

Note: Anyone wishing to speak at any Transportation Commission meeting is encouraged to do so. If you wish to speak, please rise and, after you have been recognized by the Chair, give your name and complete address for the record. You will then be allowed to speak. Please note the public testimony may be limited by the Chair.

ASHLAND TRANSPORTATION COMMISSION
December 21, 2017
AGENDA

- I. **CALL TO ORDER:** 6:00 PM, Civic Center Council Chambers, 1175 E. Main Street
- II. **ANNOUNCEMENTS**
- III. **CONSENT AGENDA**
 - A. Approval of Minutes: November 16, 2017
- IV. **PUBLIC FORUM**
- V. **NEW BUSINESS**
 - A. Crosswalk Implementation Policy (30 min.)
 - Initial discussion of policy/guidelines for installation of new marked crosswalks
- VI. **TASK LIST**
 - A. Discuss current action item list
- VII. **OLD BUSINESS**
 - A. Goal Setting
 - Final preparation leading to February meeting
 - B. Transportation Commission Code Language
 - Final review of draft code changes
- VII. **FOLLOW UP ITEMS**
 - A. None-see action item list
- VIII. **INFORMATIONAL ITEMS**
 - A. Accident Report
- IX. **COMMISSION OPEN DISCUSSION**
- X. **FUTURE AGENDA TOPICS**
 - A. High and Church St. 4-way stop
 - B. Parking Permit Policy
- XI. **ADJOURNMENT:** 8:00 PM

Next Meeting Date: January 25, 2018 Meeting

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Public Works Office at 488-5587 (TTY phone number 1 800 735 2900). Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to the meeting (28 CFR 35.102-35.104 ADA Title I).



**CITY OF
ASHLAND
Transportation Commission**
Contact List as of December 2017

Name	Title	Telephone	Mailing Address	Email Address	Expiration of Term
Dominic Barth	Commissioner	617-840-5425	586 ½ C St.	dofriessgowiththatshake@yahoo.com	4/30/2018
Joe Graf	Commissioner	541-488-8429	1160 Fern St.	jlgrans15@gmail.com	4/30/2018
Corinne Vieville	Commissioner	541-488-9300 or 541-944-9600	805 Glendale Ave.	corinne@mind.net	4/30/2019
David Young	Commissioner	541-488-4188	747 Oak Street	dyoung@jeffnet.org	4/30/2018
Sue Newberry	Commissioner	775-720-2400	2271 Chitwood Lane	sue.l.newberry@gmail.com	4/30/2019
Kat Smith	Commissioner	541-326-7517	770 Faith Ave.	ladybikesafety@gmail.com	
Bruce Borgerson	Commissioner	541-488-5542	209 Sleepy Hollow Dr	wave@mind.net	4/30/2020

Non-Voting Ex Office Membership

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Vacant	Ashland Parks				
Vacant	Ashland Schools				

Staff Support

Scott Fleury	Deputy Public Works Director	541-488-5347	20 E. Main Street	fleury@ashland.or.us	
Karl Johnson	Associate Engineer	541-552-2415	20 E. Main Street	johnsonk@ashland.or.us	
Taina Glick	Administrative Assistant	541-552-2427	20 E. Main Street	taina.glick@ashland.or.us	

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These minutes are pending approval by this Commission

CALL TO ORDER:

Graf called the meeting to order at 6:00 p.m.

Commissioners Present: David Young, Sue Newberry, Corinne Viéville, Dominic Barth, Joe Graf, Kat Smith

Commissioners Absent: None

Council Liaison Absent: Mike Morris

SOU Liaison Present: Fred Creek

Staff Present: Scott Fleury, Taina Glick, Steve MacLennan, Tighe O'Meara

ANNOUNCEMENTS

None

CONSENT AGENDA

Approval of Minutes: October 26, 2017

Commissioners Barth and Young m/s to approve minutes as corrected.

All ayes. Minutes approved.

PUBLIC FORUM

None

NEW BUSINESS

Chair departed from agenda to allow O'Meara and MacLennan to present first.

Accident Report

Commissioners sought clarification of police policy regarding issuance of citations, specifically for collisions involving cyclists or pedestrians. O'Meara described departmental policy and the importance of providing officers the ability to use judgement on a case by case basis when determining if the issuance of a citation is appropriate.

Newberry inquired about officers visiting schools to discuss safety. MacLennan indicated that officers have visited schools but not as frequently in recent years as in the past. Newberry wondered if bicycle officers will be reintroduced to the area. O'Meara stated that the program is not feasible currently but could be considered for reinstatement several years down the road.

Young asked if O'Meara had comments about distracted driving, especially related to screens and to discuss upcoming law related to driving with electronic devices. O'Meara and MacLennan described new legislation in effect. Young welcomed suggestions from O'Meara and MacLennan of ways the Transportation Commission (TC) can help. O'Meara stated his belief that a cultural shift is necessary to reduce electronic use while driving, citing change in beliefs regarding drunk driving.

Smith requested additional information regarding RVTD vs cyclist case. MacLennan suggested contacting him directly.

Newberry remarked on upcoming goal setting meeting and wondered if officers had suggestions of what the commission could do to increase safety or any specific areas the Transportation Commission should focus on. O'Meara did not have suggestions at the time, but indicated he would ponder it and get back to the commission prior to February.

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Graf pointed out that use of the accident report by the TC made it a public document and felt that it has insufficient descriptions and highlighted inconsistent case treatment, making the TC and the Police Department look somewhat bad. Graf further wondered about if the TC needs to cease analysis of the report. MacLennan stated that some incidences where the driver was not cited may have been called in after the fact. Newberry and Young wondered if the report could include which were reported after the incident. MacLennan indicated that his narratives say "called in after the fact." Young wondered if a code could be added to the report. Fleury will discuss adding that data with Lea Light.

CIP Storybook/Capital Project Prioritization

Fleury introduced CIP Storybook as a tool developed by staff to show current projects defined in all master plans. Storybook provides a visual representation showing overlay of projects enabling divisions to coordinate projects to increase efficiency. Fleury briefly outlined the functionality for staff, citizens, and franchisees, as well as the planned process of keeping information up to date. Vièville queried if Storybook could be used for citizens to find out current road or sidewalk closures. Fleury responded with current difficulties with the accurate reporting of all closures, but indicated how a citizen could obtain known areas of closure. Fleury will research ways to improve the availability of closure information to citizens. Fleury, Vièville, and Newberry discussed ADA requirements for sidewalk closures.

TASK LIST

Action item list

Fleury informed commissioners that Paula Brown and Kim Parducci presented information to City Council on the following previously approved projects: N Main St refuge island, Crosswalks at Van Ness Ave and Nursery St, Left turn lane at Bush St., and signal removal at Helman St.

Fleury and Parducci plan to meet with the new Oregon Department of Transportation (ODOT) traffic manager to get final approval for crosswalks at N Main St at Van Ness Ave and N Main St at Nursery St. Fleury intends to have these crosswalks and the N Main St refuge island reduction bid as one project.

Parducci will perform a yearly, one-month analysis of the road diet, targeting a.m.-peak hours, likely in September. Fleury indicated there will be nothing related to the road diet for the TC to consider until the signal comes up.

Graf inquired about a turn pocket at Bush St and where the merge will occur. Fleury clarified that the merge will begin on the viaduct. Barth wondered where traffic lights would be located. Fleury remarked that Parducci recommended increasing the signal length at Helman intersection. Graf stated that the Helman light project can be removed from the action list until there is a downtown design.

Barth inquired about a bike lane on Lithia Way, starting at Pucks. Fleury indicated he does not know the exact plan and would need to look at the plan sets before responding. Barth described problems with striping of bike lane along N Main St from the railroad trellis toward downtown. Fleury stated he would contact ODOT about striping the area. Smith wondered if a phone number exists for citizens to report complaints.

FOLLOW UP ITEMS

Super sharrow project

Fleury presented information to commissioners about currently allowed FHWA sharrow designs, MUTCD recommended sharrow placement, maintenance concerns, and how the current allowances differ from the sharrow originally planned. Fleury and Parducci will seek ODOT approval for green box type sharrow under a pilot program which allows applicants to recommend the appropriate distance between painted boxes. Young described the need to

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help all road users understand appropriate sharrows use. Barth sought clarification about the likelihood of a bike lane instead of a sharrows project. Young reminded commissioners that the sharrows were suggested as a compromise after organized opposition to a downtown bike lane. He further elaborated that a bike lane could be reconsidered at the time of a new downtown redesign plan. Graf explained past difficulties with downtown redesign but believed that parking and bike lane will be considered in future redesign efforts but concluded that the road is too narrow. Young pointed out that Uber will be available soon and could ease parking issues. Fleury told the commission about attending a meeting related to Uber starting in the area and learned that Uber has had no effect on parking use in other cities. He further described concerns about drop offs and their effect on safety. Vièville inquired about how existing cab companies handle drop offs. Fleury indicated that cabs typically double park to allow for pick-ups and drop offs and that the volume of Uber users should be considered.

Vièville wondered if light at Water St would be a talking signal. Fleury indicated it would be.

Newberry requested that Siskiyou Blvd at Tolman Creek Rd be added to the task list, specifically improvement of angled and unsafe crosswalks. Fleury informed commissioners that surveys and schematic design have been done internally but not finalized. Fleury will add this intersection to the task list.

Transit Feasibility Plan Update

Solicitation for TFP is out and due back November 30 at 2:00pm. Fleury indicated that there has been a lot of interest and anticipates a good response. Grading process will begin after the 30th.

Iowa St Safety/Walking Audit

Fleury described the walking audit, who was present, and identified concerns. Parducci will follow up with a traffic study and corridor safety write-up. Officer MacLennan and Chuck Schweizer made contact with vision clearance code violators. Young described problems with reporting vegetation violations and questioned the best way to report concerns. Fleury indicated the street division should be contacted for such violations. Newberry complimented staff for doing a wonderful job and for summary of audit.

OLD BUSINESS

Goal setting

Graf reminded commissioners of the urgency of having the needed items and plan of action clearly defined at the next meeting. Newberry reminded commissioners to make sure their list of stakeholders is sent to staff.

Traffic Calming Program Development

Staff will begin working on brochure pamphlet, flow chart, and visuals to bring back to commission for approval before presenting to Council. Fleury is researching portable, battery-run radar signs that collect speed and time data. Fleury intends to obtain data from traffic tubes, then the signs for one month, followed by the tubes a second time. The intent is to see if driving habits change. Signs could be in place by next Spring and will work with PD as well as citizen reports to determine problem locations.

Newberry stressed the importance of a neighborhood meeting, not public hearing, to educate residents about traffic calming options early in the process. Young reiterated the importance of citizen input prior to decisions being made. Newberry suggested walking audits and cautioned about a one-size-fits-all approach to traffic calming.

