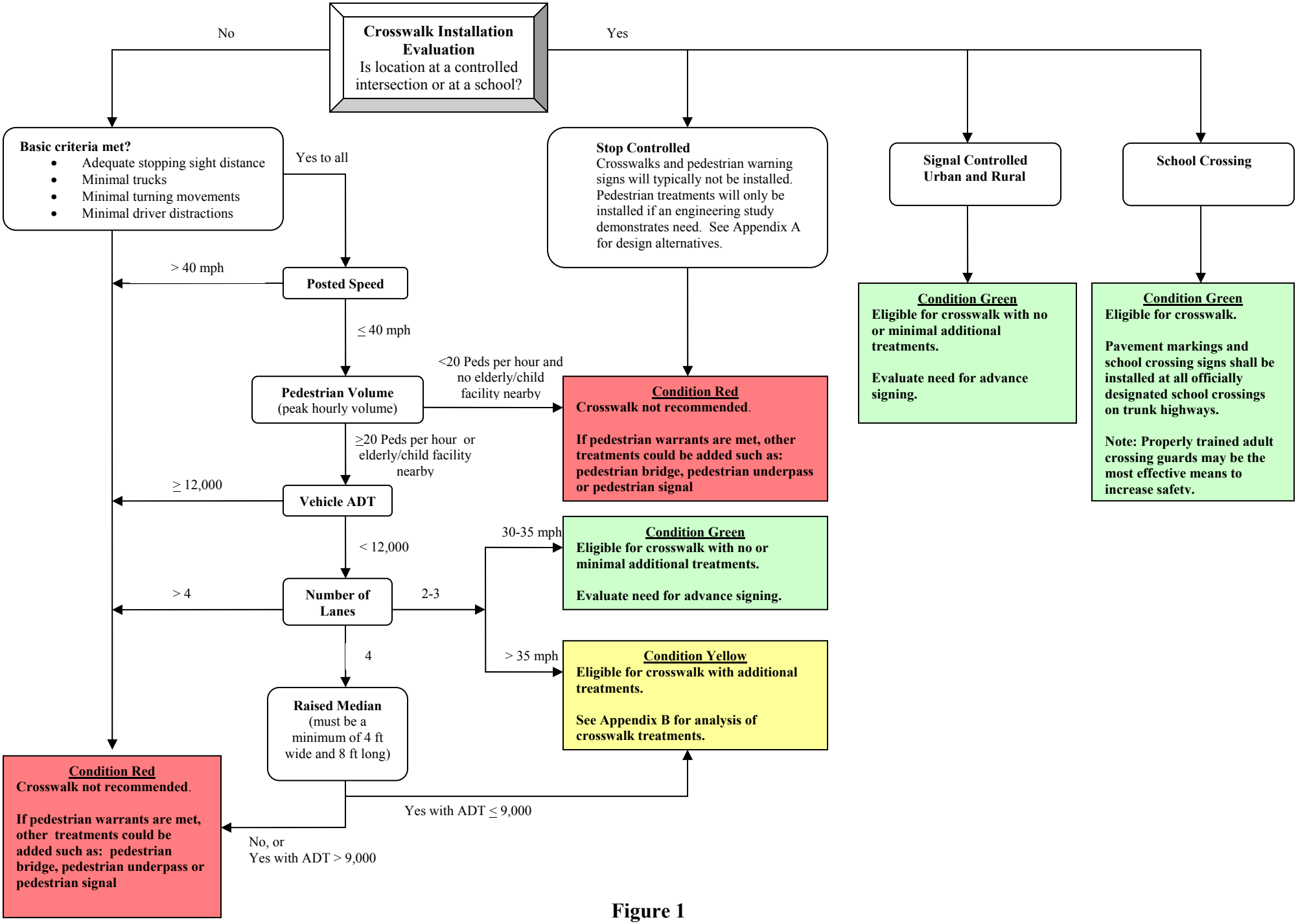

Crosswalk Installation Evaluation
Is location at a controlled intersection or at a school?
No
Yes
Basic criteria met?
Adequate stopping sight distance
Minimal trucks
Minimal turning movements
Minimal driver distractions
Yes to all
Stop Controlled
Crosswalks and pedestrian warning signs will typically not be installed. Pedestrian treatments will only be installed if an engineering study demonstrates need. See Appendix A for design alternatives.
Signal Controlled Urban and Rural
School Crossing
> 40 mph
Posted Speed
≤ 40 mph
<20 Peds per hour and no elderly/child facility nearby
Pedestrian Volume (peak hourly volume)
Condition Red
Crosswalk not recommended.
If pedestrian warrants are met, other treatments could be added such as: pedestrian bridge, pedestrian underpass or pedestrian signal
≥20 Peds per hour or elderly/child facility nearby
≥ 12,000
Vehicle ADT
< 12,000
30-35 mph
Condition Green
Eligible for crosswalk with no or minimal additional treatments.
Evaluate need for advance signing.
> 4
Number of Lanes
2-3
4
> 35 mph
Condition Yellow
Eligible for crosswalk with additional treatments.
See Appendix B for analysis of crosswalk treatments.
Raised Median (must be a minimum of 4 ft wide and 8 ft long)
Yes with ADT ≤ 9,000
No, or
Yes with ADT > 9,000
Condition Red
Crosswalk not recommended.
If pedestrian warrants are met, other treatments could be added such as: pedestrian bridge, pedestrian underpass or pedestrian signal
Condition Green
Eligible for crosswalk with no or minimal additional treatments.
Evaluate need for advance signing.
Condition Green
Eligible for crosswalk.
Pavement markings and school crossing signs shall be installed at all officially designated school crossings on trunk highways.
Note: Properly trained adult crossing guards may be the most effective means to increase safety.

Figure 1

Design Criteria that benefit any crossing locations:
The following design criteria can benefit pedestrian crossings at any location:

- Adequate lighting
- Proper placement of curb ramps
- Attention to location of bus stops and crosswalks
- Smaller curb radius

Condition Red

Design Criteria benefiting flowchart condition red.
The following design options should be considered at locations that present a relatively high risk to pedestrians:

- Pedestrian bridge or underpass
- Pedestrian signal

Condition Yellow

Design Criteria benefiting flowchart condition yellow.
The following design options should be considered at locations that present a relatively medium risk to pedestrians:

- Reduce number of travel lanes
- Raised median (minimum width of four feet and length of eight feet)
- Curb extensions
- Pedestrian crossing island
- Advanced stop lines and associated signing
- Parking restrictions
- Increased law enforcement

Some Condition Yellow crossings may be determined sufficient without additional crosswalk enhancements. The tables in Appendix C can assist in making this determination.

