

Transportation Commission



November 11, 2025
Town Hall
2121 Cross Timbers Road
Flower Mound, TX 75028

6:30 p.m.

AGENDA

A. CALL TO ORDER

B. PLEDGE OF ALLEGIANCE TO THE UNITED STATES FLAG

C. PUBLIC COMMENT

The purpose of this item is to allow the public an opportunity to address the Board/Commission regarding any item on this agenda that is not a "Public Hearing." Issues regarding daily operational or administrative matters should first be dealt with by calling Town Hall at 972- 874-6000 during business hours. To speak to the Board/Commission during public comment, please fill out a comment form, which is located in the lobby of Town Hall.

In accordance with the Texas Open Meetings Act, the Board/Commission is restricted from discussing or acting on items not listed on the agenda.

- Speakers are limited to 3 minutes; a tone will sound at 30 seconds left and when time has expired, and times may be adjusted by the Chair depending on the number of speakers.
- Speakers must address their comments to the Board/Commission.
- Please state your name and address when speaking.

D. ASSISTANT DIRECTOR REPORT

1. Update status report related to operational issues, capital improvement projects, and TxDOT projects.
2. Future Transportation Meeting dates — December 9th & January 13th
3. Future Agenda Items

E. CONSENT ITEM(S)

This part of the agenda consists of non-controversial, or "housekeeping" items required by law. Items may be removed from Consent by any Commissioner by making such request prior to a motion and vote.

1. Consider approval of the minutes from 10/14. - Consider approval of the minutes from October 14, 2025.

F. REGULAR ITEM(S)

1. Town Crosswalk Policy - Consider a recommendation to staff on the adoption of a proposed Town Crosswalk Policy.

G. WORK SESSION

1. Sharing of information related to School Crossing Guard Index (SCGI) data collection for the fall 2025 semester.

H. ADJOURN

I do hereby certify that the notice of above meeting for the Town of Flower Mound was posted at Town Hall, Town of Flower Mound, Texas, and on the Town's website in compliance with Chapter 551, Texas Government Code on November 5, 2025, by 5:00 p.m.

Tina Wells, Administrative Assistant

The Flower Mound Town Hall and Jody Smith Hall are wheelchair accessible. Requests for accommodation or interpretive services must be made 48 hours prior to this meeting by contacting Town Hall at 972.874.6000. Additional time limits will be provided for members of the public that need to address the Town Council through a translator.

Transportation Commission



October 14, 2025
Town Hall
2121 Cross Timbers Road
Flower Mound, TX 75028

6:30 p.m.

DRAFT MINUTES

A. CALL TO ORDER

Meeting called to order by Chris Reed at 6:30 p.m.

The Transportation Commission met in a regular meeting with the following members present:

Ricky Clark, Place 3
Jason Huse, Place 4
Erica Mulder, Place 5
Chris Reed, Place 6
Charlie Landry, Place 7
Christopher Davidson, Place 8, Alternate
Barbara Barrios, Place 9, Alternate

with the following member(s) absent:

Bjorn Vandug, Place 1
Robert Morreira, Place 2

constituting a quorum with the following members of the Town Staff participating:

Matthew Hotelling, Assistant Director of Public Works/Transportation
Thomas Peppers, Traffic Engineer
Tina Wells, Administrative Assistant
Lexin Murphy - Director of Development Services

B. PLEDGE OF ALLEGIANCE TO THE UNITED STATES FLAG

Led by Chris Reed

C. PUBLIC COMMENT

The purpose of this item is to allow the public an opportunity to address the Board/Commission regarding any item on this agenda that is not a "Public Hearing." Issues regarding daily operational or administrative matters should first be dealt with by calling Town Hall at 972- 874-6000 during business hours. To speak to the Board/Commission during public comment, please fill out a comment form, which is located in the lobby of Town Hall.

In accordance with the Texas Open Meetings Act, the Board/Commission is restricted from discussing or acting on items not listed on the agenda.

- Speakers are limited to 3 minutes; a tone will sound at 30 seconds left and when time has expired, and times may be adjusted by the Chair depending on the number of speakers.
- Speakers must address their comments to the Board/Commission.
- Please state your name and address when speaking.

Public Comment opened at 6:31 p.m.

Names listed below don't necessarily reflect the order in which each person spoke and all addresses are located in Flower Mound unless otherwise indicated.

	Speaker name and address	Subject (as written on the form)
1.	Suresh Mutyala, 1409 Kings Lake Dr	Street light request

** Indicates person did not wish to speak*

Public Comment closed at 6:34 p.m.

D. COMMISSION MEMBER INTRODUCTIONS

1.
 - Bjorn Vandug - Place 1
 - Robert Morreira - Place 2
 - Ricky Clark - Place 3
 - Jason Huse - Place 4
 - Erica Mulder - Place 5
 - Chris Reed - Place 6
 - Charles Landry - Place 7
 - Christopher Davidson - Place 8 (Alternate)
 - Barbara Barrios - Place 9 (Alternate)

E. ELECTIONS

1. Chair (conducted by the Assistant Director Public Works/Transportation
 - a. CIAC - November meeting

ACTION: Chris Reed moved to nominate himself as Chair. Erica Mulder seconded the motion.
AYES: Chris Reed, Jason Huse, Erica Mulder, Charles Landry, Ricky Clark, Christopher Davidson, Barbara Barrios
NAYS: None
ABSTAIN: None
RESULT: 7 : 0

2. Vice Chair

ACTION: Barbara Barrios moved to nominate Ricky Clark as Vice Chair. Charles Landry seconded the motion.
AYES: Jason Huse, Erica Mulder, Charles Landry, Ricky Clark, Christopher Davidson, Barbara Barrios
NAYS: None
ABSTAIN: None
RESULT: 6 : 0

At 6:40 p.m. Chair Chris Reed called a recess before proceeding with the Assistant Directors Report.

Chair and Vice Chair Sworn into Office

At 6:45 p.m. Chair Chris Reed called the meeting back to order.

F. ASSISTANT DIRECTOR REPORT

1. Update status report related to operational issues, capital improvement projects, and TxDOT projects.
2. Future Transportation Meeting dates - November 11th & December 9th
3. Future Agenda Items.

4. Boards and Commission Banquet — October 23rd

G. CONSENT ITEM(S)

This part of the agenda consists of non-controversial, or “housekeeping” items required by law. Items may be removed from Consent by any Commissioner by making such request prior to a motion and vote.

1. Consider approval of the minutes from 09/09. - Consider approval of the minutes from September 9, 2025.

ACTION: Erica Mulder moved to approve G.1. as presented in the agenda caption. Charles Landry seconded the motion.
AYES: Jason Huse, Erica Mulder, Charles Landry, Ricky Clark, Christopher Davidson, Barbara Barrios
NAYS: None
ABSTAIN: None
RESULT: 6 : 0

H. REGULAR ITEM(S)

1. Update Monarch Thoroughfare Plan Amendment - Public Hearing to consider a request for a Master Plan Amendment (MPA25-0003) to amend Section 7.0 - Thoroughfare Plan. The request is to change Landsdowne from an Urban Minor Arterial to an Urban Minor Arterial Undivided; and remove the Urban Collector north of Denton Creek Boulevard in the Monarch Development Area. The location is generally located east of IH 35W and northwest of the Canyon Falls Development. This item was postponed at the September 9, 2025, Transportation Commission meeting

Staff Presentation

Matt Hotelling — Assistant Director Public Works/Transportation

Applicant Presentation

Jonathan Kerby - Kimley-Horn
2600 North Central Expressway
Richardson, TX

Public Comment: Open at 7:15:44 p.m.

None

Public Comment: Closed at 7:15:55 p.m.

ACTION: Jason Huse moved to approve H.1. as presented in the agenda caption. Ricky Clark seconded the motion.
AYES: Jason Huse, Erica Mulder, Charles Landry, Ricky Clark, Christopher Davidson, Barbara Barrios
NAYS: None
ABSTAIN: None
RESULT: 6 : 0

I. ADJOURN

Motion to adjourn made by Erica Mulder, second made by Charles Landry, all in favor.
Meeting adjourned at 7:17 p.m.



TRANSPORTATION COMMISSION AGENDA F.1. REGULAR ITEM(S)

DATE: November 11, 2025
FROM: Thomas Peppers, Traffic Engineer
ITEM: **Consider a recommendation to staff on the adoption of a proposed Town Crosswalk Policy.**

BACKGROUND: As the Town continues to grow, it becomes increasingly important to provide pedestrian facilities that are safe, accessible, and efficient. Marked crosswalks are a key component of a well-designed pedestrian network, providing clearly defined and legally recognized points for people to cross roadways. When properly planned and designed, marked crosswalks can not only improve safety but also support broader goals such as improving walkability and connectivity across the Town. That being said, creating safe pedestrian crossings is a complex process. Simply marking a crosswalk does not guarantee safety.

Each year staff receive numerous requests for the installation of marked crosswalks. To ensure consistency in how these requests are assessed and to provide clear guidance for decision making, the Town has developed a formal crosswalk policy. This policy will standardize the review of marked crosswalk requests by establishing a structured evaluation process to determine whether a crosswalk should be marked based on objective criteria and nationally recognized best practices in pedestrian safety. It will also provide guidance for the appropriate design, placement, and implementation of marked crosswalks and associated treatments on Town roadways. By creating a crosswalk policy, staff will be better positioned to make informed decisions that balance community desires with the responsible use of Town resources.

At the September 10, 2024, Transportation (TRC) meeting, staff presented a preliminary draft of the crosswalk policy to introduce the policy's framework, outline its key components, and receive initial feedback from the Commission. The recording of that meeting can be accessed via this link: [Sep 10, 2024 Transportation Commission - Flower Mound, TX](#). Following that meeting, staff prepared an updated draft that incorporated the Commission comments and expanded on the proposed evaluation procedures, design criteria, and implementation guidance. This draft was presented at the June 10, 2025, TRC meeting to obtain further feedback from the Commission. The recording for this meeting can be viewed via this link: [Jun 10, 2025 Transportation Commission - Flower Mound, TX](#). Based on feedback received during both work sessions, staff have prepared a final draft of the Town's crosswalk policy, which is provided in Attachment 1. The information presented in the policy is based on extensive research drawn from crosswalk policies adopted by various agencies across the United States, as well as national and state-level publications focused on improving pedestrian safety. The agenda packet for the June 10, 2025, TRC meeting contains examples of crosswalk policies from several municipalities and relevant national and state-level publications.

CURRENT PROCEDURE/PRACTICE: Currently, requests for marked crosswalks are evaluated on a case-by-case basis using a combination of engineering judgment, professional experience, and national standards. While this approach allows some flexibility in decision-making, it often leads to inconsistencies in crosswalk placement and design, reduces transparency around how decisions are made, and makes it difficult to explain those decisions to the public. Furthermore, since the Town

does not have a standardized evaluation framework or defined criteria for warranting marked crosswalks, this policy will help staff decide when a marked crosswalk is appropriate and how to determine the specific design and supporting treatments that should accompany it.

CROSSWALK DEFINITIONS: According to the Texas Transportation Code, pedestrians have the right-of-way when crossing at intersections, regardless of whether the crosswalk is marked, unless the crossing is explicitly prohibited by signage or traffic signals. This means that a marked crosswalk is not required at every intersection. However, at locations outside of intersections, crosswalks are only legally recognized, if they are marked. Marking a crosswalk serves three primary functions: it identifies where pedestrians should cross, improves the predictability of pedestrian movements, and increases driver awareness of the crossing. For the purposes of this policy, the term “crosswalk” refers to a crosswalk, whether marked or unmarked. The term “crossing” is used to refer to any location where pedestrians cross a roadway, which may or may not be a crosswalk.

Crosswalks can be generally classified into two types:

- Unmarked Crosswalks – These are crossings that are not delineated by pavement markings, typically found at intersections where pedestrian pathways continue across the roadway.
- Marked Crosswalks – These are crossings that are designated with pavement markings and are often placed at intersections or mid-block locations to enhance visibility and safety of the pedestrian crossing.

Crosswalks and crossings may be further categorized based on location and the presence of traffic control devices:

- Grade-separated crossings – These are crossings where pedestrians cross a roadway using either an overpass or underpass and are completely separated from vehicular traffic. These crossings are very expensive.
- Controlled Crossings – These are crossings where the road being crossed is controlled at the crossing by a traffic signal, pedestrian hybrid beacon (PHB), stop or yield sign. Controlled crossings are most commonly located at intersections.
- Uncontrolled Crossings – These are crossings where the road being crossed is free flowing and not controlled by a traffic control device at the crossing point. Uncontrolled crossings are typically located at mid-block locations or minor intersections.

POLICY OVERVIEW: The proposed crosswalk policy provides guidance for the installation, enhancement, relocation, and/or removal of crosswalks. It defines crosswalk types, their function and legal basis under the Texas Transportation Code, and the benefits and limitations of marked crosswalks. The policy also establishes conditions under which crosswalks are warranted, outlines best practices for design and placement at intersections and mid-block locations, and presents a variety of treatments to improve pedestrian safety. It will apply to all future crosswalk requests and new installations. Existing crosswalks installed on roadways owned and maintained by the Town will not be subject to its provisions.

POLICY STRUCTURE: The proposed policy is organized into seven sections:

1. Introduction – Explains the purpose of the policy and how to apply its guidance in decision-making.
2. Background – Summarizes relevant research and national best practices regarding marking crosswalks.

3. Crosswalk Fundamentals – Describes crosswalk types, the rationale for marking crosswalks, key benefits and drawbacks, state guidance, and legal context.
4. Crosswalk Signing and Marking – Provides an overview of standard crosswalk signs and pavement markings and guidance on appropriate application at crosswalks.
5. Marking Crosswalks at Controlled Locations – Establishes criteria and guidance for marking crosswalks at locations regulated by a traffic control device.
6. Marking Crosswalks at Uncontrolled Locations – Defines the evaluation process and criteria for marking crosswalks at locations where no traffic control devices are present.
7. Supplemental Policies – Provides additional criteria and guidance related to the planning, design, and implementation of crosswalks on Town roadways.

KEY APPLICATION AREAS: The proposed policy focuses on two primary application areas: controlled and uncontrolled locations.

Controlled Locations

Controlled locations refer to intersection approaches or mid-block locations regulated by traffic control devices such as traffic signals, PHBs, stop signs, or yield signs. Under the proposed policy:

- Marked crosswalks are recommended to be installed on all approaches of signalized intersections and roundabouts, unless site-specific conditions warrant an exception.
- Marked crosswalks are only recommended to be installed at stop or yield-controlled intersections when engineering judgment determines that marking the crosswalk would improve safety and/or there is a need to guide pedestrians to the appropriate crossing point.
- Marked crosswalks are generally not recommended to be installed at intersections within residential subdivisions or across commercial driveways unless there are compelling reasons to do so.

Uncontrolled Locations

Uncontrolled locations refer to intersection approaches or mid-block locations not regulated by a traffic control device. Pedestrian crossings at these locations require careful consideration during planning and design, as drivers are not always required to stop. Instead, drivers must recognize the presence of a pedestrian crossing and yield the right-of-way as required by state law. This reliance on driver awareness can present significant safety issues at uncontrolled crossings, if proper markings, signage, and other treatments are not implemented. The proposed policy establishes the following four-step evaluation process to determine whether a marked crosswalk is warranted, based on factors such as traffic volume, vehicle speeds, pedestrian activity, and roadway characteristics.

1. Field Review and Preliminary Data Collection – High-level review of the existing conditions at the crossing to identify any potential safety concerns or operational issues. This initial assessment will help determine whether a more detailed analysis is necessary.
2. Comprehensive Data Collection – Detailed information about the crossing location is collected, including roadway geometry and configuration, traffic operations, pedestrian activity, and other factors such as lighting conditions and proximity to the nearest marked crosswalks.
3. Evaluation of Candidate Location – Use the *Uncontrolled Crossing Evaluation Flowchart* (Attachment 2) to determine whether a marked crosswalk or other improvements are warranted.
4. Further Analysis and Treatment Selection – If a crosswalk is warranted according to the flowchart, a more detailed review of the specific site conditions at the crossing location will be

done and targeted crossing treatments will be selected using the Uncontrolled Crossing Treatment Matrix (Attachment 3).

HOW TO USE THE POLICY: To determine whether a marked crosswalk is appropriate at a given location, the reviewer will first identify whether the crossing is controlled by a traffic control device. Based on that determination, the reviewer will refer to the applicable section of the crosswalk policy:

- If the location is controlled by a traffic control device, the reviewer will use the criteria and guidance provided in the “Marking Crosswalks at Controlled Locations” section of the policy to determine whether a crosswalk should be marked.
- If the location is uncontrolled (traffic flows freely), the reviewer will follow the four-step evaluation process outlined in the “Marking Crosswalks at Uncontrolled Locations” section and complete the Uncontrolled Crossing Evaluation Flowchart.

To use the flowchart, the reviewer will start at the top left and proceed step-by-step through each decision point, selecting the path that corresponds to whether the site meets each criterion based on the data collected.