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Transportation Commission Code Language

Fleury provided a copy of draft revision. Newberry posed the question of increasing the scope of Transportation Commission advisory role especially as it related to Planning when on-street parking could be dramatically impacted. Commissioners discussed how they could be made aware of Planning Commission items. Smith conveyed the need to be proactive rather than reactive.

Barth called attention to page 1, section B, paragraph 2, line 5, word 5. This word should be "phrase" not phase.

Graf directed attention to the Sub-Committee, section A. It should read that the purpose of sub-committees is to focus on specific topics and advise the commission, enabling the commission to focus on broad transportation topics.

Graf advised commissioners to direct suggested changes to Fleury.

COMMISSION OPEN DISCUSSION

Newberry mentioned that she made a code violation report but did not receive a response. Fleury informed commission of staffing change and will request Street Division clean up leaves in the area of Hillview to Harmony. Newberry inquired about who sets signal at Walker and Siskiyou. Newberry described that the intersection used to have a hot call and the problem associated with changing it. Fleury indicated this is an ODOT controlled intersection.

Barth wondered if A St is scheduled for chip sealing in BN2019-21. Fleury indicated it is scheduled for rehab but if there is a specific area to email the details to him or Avram Biondo, street division supervisor. Fleury elaborated on the overlay of repairs in the area scheduled during BN2017-19.

Young remarked that drainage issues exist where the bike path intersects with Mountain Ave. He is encouraged to see people using Zagster bikes and reports flooding at the rack located at Safeway. Young urged commissioners to report issues as they are seen.

Graf reported that, at the mayor's brown bag meeting, he informed the chair of the Planning Commission of difficulties the Transportation Commission has had especially with the E Nevada area and feeling blindsided because the street will never be a good street and the Planning Commission appears to be cutting slack to the developer. Additionally, parks commissioners were not happy about Smith's painting project, feeling that their process for public art project approval had been circumvented. Fleury clarified that the aforementioned painting did not meet the criteria of public art. Graf stated the need for communication between commissions.

Vièville wondered about a street sweeping schedule and the feasibility of alerting residents so that cars can be moved. Fleury informed commissioners that the actual purposes of the city's street sweeping program is to keep debris from the storm drain system to maintain TMDL compliance and to keep critical routes clean. At this time there is no way for staff to reasonably manage a program which eliminates street side parking on a schedule.

ADJOURNMENT: 8:12 p.m.

*Respectfully submitted,
Taina Glick
Public Works Administrative Assistant*

Memo

CITY OF
ASHLAND

Date: December 14, 2017
From: Scott A. Fleury
To: Transportation Commission
RE: Crosswalk Policy

BACKGROUND:

As previously requested by the Transportation Commission, staff has researched municipal crosswalk policies for discussion. Installation of a crosswalk is covered in the Manual of Uniform Traffic Control Devices section 3B.18, reference attached documents. Staff has also attached various other municipal crosswalk policies and information from the National Association of City Transportation Officials (NACTO).

The MUTCD states that crosswalks should not be installed indiscriminately and 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/yield sign (3.B.18 08).

In previous discussion with our consultant Traffic Engineer many parameters should be considered when installing a crosswalk. Parameter include sidewalk improvements, ADA accessibility, lighting, vision clearance, pedestrian usage, speed of the road and traffic volumes.

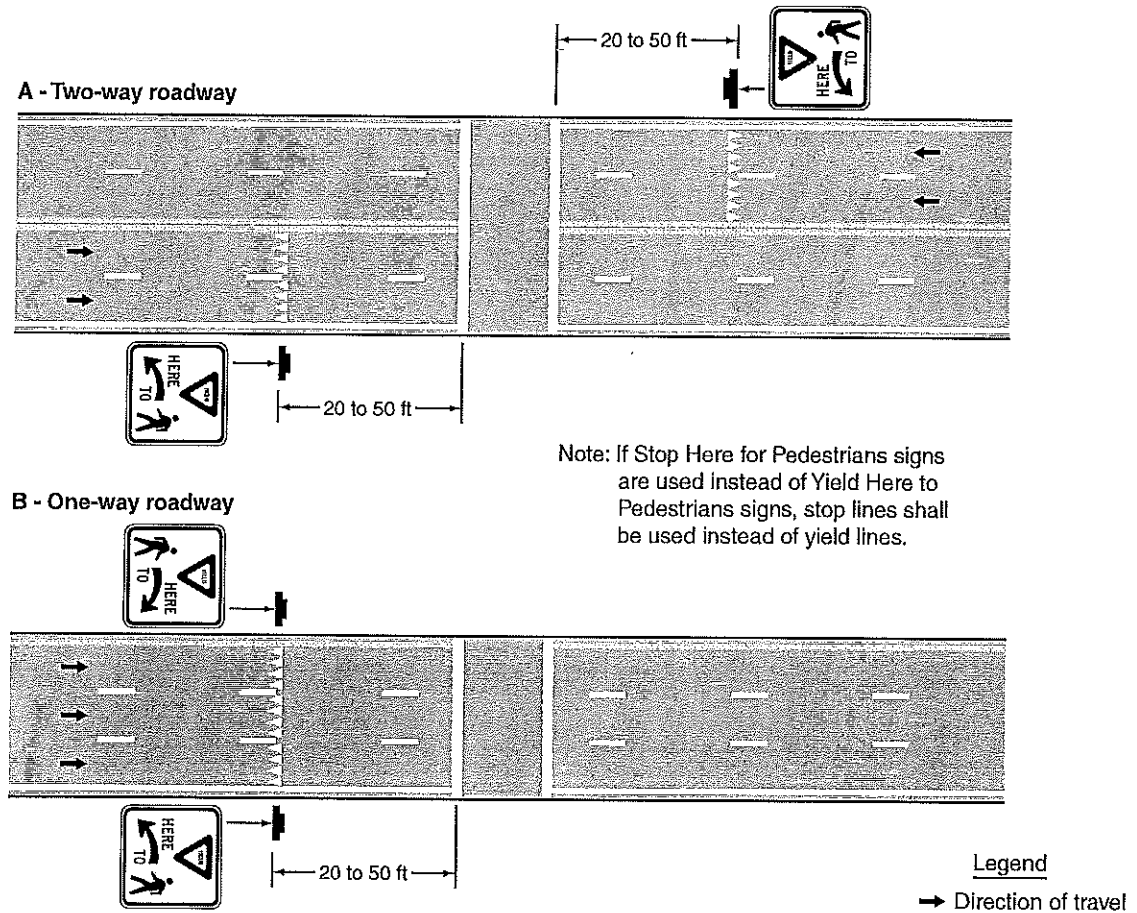
If the appropriate conditions are not met for installation of a marked crosswalk any additional improvements should be considered prior to marking the crosswalk. If major capital improvements are required, they should be combined if possible with other capital infrastructure work to be performed in corridor. For example with the road overlay projects beginning staff recommends analysis on roadways for installation of marked crosswalks that can be incorporated with roadway improvements.

Staff has attached crosswalk installation policies developed by other communities for reference in discussion.

CONCLUSION:

Commission is asked to comment on draft outlines for a crosswalk installation policy.

Figure 3B-17. Examples of Yield Lines at Unsignalized Midblock Crosswalks



Section 3B.18 Crosswalk Markings

Support:

- 01 Crosswalk markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops.
- 02 In conjunction with signs and other measures, crosswalk markings help to alert road users of a designated pedestrian crossing point across roadways at locations that are not controlled by traffic control signals or STOP or YIELD signs.
- 03 At non-intersection locations, crosswalk markings legally establish the crosswalk.

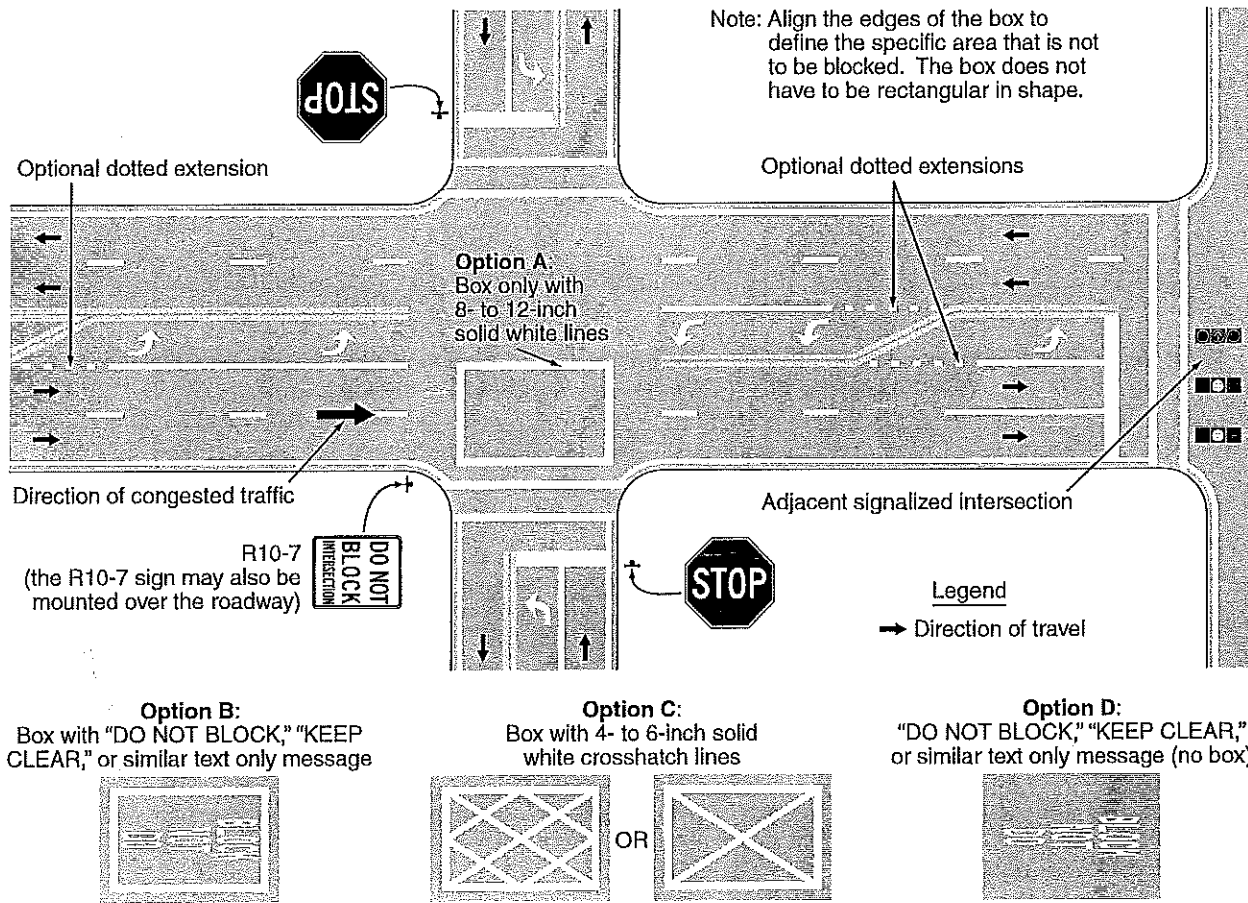
Standard:

- 04 When crosswalk lines are used, they shall consist of solid white lines that mark the crosswalk. They shall not be less than 6 inches or greater than 24 inches in width.