Condition Green

Crossings that are identified as having a relatively low risk for pedestrians are those that typically require only pavement markings. Signing may be included based on engineering analysis. For example, advance warning signs of free right turn lanes may be considered at high volume crossing locations or where sight restrictions exist.

Crosswalk treatments should be selected to address a specific problem, such as crossings at multi-lane locations where multiple threat crashes may be expected. A chart is provided in Appendix C that lists common problems associated with pedestrian crossings and possible crosswalk treatment solutions.

Crosswalk Pavement Marking Specifications
Unless otherwise specified, crosswalk pavement markings shall be installed using the continental pattern. Crosswalks shall be constructed of ground-in poly preform Type 3 material (Mn/DOT Spec 3354). If a pavement resurfacing or reconstruction project is expected to take place within three construction seasons, epoxy may be used in place of poly preform.

Specifications for signing can be found in the Traffic Engineering Manual and the Minnesota Manual of Uniform Traffic Control Devices:
www.dot.state.mn.us/trafficeng/otepubl/index.html

Design Considerations
There is no single solution for the design of a pedestrian crosswalk. Once the decision has been made to install a crosswalk, several variables must be considered to determine the appropriate installation. For example, additional design treatments should be considered for crosswalks on roadways with four or more lanes of travel. Appendix A contains more specific information on crosswalk treatment options.

Additional Considerations
- Some researchers question using a specific pedestrian volume to determine the need for a pedestrian crossing. An alternative to consider is to include pedestrian delay in the need analysis and adjust pedestrian volumes for elderly, children, handicapped and population of the community.
- Some road authorities have chosen to modify the Manual on Uniform Traffic Control Devices warrant process used to determine whether installation of a pedestrian signal is appropriate. In general, the warrant process has been modified to allow installation of pedestrian signals at lower pedestrian volumes.
- Applied research on pedestrian crossings is limited. Some treatments do not have support from case studies. Also, studies may have been conducted at locations different than where an application is desired. Therefore, pedestrian crossing treatments can benefit from additional observations. Appendix D contains a sample pedestrian observation form.
- Consideration has been given by some road authorities to use 85th percentile speed rather than posted speed to determine crossing treatment needs.
- Require communities to submit a Mn/DOT form to request crosswalk installation. Appendix E contains a sample of information to be supplied by the requesting community.