Evaluation Criteria

The design criteria associated with each decision point in the flowchart are described below:

Minimum Vehicle Volume – Given the limited resources available for implementing crosswalks and crossing treatments across the Town, marked crosswalks will only be considered on roadways with a volume of 1,500 vehicles per day (vpd) or greater. Lower-volume roadways typically allow pedestrians to find adequate gaps in traffic and cross safely without additional treatments. Exceptions to the 1,500-vpd threshold may be applied to School Crossings or Park Crossings where peak-hour traffic exceeds 15% of daily volume.

- School Crossings are defined as locations where the Police Department has assigned a crossing guard.
- Park Crossings are defined as locations that directly connect to a Town Park.

Minimum Multimodal Crossing Volume – Research conducted across various communities indicates that driver yielding rates decrease significantly when crossing activity falls below approximately 20 crossings per hour. To avoid the overuse of marked crosswalks and ensure that crossings remain safe and effective, the policy establishes the following minimum crossing volume thresholds:

- ≥ 20 crossings in any single hour, or
- ≥ 15 crossings per hour over any two hours, or
- ≥ 10 crossings per hour over any three hours

Multimodal users refer to pedestrians, cyclists (including e-bikes), individuals using mobility devices, and persons on scooters or skateboards (excluding Off-Highway Vehicles). Young, elderly, and disabled individuals will count 2x toward these thresholds (e.g., 10 young (elementary or middle school-aged children) = 20 crossings). Locations that do not meet these thresholds may still be considered if it can be reasonably assumed the required crossing volume would be met if a properly marked crosswalk were available.

Crash History – Locations that have experienced one or more crashes involving a multimodal user

within 300 feet of the crossing under review during the past three years will be prioritized for crossing infrastructure improvements. Crashes that cannot be mitigated through engineering solutions, such as those caused by impaired driving, will be excluded from consideration.

Key Destinations / Active Transportation Facilities – If a location does not meet crash or crossing volume thresholds, it may still be considered for crossing improvements if it serves a key destination or is part of an active transportation facility with frequent crossing activity.

- Key destinations may be existing or planned and include hospitals, senior centers, recreation centers, libraries, parks, or other significant community facilities, subject to staff review.
- Active transportation facilities include sidewalks, multi-use trails, or other similar pathways.
- Frequent crossings are defined as five or more crossings per hour.

Visibility – To ensure multimodal users are visible to approaching drivers, uncontrolled crosswalks will only be installed where the available sight distance meets or exceeds the minimum stopping sight distance (SSD). SSD is the minimum distance required for a driver to perceive a hazard and bring their vehicle to a complete stop safely.

- If the location does not meet the minimum SSD and visual obstructions cannot be feasibly mitigated, measures to improve visibility at the crossing will be implemented.
- If adequate visibility still cannot be achieved, a marked crosswalk will not be installed. Measures will be implemented to discourage or prohibit pedestrian crossings at the location.

Distance to Nearest Marked or Controlled Crossing – A review of agency best practices showed that the typical spacing of crosswalks ranges from 200 to 600 feet. Based on these findings, the policy requires new crosswalks to be at least 300 feet from the nearest marked or controlled crossing. Exceptions include:

- Central business districts – Due to higher pedestrian activity and shorter block lengths, spacing may be reduced to 200 feet.
- High-volume locations – Where crossing volumes are at least twice the minimum multimodal thresholds, spacing may be reduced to 150 feet, provided that safety and traffic operations are not compromised.

Accessibility – Locations must have existing curb ramps on both ends of the crossing; if not, curb ramps must be constructed. If immediate construction is not feasible, the crossing design must accommodate the future installation of curb ramps. Funding for future curb ramps must be identified prior to marking the crosswalk or installing crossing treatments. All curb ramps at the crossing must comply with applicable federal and state accessibility standards.

Flowchart Outcomes

After completing the flowchart, the reviewer will reach one of three outcomes:

- No Action Recommended – The location does not meet the criteria for a marked crosswalk; Users should be directed to the nearest marked crosswalk. Physical or visual barriers may be added to discourage crossings at the location.
- Consider an Unmarked Crossing – An “unmarked crossing” refers to any treatment that improves a person’s ability to cross a roadway, short of a marked crosswalk. Installation requires staff review and engineering judgment and must include curb ramps, appropriate

warning signs, streetlights, and, where needed, geometric improvements. These crossings are intended to enhance safety at low-volume locations where pedestrians are already crossing.

- Consider a Marked Crosswalk – The location qualifies for a marked crosswalk. Further analysis should be done to assess whether additional crossing treatments are needed to address the site’s specific safety needs.

Uncontrolled Crossing Treatment Matrix

If a location is determined to be appropriate for a marked crosswalk, the reviewer will use the Uncontrolled Crossing Treatment Matrix to select the most suitable infrastructure improvements to implement alongside the marked crosswalk. The matrix organizes treatment options into six categories based on roadway configuration, traffic volume, and posted or 85th percentile speed. The 85th percentile speed refers to the speed at or below which 85% of vehicles are traveling.

To use the matrix, the reviewer will:

1. Identify the row that describes the roadway configuration at the crossing location.
2. Identify the column that corresponds to the traffic volume and speed at the location.
3. The cell at the intersection of the selected row and column indicates the minimum category of treatments recommended for the crossing.
4. Refer to the second page of the matrix for detailed guidance on the design, placement, and implementation of the marked crosswalk and associated improvements for the specific treatment category.

BOARD REVIEW/CITIZEN FEEDBACK: During the September 10, 2024, TRC meeting, the Commission reviewed the initial draft of the crosswalk policy and provided feedback to staff. The Commission requested that crash history be incorporated into the evaluation process and sought clarification on how crossing volumes would be collected, particularly for locations with seasonal or weekend activity. At the June 10, 2025, TRC meeting, the Commission reviewed an updated draft of the crosswalk policy. During this meeting, the Commission did not provide any additional feedback and expressed that the updated draft adequately addressed all previous comments and concerns.

ALTERNATIVES: The Commission may recommend modifications, additions, or other changes to the proposed policy.

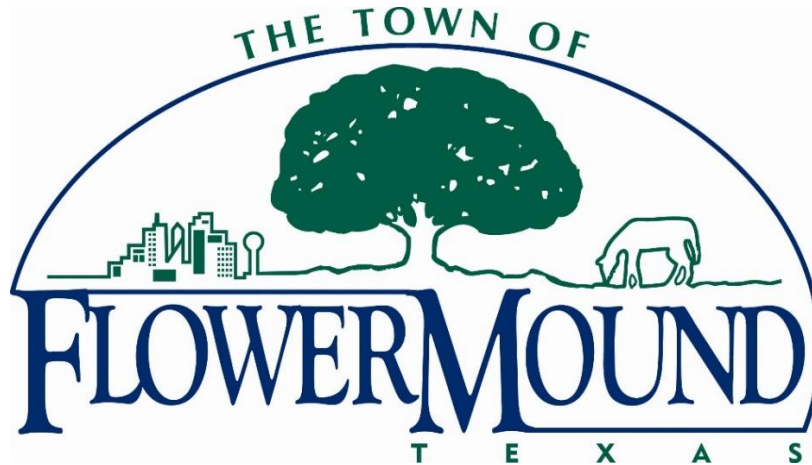
FISCAL IMPACT: N/A

LEGAL REVIEW: N/A

ATTACHMENTS:

1. Town Crosswalk Policy
2. Uncontrolled Crossing Evaluation Flowchart
3. Uncontrolled Crossing Treatment Matrix

DRAFT MOTION: Move to recommend adoption of the Town Crosswalk Policy.



TOWN OF FLOWER MOUND
CROSSWALK POLICY

PREPARED BY:

TOWN OF FLOWER MOUND

TRANSPORTATION DIVISION

November 2025

Table of Contents

1. Introduction	3
1.1 Purpose and Scope	3
1.2 Flexibility and the Role of Engineering Judgement	3
1.3 How to Use this Guidance	3
2. Background	4
3. Crosswalk Fundamentals	4
3.1 Crosswalk Types	4
3.2 Why Mark a Crosswalk?	5
3.3 TMUTCD Guidance	6
3.4 Texas State Statute	7
4. Crosswalk Signing and Marking	9
4.1 Signing at Crosswalks	9
4.2 Crosswalk Markings	10
5. Marking Crosswalks at Controlled Locations	11
5.1 Signalized Intersections	11
5.2 Enhancing Pedestrian Safety at Signalized Intersections	12
5.3 Stop & Yield-Controlled Intersections	14
5.4 Roundabouts	15
6. Marking Crosswalks at Uncontrolled Locations	16
6.1 Evaluation Process	16
6.1-1 Field Review and Preliminary Data Collection	17
6.1-2 Data Collection	17
6.1-3 Evaluate Candidate Crossing Location	19
6.2 Criteria Definitions	20
6.3-4 Further Analysis and Selection of Crossing Treatments	23
6.4 Treatment Selection Guidance	26
6.5 Additional Crossing Treatments	29
7. Supplemental Policies	36
8. References	39

1. Introduction

The Town of Flower Mound receives numerous requests each year for the installation of marked crosswalks. To clarify Town policies and improve consistency in the evaluation of these requests, the Town has developed a formal Crosswalk Policy. This policy will establish a standardized process for evaluating requests for crosswalks using objective criteria and recognized best practices in pedestrian safety. By creating a Crosswalk Policy, the Town will be better positioned to make informed decisions that balance community desires with the responsible use of Town resources.

Creating safe pedestrian crossings is a complex process; simply marking a crosswalk does not guarantee safety. This document provides an overview of the purpose and function of crosswalks, their legal basis under the Texas Transportation Code, and discusses both the benefits and drawbacks of marking crosswalks. It also defines the conditions under which crosswalks are warranted, outlines best practices for their design and placement at both intersections and mid-block locations, and presents a variety of crossing treatments that can be used to help achieve the goal of getting pedestrians safely across roadways.

1.1 Purpose and Scope

As Flower Mound continues to grow, crosswalks play an increasingly important role in connecting neighborhoods, schools, and commercial areas. Crosswalks are a key component of a well-designed pedestrian network, providing clearly defined and legally recognized points for people to cross roadways. The purpose of this document is to establish criteria, procedures, and policies to guide Town staff in determining where and how crosswalks should be implemented on roadways owned and maintained by the Town. Consistent application of this policy will ensure uniformity in the design, installation, and maintenance of crosswalks throughout the Town. This policy applies to all future crosswalk requests and new installations. Existing crosswalks installed on roadways owned and maintained by the Town prior to the adoption of this policy are not subject to its provisions until such time that a location is reevaluated.

1.2 Flexibility and the Role of Engineering Judgement

The guidance provided in this document aims to strike a balance between prescriptive requirements, engineering analysis, and the flexibility provided by engineering judgment. In certain cases, prescriptive requirements may not be sufficient to determine the need for a marked crosswalk. When this occurs, the Director of Public Works or their designee should apply engineering judgment or conduct an engineering study to assess whether a marked crosswalk can and should be applied.

1.3 How to Use this Guidance

To determine whether a marked crosswalk is appropriate at a specific location, begin by identifying whether the crossing is located at a location controlled by a traffic signal, stop sign, yield sign or uncontrolled.

- If the location is controlled by a traffic control device, refer to the *Marking Crosswalks at Controlled Locations* section of this policy.
- If the location is not controlled by a traffic control device (i.e., traffic flows freely), refer to the *Marking Crosswalks at Uncontrolled Locations* section of this policy. Follow the evaluation process outlined in that section and use the attached *Uncontrolled Crossing Evaluation Flowchart*.

For detailed guidance on how to apply the flowchart, refer to the *Criteria Definitions* and *Evaluating Candidate Locations* sections of this policy. If the evaluation determines that a marked crosswalk is appropriate, consult the *Uncontrolled Crossing Treatment Matrix* to identify the recommended crossing treatments based on the specific site conditions.

2. Background

Roadway crossings can present significant barriers to pedestrian travel. The decision to walk is often influenced by both the actual and perceived ability to safely and efficiently cross roadways along one's route. To encourage active transportation and create a more walkable community, it is essential to provide safe and convenient crossing opportunities. A variety of treatments can be used to achieve this goal. Those treatments range from basic marked crosswalks to enhanced crossings; from Pedestrian Hybrid Beacons (PHBs) to traffic signals; or even grade-separated facilities. Active transportation refers to travel by human power or micromobility devices.

Enhanced crossings may include high-visibility pavement markings, signage, pedestrian-activated warning devices, such as Rectangular Rapid Flashing Beacons (RRFBs). It may also include; geometric improvements designed to increase pedestrian visibility and reduce crossing distance. Examples of geometric improvements include curb extensions, pedestrian refuge islands, raised crosswalks, lane reductions, and roadway design modifications.

While marked crosswalks are widely recognized as safety improvements and legally grant pedestrians the right-of-way when within them, research shows that they often lead pedestrians to feel overly confident when crossing. This overconfidence or "false sense of security" often leads pedestrians to assume that drivers will always stop for them, even in situations where it may not be possible to do so. This type of aggressive behavior often puts pedestrians in hazardous situations and contributes to a higher rate of pedestrian related accidents at marked crosswalks.

In contrast, pedestrians using unmarked crosswalks tend to feel less secure and less certain that the drivers will stop prompting them to exercise more caution and wait for a safe gap in traffic before crossing. As a result, unmarked crosswalks tend to experience fewer accidents. Despite these concerns, marked crosswalks can still be a valuable safety tool when properly planned and designed.

3. Crosswalk Fundamentals

Pedestrian crossing and right-of-way laws can vary from state to state, often leading to confusion for both drivers and pedestrians about when and where it is legal to cross. This section describes the different types of crosswalks, the reasons behind marking them, their advantages and disadvantages, the state's guidance on marking them, and where crossing the road is legally allowed in Texas.

3.1 Crosswalk Types

Crosswalks can be generally classified into two types:

- **Unmarked Crosswalks:** These are crossings that are not delineated by pavement markings. They are typically found at intersections where pedestrian pathways continue across the roadway.
- **Marked Crosswalks:** These are crossings that are designated with pavement markings and are often placed at intersections or mid-block locations to enhance visibility and safety of the pedestrian crossing.

In this document, the term "crosswalk" refers to a crosswalk either with or without markings. The term "crossing" is used to refer to any location where pedestrians cross a roadway, which may or may not be a crosswalk.

Crossings can be categorized into three types based on location and the presence of traffic control devices:

- **Grade-separated crossings:** These are crossings where pedestrians cross a roadway using either an overpass or underpass and are not exposed to conflicts with vehicular traffic.
- **Controlled Crossings:** These are crossings where the road being crossed is controlled at the crossing by a traffic signal, PHB, stop or yield sign. Controlled crossings are most commonly located at intersections.
- **Uncontrolled Crossings:** These are crossings where the road being crossed is free flowing and not controlled by a traffic control device at the crossing point. Uncontrolled crossings are typically located at mid-block locations or minor intersections.

3.2 Why Mark a Crosswalk?

A well-designed transportation network should accommodate the needs of all road users, not just drivers. Pedestrians are legitimate users of the network and should not be forced to wait unreasonably for a gap in traffic or to walk out of their way to reach a marked crosswalk. When proper crossing opportunities are not provided, pedestrians are often forced to make unsafe or undesirable choices, such as:

- Walking longer distances to reach crossings controlled by traffic signals or signs.
- Using intersections where crossings are legal but lack proper safety measures or control.
- Crossing mid-block at risky locations, particularly between two signalized intersections.

When crosswalks are appropriately marked and enhanced, they offer pedestrians safer and more convenient opportunities to cross roadways.

A marked crosswalk has three primary functions:

1. Provide a clear indication of where pedestrians are expected to cross. This not only gives pedestrians a defined path to follow but also helps drivers anticipate pedestrian crossings.
2. Improve predictability of pedestrian behavior. This reduces the likelihood of sudden or unexpected movements that could result in accidents.
3. Guide pedestrians to designated crossing points, ensuring they cross at the safest, most appropriate locations.

Advantages of marking crosswalks

- At complex or heavily trafficked intersections, marked crosswalks provide clear guidance for pedestrians on where it is safe to cross.
- Often lead pedestrians to the shortest and most direct path, minimizing their exposure to traffic and improving the efficiency of their crossing.
- By directing pedestrians to designated crossing points, marked crosswalks help to reduce the risk of accidents and improve overall pedestrian safety when properly designed.

Potential drawbacks of marking crosswalks

- May create a "false sense of security" for pedestrians, leading them to assume that drivers will always yield to them. This behavior may not always be the case.
- On multi-lane roads with moderate to high traffic volumes, marked crosswalks can increase the potential for accidents unless they are supplemented with additional safety measures.
- Require regular maintenance to remain effective, including restriping and ensuring that associated signage and crossing treatments are visible and functional.

3.3 TMUTCD Guidance

The Texas Manual on Uniform Traffic Control Devices (TMUTCD) serves as the state's guidance and standard for the design and installation of signs, markings, and traffic signals across Texas. The Town has adopted the latest edition of the TMUTCD as the Town standard for traffic control devices. According to the TMUTCD, the decision to mark a crosswalk like the decision to install any other traffic control device should be guided by the fundamental principles that define an effective traffic control device. These principles include:

- Fulfill a need
- Command attention
- Convey a clear, simple meaning
- Command respect from road users
- Give adequate time for proper response

Controlled Crossing Locations

The TMUTCD offers the following guidance for the installation of marked crosswalks at controlled intersections:

At locations controlled by traffic control signals or on approaches controlled by STOP or YIELD signs, crosswalk lines should be installed where engineering judgment indicates they are needed to direct pedestrians to the proper crossing path(s).