Guidance:

- 05 If transverse lines are used to mark a crosswalk, the gap between the lines should not be less than 6 feet. If diagonal or longitudinal lines are used without transverse lines to mark a crosswalk, the crosswalk should be not less than 6 feet wide.
- 06 Crosswalk lines, if used on both sides of the crosswalk, should extend across the full width of pavement or to the edge of the intersecting crosswalk to discourage diagonal walking between crosswalks (see Figures 3B-17 and 3B-19).
- 07 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).

Figure 3B-18. Do Not Block Intersection Markings

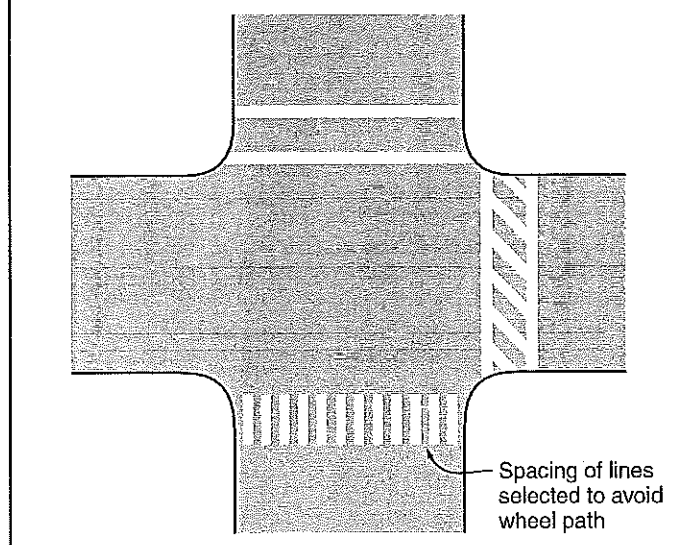


08 *Crosswalk lines should not be used indiscriminately. An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign. The engineering study should consider the number of lanes, the presence of a median, the distance from adjacent signaled intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.*

09 *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:*

- A. *The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or*
- B. *The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater.*

Figure 3B-19. Examples of Crosswalk Markings



Support:

- 10 Chapter 4F contains information on Pedestrian Hybrid Beacons. Section 4L.03 contains information regarding Warning Beacons to provide active warning of a pedestrian's presence. Section 4N.02 contains information regarding In-Roadway Warning Lights at crosswalks. Chapter 7D contains information regarding school crossing supervision.

Guidance:

- 11 *Because non-intersection pedestrian crossings are generally unexpected by the road user, warning signs (see Section 2C.50) should be installed for all marked crosswalks at non-intersection locations and adequate visibility should be provided by parking prohibitions.*

Support:

- 12 Section 3B.16 contains information regarding placement of stop line markings near crosswalk markings.

Option:

- 13 For added visibility, the area of the crosswalk may be marked with white diagonal lines at a 45-degree angle to the line of the crosswalk or with white longitudinal lines parallel to traffic flow as shown in Figure 3B-19.

- 14 When diagonal or longitudinal lines are used to mark a crosswalk, the transverse crosswalk lines may be omitted. This type of marking may be used at locations where substantial numbers of pedestrians cross without any other traffic control device, at locations where physical conditions are such that added visibility of the crosswalk is desired, or at places where a pedestrian crosswalk might not be expected.

Guidance:

- 15 *If used, the diagonal or longitudinal lines should be 12 to 24 inches wide and separated by gaps of 12 to 60 inches. The design of the lines and gaps should avoid the wheel paths if possible, and the gap between the lines should not exceed 2.5 times the width of the diagonal or longitudinal lines.*

Option:

- 16 When an exclusive pedestrian phase that permits diagonal crossing of an intersection is provided at a traffic control signal, a marking as shown in Figure 3B-20 may be used for the crosswalk.

Guidance:

- 17 *Crosswalk markings should be located so that the curb ramps are within the extension of the crosswalk markings.*

Support:

- 18 Detectable warning surfaces mark boundaries between pedestrian and vehicular ways where there is no raised curb. Detectable warning surfaces are required by 49 CFR, Part 37 and by the Americans with Disabilities Act (ADA) where curb ramps are constructed at the junction of sidewalks and the roadway, for marked and unmarked crosswalks. Detectable warning surfaces contrast visually with adjacent walking surfaces, either light-on-dark, or dark-on-light. The "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see Section 1A.11) contains specifications for design and placement of detectable warning surfaces.

Section 3B.19 Parking Space Markings

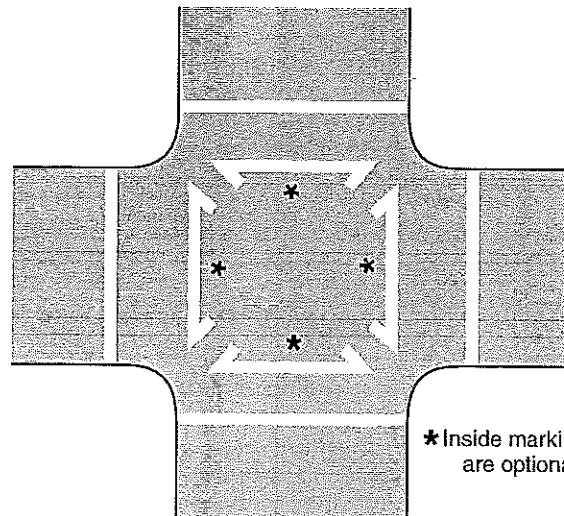
Support:

- 01 Marking of parking space boundaries encourages more orderly and efficient use of parking spaces where parking turnover is substantial. Parking space markings tend to prevent encroachment into fire hydrant zones, bus stops, loading zones, approaches to intersections, curb ramps, and clearance spaces for islands and other zones where parking is restricted. Examples of parking space markings are shown in Figure 3B-21.

Standard:

- 02 **Parking space markings shall be white.**

Figure 3B-20. Example of Crosswalk Markings for an Exclusive Pedestrian Phase that Permits Diagonal Crossing



1.0 INTRODUCTION

1.1 Statement of Policy

It shall be the policy of the Town of Brookline, Department of Public Works, to provide for safe pedestrian crossings of public streets by installing and maintaining marked crosswalks at all locations where there is substantial conflict between vehicle and pedestrian movements, where significant pedestrian concentrations occur, where pedestrians would not otherwise recognize the proper place to cross, and where traffic movements are controlled.

A "marked crosswalk" is any crosswalk that is delineated by painted markings placed on the pavement for the purpose of directing pedestrians to use a particular location to cross the street. Crosswalks may be marked at intersections controlled by traffic signals or stop/yield signs ("controlled crossings"), or at locations where traffic is not controlled by signals or stop/yield signs ("uncontrolled crossings").

1.2 Purpose of Guideline

The purpose of this guideline is to describe the warrants and criteria for the installation of marked crosswalks and the design specifications for crosswalk markings and signage. Compliance with these guidelines will ensure that the pavement markings and signs associated with safe pedestrian crossings are treated consistently throughout the Town of Brookline with respect to their placement, design, installation and maintenance.

This guideline incorporates the guidance and standards contained in the Manual on Uniform Traffic Control Devices (MUTCD)¹, the Massachusetts Highway Department (MassHighway) Highway Design Manual and Engineering Directive² concerning the standardization of crosswalk markings, the Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities, and applicable Massachusetts state law.³

1.3 General

Marked crosswalks are viewed widely as "safety devices," and most municipalities give the pedestrian the right-of-way when within them. However, there is strong evidence that these facts prompt many pedestrians to feel overly secure when using a marked crosswalk. As a result, pedestrians will often place themselves in a hazardous position by believing that motorists can and will stop in all cases, even when it may be impossible to do so. It is not unusual for this type of aggressive pedestrian behavior to contribute to a higher incidence of

¹ *Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)*, U.S. Department of Transportation, Federal Highway Administration, 2003. MUTCD requirements for crosswalk markings are summarized in Attachment 1.

² MassHighway Engineering Directive E-96-001, "Standardization of Crosswalk Markings," dated 3/26/96. A copy of this Directive is provided in Attachment 2.

³ Massachusetts state law (M.G.L. Chapter 89, Section 11) requires motorists to yield to pedestrians in marked crosswalks. State law also protects blind pedestrians when crossing a road (M.G.L. Chapter 90, Section 14A), and provides local officials with the authority to adopt pedestrian rules and regulations (M.G.L. Chapter 90, Section 18A). Copies of the above statutes are provided in Attachment 3.

pedestrian accidents and cause a greater number of rear-end collisions. In contrast, a pedestrian using an unmarked crosswalk generally feels less secure and less certain that the motorist will stop and thereby exercise more caution and waiting for safe gaps in the traffic stream before crossing. The end result is fewer accidents at unmarked crosswalks.

Despite the above safety issues, a marked crosswalk is a useful traffic engineering device for helping pedestrians across complex intersections, channelizing pedestrians to safe crossing locations, and minimizing their exposure to vehicular conflicts, as long as sound engineering judgment is exercised in their location and design. Crosswalk lines should not be used indiscriminately at mid-block locations away from traffic signals or stop signs. Crosswalks may be marked at mid-block locations, however, if an engineering study determines it is safe to do so, and their presence is necessary to concentrate pedestrian crossing activity at a specific location. A mid-block crosswalk is not likely to be effective if pedestrian crossings occur at random locations within a block and if vehicle volumes are low or moderate (adequate gaps are available).

Crosswalks should also not be marked on 2-lane roadways with ADT greater than 9,000 vehicles per day, or 4-lane roadways with ADT greater than 12,000 vehicles per day, unless other special treatments - such as raised median refuges, curb extensions, overhead lighting, pedestrian-activated signals or warning lights - are provided, and an engineering study concludes that pedestrian safety will be ensured by the special treatments.