References

1) Motorist Compliance With Standard Traffic Control Devices, Pietrucha, M.T. and others, Public Roads, volume 53, No. 4, March 1990.
2) A Guide for Addressing Crashes Involving Pedestrians (draft), The National Cooperative Highway Research Program, December 2002.
3) Effect on Vehicle-Pedestrian Conflicts of "Turning Traffic Must Yield to Pedestrians" Sign, Abdulsatter and others, Traffic Control Devices, Visibility, and Evaluations, Transportation Research Record, November 1996.
4) Crosswalk Markings and the Risk of Pedestrians-Motor Vehicle Collisions in Older Pedestrians, Koepsell and others, Journal of the American Medical Association, Vol 288, November 2002.
5) The Effects of Advance Stop Lines and Sign Prompts on Pedestrian Safety in a Crosswalk on a Multilane Highway, Van Houten, R., Journal of Appiled Behavior Analysis, Number 3, pages 245-251, Fall 1988.
6) Pedestrian Facilities Users Guide – Providing Safety and Mobility, Zegeer, C.V. and others, Federal Highway Administration publication number FHWA-RD-01-102, March 2002.
7) Controlled-Environment Evaluation of Fluorescent Strong Yellow-Green Pedestrian-Crossing Sign Prototypes, Dutt, N. and others, Transportation Research Record 1553
8) Alternative Treatments for At-Grade Pedestrian Crossings, Lalani, N. and others, Institute of Transportation Engineers, Publication No. LP-629, 2001.
9) Requirements for the Installation of Pedestrian Crossovers in Ontario, Ministry of Transportation, Traffic Office.
10) Traffic Manual, Oregon Department of Transportation, Traffic Management Section
11) Safety Effects of Marked vs Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines, Zeeger, C.V. and others, U.S. Department of Transportation, Federal Highway Administration, November 2000.
12) Safety Analysis of Marked Versus Unmarked Crosswalks in 30 Cities, Zeeger, C.V. and others, ITE Journal, January 2004.
13) Phase I Findings on Treatments for Pedestrians (draft), Fitzpatrick, K. and others, Transportation Research Board, August 2003.

Appendix A

Design Alternatives

12. Raised Medians

Medians are raised barriers in the center portion of the street or roadway that can serve as a place of refuge for pedestrians who cross a street midblock or at an intersection location. They may provide space for trees and other landscaping that, in turn, can help change the character of a street and reduce speeds. They also have benefits for motorist safety when they replace center turn lanes. Desired turning movements need to be carefully provided so that motorists are not forced to travel on inappropriate routes, such as residential streets, or make unsafe U-turns.

Continuous medians may not be the most appropriate treatment in every situation. In some cases, separating opposing traffic flow and eliminating left-turn friction can increase traffic speeds by decreasing the perceived friction of the roadway. They may also take up space that can be better used for wider sidewalks, bicycle lanes, landscaping buffer strips, or on-street parking and may cause problems for emergency vehicles. In some environments, medians can be constructed in sections, creating an intermittent rather than continuous median. Another good alternative device for two-, three- or four-lane roads is the crossing island, which provides a crossing refuge for pedestrians and, in some designs, aids in decreasing vehicle speeds.

Raised medians are most useful on high-volume, high-speed roads, and they should be designed to provide tactile cues for pedestrians with visual impairments to indicate the border between the pedestrian refuge area and the motorized vehicle roadway.

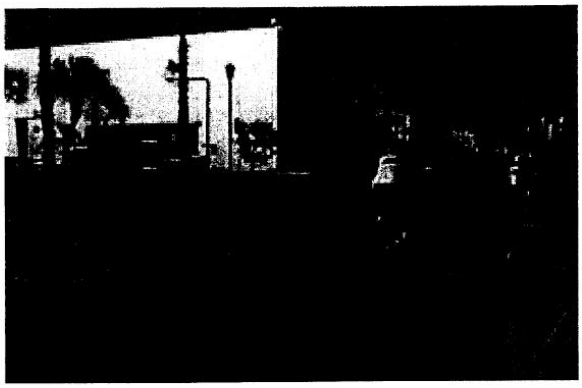
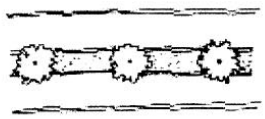


Photo by Dan Burden

This attractive median provides curb ramps and median openings for wheelchair users.