Uncontrolled Crossing Locations

The TMUTCD offers the following guidance for the installation of marked crosswalks at uncontrolled locations:

Marked crosswalks should not be used indiscriminately. An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign. The engineering study should consider:

- | | |
|--|---|
| ➤ Total number of approach lanes | ➤ Average daily traffic (ADT) |
| ➤ Presence of a median | ➤ Speed limit or the 85th-percentile speed |
| ➤ The distance from adjacent signalized intersections/controlled crossings | ➤ The horizontal and vertical geometry of the crossing location |
| ➤ Pedestrian and bicyclist volumes, paths of travel, and delays | ➤ The possible consolidation of multiple crossing points |
| ➤ Pedestrian ages and abilities | ➤ The availability of street lighting |

New 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:

- 1. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island with an ADT of 12,000 vehicles per day (VPD) or greater; or*
- 2. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island WITH an ADT of 15,000 VPD or greater*

3.4 Texas State Statute

In the State of Texas, both pedestrians and drivers have defined rights and responsibilities when traveling along or across roadways. At intersections pedestrians have the right-of-way in crosswalks regardless of whether the crossing is marked or not, unless the crossing is explicitly prohibited by signage or traffic signals. However, at locations outside of intersections, crosswalks are only legally recognized if marked. Sections 552.001 through 552.005 of the Texas Transportation Code define what constitutes a legal crosswalk, establishes the rights and responsibilities of both pedestrians and drivers; and specifies when and where drivers are required to stop and yield the right-of-way. The definitions and legal language presented in this section form the foundation for how pedestrian crossings are viewed in Texas and serve as the basis for this policy.

Texas state law defines a “crosswalk” as:

- (a) The portion of a roadway, including an intersection, designated as a pedestrian crossing by surface markings, including lines; or
- (b) The portion of a roadway at an intersection that is within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or, in the absence of curbs, from the edges of the traversable roadway.

Based on the state-law definition of “crosswalk”, a crosswalk legally exists across every leg of an intersection. Therefore, pedestrians and drivers have the same rights and responsibilities at intersections, regardless of whether the crosswalk is marked.

Texas state law defines a “sidewalk” as:

The portion of a street that is between the curb lines or the lateral lines of a roadway and the adjacent property lines and that is intended for the use of pedestrians.

The state-law definition of “sidewalk” is somewhat different than the word’s common usage. According to state law, a sidewalk exists even if an area is “intended” for use by pedestrians. A sidewalk does not need to be paved or otherwise improved to meet the state-law definition. Sidewalks exist along almost all roadways as long as the roadside is traversable by pedestrians.

Section. 552.001 Describes Pedestrian Right-of-Way when No Pedestrian Signals are Present:

(a) A traffic signal displaying green, red, and yellow lights or lighted arrows applies to a pedestrian as provided by this section unless the pedestrian is otherwise directed by a special pedestrian signal.

(a) A pedestrian facing a green signal may proceed across a roadway within a marked or unmarked crosswalk unless the sole green signal is a turn arrow.

(b) A pedestrian facing a steady red signal alone or a steady yellow signal may not enter a roadway.

Section. 552.002 Describes Pedestrian Right-of-Way when Pedestrian Signals are Present

(a) A pedestrian signal displaying "Walk," "Don't Walk," or "Wait" applies to a pedestrian as provided by this section.

(a) A pedestrian facing a "Walk" signal may proceed across a roadway in the direction of the signal, and the operator of a vehicle shall stop and yield the right-of-way to the pedestrian.

(b) A pedestrian facing a "Don't Walk" signal may not start to cross a roadway in the direction of a "Don't Walk" signal or a "Wait" signal. A pedestrian who has partially crossed while the "Walk" signal is displayed shall proceed to a sidewalk or safety island while the "Don't Walk" signal or "Wait" signal is displayed.

Section. 552.003 Describes Right-of-Way at a Crosswalk

(a) The operator of a vehicle shall stop and yield the right-of-way to a pedestrian crossing a roadway in a crosswalk if:

1. no traffic control signal is in place or in operation; and

2. the pedestrian is:

A. on the half of the roadway in which the vehicle is traveling; or

B. approaching so closely from the opposite half of the roadway as to be in danger.

(b) Notwithstanding Subsection (a), a pedestrian may not suddenly leave a curb or other place of safety and proceed into a crosswalk in the path of a vehicle so close that it is impossible for the vehicle operator to stop and yield.

(c) The operator of a vehicle approaching from the rear of a vehicle that is stopped at a crosswalk to permit a pedestrian to cross a roadway may not pass the stopped vehicle.

Section. 552.005 Describes Right-of-Way at a Point Other Than a Crosswalk

(a) A pedestrian shall yield the right-of-way to a vehicle on the highway if crossing a roadway at a place:

1. other than in a marked crosswalk or in an unmarked crosswalk at an intersection; or

2. where a pedestrian tunnel or overhead pedestrian crossing has been provided.

(b) Between adjacent intersections at which traffic control signals are in operation, a pedestrian may cross only in a marked crosswalk.

(c) A pedestrian may cross a roadway intersection diagonally only if and, in the manner, authorized by a traffic control device.

4. Crosswalk Signing and Marking

This section provides an overview of the various signs and markings typically used at crosswalks, as well as factors to consider when selecting the most appropriate signage and markings for a specific crossing location.

4.1 Signing at Crosswalks

The Town employs a variety of warning and regulatory signs at both marked and unmarked crossings to enhance visibility and improve safety. The following signs are typically used:

- S1-1 (School): Used at pedestrian crossings associated with schools.
- W11-2 (Pedestrian): Used to indicate general pedestrian crossing locations.
- W11-15 (Trail): Used to identify shared-use path or trail crossings.
- R1-5b (Stop Here for Pedestrians): Used to direct drivers to stop at a designated point in advance of the crosswalk to allow pedestrians to cross.

To designate a specific crossing location, signs S1-1, W11-2, or W11-15 shall be installed with a downward-pointing arrow plaque (W16-7P) at the crossing point. Additional warning signs supplemented with a “AHEAD” plaque (W16-9P) should be installed ahead of the crossing to provide advanced warning to road users. The placement of advanced warning signs shall follow the TMUTCD's guidance for the advance placement of warning signs. Where this is not feasible, the placement of the signs shall be determined based on engineering judgment.

Fluorescent yellow-green backgrounds may be used for the warning signs described above to improve conspicuity of the crossing. For school-related warning signs, the use of fluorescent yellow-green backgrounds is required.

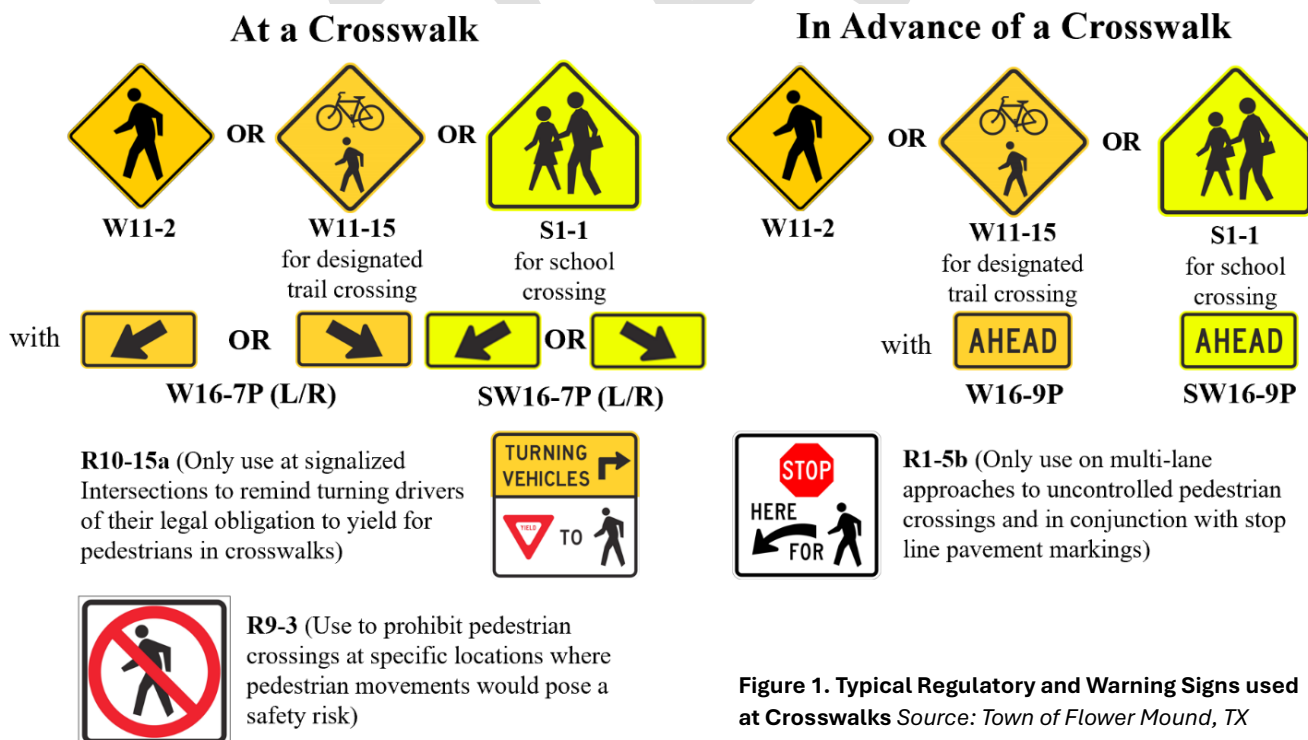


Figure 1. Typical Regulatory and Warning Signs used at Crosswalks Source: Town of Flower Mound, TX

4.2 Crosswalk Markings

The TMUTCD provides guidance on the appropriate application and design of crosswalk markings. In practice, two primary marking patterns are used: “standard” and “high-visibility”. While the TMUTCD does not specifically use these terms, these classifications are widely recognized in the industry. Each crosswalk marking pattern is described in detail below.

Standard Crosswalk Markings

Standard crosswalks consist of two parallel transverse white lines which define the edges of the crossing path. While not as attention-grabbing as high-visibility patterns, standard crosswalks still provide basic delineation of the pedestrian crossing and are effective in areas where the need for high visibility is not as critical.

High-Visibility Crosswalk Markings

High-visibility crosswalks use additional markings to enhance the visibility of the crosswalk to approaching drivers. The TMUTCD allows for the use of diagonal or longitudinal lines within the crosswalk, which may be used in conjunction with or in place of the standard transverse lines. Common high-visibility patterns include:

- **Longitudinal Bar:** Characterized by a series of thick white rectangles perpendicular to the direction of travel.
- **Ladder:** Combines transverse lines with perpendicular lines (similar to the longitudinal bar pattern) to form a ladder-like appearance. Not used by the Town.
- **Zebra:** Features wide, angled alternating dark and light stripes across the crosswalk. Not used by the Town.

High-visibility crosswalk markings are especially effective in areas with high pedestrian traffic, near schools, or at locations where crossings may be unexpected by drivers. The Federal Highway Administration (FHWA) strongly recommends the use of high-visibility crosswalk markings at all uncontrolled crossings and mid-block locations to improve safety.

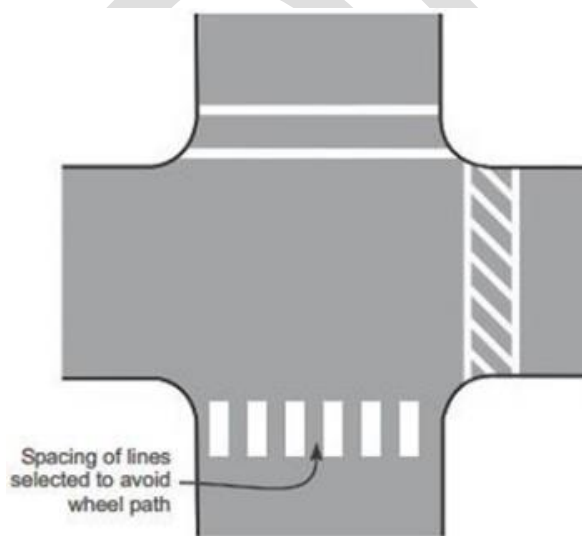


Figure 2. Examples of Standard and High Visibility Crosswalk Markings Source: TMUTCD

The Town currently uses only the standard or longitudinal bar patterns for crosswalks, as these designs provide adequate visibility while remaining cost-effective.

The following provisions in the TMUTCD apply to crosswalk markings:

- Crosswalks shall be at least 6 feet wide
- Crosswalk markings shall extend across the full width of the pavement or to the edge of the intersecting crosswalk
- Crosswalk markings shall be located so the curb ramps are entirely within the extension of the crosswalk markings

5. Marking Crosswalks at Controlled Locations

This section provides guidance for evaluating whether a crosswalk should be marked at controlled locations. It identifies key factors to consider and offers design recommendations to ensure that marked crosswalks not only comply with the requirements of the TMUTCD but also align with best practices. Controlled locations refer to pedestrian crossings located at intersections or mid-block locations that are controlled by a traffic signal, PHB, stop, or yield sign.

5.1 Signalized Intersections

Marked crosswalks should generally be installed on all signalized intersection approaches (i.e., all legs of an intersection) unless specific site conditions warrant an exception, as determined by engineering judgment. When choosing whether to mark a crosswalk on a signalized intersection approach, the following factors should be considered:

- ▶ **Heavy Right or Left-Turn Volumes:** Approaches with high volumes of right or left-turning traffic during the same signal phase as pedestrian movements pose significant safety risks. As drivers focused on navigating, turns may overlook pedestrians, increasing the likelihood of accidents
- ▶ **Sight Distance:** Approaches with limited or obstructed visibility can prevent both pedestrians and drivers from seeing each other in time to avoid potential accidents
- ▶ **Presence of Curb Ramps or Sidewalk Connections:** Approaches lacking curb ramps or sidewalk connections create barriers to safe and accessible pedestrian movement



Figure 2. Crosswalk Markings – FM 2499 & FM 3040
Source: Town of Flower Mound, TX




Table 1. Design of Crosswalks at Signalized Intersections



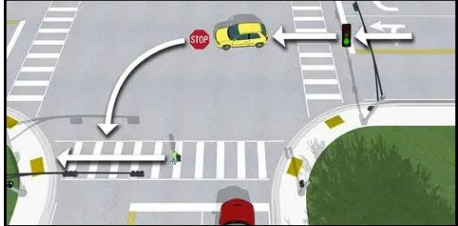

Design Element	Standard / Guidance
Crosswalk Pattern	<ul style="list-style-type: none"> ▪ Standard or High Visibility patterns may be used. ▪ Consistency in the use of crosswalk markings at intersections and along corridors is recommended.
Crosswalk Width	<ul style="list-style-type: none"> ▪ Minimum crosswalk width shall be 6 feet. ▪ If the pedestrian facility approaching the crosswalk is wider than 6 feet, the crosswalk should match the width of the sidewalk, path or trail. ▪ At locations with higher pedestrian traffic, wider crosswalks and curb ramps (e.g., 8–10 feet) should be considered to accommodate larger volumes of pedestrians.
Stop Lines	<ul style="list-style-type: none"> ▪ Required wherever a marked crosswalk is installed on a signalized approach. ▪ Must be 24 inches wide, white in color, and placed at least 4 feet in advance of the nearest crosswalk line, measured as the gap between the stop line and the crosswalk.
Signs	Warning signs related to crosswalks should not be used at or in advance of crosswalks across approaches controlled by a traffic signal.
RRFBs	RRFBs shall not be used at crosswalks controlled by a traffic signal or PHB.
Lighting	Street lighting should be provided on each leg of a signalized intersection whenever possible to adequately illuminate the intersection and crosswalks.

5.2 Enhancing Pedestrian Safety at Signalized Intersections

For signalized intersections, there are a variety of treatments that can be used to improve pedestrian safety. The following treatments are particularly effective at locations with frequent pedestrian-vehicle conflicts or high pedestrian volumes.