1.4 Traffic Engineering Study

A traffic engineering study is required to determine if the criteria and warrants are satisfied for the installation of a marked crosswalk at a particular location, and to determine the level of marking justified. The components of a traffic engineering study will vary by location, but may include consideration of:

- Speed and volume on the street(s) involved
- Pedestrian volume, age, and level of mobility
- Location of pedestrian origins and destinations and crossing patterns
- Existing sidewalk network and sidewalk ramps
- Adequacy of sight distances (absence of sight obstructions)
- Street characteristics including grade, curvature, pavement widths, number of vehicle and bicycle lanes
- Location of adjacent driveways
- On-street parking
- Street lighting
- Location of drainage structures
- Distance to nearest marked crossing
- Traffic signal progression
- Potential for rear-end accidents

1.5 Crosswalk Maintenance

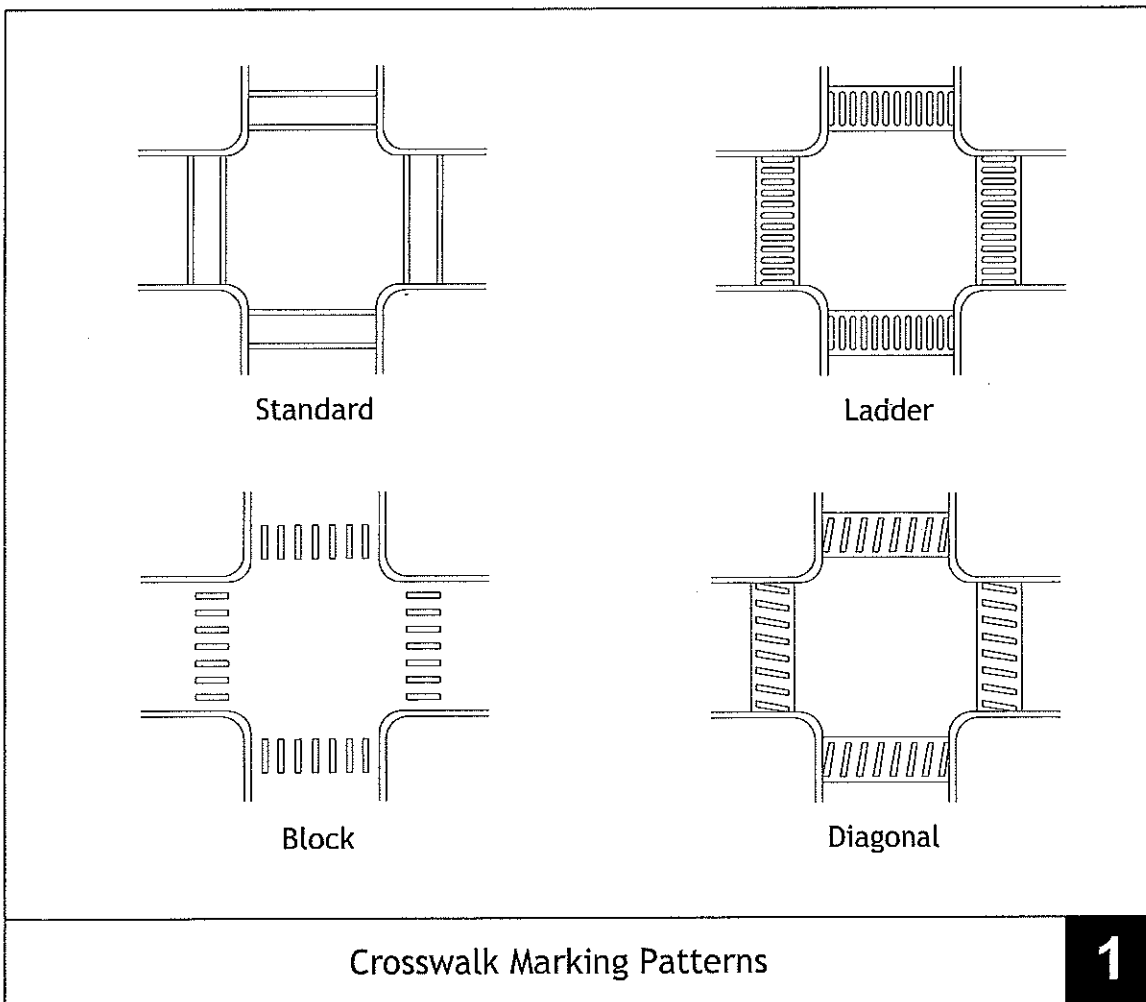
Crosswalk markings and signs should be maintained in a high state of visibility and meet reflectivity standards. All crosswalk markings and signs should be inspected at least once a

year and replaced as needed. Markings and signs for crosswalks located in school zones must be inspected prior to the beginning of the school year and replaced as needed.

2.0 DESIGN FEATURES OF MARKED CROSSWALKS

2.1 Pavement Marking Patterns (See Figure 1)

Marked crosswalks in the Town of Brookline are presently painted or marked in one of the four patterns shown in **Figure 1**: Standard, Block, Ladder, and Diagonal. All new crosswalks marked in the town shall be of either the Standard or Ladder design only, and installed in conformance with the following guidelines. Existing crosswalks of the Block or Diagonal design may be repainted in their existing pattern until such time as (re)construction of the street on which they lie requires removal of the existing crosswalk and it can be replaced with the preferred Standard or Ladder design.



2.2 Crosswalk Marking Width and Color

When a standard or ladder-type crosswalk is located on a residential or local street, the width of the crosswalk (distance between transverse lines) shall be 8 feet on center. When the crosswalk is located on a collector or arterial street, the width of the crosswalk shall be 10 feet on center. In accordance with the MUTCD, all transverse lines, regardless of their marking material, shall be solid white in color with a width of 12 inches.

When a ladder-type crosswalk is installed, the longitudinal lines or bars shall be solid white in color, have a width of 12 inches, and be spaced 3 feet apart on center. The marking location of the longitudinal lines should avoid the wheel paths whenever possible.

2.3 Crosswalk Marking Materials

It is important that crosswalk markings be visible to motorists (especially at night), not be slippery or create tripping hazards, and not be difficult to traverse by those with diminished mobility or visual capabilities. All crosswalk markings shall therefore be installed using either: (a) a chlorinated paint suitable for application on asphalt surfaces, (b) a thermoplastic paving marking material, or (c) an inlay polymer marking tape. All crosswalk markings shall also consist of high reflectivity materials.

Because it is highly reflective, durable, slip-resistant, and does not require a high level of maintenance, it shall be the policy of the Town to install marked crosswalks using inlay tape whenever possible. To the maximum extent practicable, inlay tape shall be used as the preferred marking material whenever crosswalks are installed on new or resurfaced pavements.

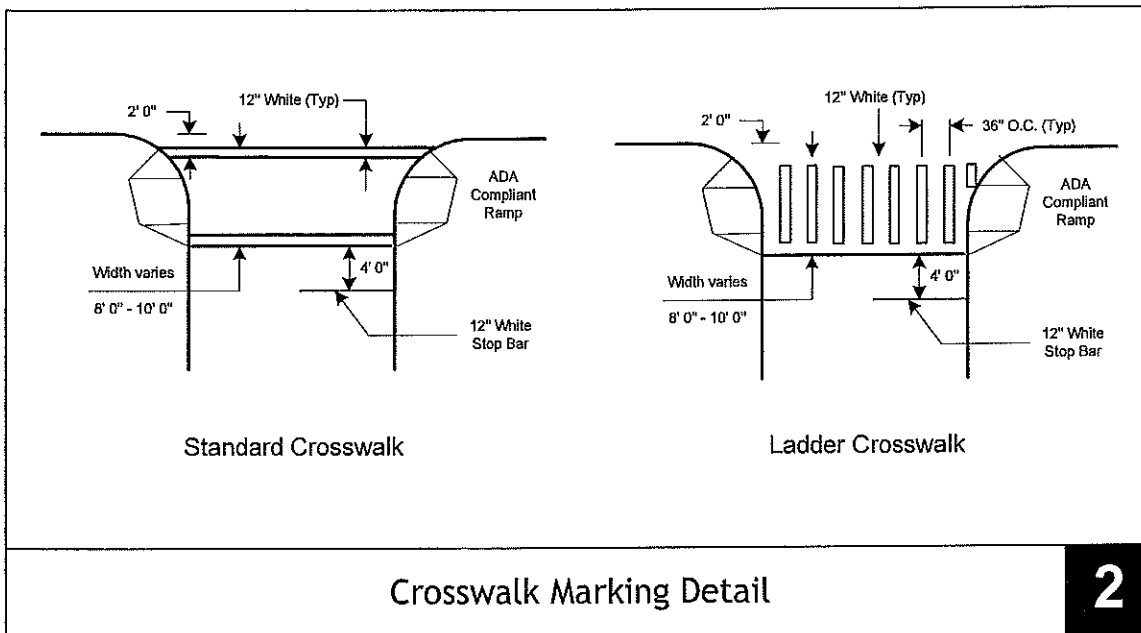
2.4 ADA Compliance

Where a crosswalk provides access to sidewalks, curb ramps that meet ADA Accessibility Guidelines (ADAAG), MassHighway Construction Standards, and all requirements of the Massachusetts Architectural Board (521 CMR) must be provided at both ends of the crosswalk. If a crosswalk leads to a paved shoulder, it should meet ADAAG regarding width and cross-slope (maximum 2%) to the extent feasible.

2.5 Use of Colored and Textured Pavement

In commercial areas or school zones, colored and textured pavement may be used to enhance the aesthetics of the crosswalks. The most common treatment is a terra cotta colored, brick pattern that is stamped into newly laid asphalt. In accordance with the MUTCD, the colors white, yellow, blue, or red shall not be used for this purpose. Transverse white crosswalk markings (standard crosswalk pattern) must be used in addition to the colored or texture pavement in order to legally establish a crosswalk location when textured pavement is used.

Granite and cobblestones are examples of materials that while aesthetically attractive, may become slippery when wet and be difficult to cross by pedestrians who are blind or use wheelchairs. The use of these materials at pedestrian crossings is not recommended.



The use of colored and textured pavement has not been proven to substantially improve the safety, or enhance the visibility to the driver, of a crosswalk. It is therefore recommended that colored and textured pavement not be used at uncontrolled mid-block locations, or on approaches to intersections that are not signalized or controlled by a stop or yield sign. Colored pavement located between crosswalk lines to emphasize the presence of the crosswalk is not considered a traffic control device.