Adapted from *Making Streets That Work*, Seattle, 1996

Purpose:

- Manage motor vehicle traffic and provide comfortable left-hand turning pockets with fewer or narrower lanes.
- Provide a refuge for pedestrians crossing the street.
- Provide space for street trees and other landscaping.

Considerations:

- Ensure that there is enough room for wider sidewalks, bike lanes, and planting strips before proceeding with construction.
- Landscaping in medians should not obstruct the visibility between pedestrians and approaching motorists.
- Median crossings at midblock and intersection locations must be fully accessible by means of ramps or cut-throughs, with detectable warnings.

Estimated Cost:

The cost for adding a raised median is approximately $15,000 to $30,000 per 30 m ($15,000 to $30,000 per 100 ft), depending on the design, site conditions, and whether the median can be added as part of a utility improvement or other street construction project.

14. Curb Radius Reduction

One of the common pedestrian crash types involves a pedestrian who is struck by a right-turning vehicle at an intersection. A wide curb radius typically results in high-speed turning movements by motorists. Reconstructing the turning radius to a tighter turn will reduce turning speeds, shorten the crossing distance for pedestrians, and also improve sight distance between pedestrians and motorists.

Nearby land uses and types of road users should be considered when designing an intersection so that curb radii are sized appropriately. If a curb radius is made too small, large trucks or buses may ride over the curb, placing pedestrians in danger.

Where there is a parking and/or bicycle lane, curb radii can be even tighter, because the vehicles will have more room to negotiate the turn. Curb radii can, in fact, be tighter than any modern guide would allow; older cities in the Northeast and in Europe frequently have radii of 0.6 to 1.5 m (2 to 5 ft) without suffering any detrimental effects.

More typically, in new construction, the appropriate turning radius is about 4.6 m (15 ft) and about 7.6 m (25 ft) for arterial streets with a substantial volume of turning buses and/or trucks. Tighter turning radii are particularly important where streets intersect at a skew. While the corner characterized by an acute angle may require a slightly larger radius to accommodate the turn moves, the corner with an obtuse angle should be kept very tight, to prevent high-speed turns.

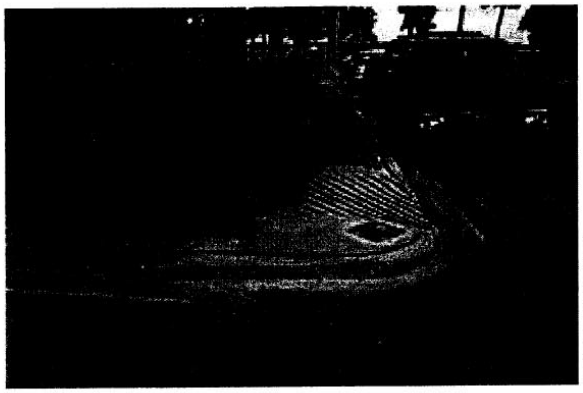
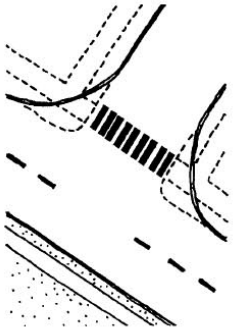


Photo by Peter Lagerwey

Tight corner radii keep turning vehicle speeds down and minimize crossing distances for pedestrians. This demonstration project uses inexpensive curbing to reduce the curb radius.



Making Streets That Work, Seattle, 1996

Purpose:

- Safer intersection design.
- Slow right-turning vehicles.
- Reduce crossing distances, improve visibility between drivers and pedestrians, and provide space for accessible curb ramps.
- Shorter crossing distances can lead to improved signal timing.

Considerations:

- Consider effective radii by taking into account parking and bicycle lanes.
- Make sure that public maintenance vehicles, school buses, and emergency vehicles are accommodated.
- Smaller radii reduce overall crossing distance and reduce time needed for the pedestrian phase.

Estimated Cost:

Construction costs for reconstructing a tighter turning radii are approximately $2,000 to $20,000 per corner, depending on site conditions (e.g., drainage and utilities may need to be relocated).