Table 2. Crosswalk Treatments for Signalized Intersections

High Number of Turning Vehicles		
Treatment	Description	
Leading Pedestrian Interval (LPI)	A LPI provides pedestrians with a head start when entering an intersection, by activating the "Walk" signal several seconds before the green signal for vehicles. This provides pedestrians with the opportunity to begin crossing the street before vehicles are permitted to proceed. Allowing pedestrians to establish a presence in the crosswalk, which increases their visibility to drivers and reduces conflicts with turning vehicles.	 <p>Source: Town of Flower Mound, TX</p>
Turning Vehicles Yield to Pedestrians Signs	Turning Vehicles Yield to Pedestrians (R10-15) signs may be installed at an intersection to remind drivers to yield to pedestrians. These signs should be placed in accordance with the TMUTCD and be clearly visible to drivers making their turn.	 <p>Source: Town of Flower Mound, TX</p>
Elimination of Free Flow Right Turns	Free-flow right turns can pose significant risks to pedestrians, as they allow vehicles to turn without stopping and often at higher speeds. Drivers typically focus on merging with traffic rather than watching for pedestrians in the crosswalk, which increases the likelihood of accidents. Therefore, whenever possible, intersections adjacent to pedestrian generators should be designed without free-flow right-turn lanes to minimize pedestrian-vehicle conflicts, subject to engineering judgment. In cases where a free-flow right turn lane is necessary to maintain traffic operations, the design should incorporate additional safety measures at the crossing location to reduce risks to pedestrians.	 <p>Source: Google Earth, Flower Mound, TX</p>

High Number of Pedestrians		
Treatment	Description	
Pedestrian “Scramble” Signal Phase	A pedestrian scramble allows pedestrians to cross an intersection in any direction, including diagonally, while all vehicular traffic is stopped. This eliminates conflicts between turning vehicles and crossing pedestrians by providing dedicated time for pedestrians to move freely in all directions. This treatment is appropriate where pedestrian volumes are exceptionally high. Not currently used in the Town.	 <p>Source: Google Earth, Denton, TX</p>
Right Turn on Red Restrictions	Drivers turning right on red tend to focus only on approaching traffic from the left and frequently fail to check for pedestrians to their right. Prohibiting right turns on red can help address this issue by reducing conflicts between turning vehicles and pedestrians. However, this restriction may impact intersection capacity and increase delay, so it should be applied based engineering judgement. Blank-out signs, which display the turn restriction only, when necessary, have been shown to improve driver compliance compared to static “No Turn on Red” signs.	 <p>Source: News4Jacksonville</p>
Protected Left Turn Signal Phasing	<p>Permissive left turns create significant safety risks for pedestrians, as they allow drivers to turn left while pedestrians may be crossing in the parallel crosswalk. This conflict increases the likelihood of accidents as drivers often focus on oncoming traffic while making a left turn rather than pedestrians in the crosswalk.</p> <p>Protected left turn phasing eliminates this conflict by providing an exclusive phase for left turns during which oncoming traffic is stopped, and pedestrian crossings are not permitted. This treatment is recommended at intersections where pedestrian-vehicle conflicts or roadway design contribute to a history of, or an increased risk for, left-turn crashes, subject to engineering judgment. While protected phasing improves safety, it can reduce intersection capacity, impact signal coordination, and increase delays. Therefore, its implementation should be carefully evaluated.</p>	 <p>Source: iwalksafe.org</p>  <p>Source: Town of Flower Mound, TX</p>

The information above provides a general overview of marking crosswalks at signalized intersections. For detailed guidance on the design, placement, and best practices for marking crosswalks at these locations, please refer to the latest editions of the TMUTCD and the FHWA Informational Guide for Signalized Intersections.

5.3 Stop & Yield-Controlled Intersections

Marked crosswalks should be installed across stop or yield-controlled approaches when engineering judgment determines that doing so will improve safety and help guide pedestrians to the proper crossing location. Generally marked crosswalks should not be installed at intersections within residential subdivisions or across commercial driveways unless there are compelling reasons for a crosswalk to be marked.



Figure 3. Crosswalk Markings – Bruton Orand Blvd & Quail Run Rd Source: Town of Flower Mound, TX

Key factors to consider when deciding whether to mark a crosswalk on a stop or yield-controlled approach include:

- Accident history
- Distance to nearby marked crosswalks
- Crossing volume
- Proximity to destinations (e.g., schools, parks, and shopping centers)
- Traffic volume
- Visibility
- Roadway width

Table 3. Design of Crosswalks at Stop & Yield-Controlled Intersections

Design Element	Standard / Guidance
Crosswalk Pattern	<ul style="list-style-type: none"> ▪ Standard or High Visibility patterns may be used on stop-controlled approaches. For yield-controlled approaches High Visibility patterns should only be used. ▪ Consistency in the use of crosswalk markings at an intersection is recommended.
Crosswalk Width	Crosswalk width requirements shall be the same as specified for signalized intersections.
Stop or Yield Markings	Stop or yield pavement markings are not required when a crosswalk is installed but may be considered, based on engineering judgment. If used these markings shall be installed in accordance with the latest edition of the TMUTCD.
Signs	<ul style="list-style-type: none"> ▪ Warning signs related to crosswalks shall not be installed at or in advance of crosswalks located at approaches controlled by stop or yield signs, with the exception of roundabouts and channelized right turn lanes. ▪ For channelized right-turn lanes controlled by a yield sign, a Pedestrian (W11-2), Trail (W11-15), or School (S1-1) warning sign, supplemented with a downward-pointing diagonal arrow plaque (W16-7P), may be installed at the crossing location when the crosswalk is located at least 20 feet in advance of the yield point. The placement of the warning sign shall not obstruct the view of the yield sign.
RRFBs	RRFBs shall not be used at crosswalks controlled by stop or yield signs, with the exception of roundabouts and channelized right turn lanes.
Lighting	Street lighting shall be provided at all stop and yield-controlled intersections to adequately illuminate the intersection and crosswalks.

For further guidance on marking crosswalks at stop or yield-controlled intersections, please refer to the latest edition of the TMUTCD.

5.4 Roundabouts

Marked crosswalks should generally be installed across all approaches of a roundabout unless specific site conditions warrant an exception, as determined by engineering judgment. When determining whether to mark a crosswalk on a roundabout approach, the same factors described for signalized intersections except for Heavy Right or Left-Turn Volumes should be considered.



Figure 4. Typical Crosswalk Layout at a Roundabout
 Source: *How to Drive in a Roundabout* PEMCO Insurance

Table 4. Design of Crosswalks at Roundabouts

Design Element	Standard / Guidance
Crosswalk Markings	<ul style="list-style-type: none"> High Visibility patterns shall only be used. Crosswalk markings shall extend across the full width of the entrance and exit of each approach and across any right-turn bypass lanes.
Crosswalk Width	Crosswalk width requirements shall be the same as specified for signalized intersections.
Crosswalk Location	Crosswalks shall be placed a minimum of 20 feet in advance of the edge of the circulatory roadway and shall not be marked to or from the central island.
Splitter Islands	<ul style="list-style-type: none"> All roundabout approaches with crosswalks must include raised splitter islands with a minimum width of 6 feet to provide adequate refuge. The walkway through the island shall be cut through rather than ramped, and its width shall match that of the crosswalk.
Signs	<ul style="list-style-type: none"> Pedestrian (W11-2), Trail (W11-15), or School (S1-1) warning signs, supplemented with a diagonal downward-pointing arrow plaque (W16-7p) shall be installed at each end of the crosswalk on all entrances and exits to a roundabout. The signs shall be placed in advance of the crosswalk adjacent to the travel lane and not obstruct the view of the yield sign. Additional (W11-2, W11-15, or S1-1) warning signs supplemented with an “AHEAD” plaque (W16-9p) may be installed in advance of the crosswalk on each roundabout approach. When the posted speed is ≥ 40 mph, a Circular Intersection (W2-6) sign should be installed instead. “Yield (Stop) Here for Pedestrians” (R1-5 and 5b) signs shall not be used in advance of crosswalks that cross an approach to or from a roundabout.
RRFBs	RRFBs may be used on roundabout approaches to enhance pedestrian visibility. If used, RRFBs shall be placed on both sides of the crosswalk, i.e. one on the entrance of the roundabout, one on the exit of the roundabout, and one on the raised splitter island. RRFBs shall only be used to supplement W11-2, W11-15, or S1-1 warning signs with a W16-7p plaque and be placed in advance of the crosswalk adjacent to the travel lane. RRFBs shall not obstruct the view of the yield sign.
Lighting	Street lighting shall be provided around the perimeter of the roundabout and on the approach side of the crosswalk for each leg of a roundabout.

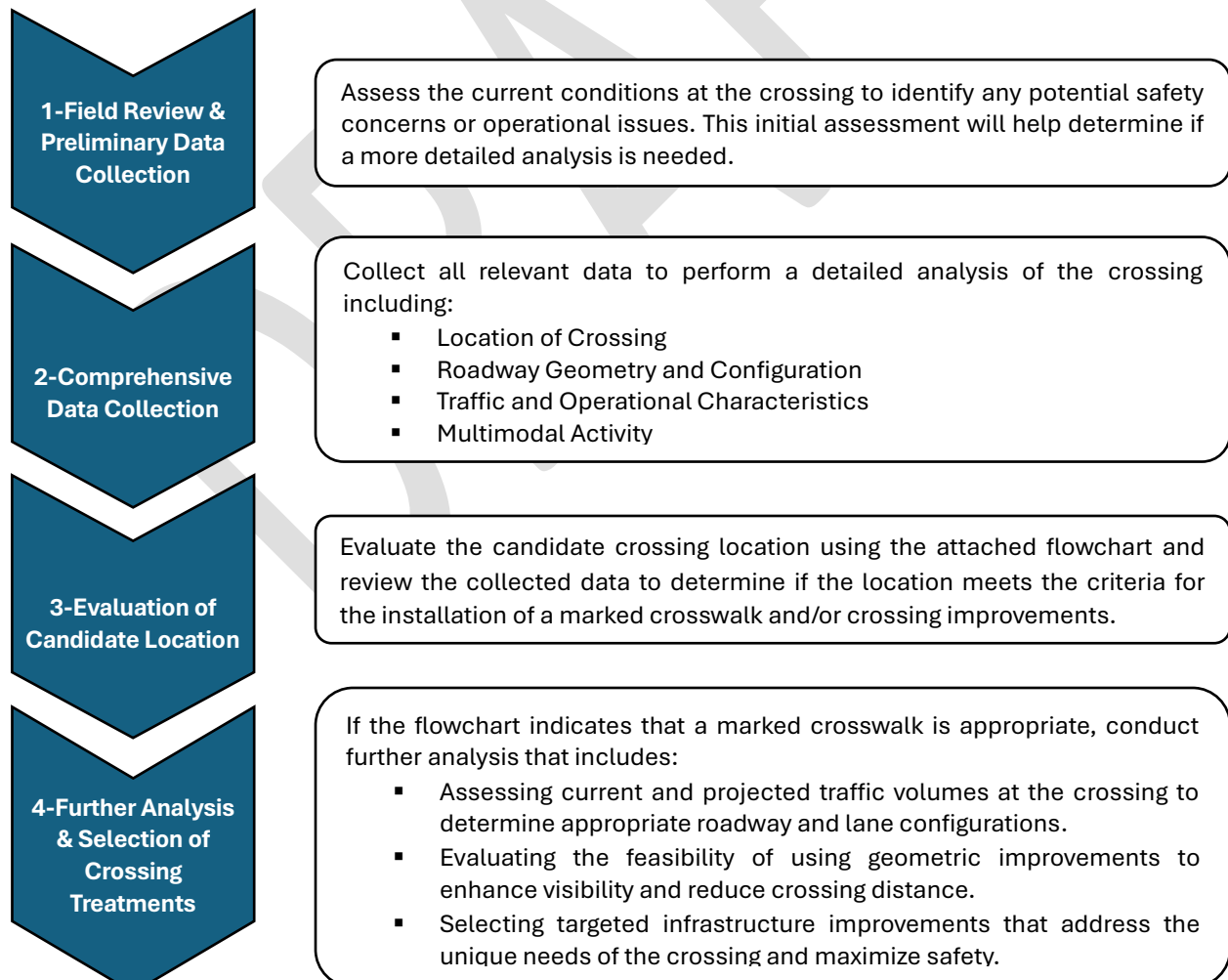
The information above provides a general overview of marking crosswalks at roundabouts. For detailed guidance, please refer to the latest editions of the TMUTCD and the FHWA *Informational Guide for Roundabouts*.

6. Marking Crosswalks at Uncontrolled Locations

This section presents a process for evaluating and implementing marked crosswalks at uncontrolled intersection approaches and mid-block locations. “Uncontrolled” refers to locations where pedestrians cross that are not controlled by a traffic control device such as a traffic signal PHB, stop sign, or yield sign. These crossings require careful consideration during planning and design, as drivers are not always required to stop. Instead, drivers must recognize the presence of a pedestrian crossing and yield the right-of-way as required by state law. This reliance on driver awareness can present significant safety issues at uncontrolled crossings, if proper markings, signage, and other treatments are not implemented.

6.1 Evaluation Process

Determining whether a marked crosswalk is appropriate at an uncontrolled location requires a thorough review of each crossing’s unique characteristics. The following steps provide a methodical data-driven process to determine whether a marked crosswalk is warranted for a specific crossing location. Factors to be considered include traffic volume, crossing activity, roadway design, and overall safety of the crossing. Each location should be evaluated using engineering judgment in conjunction with the guidelines outlined in this section to ensure that decisions regarding the installation of marked crosswalks are consistent, effective, and in line with engineering best practices.



6.1-1 Field Review and Preliminary Data Collection

The evaluation process starts by identifying a crossing location either proactively (anticipating changes due to future development, capital improvement projects or safety concerns) or reactively (responding to resident requests or recent crashes). Once a location is identified, an initial field review should be conducted to assess the current site conditions. This will help provide important insights into the existing conditions of the crossing and guide future decisions.

During the field review, the following factors should be assessed:

- Physical characteristics of the crossing.
- Pedestrian and vehicular volumes and behaviors at the crossing.
- Roadway design and its suitability for safe pedestrian crossing.
- Available sightlines at the crossing for both pedestrians and drivers.
- The presence and condition of safety features, such as signage, lighting, and pavement markings at the crossing.

It is also important to consider nearby land uses and how they might affect traffic patterns and safety at the crossing. This first step will help determine if any issues are present, whether other mitigation measures outside the scope of this policy can be implemented, or if no further action is needed.

6.1-2 Data Collection

Data collection is a critical step in the evaluation process. The following data must be collected to perform a comprehensive review of the crossing location. Ensuring the accuracy and completeness of the data collected is essential to effectively assessing the need for a marked crosswalk.

Crossing Identification

- Identify the primary and minor streets if at an intersection, or the specific crossing location if mid-block.
- Identify land uses or destinations within a 600-foot radius of the crossing that are likely to attract or generate pedestrian and bicycle traffic. These may include schools, parks, shopping centers, healthcare facilities, and community centers. Proximity to these locations is often associated with higher crossing volumes, making it important to evaluate their influence when determining the need for a marked crosswalk.

Roadway Characteristics

- Determine whether the cross-section is urban (curb and gutter; sidewalk present) or rural (shoulder and ditch; no sidewalk).
- Identify the roadway layout at the crossing location, including the total number of lanes and whether it is divided or undivided.
- Measure the available stopping sight distance (SSD) in both directions at the crossing location to ensure adequate visibility is available. The adequacy of SSD shall be assessed in accordance with the latest edition of the *American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets*.
- Determine whether the crossing connects directly to an existing sidewalk or multi-use trail.
- Identify whether curb ramps are present at the crossing. If curb ramps are present evaluate their condition and compliance with accessibility standards.

-
- Measure the distance (in feet) from the crossing under review to the nearest marked or controlled crosswalk.
 - Assess whether the crossing location is adequately illuminated, especially where nighttime crossings are prevalent.

Traffic and Operational Characteristics

- If the crossing is at an intersection, identify the type of traffic control in place, such as side-street stop control only, all-way stop control, yield control, RRFB, PHB, or a traffic signal.
- Identify the posted speed limit at the crossing location.
- Collect hourly speed and vehicular volume data for the major roadway at the crossing, ideally coinciding with the pedestrian data collection.
- Gather and review crash data from the past 3 years within 600 feet of the crossing location, with a focus on accidents involving pedestrians or bicyclists crossing the road.
- Observe if any vehicular queues extending from downstream traffic signals or intersections back up into the crossing location. Document any impacts on safety and discrepancies in lane-to-lane queuing.

Multimodal Data

- Collect multimodal crossing volumes during peak crossing times, for a minimum of two hours. Note that peak crossing hours may not always coincide with peak vehicular traffic hours. If the peak crossing hours are unknown, it is desirable to conduct a 12-hour count of crossing activity to determine the peak times. The peak crossing hours for some locations (such as parks or athletic fields) may occur on the weekend. For locations near schools, data collection may only require two hours corresponding to school opening and closing. Whenever possible, data should be collected during warm-weather months and during fair weather conditions to represent peak crossing activity.
 - Volume counts should include and differentiate between pedestrians and bicyclists and should note separately the number of young, elderly, or disabled individuals crossing.
 - If the crossing location is anticipated to be used as a school crossing, the volume of student pedestrians should be counted separately. Volume counts should be conducted on school days when classes are in session. A school crossing is defined as a crossing location where ten or more student pedestrians cross per hour or where the Police Department has assigned a crossing guard.

- Given the potential fluctuation in crossing volumes from day to day, it may be necessary to collect up to three days of data to determine if a marked crosswalk is warranted. Daily collection should be as follows:
 - Day 1: If crossing volumes meet the minimum threshold, no additional data collection is required. If at least 50% of the minimum crossing volumes are observed but the threshold is not met, proceed to Day 2.
 - Day 2: If minimum crossing volumes are met, data collection is complete. If at least 50% of the minimum volumes are observed but the threshold is still not met, proceed to Day 3.
 - Day 3: If minimum crossing volumes are not met on the third day, the installation of a marked crosswalk may not be warranted.