2.6 Use of Fluorescent Yellow-Green Signs

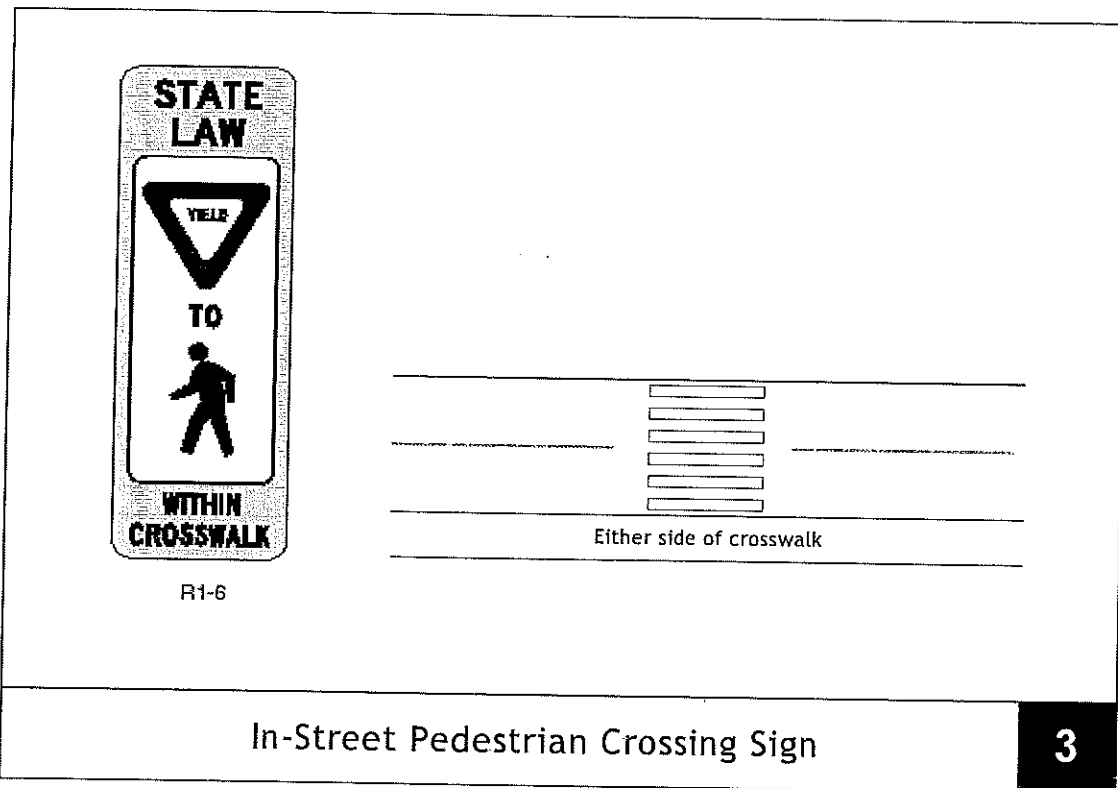
In accordance with the MUTCD (Section 2C.41), pedestrian, bicycle, and school signs and their related supplemental plaques may have a fluorescent yellow-green background with a black legend and border. However, when a fluorescent yellow-green background is used, a systematic approach featuring one background color within a zone or area should be used. The mixing of standard yellow and fluorescent yellow-green within a selected site area should be avoided.

2.7 In-street Pedestrian Crossing Signs

The In-street Pedestrian Crossing (R1-6) sign may be used to remind road users of the state law that a driver must yield to a pedestrian in a crosswalk at an uncontrolled pedestrian crossing. Permission to place an In-street Pedestrian Crossing sign at a particular location requires approval of the Transportation Board and the issuance of a permit by the DPW Highways Division. Guidelines for sign use and placement include:

- a. One In-street Pedestrian Crossing sign is allowed per crosswalk location;
- b. The In-street Pedestrian Crossing sign shall not be used on the approaches to a signalized intersection;

- c. The In-street Pedestrian Crossing sign should be placed at the roadway centerline adjacent to the crosswalk, not within the crosswalk itself;
- d. If a central island is provided in the street, the sign should be placed on the island;
- e. If used, the In-Street Pedestrian Crossing sign shall have a black legend (except for the red YIELD sign symbol) and border on either a white and/or florescent yellow-green background.
- f. If the In-Street Pedestrian Crossing sign is placed in the roadway, the sign support shall comply with the breakaway requirements of the latest edition of AASHTO's "Specification for Structural Supports for Highways Signs, Luminaries, and Traffic Signals."
- g. The In-Street Pedestrian Crossing sign may be used seasonably to prevent damage in winter because of plowing operations, and may be removed at night if the pedestrian activity at night is minimal.



3.0 MARKED CROSSWALKS AT INTERSECTIONS

3.1 SIGNALIZED INTERSECTIONS

3.1.1 Criteria for Installation

Intersections with a traffic signal timed for concurrent pedestrian movements shall have

crosswalks applied on the roadway approaches that have sidewalks on both sides of the approaching street. Crosswalks should not be installed where no sidewalks exist unless adequate shoulders exist for use by pedestrians. The determination of adequate shoulder should be based on an assessment of traffic volumes, adjacent land uses, and other site-specific considerations.

Intersections with a traffic signal which is not timed to accommodate concurrent or exclusive pedestrian movements, or have traffic signal heads that cannot be seen by the pedestrian, shall have crosswalks applied only on those approaches which might be used by the pedestrian.

3.1.2 Crosswalk Marking Pattern

The standard crosswalk design, consisting of two transverse lines parallel to one another, shall be the preferred crosswalk design at all intersections controlled by a traffic signal. See previous Figure 2. In accordance with the MUTCD (Section 3B.17), the crosswalk lines should extend across the full width of the pavement, or to the edge of the intersection crosswalk, to discourage diagonal walking between crosswalks.

3.1.3 Crosswalk Marking Width and Color

When the approach to the signalized intersection is a residential or local street, the width of the standard crosswalk shall be 8 feet on center. When the approach to the signalized intersection is a collector or arterial streets, the width of the crosswalk shall be 10 feet on center. In accordance with the MUTCD, all transverse lines, regardless of their marking material, shall be solid white in color and have a width of 12 inches. See previous Figure 2.

3.1.4 Installation of Stop Line

When a crosswalk is installed on the approach to a signalized intersection, a stop line should also be installed. In accordance with the MUTCD (Section 3B.16), the stop line should be white in color, have a width of 12 inches, and be marked a minimum of 4 ft in advance of the nearest crosswalk line, as measured by the gap between the stop bar the closest crosswalk marking. See previous Figure 2.

3.1.5 No Parking Zone

In accordance with the MUTCD (Section 3B.18), parking spaces shall not be marked within 20 feet of a marked crosswalk at an intersection, as measured by the gap between the parking space and the closest crosswalk marking.

3.1.6 Pedestrian Warning Signs

In accordance with the MUTCD, there shall be no pedestrian crossing signs installed at the location of the marked crosswalks, nor any advance pedestrian warning signs installed on the approaches to the signalized intersection.

3.2 UNSIGNALIZED INTERSECTIONS - STOP OR YIELD CONTROLLED

3.2.1 Criteria for Installation

A crosswalk may be placed across an approach controlled by a stop or yield sign if a sidewalk exists on both sides of the roadway approach controlled by the stop or yield sign. Crosswalks should not be installed at locations where sidewalks do not exist unless adequate shoulders exist for use by pedestrians. The determination of adequate shoulder should be based upon an assessment of traffic volumes, adjacent land use patterns, and other site-specific conditions.

In general, the installation of crosswalks across the throat of driveways or minor side roads is not recommended unless there is a high potential for vehicle/pedestrian conflicts that will be mitigated by a marked crosswalk.

3.2.2 Crosswalk Pattern

The ladder crosswalk design, consisting of two transverse lines parallel to one another together with longitudinal lines parallel to traffic flow, shall be the preferred crosswalk design at intersections controlled by a stop or yield sign. The crosswalk lines should extend across the full width of the pavement, or to the edge of the intersection crosswalk, to discourage diagonal walking between crosswalks. See previous Figure 2.

3.2.3 Crosswalk Marking Width and Color

When a ladder crosswalk is installed, the longitudinal lines shall be solid white in color, have a width of 12 inches, and be spaced 3 ft apart on center. The marking location of the longitudinal lines should avoid the wheel paths whenever possible. See previous Figure 2.

3.2.4 Installation of Stop or Yield Line

When a crosswalk is installed on a stop or yield-controlled approach, a stop or yield line should also be installed. In accordance with the MUTCD (Section 3B.16), the stop or yield line should be white in color, have a width of 12 inches, and be marked a minimum of 4 ft in advance of the nearest crosswalk line, as measured by the gap between the stop bar the closest crosswalk marking. See previous Figure 2.

3.2.5 No Parking Zone

In accordance with the MUTCD (Section 3B.18), parking spaces shall not be marked within 20 feet of the marked crosswalk, as measured by the gap between the parking space and the closest crosswalk marking.

3.2.6 Pedestrian Warning Signs

In accordance with the MUTCD, there shall be no pedestrian crossing signs installed at the location of the marked crosswalks, or any advance pedestrian warning signs installed on the stop or yield controlled approaches to the intersection.

3.3 UNSIGNALIZED INTERSECTION - ROUNDABOUT

3.3.1 Criteria for Installation

A crosswalk may be placed across a roundabout approach if a sidewalk exists on both sides of the approach. Crosswalks should not be installed in the absence of sidewalks unless adequate shoulders exist for use by pedestrians. The determination of adequate shoulder should be based on an assessment of traffic volumes, adjacent land use patterns, and other site-specific conditions.

In accordance with the MUTCD, crosswalks that are marked on the approaches to a roundabout shall be placed a minimum of 25 feet in advance of the yield line, or if none, from the edge of the circulating lane.

3.3.2 Crosswalk Pattern

The ladder crosswalk design, consisting of two transverse lines parallel to one another together with longitudinal lines parallel to traffic flow, shall be used on all roundabout approaches so that the visibility of the crossing location is maximized.

3.3.3 Crosswalk Marking Width and Color

When the ladder crosswalk is installed, the longitudinal lines shall be 8 feet on center when the approach to the intersection is a residential or local street. The width of the crosswalk shall be 10 feet on center when the approach is on a collector or arterial street. In accordance with the MUTCD, all transverse lines, regardless of their marking material, shall be solid white in color and have a width of 12 inches. The longitudinal lines shall also be solid white in color, have a width of 12 inches, and be spaced 3 ft apart on center. The marking location of the longitudinal lines should avoid the wheel paths whenever possible.

3.3.4 No Parking Zone

In accordance with the MUTCD (Section 3B.18), parking spaces shall not be marked within 20 feet of the marked crosswalk, as measured by the gap between the parking space and the closest crosswalk marking.

3.3.5 Pedestrian Warning Signs

Pedestrian in crosswalk signs (W11A-2 with downward arrow plaque W16-7p) shall be installed at each end of the crosswalk location. The signs shall be placed in advance of the crosswalk adjacent to the travel lane and facing the driver.

Advance pedestrian warning signs (W11-2) shall be installed at a distance of at least 150 ft but not exceeding 700 feet in advance of the crosswalk on the approach to the roundabout. No advance warning sign is required within the roundabout. Advance pedestrian warning signs may be accompanied by supplemental plaques with the legend "AHEAD" (W16-9p) or "XXX FEET" (W16-2a).