Appendix B

Crosswalk Crash Frequency Data
and
Additional Treatment Evaluation

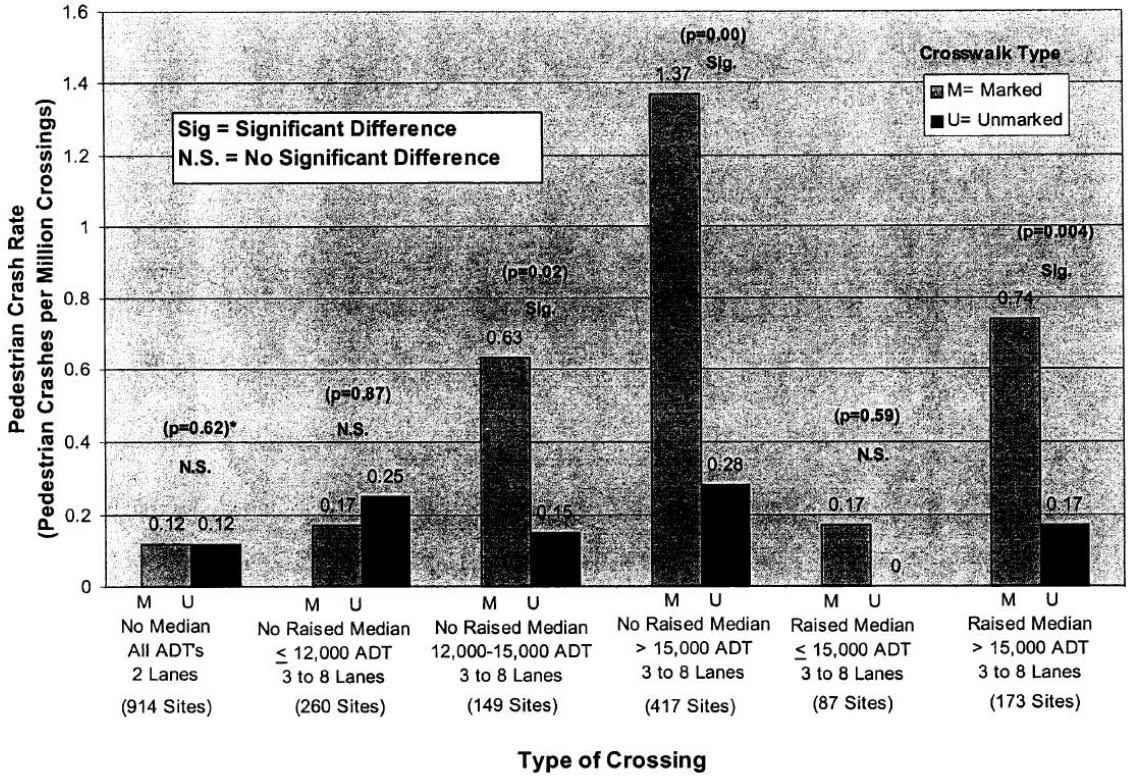


Figure 4. Pedestrian crash rate vs type of crossing.

reference: http://safety.fhwa.dot.gov/fourthlevel/pdf/Cros.pdf. page 10

Table 1. Recommendations for installing marked crosswalks and other needed pedestrian improvements at uncontrolled locations.*

Roadway Type (Number of Travel Lanes and Median Type)	Vehicle ADT ≤ 9,000			Vehicle ADT >9000 to 12,000			Vehicle ADT >12,000 - 15,000			Vehicle ADT > 15,000		
	Speed Limit**											
	≤ 30 mi/h	35 mi/h	40 mi/h	≤ 30 mi/h	35 mi/h	40 mi/h	≤ 30 mi/h	35 mi/h	40 mi/h	≤ 30 mi/h	35 mi/h	40 mi/h
2 Lanes	C	C	P	C	C	P	C	C	N	C	P	N
3 Lanes	C	C	P	C	P	P	P	P	N	P	N	N
Multi-Lane (4 or More Lanes) With Raised Median***	C	C	P	C	P	N	P	P	N	N	N	N
Multi-Lane (4 or More Lanes) Without Raised Median	C	P	N	P	P	N	N	N	N	N	N	N

* These guidelines include intersection and midblock locations with no traffic signals or stop signs on the approach to the crossing. They do not apply to school crossings. A two-way center turn lane is not considered a median. Crosswalks should not be installed at locations that could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex or confusing designs, a substantial volume of heavy trucks, or other dangers, without first providing adequate design features and/or traffic control devices. Adding crosswalks alone **will not** make crossings safer, nor will they necessarily result in more vehicles stopping for pedestrians. Whether or not marked crosswalks are installed, it is important to consider other pedestrian facility enhancements (e.g., raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, curb extensions), as needed, to improve the safety of the crossing. **These are general recommendations; good engineering judgment should be used in individual cases for deciding where to install crosswalks.**

** Where the speed limit exceeds 40 mi/h (64.4 km/h) marked crosswalks alone should not be used at unsignalized locations.