6.1-3 Evaluate Candidate Crossing Location

Once data collection is complete, the candidate crossing location should be evaluated using the attached “Uncontrolled Crossing Evaluation Flowchart.” Start at the top left and move through each criterion, following the path based on whether the data meets the specified requirements. Continue through the flowchart until reaching one of the three outcomes described below.

Table 5. Uncontrolled Crossing Evaluation Flowchart Outcomes

Outcome	Description
No Action Recommended	The crossing location does not meet one or more required criteria and is not recommended to be marked. Directing users to the nearest marked crosswalk should be considered to reduce risk taking behavior. An explanation of why a marked crosswalk is not warranted should be provided to stakeholders. To reinforce that the location is not intended for pedestrian crossings, a No Pedestrian Crossing sign (R9-3 or R9-3a) with a Use Crosswalk plaque (R9-3b) may be installed at the crossing location to prohibit pedestrians from crossing and to indicate the direction of the nearest crosswalk. If the pedestrian facility is not already physically separated from the roadway, detectable features such as grass strips, landscaping, barricades, or pedestrian fencing should be installed to establish a clear boundary between the roadway and walkway. These treatments help individuals who have visual restrictions recognize that the location is not intended to be a roadway crossing. The nearest marked or controlled crosswalk should be consistent with the guidelines and standards established in this policy or approved following staff review.
Consider an Unmarked Crossing	An “unmarked crossing” refers to any treatment that improves a person’s ability to cross a roadway, short of a marked crosswalk with signage or other enhancements at the crossing location. The installation of this type of crossing is subject to staff review and engineering judgement and must include ADA compliant curb ramps, appropriate crossing warning signage, streetlights and where applicable, roadway geometric improvements to improve crossing safety. No markings or additional signage beyond crossing warning signs are provided to promote the use or attempt to attract new users to the crossing. An unmarked crossing is intended to function as a safety improvement at low-volume locations where pedestrians are already crossing and are expected to continue to do so.
Consideration of a Marked Crosswalk is Appropriate	The crossing location qualifies for the installation of a marked crosswalk. Proceed with further analysis to evaluate whether additional infrastructure improvements are necessary to support the crosswalk. This analysis should focus on the specific characteristics of the crossing location to ensure that the selected crossing treatments effectively address the location’s specific needs.

6.2 Criteria Definitions

This section defines the criteria and key factors to consider when evaluating the need for a marked crosswalk at uncontrolled locations. The thresholds and criteria described in this section are derived from extensive research of agency best practices and national guidance regarding marking crosswalks. The decision to install a marked crosswalk shall be guided by whether the thresholds and criteria outlined in this section are met. In cases where this is not satisfied, engineering judgment may be applied to determine whether site-specific conditions or additional considerations not covered in this policy justify the installation of a marked crosswalk.

Minimum Vehicle Volumes

On roads with low traffic volumes, people can often find gaps in traffic and cross safely without the need for marked crosswalks. Given the limited resources available for implementing crossing treatments across the Town, it is generally not recommended to install a marked crosswalk on roadways with an average daily traffic (ADT) of less than 1,500 vehicles per day (VPD). Exceptions may be considered under the following conditions:

- School Crossings: Marked crosswalks should be considered near schools if peak-hour traffic exceeds 150 vehicles per hour and at least 10 students cross during the same hour.
- Park Crossings: Marked crosswalks should be considered near Town parks if peak-hour traffic exceeds 150 vehicles per hour and 20 or more pedestrians are crossing during the same hour.

For roadways with an ADT greater than 1,500 VPD, the installation of marked crosswalks and associated treatments should be evaluated using the criteria and process outlined in this policy.

Minimum Multimodal Crossing Volumes

Research across various communities has demonstrated a strong correlation between driver compliance (e.g., yielding behavior) and crossing volumes. As crossing activity increases, drivers generally become more aware of the crossing, resulting in higher yielding rates. However, at locations with low crossing volumes, drivers tend to become less attentive to crossing treatments leading to reduced yield compliance rates. Data indicates there is a significant decline in compliance rates when crossing volumes drop below 20 crossings per hour. Based on these findings, the following volume thresholds have been established:

- 20 or more crossings per hour during any single hour of an average day.
- 15 or more crossings per hour during any two hours of an average day.
- 10 or more crossings per hour during any three hours of an average day.

It is important to note that the two or three-hour counts do not need to be conducted consecutively. Multimodal users refer to individuals walking, rolling (e.g., using a skateboard, scooter, or other nonmotorized or motorized device), bicycling (whether pedal-powered or e-bikes), or utilizing wheelchairs or other mobility devices. This definition does not include golf carts or off-highway vehicles.

Since elderly, young, and disabled individuals face greater challenges when crossing roadways such as difficulty judging gaps in traffic and slower walking speeds, these users count double (2x) towards the multimodal volume thresholds. Meaning a crossing used by 10 young individuals (e.g., elementary or middle school-aged children) would effectively meet the 20 crossing volume threshold due to this adjustment.

Induced Pedestrian Demand

In lieu of the Minimum Multimodal Crossing Volumes mentioned above, a location may be considered for a marked crosswalk if it can be reasonably assumed the required crossing volume threshold would be met if a properly marked crosswalk were available. To qualify, the location must be at least 300 feet from the nearest existing crosswalk and within 1/2 mile of a recognized pedestrian attractor or generator, as outlined below. Additionally, a continuous and accessible sidewalk or multi-use trail must connect the proposed crossing location to the identified attractor or generator.

- Elementary/Middle/High Schools
- Community Civic Facility (i.e. library, senior citizens center, etc.)
- Park and Recreation Facilities
- Office and retail/restaurant developments

Crash History

Locations that have experienced one or more crashes involving a multimodal user crossing the roadway within 300 feet of the crossing under review during the past three years shall be prioritized for crossing infrastructure improvements. Crashes that cannot be mitigated through engineering solutions, such as those caused by impaired driving, should be excluded from consideration.

Visibility

To ensure that multimodal users are visible to approaching drivers, uncontrolled crosswalks shall only be installed when the available sight distance equals or exceeds the minimum stopping sight distance as specified in the latest edition of *AASHTO's A Policy on Geometric Design of Highways and Streets*. SSD shall be based on the posted speed limit or the 85th percentile speed as measured in a recent traffic study, whichever is higher. If a crossing location does not meet the minimum SSD requirements and visual obstructions cannot be feasibly mitigated, treatments to improve the visibility of multimodal users to approaching drivers should be implemented; otherwise, crossings at the location should be prohibited.

Distance to Nearest Marked or Controlled Crossing

The National Association of City Transportation Officials (NACTO) identifies a three-minute out-of-direction walk as a critical threshold beyond which multimodal users are more likely to engage in risk-taking behavior. Using an assumed walking speed of 3.5 feet per second, a three-minute walk equates to approximately 600 feet in total distance. While this behavior depends on the speed and volume of traffic, it is important to view crossings from the user's perspective. Multimodal users will typically seek the most direct crossing route, even if it compromises their safety.

While no specific state or federal standards define exact distances between marked or enhanced crosswalks, factors like surrounding land use, network connectivity, and block length heavily influence spacing. A review of agency best practices in the United States showed that the typical minimum spacing of a crosswalk range from 200 to 600 feet. Based on these findings, new marked crosswalks should generally only be considered if the proposed location is at least 300 feet from the nearest marked or controlled crossing.

The minimum crosswalk spacing may be reduced to 200 feet in central business districts due to higher pedestrian activity and shorter block lengths. At locations where crossing volumes meet or exceed twice the Minimum Multimodal Volume Thresholds, crosswalk spacing may be further reduced to 150 feet. Such reductions should only be applied where crossing activity is not expected to significantly disrupt vehicular traffic operations or compromise safety. It is important to note that, according to the TMUTCD, “mid-block crosswalks shall not be signalized if they are located within 300 feet from the nearest traffic signal.”

Delay to Cross a Roadway

Crosswalks should be designed to minimize unnecessary delays, ensuring that users are not forced to wait excessively for a gap in traffic or take significant detours to reach a safe crossing. According to the *Highway Capacity Manual, 6th Edition*, users who must wait 30 seconds or more to cross a roadway are highly likely to engage in risk-taking behavior. NACTO guidance similarly states that delays exceeding 40 seconds at signalized crossings and 20 seconds at unsignalized or yield-controlled crossings can significantly increase the likelihood of unsafe crossing behavior. Therefore, expected crossing delay should be considered when reevaluating whether to mark a crosswalk and assessing the need for supplemental treatments to ensure safe crossings.

Differential Vehicle Queueing

When multimodal users’ cross roadways with two or more lanes in a single direction, they face the risk of "multiple threat" type accidents. A multiple threat accident occurs when one lane of traffic stops for a person crossing and, in doing so, blocks the view of the person crossing to a driver in the adjacent travel lane. The result is that the person crossing can step in front of a vehicle that is approaching too fast to stop. The likelihood of these accidents increases when vehicle queues extend into the crosswalk, especially if one lane has a significantly longer queue.

In these situations, drivers may mistakenly assume the stopped traffic is caused by the queue, rather than by the presence of a pedestrian. If queue lengths cannot be effectively managed through measures like signal timing adjustments or improvements cannot be implemented to prevent multiple threat accidents the installation of a marked crosswalk should not be considered.

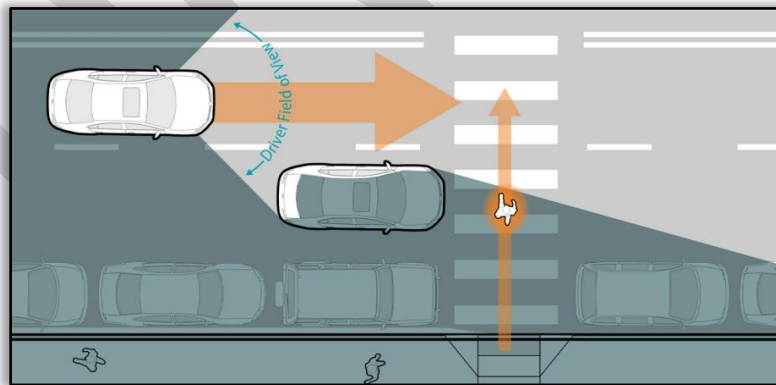


Figure 5. Illustration of a Multiple-Threat Accident

Exceptions to Criteria

Source: MnDOT Best Practices for Pedestrian & Bicycle Safety

In some instances, it may be reasonable to allow exceptions to the criteria previously described. All exceptions must be reviewed and approved by Town staff and must be clearly documented including the rationale for the exception and supporting evidence. Examples may include locations identified for potential crossing improvements that do not meet all the criteria outlined in this document but possess other factors that justify the implementation of crossing enhancements.

6.3-4 Further Analysis and Selection of Crossing Treatments

If a location is identified as appropriate for a marked crosswalk, the process described in this section should be followed to evaluate the need for additional infrastructure improvements. This will ensure that the most appropriate crosswalk treatments are identified and selected based on user needs, traffic conditions, and the specific characteristics of the crossing location.

Traffic Volume Review

The first step in this process is important, as the number and configuration of lanes are key factors used in the selection of crossing treatments. This step focuses on evaluating whether the roadway at the crossing location is appropriately sized based on existing and projected traffic volumes. Ensuring that the roadway is properly sized is critical for minimizing crossing distances and reducing a person’s exposure to hazards while crossing a roadway.

Using the following ranges, evaluate the existing and projected traffic volumes for the roadway being crossed to determine whether the design is appropriate.

Table 6. Volume Thresholds for Typical Roadway Configurations

Roadway Design	Volume Range (vpd)	Volume Range (vphpl)
2-lane undivided	7,000 – 8,000	425 - 500
3-lane (2-lane w/TWLTL)	12,000 – 14,000	500 - 525
4-lane undivided	17,000 – 18,000	500 - 550
4-lane divided	23,000 – 26,000	700 - 775
6-lane divided	44,000 – 49,000	880 - 990

The volume ranges referenced above correspond to a Level of Service (LOS) of D and apply only to roadways designated on the Town’s Thoroughfare Plan or to roadways that match the specified functional classification. For all other roadways, the design should be evaluated using engineering judgment.

- If the roadway design is appropriate proceed to the “Roadway Geometric Treatment Assessment” step and consider applying geometric treatments to further improve crossing safety.
- If the roadway design is not appropriate explore the possibility of lane reductions or turn lane removals to enhance safety and reduce crossing distances.

Roadway Geometric Treatment Assessment

Marking a crosswalk is just one of many tools that can be used to improve the safety of a crossing. Before considering installing signage, markings, signals, or other crosswalk treatments at a crossing, it is important to first assess the feasibility of roadway geometric improvements. Adjusting roadway geometry can significantly improve safety by shortening crossing distances, enhancing visibility, and calming traffic. Below are recommended strategies for improving crossing safety through geometric improvements:

Lane Narrowing: Reducing lane width can slow traffic and create a safer pedestrian environment without causing adverse effects on traffic operations.

- Rural Roadways: 11 or 12-foot lanes
- Urban Roadways: 10-foot lanes (≤ 35 mph and turn lanes), 11-foot lanes (suitable for all other roadway classifications), 12-foot lanes (≥ 45 mph)

Reduce Conflict Points: Consider relocating the crossing to a location with the least number of conflict points subject to engineering judgement. This could be an intersection leg with lower turning vehicles or overall traffic, as well as moving the crossing entirely out of an intersection and to a mid-block location.

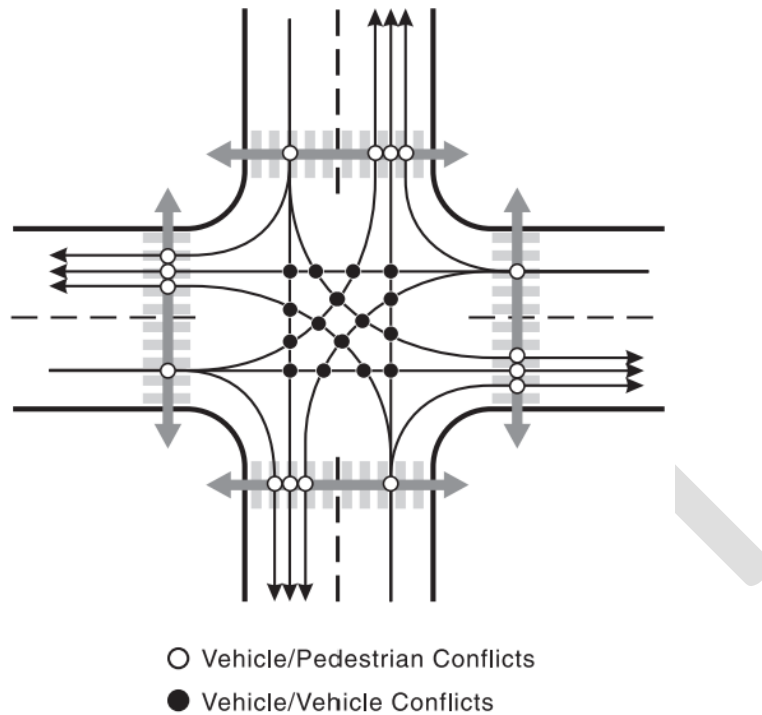


Figure 6. Vehicle–Pedestrian Conflict Points at a Typical Four-Leg Intersection

Source: FHWA

Implement Traffic Calming Measures: Consider installing traffic calming measures, based on the Town’s Neighborhood Traffic Management Policy (NTMP), to create a more pedestrian-friendly environment. Examples include:




- *Curb Extensions (Bulb-Outs)* - Curb extensions narrow the roadway by extending the curb line into the parking or shoulder area at intersections or mid-block crossings. This treatment reduces crossing distance, slows vehicle speeds, and enhances sightlines between pedestrians and drivers.
- *Pedestrian Refuge Islands* - A raised median or island typically at least 6 feet wide (8 feet preferred) placed at the center of a crosswalk. Refuge islands allow a person to cross one direction of traffic at a time, increasing the availability of safe crossing opportunities on multi-lane roadways.
- *Chicanes* - A series of alternating curb extensions or roadway shifts designed to create a horizontal deflection in the driving path. Chicanes encourage lower vehicle speeds by preventing straight-through travel at high speeds.
- *Lane Reduction (Road Diet)* - A roadway reconfiguration that reduces the number of travel lanes typically from four lanes to three in order to improve safety and allocate space for other uses such as bike lanes, turn lanes, or crossing enhancements.



Additional traffic calming measures identified in best practice documents and guidance (e.g., NACTO, ITE, FHWA, NTMP, etc.) may be considered based on engineering judgment and staff review.

Evaluate Crossing Infrastructure Improvements

Use the attached “Uncontrolled Crossing Treatment Matrix” to assess and select the most appropriate infrastructure improvements for the crossing location. The matrix organizes treatment options into five distinct categories based on roadway configuration, traffic volume, and posted or 85th percentile speed. Each category is described in detail below.