3.4 UNSIGNALIZED INTERSECTION - UNCONTROLLED APPROACHES

3.4.1 Criteria for Installation

A crosswalk should not be installed at an intersection on a roadway approach that is not regulated by a traffic signal, a stop sign, or a yield sign unless all of the following criteria are met:

- a. The speed limit is 40 mph or less; and,
- b. There are 20 or more pedestrians using the crossing per hour during the peak AM and PM periods of vehicular traffic (lesser volumes may be considered if a large percentage of the pedestrian population consists of young, elderly, or disabled pedestrians); and,
- c. The ADT (average daily traffic) for the roadway (both directions combined) exceeds 3,000 vehicles per day; and,
- d. A sidewalk or adequate shoulder for use by pedestrians (as determined by traffic volumes, adjacent land uses and other site specific considerations) exists on both sides of the roadway approach; and,
- e. There is not another crosswalk across the same roadway within 200 ft of the intersection; and,
- f. Adequate stopping sight distance (equal to or exceeding that for the posted speed) is available in both directions. Because a driver must be able to see either the crosswalk or the pedestrian warning sign, the sight distance should be measured from the driver's perspective to the outer edges of the travel lane so that an approaching driver can see a pedestrian at any point on the crosswalk. The adequacy of stopping sight distances shall be determined in accordance with the guidance contained in the AASHTO "Green Book" - A Policy on the Design of Highways and Streets (2001).

When a crosswalk is proposed in conjunction with a new development, change in land use, or new pedestrian facilities, an engineering study may be used to predict whether or not the above criteria will be met once the development or facility has been constructed and is fully occupied.

Crosswalks should not be marked on 3 or 4 lane roadways with ADT greater than 9,000 vehicles per day unless other safety features - such as raised median refuges, traffic calming measures, or overhead lighting - are provided, and an engineering study concludes that pedestrian safety will be enhanced by their presence.

3.4.2 Crosswalk Pattern

The ladder crosswalk design, consisting of two transverse lines parallel to one another together with longitudinal lines parallel to traffic flow, shall be used on all uncontrolled intersection approaches so that the visibility of the crossing location is maximized.

3.4.3 Crosswalk Marking Width and Color

When the ladder crosswalk is installed, the longitudinal lines shall be 8 feet on center when the approach to the intersection is a residential or local street. The width of the crosswalk shall be 10 feet on center when the approach is on a collector or arterial street. In accordance with the MUTCD, all transverse lines, regardless of their marking material, shall

be solid white in color and have a width of 12 inches. The longitudinal lines shall also be solid white in color, have a width of 12 inches, and be spaced 3 ft apart on center. The marking location of the longitudinal lines should avoid the wheel paths whenever possible.

3.4.4 No Parking Zone

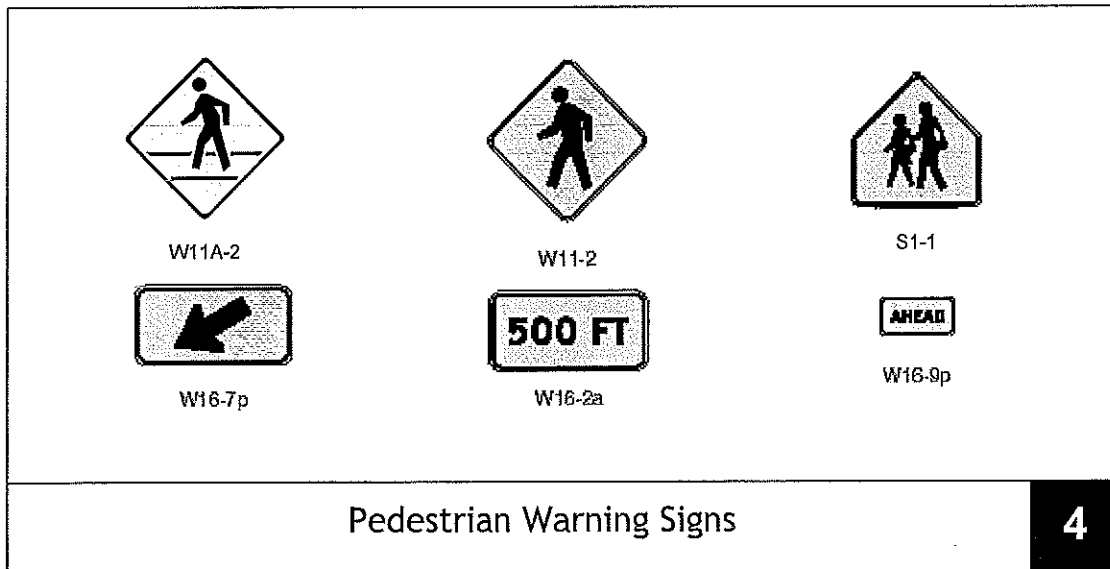
In accordance with the MUTCD (Section 3B.18), parking spaces shall not be marked within 20 feet of the marked crosswalk, as measured by the gap between the parking space and the closest crosswalk marking.

3.4.5 Pedestrian Warning Signs

Pedestrian in crosswalk signs (W11A-2 with downward arrow plaque W16-7p) shall be installed at each end of the crosswalk location. The signs shall be placed in advance of the crosswalk adjacent to the travel lane and facing the driver.

Advance pedestrian warning signs (W11-2) shall be installed at a distance of at least 150 ft but not exceeding 700 feet in advance of the crosswalk, in either direction. Advance pedestrian warning signs may be accompanied by supplemental plaques with the legend "AHEAD" (W16-9p) or "XXX FEET" (W16-2a).

At locations along an established route to school, a school crossing sign (S1-1) may be used instead of the pedestrian warning sign (W11-2).



4.0 MARKED CROSSWALKS AT MID-BLOCK LOCATIONS

4.1 SCHOOL CROSSINGS

Crosswalks should be marked at locations on established routes to a school (if the school has established a school route plan) where there exists a conflict between vehicles and school children, or where students would not otherwise know the proper place to cross the street. The following guidance applies only to locations adjacent to schools.

4.1.1 Criteria for Installation

All of the following criteria should be met before installing a crosswalk at a mid-block location on an established school route:

- a. The speed limit is 40 mph or less; and,
- b. A sidewalk or adequate shoulder for use by pedestrians (as determined by traffic volumes, adjacent land uses and other site specific considerations) exists on both sides of the roadway approach; and,
- c. There is not another crosswalk across the same roadway within 200 ft of the proposed location; and,
- d. Adequate stopping sight distance (equal to or exceeding that for the posted speed) is available in both directions. Because a driver must be able to see either the crosswalk or the school crossing sign, the sight distance should be measured from the driver's perspective to the outer edges of the travel lane so that an approaching driver can see a pedestrian at any point on the crosswalk. The adequacy of stopping sight distances shall be determined in accordance with the guidance contained in the AASHTO "Green Book" - A Policy on the Design of Highways and Streets (2001).

Crosswalks should not be marked on 2-lane roadways with ADT greater than 9,000 vehicles per day, or 4-lane roadways with ADT greater than 12,000 vehicles per day, unless other special treatments - such as raised median refuges, curb extensions, overhead lighting, pedestrian-activated signals or warning lights - are provided, and an engineering study concludes that pedestrian safety will be ensured by the special treatments.

While there is no minimum pedestrian volume for a school crossing, it is recommended that a trained crossing guard be present whenever there is crossing activity by students.

When a crosswalk is proposed in conjunction with a new development, change in land use, or new pedestrian facilities, an engineering study may be used to predict whether or not the above criteria will be met once the development or facility has been constructed and is fully occupied.

4.1.2 Crosswalk Pattern

The ladder crosswalk design, consisting of two transverse lines parallel to one another together with longitudinal lines parallel to traffic flow, shall be used on all uncontrolled intersection approaches so that the visibility of the crossing location is maximized.

4.1.3 Crosswalk Marking Width and Color

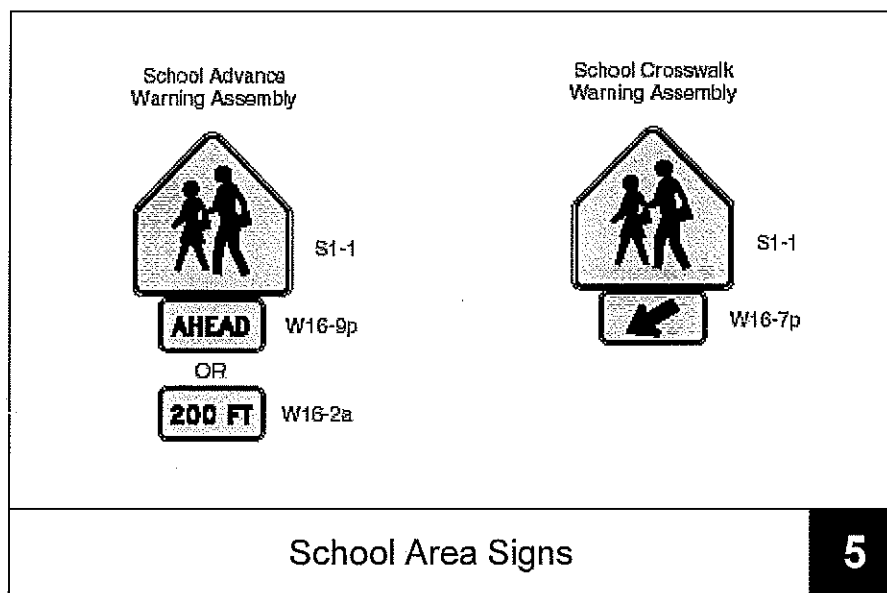
When the ladder crosswalk is installed, the transverse lines shall be 8 feet on center when the approach to the intersection is a residential or local street. The width of the crosswalk shall be 10 feet on center when the approach is on a collector or arterial street. In accordance with the MUTCD, all transverse lines, regardless of their marking material, shall be solid white in color and have a width of 12 inches. The longitudinal lines shall also be solid white in color, have a width of 12 inches, and be spaced 3 ft apart on center. The marking location of the longitudinal lines should avoid the wheel paths whenever possible.

4.1.4 No Parking Zone

In accordance with the MUTCD (Section 3B.18), parking spaces shall not be marked within 20 feet of the marked crosswalk, as measured by the gap between the parking space and the closest crosswalk marking. If a bulb-out is present, the gap may be reduced to 10 feet. Parents should be discouraged from using the area adjacent to the crosswalk for pick-ups and drop-offs.

4.1.5 School Crossing Signs

A School Crossing Warning Assembly (SCWA) consisting of a School Crossing Sign (S1-1) with a diagonal downward arrow plaque (W16-7p) shall be installed at each end of the crosswalk location. The signs shall be placed in advance of the crosswalk adjacent to the travel lane and facing the driver. The SCWA shall not be used at marked crosswalks other than those adjacent to schools or on established school routes. The SCWA shall not be installed on intersection approaches controlled by a traffic signal or stop sign.



A School Advance Warning Assembly consisting of a School Crossing Sign (S1-1) and a supplemental plaque with the legend "AHEAD" (W16-9p) or "XXX FEET" (W16-2a) shall be

installed at a distance of at least 150 ft but not exceeding 700 feet in advance of the crosswalk, in either direction.