C = **Candidate sites for marked crosswalks**. Marked crosswalks must be installed carefully and selectively. Before installing new marked crosswalks, an engineering study is needed to determine whether the location is suitable for a marked crosswalk. For an engineering study, a site review may be sufficient at some locations, while a more in-depth study of pedestrian volume, vehicle speed, sight distance, vehicle mix, etc. may be needed at other sites. It is recommended that a minimum of 20 pedestrian crossings per peak hour (or 15 or more elderly and/or child pedestrians) exist at a location before placing a high priority on the installation of a marked crosswalk alone.

P = **Possible increase in pedestrian crash risk may occur if crosswalks are added without other pedestrian facility enhancements.** These locations should be closely monitored and enhanced with other pedestrian crossing improvements, if necessary, before adding a marked crosswalk.

N = **Marked crosswalks alone are insufficient, since pedestrian crash risk may be increased due to providing marked crosswalks alone. Consider using other treatments, such as traffic-calming treatments, traffic signals with pedestrian signals where warranted, or other substantial crossing improvement to improve crossing safety for pedestrians.**

*** The raised median or crossing island must be at least 4 ft (1.2 m) wide and 6 ft (1.8 m) long to adequately serve as a refuge area for pedestrians in accordance with MUTCD and American Association of State Highway and Transportation Officials (AASHTO) guidelines.

Appendix C

Crosswalk Treatment Analysis

Countermeasures	Crash Group											
	Midblock Dart/Dash	Multiple Threat	Midblock Mailbox, etc.	Failure to Yield (Unsignalized)	Bus Related	Turning Vehicle At Intersection	Through Vehicle at Intersection	Walking Along Roadway	Working/ Playing in Road	Not in Road	Backing Vehicle	Crossing Expressway
1. Sidewalk/Walkway					●			●	●	●	●	
2. Curb Ramp				●	●	●	●	●				
3. Crosswalk Enhancements	●	●		●	●	●	●					
4. Transit Stop Treatments	●	●		●	●	●	●					
5. Roadway Lighting	●	●	●	●	●	●	●	●	●	●	●	●
6. Overpass/Underpass	●	●		●		●	●					●
7. Street Furniture	●				●			●				
8. Bike Lane/Shoulder	●	●	●	●	●			●	●	●		
9. Road/Lane Narrowing	●	●	●	●				●	●			
10. Fewer Lanes		●		●	●			●				
11. Driveway Improvement										●	●	
12. Raised Median	●	●	●	●		●	●					
13. One-Way Street						●	●					
14. Smaller Curb Radius				●		●				●		
15. Right-Turn Slip Lane						●						
16. Modern Roundabout						●	●					
17. Modified T-Intersection						●						
18. Intersection Median Barrier		●		●		●	●					
19. Curb Extension	●	●		●	●	●	●			●	●	
20. Choker	●			●								
21. Pedestrian Crossing Island	●	●		●	●	●	●		●			
22. Chicane	●		●	●					●			
23. Mini-Circle						●	●		●			
24. Speed Humps	●		●	●					●			
25. Speed Table	●	●	●	●								
26. Raised Intersection				●		●	●					
27. Raised Ped. Crossing	●	●		●	●	●	●				●	
28. Gateway	●		●	●					●			
29. Landscape Options				●						●	●	
30. Paving Treatments				●		●	●					
31. Driveway Link/Serpentine	●			●					●			
32. Woonerf	●								●			
33. Diverter	●					●	●		●			
34. Full Street Closure	●					●	●		●			
35. Partial Street Closure	●					●	●		●			
36. Pedestrian Street	●			●					●			
37. Traffic Signal	●	●		●	●	●	●					
38. Pedestrian Signal	●	●		●	●	●	●					
39. Pedestrian Signal Timing						●	●					
40. Signal Enhancement	●					●	●					
41. RTOR Restriction						●						
42. Advanced Stop Lines		●			●	●	●					
43. Sign Improvement	●	●	●	●	●	●	●	●	●	●		●
44. School Zone Improvement	●	●		●	●	●	●	●		●		
45. Identify Neighborhood	●		●	●				●	●			
46. Speed-Monitoring Trailer	●		●	●			●	●	●			
47. Parking Enhancement	●		●	●	●	●	●			●	●	
48. Ped./Driver Education	●	●	●	●	●	●	●	●	●	●	●	●
49. Police Enforcement	●	●	●	●	●	●	●	●	●	●		●