Table 7. Crosswalk Treatment Categories

Category	Description	Example
Unmarked Crosswalk (A)	This is the simplest form of a crossing treatment, where no visible pavement markings are used to define the crossing. The only indication of the crossing is warning signs placed at and/or in advance of the crossing location. No additional signage or markings are used to encourage the use of the crossing.	
Marked Crosswalk (B)	This is the most basic marked crosswalk treatment consisting of only pavement markings to designate the crossing location. It provides a clear visual cue for pedestrians and drivers but no additional safety features.	
Marked Crosswalk with Signs (C)	Builds upon the marked crosswalk treatment by placing crossing warning signs, such as Pedestrian (W11-2) at and in advance of the crossing location. On multi-lane roadways "Stop Here for Pedestrians," (R1-5b) and stop lines are added in advance of the crossing location.	
Heightened Awareness Crossing (D)	A marked crosswalk enhanced with RRFBs, which use high-frequency flashing LED lights to increase driver awareness of a person crossing. The RRFBs are used in conjunction with crossing warning signs and placed on each approach to the crosswalk, along with advanced "Stop Here for Pedestrians" signs and stop lines.	

<p>Signalized Crossing (E)</p>	<p>Combines a marked crosswalk with PHBs or a traffic signal, supplemented with appropriate signage and pavement markings as specified in the TMUTCD. PHBs remain dark until activated and display a sequence of flashing and steady signal indications to control traffic. PHBs are typically installed at multi-lane roadway crossings where a traffic signal is not warranted or desired.</p>	
<p>Grade-Separated Crossing (F)</p>	<p>The most advanced form of crossing treatment, where multimodal users are completely separated from vehicular traffic using an overpass (Bridge) or underpass (tunnel). These types of crossings are typically implemented at roadway crossings with high crossing and vehicular volumes, or roads with high speeds, where the risk of vehicle-pedestrian conflict is significant. This treatment is highly unlikely in Town.</p>	

Sources: Google Earth, Flower Mound, TX, Grapevine, TX, and Denton, TX

6.4 Treatment Selection Guidance

The following guidance should be used to identify and select the most appropriate crossing treatment for an uncontrolled location, based on the specific characteristics of the crossing. To be eligible for crosswalk treatments, the location must meet criteria outlined in this policy. For treatment categories A–E, the requirements listed below apply to all locations and must be met in addition to the specific criteria defined in each category.

Criterion	Requirement
Spacing & Sight Distance	<ul style="list-style-type: none"> ▪ At least 300 feet from any existing marked or controlled crosswalk. See the Criteria Definitions section for exceptions. ▪ Meets AASHTO SSD requirements.
Accessibility	<ul style="list-style-type: none"> ▪ Curb ramps are present at both ends of the crossing. If not, curb ramps must be constructed, or design must accommodate future installation. ▪ Funding for curb ramps must be identified prior to proceeding.

Unmarked Crosswalk (Category A)

The installation of an unmarked crosswalk shall only be considered when all of the following criteria are met:

Criterion	Requirement
Roadway Type	<p>Must be one of the following:</p> <ul style="list-style-type: none"> • Two-lane, one-way road • Two-lane, two-way road • Two-lane, two-way road with a dedicated turn lane • Four-lane road with two through lanes in each direction, with or without a raised median
Traffic Volume & Speed	<ul style="list-style-type: none"> ▪ Average Daily Traffic (ADT) between 1,500–2,500 VPD ▪ Posted speed limit is 35 mph or lower.
User Considerations	<p>There are five or more crossings per hour and minimal potential to redirect multimodal users to a more defined crossing.</p>

Location	Crossing is not located adjacent to a school or within a school zone.
Lighting	Adequate street lighting is provided adjacent to the crossing.
Policy Compliance	A marked crosswalk is not warranted based on this policy.

Marked Crosswalk (Category B)

The Installation of a (marked crosswalk only) should be considered when the following criteria are met:

Criterion	Requirement
Crossing Type	The crosswalk is not a school crossing as defined in this policy.
Uncontrolled Crossing Treatment Matrix	The combination of the ADT, number of lanes, and posted speed limit result in a “B” square when plotted in the Uncontrolled Crossing Treatment Matrix.

Marked Crosswalk with Signs (Category C)

The Installation of a (marked crosswalk supplemented with warning and regulatory signs) should be considered when the following criteria are met:

Criterion	Requirement
Roadway Type	Must be one of the following: <ul style="list-style-type: none"> • Two-lane, two-way road • Two-lane, two-way road with a dedicated turn lane • Four-lane road with two through lanes in each direction, with a raised median at least 6 feet wide
Traffic Volume & Speed	<ul style="list-style-type: none"> ▪ Average Daily Traffic (ADT) between 1,500–9,000 vehicles per day. ▪ Posted speed limit is 35 mph or lower.
Crossing Type	The crossing is a school crossing as defined in this policy.

OR

Uncontrolled Crossing Treatment Matrix	The combination of the ADT, number of lanes, and posted speed limit result in a “C” square when plotted in the Uncontrolled Crossing Treatment Matrix.
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Heightened Awareness Crossing (Category D)

The Installation of a (marked crosswalk supplemented with RRFBs) should be considered when the following criteria are met:

Criterion	Requirement
Roadway Type	Must be one of the following: <ul style="list-style-type: none"> • Two-lane, two-way road • Two-lane, two-way road with a dedicated turn lane • Four-lane road with two through lanes in each direction, with or without a raised median
Traffic Volume & Speed	<ul style="list-style-type: none"> ▪ Average Daily Traffic (ADT) between 3,000–9,000 vehicles per day. ▪ Posted speed limit is 40 mph or lower.
Crossing Type	The crossing is a school crossing as defined in this policy or connects to a multi-use trail.

OR

Uncontrolled Crossing Treatment Matrix	The combination of the ADT, number of lanes, and posted speed limit result in a “D” when plotted in the Uncontrolled Crossing Treatment Matrix.
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Signalized Crossings (Category E)

An uncontrolled marked crosswalk shall not be installed with this category. Strongly consider installation of a signalized crossing on roadways when one of the following criteria are met:

Criterion	Requirement
Roadway Type	Roadway has three or more lanes in one direction for a pedestrian to cross.
Traffic Speed	Posted speed limit is 40 mph or lower.

OR

Uncontrolled Crossing Treatment Matrix	The combination of the ADT, number of lanes, and posted speed limit result in a “E or E/F” square when plotted in the Uncontrolled Crossing Treatment Matrix.
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The TMUTCD provides comprehensive guidance and standards for determining when and where signalized crossings (PHBs or traffic signals) should be installed and used in conjunction with signs and pavement markings to control traffic at locations where pedestrians enter or cross a roadway. A PHB or traffic signal should only be installed on a Town roadway when warranted according to the latest edition of the TMUTCD.

Grade-Separated Crossing (Category F)

The installation of a (grade separated crossing) should be considered when one of the following criteria is met:

Criterion	Requirement
Roadway Type	Roadway has three or more lanes in one direction for a pedestrian to cross.
Traffic Speed	Posted speed limit is 45 mph or greater.

OR

Uncontrolled Crossing Treatment Matrix	The combination of the ADT, number of lanes, and posted speed limit result in a “E/F” square when plotted in the Uncontrolled Crossing Treatment Matrix.
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While the criteria above provide an initial basis for considering a grade-separated crossing, a detailed engineering analysis beyond the scope of this policy should be conducted to fully assess the need for and feasibility of this treatment. Due to the high cost and amount of land needed for grade-separated pedestrian crossings, they are unlikely to be used in the Town. Additionally, unless physical barriers are provided, pedestrians may bypass the grade separation and continue to cross at grade.

6.5 Additional Crossing Treatments

This section describes additional treatments that can be used to improve the safety of roadway crossings. These treatments go beyond standard crosswalk markings and warning signs, offering proven strategies to enhance crossing conditions. While not an exhaustive list, the treatments provided here represent effective options for addressing safety concerns at crossing locations.

Lane Reduction (Road Diet)

Lane reductions commonly referred to as road diets, optimize the use of existing roadway space to improve safety and comfort for all users. A road diet typically involves reconfiguring a four-lane (or more) undivided roadway into a three-lane roadway with two through lanes and a center two-way left-turn lane (TWLTL). By reducing the number of travel lanes, road diets help shorten crossing distances, lower vehicle speeds, and decrease the likelihood of rear-end collisions. They also allow left-turning drivers to exit the traffic stream while waiting for a gap to complete their turn.

This reconfiguration frees up space that can be reallocated to various uses, including refuge islands, crosswalk visibility enhancements, on-street parking, widened sidewalks, landscaping or bicycle lanes.

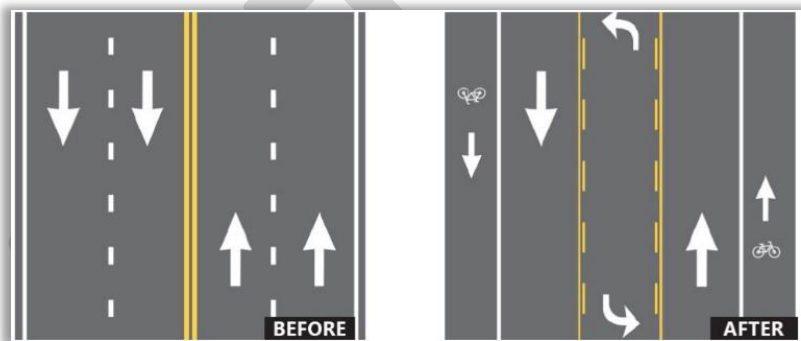


Figure 7. Conversion of a Four-Lane Undivided Roadway to a Two-Lane Roadway with a TWLTL Source: FHWA

To effectively implement a road diet, the FHWA recommends considering the following:

- *Road diets may be uncommon in a community. Consider conducting an outreach effort to educate the public on the purpose and potential benefits*
- *Four to three lane conversions should be considered for roadways with documented safety concerns, moderate volumes (less than 15,000 ADT, up to 25,000 ADT in special cases), and along priority bicycling and walking routes.*
- *FHWA's Road Diet Informational Guide recommends considering factors such as:*
 - *Vehicle Speed and Volume*
 - *Level and Quality of Service*
 - *Pedestrian, Bicycle, and Freight Activity*
 - *Peak Hour & Directional Traffic Flow*
 - *Frequency of Stops & Slow-Moving Vehicles*
 - *Presence of Parallel Roadways*
 - *Turning Volumes & Patterns*
- *Determine if and how alternative routes will be impacted by a lane reduction.*
- *Consider the importance a particular street plays in the pedestrian or bicycle network and the relationship between creating more livable streets and supporting economic development.*
- *Consider designs that incorporate raised medians and left-turn bays to help eliminate the potential for TWLTL to be used as acceleration lanes by some motorists.*
- *The common four-to-three-lane road diet is very compatible with single-lane roundabouts.*

Curb Extensions

As defined in the NTMP, a curb extension, also known as a bulb-out or neckdown is a design treatment that extends the curb line and sidewalk into the parking lane or shoulder, to reduce the effective width of the roadway. This treatment is typically used at intersections and mid-block crosswalks to improve safety by shortening crossing distance, reducing a pedestrian's exposure to traffic, slowing vehicles speeds and improving visibility between pedestrians and drivers.

At intersections, curb extensions also prevent vehicles from parking too close to crosswalks and help reduce turning speeds. When installed at mid-block locations, curb extensions function as a traffic calming measure by physically narrowing the roadway and providing a visual cue that encourages drivers to slow down.

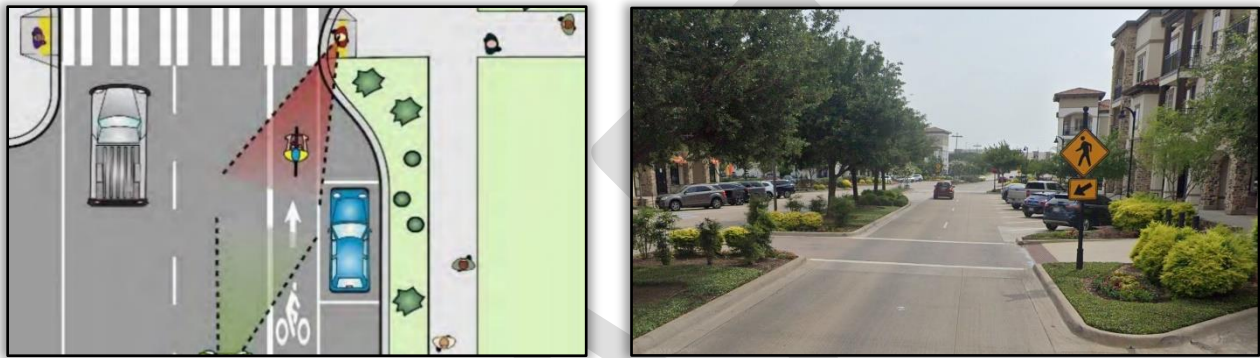


Figure 8. Examples of Curb Extensions at an Intersection and Mid-block Crosswalk

Sources: NCTCOG Curb Extensions, Bulb-Outs, Neckdowns & Google Earth, Flower Mound, TX

According to the FHWA the following should be considered when implementing curb extensions:

- *Curb extensions are only appropriate where there is an on-street parking lane and where bicyclists would be traveling outside the curb edge for the length of the street.*
- *The turning needs of larger vehicles, such as school buses and emergency vehicles, need to be considered in curb extension design, especially at intersections with significant truck or bus traffic. However, speeds should be relatively slow in a pedestrian environment so all vehicles should be traveling at speeds conducive to tight turns.*
- *Emergency access is often improved using curb extensions if intersections are kept clear of parked cars. Fire engines and other emergency vehicles can climb a curb where they would not be able to move a parked car. At mid-block locations, curb extensions can keep fire hydrants clear of parked cars and make them more accessible.*
- *It is not always necessary for a roadway to be designed for a vehicle to turn from a curb lane to a curb lane. Vehicles can encroach into adjacent lanes safely where volumes are low, or speeds are slow.*
- *Curb extensions can create additional space for curb ramps, landscaping, and street furniture that are sensitive to driver and pedestrian sightlines; this is especially beneficial where sidewalks are otherwise too narrow. Care should be taken to ensure that street furniture and landscaping do not block motorists' views of pedestrians.*
- *Curb extension design should facilitate adequate drainage.*

Pedestrian Refuge Islands

A pedestrian refuge Island is an effective tool for enhancing the safety and efficiency of roadway crossings. The presence (or not) of a median refuge can impact the type of crossing treatments that can be considered for a specific location. Typically located in the center of the roadway, a pedestrian refuge island is a raised area that separates opposing traffic lanes and provides a dedicated space for a person to pause and wait for a safe gap in traffic before completing their crossing.



Figure 9. Pedestrian Refuge Island at a Marked Crosswalk Source: Town of Flower Mound, Tx

By dividing the crossing into two segments, this treatment allows a person to focus on one direction of traffic at a time, greatly increasing the number of safe gaps available for crossing the roadway.

Pedestrian refuge Islands should be considered as a supplement to a crosswalk and are appropriate at both uncontrolled and signalized crossings. When designing a pedestrian refuge island, consideration should be given to creating a staggered (Z-style) crossing that encourages a person to cross one direction of traffic at a time and look towards oncoming vehicles before completing the second part of their crossing.

For a raised median to be considered a pedestrian refuge for an adjacent crosswalk, the raised median must be a minimum of 6 feet wide and include curb ramps or an at-grade walkway through the median. In both cases detectable warning surfaces are required. For multi-use trail crossings, a 10-foot width is ideal to better accommodate both bicycles and pedestrians. A painted center median or turn lane shall never be considered as pedestrian refuge.

According to the FHWA *“Pedestrian refuge islands are highly desirable for mid-block pedestrian crossings on roads with four or more travel lanes, especially where speed limits are 35 mph or greater and/or where ADT is 9,000 or higher. They are also a candidate treatment option for uncontrolled pedestrian crossings on 3-lane or 2-lane roads that have high vehicle speeds or volumes.”*

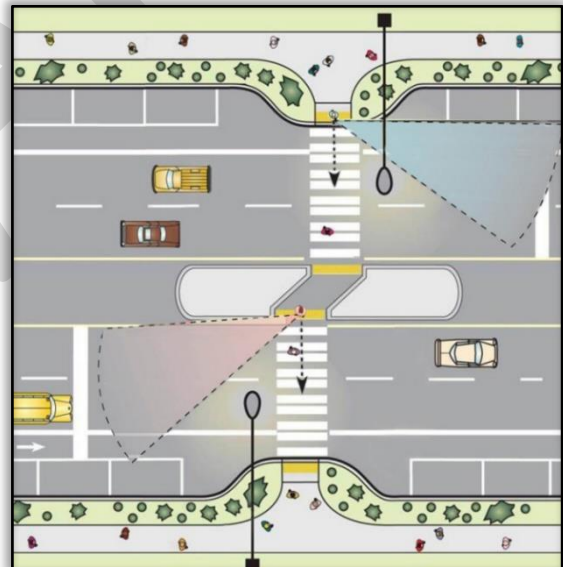


Figure 10. Example of a Staggered (Z-style) Crossing Source: NCTCOG Designing for Pedestrian Safety

Rectangular Rapid Flashing Beacons

RRFBs are pedestrian or bicycle actuated conspicuity enhancement devices used in combination with a pedestrian, school, or trail crossing warning sign to improve safety at uncontrolled, marked crosswalks. The device includes two rectangular-shaped yellow indications, each with an LED array that flashes at high frequency when activated.

RRFBs are a viable treatment option at many types of established roadway crossings. They are particularly effective at multi-lane crossings with speed limits less than 40 mph. Consider a PHB, traffic signal or grade separation for roadways with higher speeds. RRFBs are placed on both sides of a crosswalk below the crossing warning sign and above the arrow indication pointing at the crossing. The flashing pattern can be activated with pushbuttons or automated (e.g., video or infrared) pedestrian detection and should be dark when not activated.