4.2 NON-SCHOOL CROSSINGS

Crosswalk lines should not be used indiscriminately at locations away from traffic signals or stop signs. Crosswalks may be marked at mid-block locations only if an engineering study determines it is safe to do so, and their presence is necessary to concentrate pedestrian crossing activity at a specific location and position pedestrians to be more visible by motorists.

Crosswalks should not be marked on 2-lane roadways with ADT greater than 9,000 vehicles per day, or 4-lane roadways with ADT greater than 12,000 vehicles per day, unless other special treatments - such as raised median refuges, curb extensions, overhead lighting, pedestrian-activated signals or warning lights - are provided, and an engineering study concludes that pedestrian safety will be ensured by the special treatments.

4.2.1 Criteria for Installation

All of the following criteria should be met before installing a crosswalk at an uncontrolled, mid-block location:

- a. The 85th percentile speed of traffic at the marked crosswalk location must be less than 40 mph; and,
- b. The pedestrian volume at the location of the crosswalk must be more than 30 pedestrians per hour (pph) during the peak pedestrian hour (lesser volumes may be considered if a large percentage of the pedestrian population consists of young, elderly, or disabled pedestrians); or 15 pph for each of 4 hours; and,
- c. The ADT (average daily traffic) for the roadway (both directions combined) must exceed 3,000 vehicles per day; or the number of unimpeded vehicle time gaps that equal or exceed the pedestrian crossing times in an average 5-minute period during the peak vehicle hour must be greater than 4;⁴
- d. A sidewalk or adequate shoulder for use by pedestrians, or a distinct pedestrian destination such as a recreation field, must exist on both sides of the roadway approach; and,
- e. Another crosswalk across the same roadway cannot exist within 300 ft of the proposed location;⁵ and,
- f. The proposed crosswalk location must have adequate street lighting near the crosswalk already in existence or scheduled for installation; and,

⁴ The pedestrian crossing time is calculated by dividing the curb-to-curb street width by 4 feet per second, and the average number of gaps per five-minutes period is equal to the total usable gap time in seconds divided by pedestrian crossing time multiplied by 12.

⁵ Mid-block crosswalks should be located, as much as possible, mid-way between stop or signal-controlled intersections except where there are special trip generation/destinations directly across from each other and all other criteria are met. Special pedestrian trip generators include schools, senior citizen facilities, and community facilities such as parks and libraries.

- g. Adequate stopping sight distances (equal to or exceeding that for the posted speed) must be available in both directions. The adequacy of stopping sight distances shall be determined in accordance with the guidance contained in the AASHTO "Green Book" - A Policy on the Design of Highways and Streets (2001).

When a crosswalk is proposed in conjunction with a new development, change in land use, or new pedestrian facilities, an engineering study may be used to predict whether or not the above criteria will be met once the development or facility has been constructed and is fully occupied.

4.2.2 Crosswalk Pattern

The ladder crosswalk design, consisting of two transverse lines parallel to one another together with longitudinal lines parallel to traffic flow, shall be used on all uncontrolled intersection approaches so that the visibility of the crossing location is maximized.

4.2.3 Crosswalk Marking Width and Color

When the ladder crosswalk is installed, the transverse lines shall be 8 feet on center when the approach to the intersection is a residential or local street. The width of the crosswalk shall be 10 feet on center when the approach is on a collector or arterial street. In accordance with the MUTCD, all transverse lines, regardless of their marking material, shall be solid white in color and have a width of 12 inches. The longitudinal lines shall also be solid white in color, have a width of 12 inches, and be spaced 3 ft apart on center. The marking location of the longitudinal lines should avoid the wheel paths whenever possible.

4.2.4 No Parking Zone

In accordance with the MUTCD (Section 3B.18), parking spaces should not be marked within 20 feet of the marked crosswalk, as measured by the gap between the parking space and the closest crosswalk marking. If a bulb-out is present, the gap may be reduced to 10 feet.

4.2.5 Pedestrian Warning Signs

Pedestrian in crosswalk signs (W11A-2 with downward arrow plaque W16-7p) shall be installed at each end of the crosswalk location. The signs shall be placed in advance of the crosswalk adjacent to the travel lane and facing the driver.

Advance pedestrian warning signs (W11-2) shall be installed at a distance of at least 150 ft but not exceeding 700 feet in advance of the crosswalk, in either direction. Advance pedestrian warning signs may be accompanied by supplemental plaques with the legend "AHEAD" (W16-9p) or "XXX FEET" (W16-2a).



Appendix A: Crosswalk Policy

Appendix A: Crosswalk Policy

Introduction

This citywide Crosswalk Policy is aimed at improving pedestrian safety and enhancing pedestrian mobility by providing a framework and procedures for installation, enhancement, removal, and relocation of crosswalks throughout the City. A comprehensive pedestrian safety strategy contains a three-pronged approach of engineering, enforcement, and education programs. This document focuses on engineering elements, such as pedestrian crossing treatments and intersection design.

This document describes the function of crosswalks and their legal context in the California Vehicle Code. It discusses the advantages and disadvantages of marked crosswalks and summarizes research in the United States focused on pedestrian safety and crosswalks. It provides a summary of best practices related to numerous pedestrian treatments, including geometric, signage and striping, and signal hardware or operational measure treatments.

The purpose of this Policy is to enable the City to respond to crosswalk requests in a manner that improves pedestrian accessibility and maintains public safety. It provides information to be used when making decisions about where standard crosswalks (two, parallel white stripes) can be marked; where crosswalks with special treatments, such as high-visibility crosswalks, flashing beacons and other special features, should be employed; and where crosswalks will not be marked due to safety concerns resulting from volume, speed, or sight distance issues. The policy provides an overview of crosswalk fundamental, uncontrolled crosswalk considerations, and uncontrolled

Appendix A: Crosswalk Policy



crosswalk considerations. At both uncontrolled and controlled crosswalk locations, preferred and enhanced measures are described in order to:

- Improve the visibility of pedestrians to motorists and vice-versa
- Communicate to motorists and pedestrians who has the right-of-way
- Accommodate vulnerable populations such as the disabled, children, and the elderly
- Reduce conflicts between pedestrians and vehicles
- Reduce vehicular speeds at locations with potential pedestrian conflicts

Crosswalk Fundamentals

Pedestrian crossing and right-of-way laws vary state to state, and are often a source of driver or pedestrian uncertainty and confusion for when crossing is legal. This section outlines the types of crosswalks, where crossing the street is legal in California, and the steps the City should take in identifying locations for marked crosswalks.

Types of Crosswalks

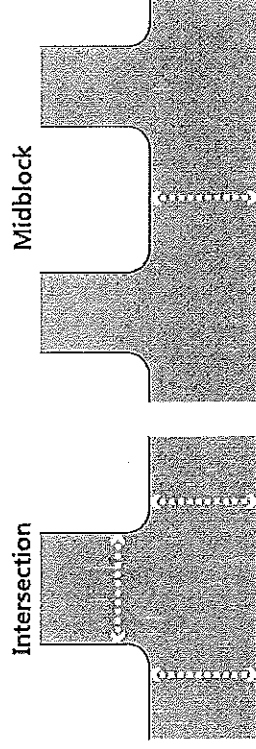
Crosswalks are primarily classified by three characteristics:

1. Whether they are marked (demarcated with striping on the street) or unmarked (no striping)
2. Whether they are controlled (by a traffic signal or stop-sign) or uncontrolled (with no intersection control)

3. Whether they are located at an intersection (where two streets meet) or mid-block (between intersections)

The following section outlines where crossing the street is legal in California. Based on pedestrian safety and crosswalk marking research, some types of crosswalks are safer than others (e.g., generally marked, controlled crosswalks at an intersection have lower risk of pedestrian collisions than a mid-block, uncontrolled crosswalk).

Where Is Crossing the Street Legal?



In California, a legal crosswalk exists where a sidewalk meets a street, regardless of whether the crosswalk is marked (i.e., with or without striping to denote the crosswalk). Pedestrians may legally cross any street, except at unmarked locations between immediately adjacent signalized crossings, or where crossing is expressly prohibited. Marked crosswalks reinforce the location and legitimacy of a pedestrian crossing.

These legal statutes are contained in the California Vehicle Code (CVC) as follows:



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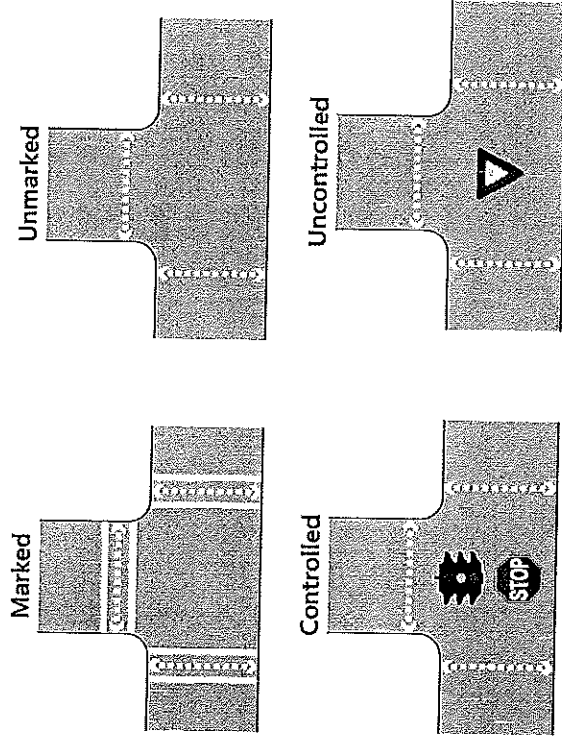
- Section 275 defines a legal crosswalk as:
 - That portion of a roadway included within the prolongation or connection of the boundary lines of sidewalks at intersections where the intersecting roadways meet at approximately right angles, except the prolongation of such lines from an alley across a street.
 - Any portion of a roadway distinctly indicated for pedestrian crossing by lines or other markings on the surface.
- Section 21950 describes right-of-way at a crosswalk:
 - The driver of a marked vehicle shall yield the right-of-way to a pedestrian crossing the roadway within any marked crosswalk or within any unmarked crosswalk at an intersection.
- Section 21955 describes where pedestrians may *not* cross a street:
 - Between adjacent intersections controlled by traffic control signal devices or by police officers, pedestrians shall not cross the roadway at any place except in a crosswalk.

Why Do Cities Mark Crosswalks?