Appendix D

Sample Pedestrian Crossing Observation Form

PEDESTRIAN CROSSWALK SURVEY

M T W TH F SA SU

weather

Date

DARK / DUSK / DAYLIGHT

Location

INTERSECTION DESCRIPTION

SIGNAL / NON SIGNAL

TIMED / UNTIMED WALK SIGNAL

OF MEDIANS _____

OF PORK CHOPS _____

OF CROSS WALKS _____

_____ WITH ____ THROUGH LANES & ___ RT TURN LANE (FREE / NOT FREE) & ____ LT TURN LANE

INTERSECTS WITH

_____ WITH ____ THROUGH LANES & ___ RT TURN LANE (FREE / NOT FREE) & ____ LT TURN LANE

INTERSECTS WITH

_____ WITH ____ THROUGH LANES & ___ RT TURN LANE (FREE / NOT FREE) & ____ LT TURN LANE

LOCATION OF CROSS WALK(S) IN INTERSECTION: EAST WEST NORTH SOUTH

DESCRIBE ADVANCED WARNING MARKINGS:

ADDITIONAL INFORMATION ON THE INTERSECTION

TIME PERIOD		PEDESTRIANS USING CROSS WALK	Ped. Not watching for vehicles making free right	CONFLICTS IN FREE RIGHT TURN LANE						CONFLICTS					
				TYPE 1		TYPE 2		TYPE 3		TYPE 1		TYPE 2		TYPE 3	
				instigated by		instigated by		instigated by		instigated by		instigated by		instigated by	
				ped	vehicle	ped	vehicle	ped	vehicle	ped	vehicle	ped	vehicle	ped	vehicle
___:00 - ___:15	child teen adult elderly														
___:15 - ___:30	child teen adult elderly														
___:30 - ___:45	child teen adult elderly														
___:45 - ___:00	child teen adult elderly														
___:00 - ___:15	child teen adult elderly														
___:15 - ___:30	child teen adult elderly														
___:30 - ___:45	child teen adult elderly														
___:45 - ___:00	child teen adult elderly														
TOTAL															

CONFLICTS

TYPE 1 WHENEVER A MOTORIST HAS TO BRAKE ABRUPTLY AUDIBLY OR, HAS TO CHANGE LANES ABRUPTLY, TO AVOID HITTING A PEDESTRIAN, OR A PEDESTRIAN HAS TO JUMP TO AVOID BEING STRUCK BY A VEHICLE.

TYPE 2 MOTORIST FAILS TO YIELD TO PEDESTRIAN AND PASSES WITHIN ONE LANE'S WIDTH FROM PEDESTRIAN. NO AUDIBLE BRAKING ON THE PART OF THE MOTORIST OR JUMPING ON THE PART OF THE PEDESTRIAN

TYPE 3 A SECOND VEHICLE PASSES IN ADJACENT LANE AFTER AN INITIAL VEHICLE HAS YIELDED FOR PEDESTRIAN

TYPE 4 UNEXPLAINED PHENOMENA, ACTS OF GOD, VEHICULAR MANSLAUGHTER, OTHER.

Appendix E

Pedestrian Crossing
Request Form

Minnesota Department of Transportation

Pedestrian Crossing Request

1. Proposed location of pedestrian crosswalk: _____

_____.

2. Peak Hours of Pedestrian Traffic_____ AM☐ PM☐

3. Pedestrian volume / Peak Hour: _____

4. Location of nearest elderly/children facility_____.

5. Posted speed limit on state highway_____M.P.H.

6. Pedestrain destinations in vicinity of crosswalk:_____

_____.

7. Pedestrian crossing observation (including law enforcement information):_____

_____.

8. Pedestrian/Vehicle crash history:_____

_____.

Submitted by :_____Date:_____

Phone #_____ Fax:_____

Address:_____

Return this form to: Minnesota Department of Transportation
1500 West Cty. Road B2
Roseville, MN 55113
Attn.: Traffic Engineering

Questions
Call 651-634-2146