The FHWA provides the following recommendations for installation of RRFBs:

- *RRFBs should not be used without the presence of a pedestrian crossing sign.*
- *A RRFB should be installed in the median rather than the far side of the roadway if there is a pedestrian refuge or other type of median.*
- *Advance stop pavement markings and signs may be used to supplement RRFBs.*
- *The crosswalk approach should not be controlled by a YIELD sign, STOP sign, or traffic-control signal.*
- *Solar-power panels can be used to eliminate the need for a power source.*
- *RRFB should be reserved for locations with significant pedestrian safety issues, as over-use of RRFB treatments may diminish their effectiveness.*
- *Other treatments may be more appropriate in locations with sight-distance constraints.*



Figure 10. RRFB Installed at a Marked Crosswalk (Approach View)

Source: FHWA



Figure 11. Close-up View of an RRFB

Source: pedbikesafe.org

Pedestrian Hybrid Beacons

A PHB is a type of traffic control device used to improve the safety of roadway crossings at mid-block locations or uncontrolled intersection approaches where traditional traffic signals may not be warranted but crossing activity and vehicle volumes are significant. Originally referred to as High intensity Activated Crosswalk (HAWK), PHBs were officially introduced in the 2009 edition of the *Manual on Uniform Traffic Control Devices (MUTCD)*.

The beacon head consists of two red lenses above a single yellow lens. Unlike traffic signals, a PHB remains dark until activated. Once activated, the PHB displays the following sequence: flashing yellow, steady yellow, solid red, and then alternating flashing red indicating to drivers when to slow down, stop, and when they may proceed if the crosswalk is clear. This unique operation helps reduce vehicle delays while still providing clear right-of-way control for multimodal users. Studies have shown that PHBs can significantly increase driver yielding rates and reduce crosswalk related crashes, particularly on multi-lane roads or corridors with higher traffic speeds. The following graphics illustrate the typical design and operation of a PHB.

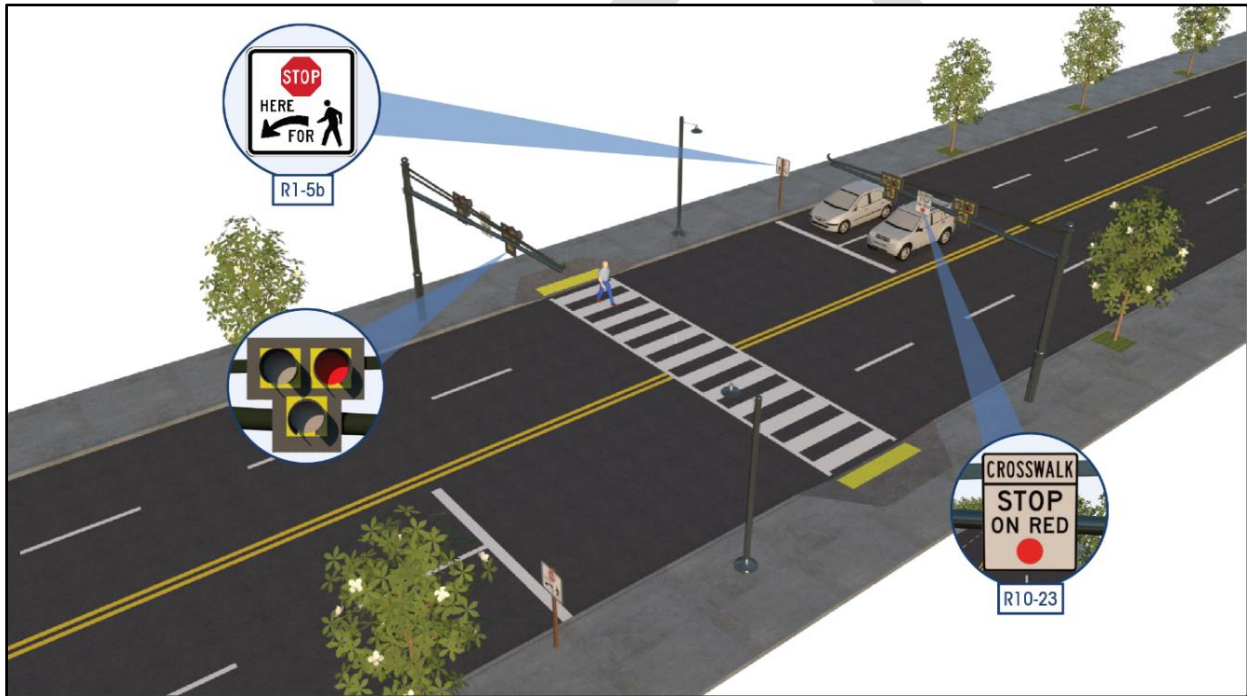


Figure 12. Typical Configuration of PHBs at a Marked Crosswalk

Source: pedbikesafe.org

According to the FHWA, a PHB should be installed in conjunction with the following:

- *Overhead beacons with three sections (circular yellow signal indication centered below two horizontally aligned circular red signals) facing both directions on the major street.*
- *Overhead signs labeled “CROSSWALK STOP ON RED” to indicate that the location is associated with a pedestrian crosswalk.*
- *A marked crosswalk on the major street.*
- *Countdown pedestrian signal heads to control pedestrian crossings at the crosswalk.*
- *Accessible Pedestrian Signal (APS) pushbuttons.*

A PHB is often considered for installation at locations where pedestrians need to cross and vehicle speeds or volumes are high, but traffic signal warrants are not met. These devices have been successfully used at school crossings, parks, senior centers, and other pedestrian crossings on multi-lane roads. PHBs are typically installed at the side of the road or on mast arms over mid-block pedestrian crossings.

The FHWA provides the following recommendations for evaluating PHB installations:

- PHBs are a candidate treatment for roads with three or more lanes that generally have AADT above 9,000.
- Strongly consider a PHB for all mid-block and intersection crossings where the roadway speed limits are equal to or greater than 40 miles per hour.
- The MUTCD provides guidance on the pedestrian volume warrants, design features, and restrictions associated with PHBs.
- Can be used at both intersections and mid-block locations.
- Works well to counteract multiple threat crashes.

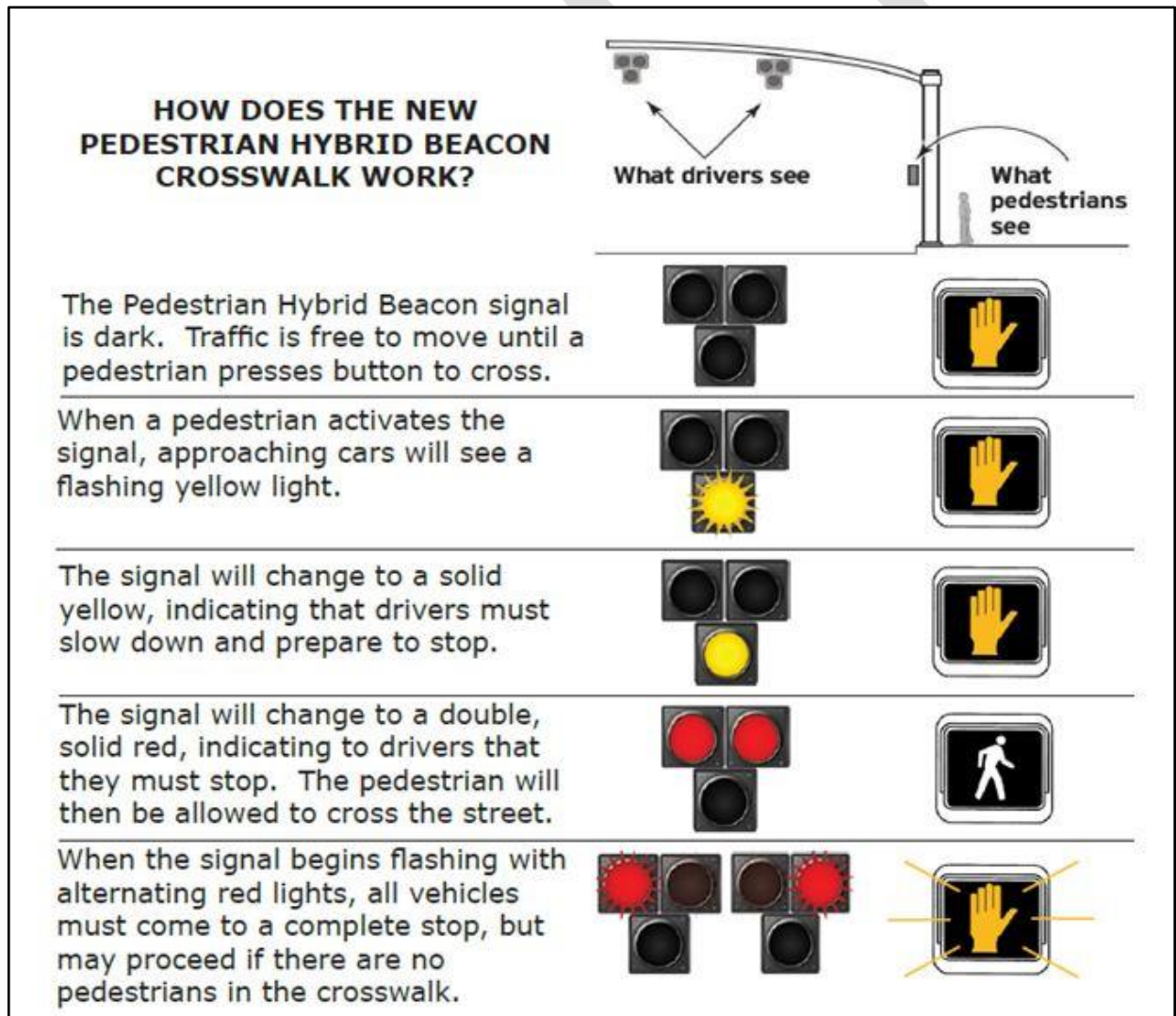


Figure 12. Diagram Illustrating the Phase Sequence of a PHB

Source: City of Rancho Cucamonga, CA

7. Supplemental Policies

This section provides supplemental policies to guide the planning, design, and installation of marked crosswalks and associated crossing treatments on Town roadways. These policies are intended to ensure that crossings are appropriately designed and implemented effectively to improve the safety of people crossing Town roadways.

Avoid the overuse of Crossings and Treatments

The FHWA recommends that the overuse of crosswalk markings should be avoided to maximize their effectiveness. For this reason, crosswalks and crossing treatments should only be used where appropriate within the Town so that the effectiveness of these treatments is not deteriorated by overuse. Although these treatments may be effective at individual locations, overuse of these treatments Town-wide may lead to a decrease in their value as drivers become desensitized to them. Minimum pedestrian and vehicular volume criteria have been established in this document with this in mind.

Accessible Crosswalks

The Town is committed to providing accessible transportation network for all users. As such, all new crosswalks shall be designed and constructed to comply with applicable federal and state accessibility standards, including the Americans with Disabilities Act Accessibility Guidelines, Public Right-of-Way Accessibility Guidelines, and the Texas Accessibility Standards. For locations where existing conditions are non-compliant, the location shall be brought into compliance with the accessibility requirements outlined above.

Crosswalk Lighting

Crosswalk lighting plays a critical role in enhancing the pedestrian environment and improving both comfort and safety. Pedestrians often assume that because they can see the headlights of oncoming vehicles, drivers can also see them. However, without adequate lighting, especially at night or in low-light conditions, drivers may not be able to detect pedestrians in time to safely stop. Therefore, adequate lighting shall be provided at all marked crosswalks installed at traffic signals, PHBs, or RRFBs. For all other marked crosswalks, lighting should be considered unless engineering judgment determines it is unnecessary.

Crosswalk lighting should illuminate the entire crosswalk (curb ramp to curb ramp) following state and federal roadway lighting standards. The FHWA recommends installing luminaires on both sides of a crosswalk to ensure adequate and uniform lighting levels along the entire crosswalk. It is also recommended to place luminaires 10 to 15 feet in advance of a crosswalk to create positive contrast on pedestrians crossing and maximize their visibility to approaching drivers.

Prohibiting Parking

To ensure adequate visibility of multimodal users, parking restrictions should be applied at marked crosswalks unless engineering judgment determines it to be unnecessary. Special consideration should be given to multi-lane roadways, where parked vehicles are more likely to obstruct sightlines between drivers and people crossing. Parking restrictions may be implemented by removing parking space markings, installing "No Parking" signs, or applying pavement markings to designate areas where parking is prohibited.

Textured and Colored Pavement Treatments

Textured, brick, or colored pavement treatments shall not be used as a substitute for crosswalk markings. According to the TMUTCD *“Non-retroreflective colored pavement, including bricks and other types of patterned surfaces, is used as a purely aesthetic treatment and is not intended to communicate a regulatory, warning, or guidance message to road users, the colored pavement is not considered to be a traffic control device, even if it is located between the lines of a crosswalk.”* Therefore, wherever a location is intended to serve as a crosswalk it shall include at minimum transverse white pavement markings in accordance with the latest edition of the TMUTCD. The use retroreflective colored pavement, artistic patterns, or murals within the crosswalk is not allowed.

Selecting Between PHBs and RRFBs

The decision to install a PHB or a RRFB at a crossing location should be based on engineering judgment and site-specific conditions. The TMUTCD provides warranting criteria for the instantiation PHBs based on pedestrian and vehicle volumes, roadway speed, and crossing distance. In some cases, PHBs may be warranted with as few as 20 pedestrians per hour, depending on traffic conditions at the crossing location.

RRFBs have been successfully used by the Town for several years and have proven effective in improving driver yield compliance and enhancing safety at uncontrolled crosswalks. However, the use of RRFBs may not always be appropriate, especially at locations where there is a combination of both high vehicle and pedestrian volumes. Under these conditions, RRFBs may contribute to increased delays or a higher risk of crashes, making a PHB or traffic signal a more appropriate treatment.

In many situations, both PHBs and RRFBs may be viable options. Ultimately, the decision regarding which treatment to implement should take into consideration factors like vehicle, pedestrian, and bicycle volumes, roadway speed, crossing distances, median presence, the impact on corridor signal progression, proximity to intersections (both signalized and unsignalized), and vehicle queue formation.

Signal Progression and Traffic Operations

The installation of RRFBs and PHBs can significantly affect corridor traffic operations. As mentioned previously, the use of RRFBs at high-volume crossings on heavily traveled corridors can increase traffic delays and disrupt signal progression because RRFB actuations cannot be coordinated with adjacent traffic signals. For this reason, PHBs are the preferred treatment option for these type of locations. Whenever possible, PHBs should be coordinated with the traffic signals in the corridor to minimize the impact on traffic flow. It is important to consider that coordinated signals may not be as responsive to pedestrian actuation, which could lead to delays in pedestrian service and even result in some pedestrians crossing against the signal rather than waiting. However, not coordinating PHBs may lead to unacceptable increases in traffic congestion and delay.

Prioritization

In situations where resources are limited, the Town may need to prioritize the installation of marked crosswalks and crossing treatments. For projects related to street rehabilitation, neighborhood improvements, or other Town-initiated projects, crosswalk evaluations should be conducted during the planning phase to ensure they are integrated effectively into the overall project. For crosswalk requests submitted by residents, requests will be reviewed and evaluated in the order they are received. All new crosswalk locations, whether Town-initiated or resident-

requested, will be prioritized for installation based on crash history, crossing activity, potential for vehicle-pedestrian conflicts, and construction costs.

Prohibiting Pedestrian Crossings

At most intersections, legal crosswalks exist regardless of whether they are marked or not. This means that if there are no signs indicating otherwise, an unmarked crosswalk can be used as a legal crossing. However, if a crosswalk has signs prohibiting pedestrian crossings, it is unlawful for pedestrians to cross at that crossing.

While crosswalk prohibition should only be implemented as a last resort, there may be situations where it is necessary due to safety concerns arising from site conditions or the infeasibility of interim improvements. If a pedestrian crossing is prohibited, a No Pedestrian Crossing (R9-3) sign must be installed facing the pedestrian approach to clearly indicate that crossing is not permitted at that location. Additionally, the crossing location should be physically separated from the roadway using grass strips, landscaping, barricades, or pedestrian fencing to reinforce the prohibition and channel pedestrians to a designated crossing.

Removal of Treatments

Conditions that contribute to the need for a crosswalk or crossing treatment may change over time, and an existing crosswalk or treatment may no longer be needed. When a roadway is impacted by reconstruction or resurfacing, a review of existing crosswalks should be performed to determine their use and need. If the use of a crosswalk is less than half of that which would be required for it to be warranted based on the criteria established in this policy, the crosswalk should not be replaced when the reconstruction or resurfacing is done, and any other treatments should be removed.

Residents and property owners within 600 feet of the crosswalk must be notified, and notices must be visibly posted at the crossing location for a minimum of 30 days prior to removal. These notices should explain the rationale for the crosswalk removal and provide contact information for residents and property owners to submit feedback or request additional information. If concerns are raised in response to the mailing or posted notification, staff shall initiate a more extensive public engagement process with the affected parties to further evaluate the proposed removal.

This policy was presented and approved at the November 11, 2025, Transportation Commission meeting by a vote of ____ to ____.

Chris Reed, Chair

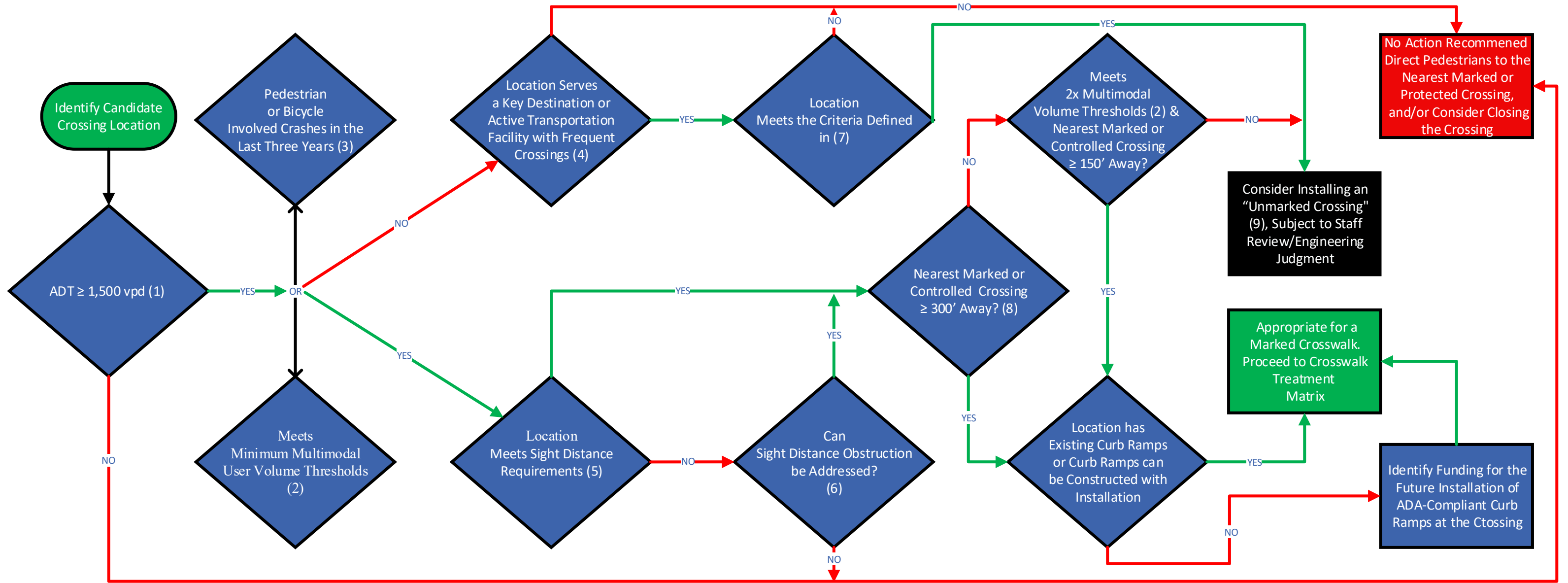
Matthew Hotelling, Assistant Director of Public Works/Transportation

References

The following documents were reviewed to help develop criteria and guidelines for the installation of marked crosswalks and associated crossing treatments on Town roadways:

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5. Clark County. (2018, November). *Pedestrian crossing treatment policy*. Clark County, WA. https://www.walkable.org/wp-content/uploads/2023/08/Pedestrian_Crossing_Policy.pdf
6. Federal Highway Administration. (2018, January). *Guide for improving pedestrian safety at uncontrolled crossing locations (FHWA-SA-17-072)*. U.S. Department of Transportation. https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/docs/STEP-guide-improving-ped-safety.pdf
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11. National Academies of Sciences, Engineering, and Medicine. *Application of pedestrian crossing treatments for streets and highways (NCHRP Synthesis 498)*. Transportation Research Board. <https://doi.org/10.17226/24634>
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13. National Academies of Sciences, Engineering, and Medicine. (2023). *Guide for roundabouts (NCHRP Report 1043)*. Transportation Research Board. <https://doi.org/10.17226/27069>
14. Texas Department of Transportation. (2014, October). *Texas manual on uniform traffic control devices for streets and highways (Texas MUTCD), revision 2*.
15. Town of Prosper. (2024, August). *Determining whether and how to mark crosswalks and school zones*. Prosper, TX. <https://www.prospertx.gov/DocumentCenter/View/4316/Determining-Whether-and-How-to-Mark-Crosswalks-and-School-Zones>

Uncontrolled Crossing Evaluation Flowchart



ADT = Average Daily Traffic VPD = Vehicles Per Day SSD = Stopping Sight Distance CBD = Central Business District

Multimodal users refer to individuals walking, cycling, using mobility aids, or other riding devices such as scooters or skateboards (motorized or non-motorized).

(1) Exception to the 1,500 VPD minimum roadway volume threshold may be made for School Crossings* or Park Crossings** where the peak hour traffic exceeds 15% of the daily traffic. * A school crossing is defined as a crossing location where the Police Department has assigned a crossing guard. ** A Park Crossing is defined as a crossing location that directly connects to a Town park.

(2) Minimum Multimodal Volume Thresholds:
 • 20 crossings per hour*** in any one hour, or
 • 15 crossings per hour*** in any two hours, or
 • 10 crossings per hour*** in any three hours
 *** Young, elderly, and disabled pedestrians count 2x towards volume thresholds (Young pedestrians are defined as a elementary or middle school-aged children)

In lieu of the Minimum Multimodal Crossing Volumes mentioned above, a location may be considered for a marked crosswalk if it can be reasonably assumed the required crossing volume threshold would be met if a properly marked crosswalk were available. For further details; refer to the Criteria Definition section.

(3) At least one preventable crash involving a multimodal user within 300 feet of the crossing under review has occurred in the past three years. Review the crash history and exclude preventable crashes (e.g., impaired driver, etc.) from consideration.

(4) Key destinations may be existing or proposed and can include hospitals, senior centers, recreation centers, libraries, parks, or other significant destinations subject to staff review. Active transportation facilities include sidewalks and multi-use trails. Frequent crossings are defined as five or more crossings per hour.

(5) The available SSD in both directions at the crossing point is equal to or greater than the minimum SSD required as specified in the latest edition of AASHTO's A Policy on Geometric Design of Highways and Streets.

(6) Only install an uncontrolled crosswalk if the sight distance obstruction has been removed. If the obstruction is located on private property, coordinate with Code Enforcement to pursue corrective action. If the sight distance issue cannot be corrected consider geometric improvements or a controlled/grade-separated crossing.

(7) For a low volume crossing to be considered for further improvement, all of the following criteria must be met:

- The roadway being crossed is either a two-lane, one-way road; a two-lane, two-way road; a two-lane, two-way road with a dedicated turn lane; or a four-lane road with two through lanes in each direction with or without a raised median.
- The roadway has an ADT between 1,500–2,500 vehicles and a posted speed limit of 35 mph or lower.
- The crossing location is at least 300 feet from any existing marked or controlled crosswalk and meets AASHTO SSD requirements.
- The crossing location has adequate street lighting; if not, a streetlight must be installed before implementing further improvements.
- Existing curb ramps are available at both ends of the crossing; if not, curb ramps should be constructed; if immediate construction is not feasible, the crossing design must accommodate future curb ramp installation. Funding for the installation of the future curb ramps must be identified before proceeding.
- There is minimal potential to redirect multimodal users to a more defined crossing.
- The crossing is not located adjacent to a school.

(8) In CBDs, this distance may be reduced to 200 feet, subject to engineering judgment. The reduction should only be considered where crossing activity is not expected to significantly disrupt vehicular traffic operations or compromise safety.

(9) An "unmarked crossing" is any treatment that improves a pedestrian's ability to cross a roadway, short of a marked, signed and enhanced crosswalk. The installation of this type of crossing is subject to staff review and engineering judgement and should include ADA compliant curb ramps, appropriate crossing warning signage, and where applicable, roadway geometric improvements to enhance crossing safety. No markings or additional signage beyond the crossing warning signs are provided to promote the use or attempt to attract new users to the crossing. An unmarked crossing is intended to function as a safety improvement at low volume locations where multimodal users are already crossing and are expected to continue to do so.

Uncontrolled Crossing Treatment Matrix (This matrix should only be used if directed by the Uncontrolled Crossing Evaluation Flowchart)

Roadway Configuration	Roadway ADT and Posted or 85th Percentile Speed																			
	1500 – 3000 vpd				3000 – 9000 vpd				9,000-12,000 vpd				12,000-15,000 vpd				> 15,000 vpd			
	≤ 30 mph	35 mph	40 mph	≥45 mph	≤ 30 mph	35 mph	40 mph	≥45 mph	≤ 30 mph	35 mph	40 mph	≥45 mph	≤ 30 mph	35 mph	40 mph	≥45 mph	≤ 30 mph	35 mph	40 mph	≥45 mph
2 Lanes (One Way Road)	B	C	C	E	B	C	C	E	C	C	D	E	C	C	D	E	C	C*	D*	E
2 Lanes (Two Way Road, w/ or w/o Raised Median)	B	C	C*	E*	B	C	C*	E*	C	C*	D*	E*	C	C*	D*	E*	C	C*	D*	E*
3 Lanes (Two Way Road, w/ Raised Median)	B	C	C	E	B	C	D	E	C	C*	D	E	C	D	D	E	C*	D*	D*	E
3 Lanes (Two Way Road, w/o Raised Median)	B*	C*	C*	E*	B*	C*	D*	E*	C*	C*	D*	E*	C*	D*	D*	E*	C*	D*	E*	E*
4 Lanes (Two Way Road, w/ Raised Median)	B	C	D	E	B	C	D	E	C	D	D	E	C	D	D	E	D	D*	E	E
4 Lanes (Two Way Road, w/o Raised Median)	C*	C*	D*	E*	C*	D*	D*	E*	C*	D*	D*	E*	D*	D*	E*	E*	D*	D/E	E*	E*
5 Lanes (Two Way Road, w/ Raised Median)				E	C	D	D	E	C/D	D	D	E	D	D	E	E	D	E	E	E
5 Lanes (Two Way Road, w/o Raised Median)									D	D*	E*	E*	D*	E*	E*	E*	D*	E*	E*	E*
6 Lanes (Two Way Road, w/ or w/o Raised Median)									E/F*	E/F*	E/F*	E/F*	E/F*	E/F*	E/F*	E/F*	E/F*	E/F*	E/F*	E/F*

Number of Lanes and Roadway Configuration Definitions

Note: The lane count reflects the total number of lanes a pedestrian must cross at the crossing point, including both through and turn lanes

- 2 Lanes (One Way Road):** A two lane roadway with two through lanes in a single direction at the crossing point.
- 2 Lanes (Two Way Road with or without Raised Median):** A two lane roadway with one through lane in each direction without a dedicated turn lane with or without a raised median at the crossing point.
- 3 Lanes (with Raised Median):** A two lane roadway with one through lane in each direction with a dedicated turn lane and a raised median at least six feet wide at the crossing point.
- 3 Lanes (without Raised Median):** A two lane roadway with one through lane in each direction with a dedicated turn lane, a striped median or a raised median less than six feet wide at the crossing point.
- 4 Lanes (Two Way Road with Raised Median):** A four lane roadway with two through lanes in each direction without a dedicated turn lane, but has a raised median at least six feet wide at the crossing point.
- 4 Lanes (Two Way Road without Raised Median):** A four lane roadway with two through lanes in each direction without a dedicated turn lane or a raised median at least six feet wide at the crossing point.
- 5 Lanes (Two Way Road with Raised Median):** A four lane roadway with two through lanes in each direction with a dedicated turn lane and a raised median at least six feet wide at the crossing point.
- 5 Lanes (Two Way Road without Raised Median):** A four lane roadway with two through lanes in each direction with a dedicated turn lane, a striped median or a raised median less than six feet wide at the crossing point.
- 6 + Lanes (Two Way Road with or without Raised Median):** A six or more lane roadway with three or more through lanes in each direction with or without dedicated turn lanes or a raised median at the crossing point.

- Notes:**
- This matrix only applies to uncontrolled pedestrian crossings.
 - The letters shown in the matrix represent the minimum recommended combination of treatments based on ADT, roadway design, and the posted or 85th percentile speed.
 - If 85th percentile speed > posted speed limit, use the 85th percentile speed for selecting treatments.
 - Striped medians or two-way left-turn lanes shall never be considered a refuge for a crossing pedestrian.
 - Additional treatments beyond those mentioned in each category may be used based on engineering judgment.

Category		Treatment Guidance
A	Unmarked Crosswalk	Specific Guidance: Install only Pedestrian (W11-2) or Trail (W11-15) crossing warning signs with diagonal downward-pointing arrow plaques (W16-7p), at each end of the crossing. Additional W11-2 or W11-15 signs with “AHEAD” plaques (W16-9p) may be installed in advance of the crossing location based on engineering judgment. For undivided multi-lane roadways, consider providing a median refuge island to enhance safety at the crossing. If a median refuge island is provided, an additional crossing warning sign should be installed within the median to enhance the visibility of the crossing. The crossing location must have adequate street lighting and ADA-compliant curb ramps installed, or funding identified for these items, prior to installing improvements. No pavement markings are installed with this category.
B	Marked Crosswalk	Specific Guidance: Install a marked crosswalk only, using standard or high visibility patterns. The minimum crosswalk width shall be 6 feet; however, if the pedestrian facility approaching the crosswalk exceeds this width, the crosswalk should match the width of the facility. In areas with high pedestrian volumes, consider increasing the width to 8–10 feet. Crosswalk markings must extend across the full width of the roadway. Installing street lighting at the crossing location should be considered to improve nighttime visibility. ADA-compliant curb ramps must be present at the crossing location, or funding must be identified for their construction, before any improvements are installed. No signs are installed with this category.
C	Marked Crosswalk with Signs	Specific Guidance: Install a marked crosswalk as described in Category B, along with Pedestrian (W11-2), Trail (W11-15), or School (S1-1) crossing warning signs at each end of the crosswalk, supplemented with diagonal downward-pointing arrow plaques (W16-7p). The S1-1 warning sign shall be used only at designated school crossing locations. Additional W11-2, W11-15, or S1-1 signs with “AHEAD” plaques (W16-9p) may be installed in advance of the crosswalk based on engineering judgment. On multi-lane roadways, "Stop Here for Pedestrians" (R1-5b) signs and corresponding stop lines shall be installed on each approach, positioned 20 to 50 feet in advance of the crosswalk. The stop line shall be a solid white line, 24 inches wide, extending across all approach lanes. For crosswalks with a raised median, an additional crossing warning sign and/or a R1-5b sign should be placed within the median to enhance visibility of the crosswalk. Street lighting at the crossing should be considered to improve nighttime visibility and safety at the crossing. ADA-compliant curb ramps must be present at the crossing location, or funding must be identified for their construction, before any improvements are installed.
D	Heightened Awareness Crossing	Specific Guidance: Install all treatments described in Categories A and B, with the addition of Rectangular Rapid Flashing Beacons (RRFBs) supplemented with Pedestrian (W11-2), Trail (W11-15), or School (S1-1) crossing warning signs and diagonal downward-pointing arrow plaques (W16-7p), either post or overhead-mounted. The S1-1 warning sign shall be used only at designated school crossing locations. Additional RRFBs may be installed in advance of the crosswalk with corresponding warning signage and “AHEAD” (W16-9p) plaques based on engineering judgment. If the roadway is undivided, RRFBs shall be installed on both sides of the crosswalk, i.e. one on the left side and one on the right side of the roadway. If the crosswalk contains a pedestrian refuge island or other type of median, an RRFB shall be installed in the median along with both sides of the crosswalk. RRFBs shall only be used to supplement crossing warning signs located at or immediately adjacent to an uncontrolled marked crosswalk. Adequate street lighting and ADA-compliant curb ramps shall be installed at the crossing location before any improvements are implemented.
E	Signalized Crossing	Specific Guidance: Do not install a uncontrolled marked crosswalk. Marked crosswalks shall only be installed in conjunction with a Pedestrian Hybrid Beacon (PHB) or a traffic signal and must be supplemented with appropriate signage and pavement markings as specified in the latest edition of the TMUTCD. The TMUTCD provides comprehensive guidance on the application and installation of PHBs and related traffic control devices at pedestrian crossings. A PHB or traffic signal should only be installed on a Town roadway when the location meets the applicable warrants established in the TMUTCD.
F	Grade-Separated Crossing	Specific Guidance: Do not install a uncontrolled marked crosswalk. Consider installing a grade-separated pedestrian crossing such as an overpass (bridge) or underpass (tunnel) to enhance pedestrian safety. A comprehensive engineering analysis, beyond the scope of this policy, should be performed to assess the need for and feasibility of this treatment.
*	Geometric Improvements	Specific Guidance: Consider implementing geometric improvements, such as curb extensions and/or a median refuge island, in conjunction with crosswalk treatments to shorten crossing distances and enhance pedestrian visibility to drivers.
	Consider Lane Reduction	Specific Guidance: Evaluate existing and projected roadway volumes to assess the feasibility of a lane reduction prior to implementing potential crossing improvements.