Sidewalks and crosswalks are essential links within a pedestrian network. Whether commuting, running an errand, exercising, or wandering, pedestrians will need safe and convenient crossing opportunities to reach their destinations. A marked crosswalk has three (3) primary functions:

- 1) To create reasonable expectations where pedestrians may cross a roadway
- 2) To improve predictability of pedestrian actions and movement
- 3) To channel pedestrians to designated crossing locations (often selected for their optimal sight distance)

Advantages of Marked Crosswalks



Marked crosswalks offer the following advantages:

- They help pedestrians find their way across complex intersections

Appendix A: Crosswalk Policy



- They can designate the shortest path
- They can direct pedestrians to locations of best sight distance
- They assure pedestrians of their legal right to cross a roadway at an intersection or mid-block crossing

This last bullet point is important. The *California Vehicle Code* gives the right-of-way to pedestrians at any marked or unmarked crosswalk (as noted above), although the law is not always obeyed by road users, including both drivers and pedestrians. Drivers often fail to yield the right-of-way without the visual cue of a marked crosswalk. Pedestrians also do not always know the right-of-way law, and will either wait for a gap in traffic, or assert their right-of-way by stepping in to the roadway.

Steps to Identify Candidate Locations for Marked Crosswalks

Identifying candidate locations for marked crosswalks involves two steps.

The first step is to locate the places people would like to cross the street. These locations are called *pedestrian desire lines*, which represent the most desirable, and typically most direct, places that people want to cross a street. Pedestrian desire lines are influenced by elements of the roadway network, such as transit stops, and nearby land uses (homes, schools, parks, trails, commercial centers, etc.). This information provides a basis for identifying pedestrian crossing improvement areas and prioritizing such improvements, thereby creating a convenient, connected, and continuous walking environment. These locations

may be identified through engineering studies, walk audits, City staff observations, or public feedback.

The second step in identifying candidate locations for marked crosswalks is to identify where people can cross safely. The primary consideration in this step is adequate stopping sight distance. Of all road users, pedestrians have the highest risk of injury in a collision because they are the least protected. The crosswalk safety treatment toolboxes in this policy provide numerous options for enhancing pedestrian safety at uncontrolled and controlled crossings, respectively, with treatment selection based on the overall context of the crosswalk – including surrounding land uses, roadway characteristics, and user characteristics.

When to Install Marked Crosswalks

Once candidate locations are identified, an engineering evaluation should be conducted to determine if a marked crosswalk should be installed at an uncontrolled or mid-block location, and if so, what visibility enhancements should be included in the design. Crossings should be marked where all of the following occur:

- Sufficient demand exists to justify the installation of a crosswalk
- Sufficient sight distance as measured by stopping sight distance calculations exists and/or sight distance will be improved prior to crosswalk marking
- Safety considerations do not preclude a crosswalk



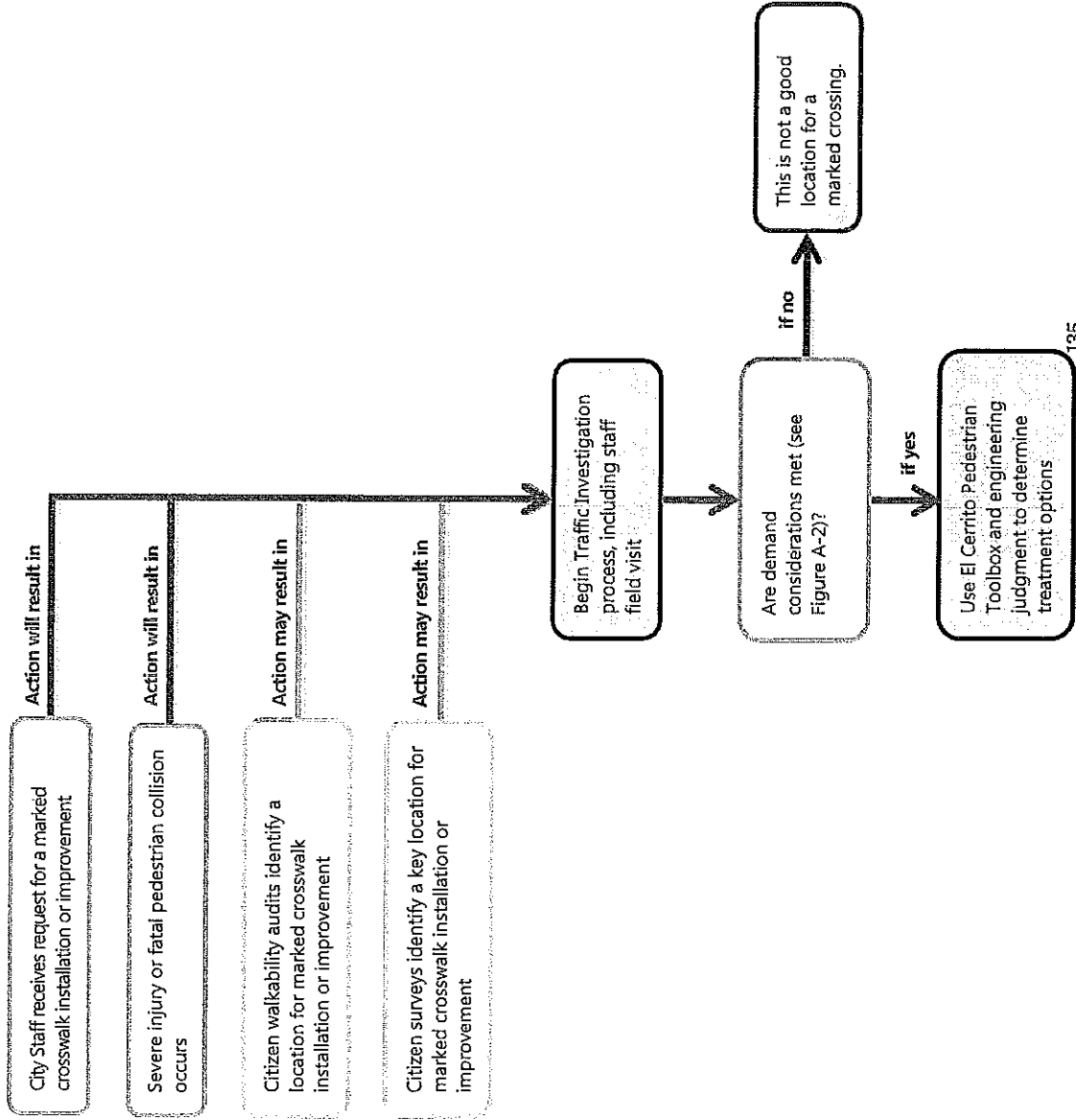
Appendix A: Crosswalk Policy

Figures A-1 and **A-2** describe the overall procedures from the moment City staff receives a request for a new marked crosswalk (or considers removing an existing marked crosswalk) to the installation of the treatment. As described, the first steps to determine the appropriate location and treatment for the crosswalk include a staff field visit.

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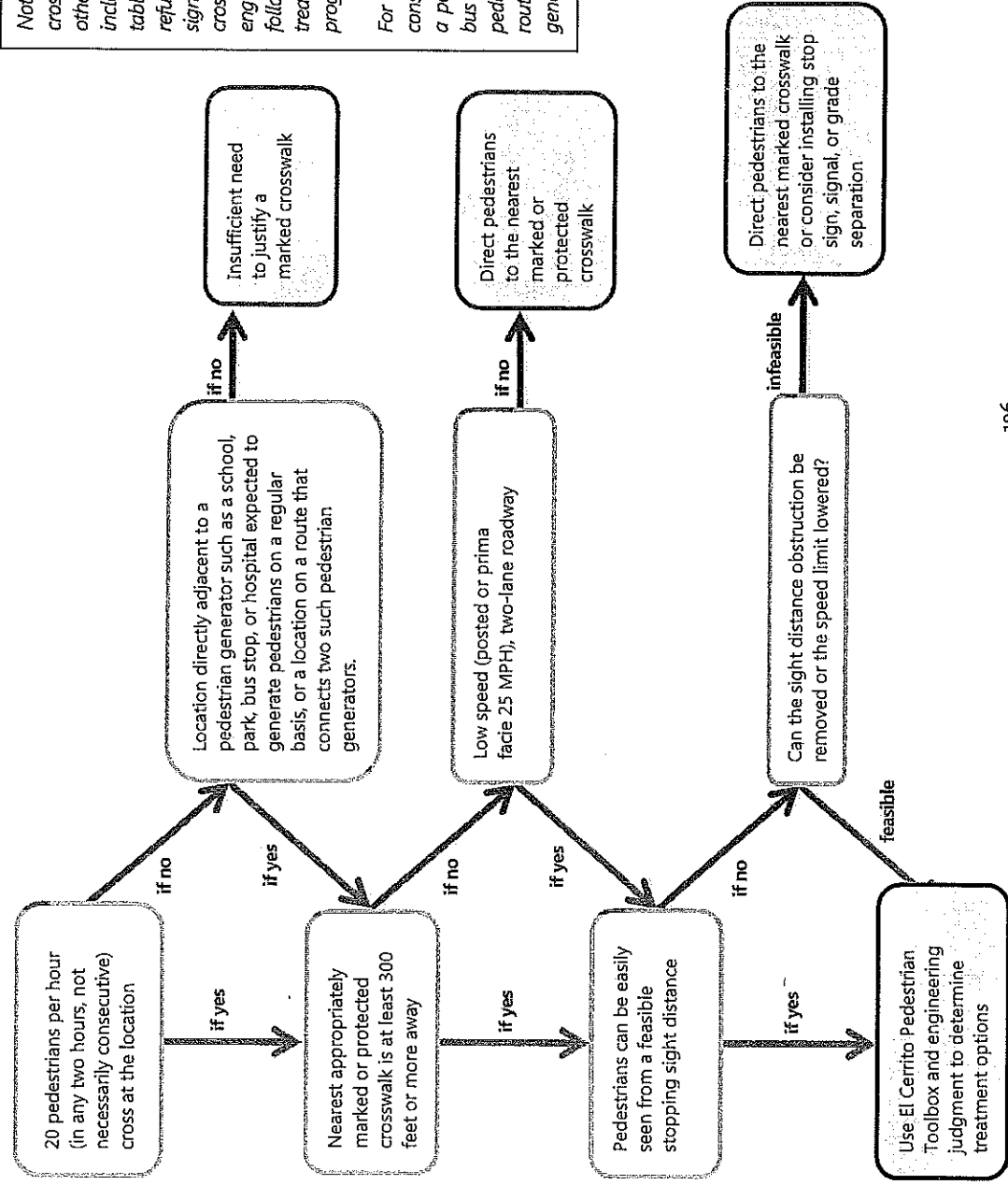
Figure A-1: Marked Crosswalk Placement Flowchart



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Figure A-2: Feasibility Analysis for Treatments at Uncontrolled Locations



Note: Where it is determined that a marked crosswalk is not necessary based on Figure A-2, other treatment options are available. These include traffic calming measures, such as speeds tables and speed humps; curb extensions and refuges to narrow the roadway; speed feedback signs, and similar treatments to help reducing crossing distances and slow speeds. These engineering treatments are described in the following pages. In addition to engineering treatments, education and enforcement programs should also be considered.

For locations without pedestrian counts, consider whether location is directly adjacent to a pedestrian generator such as a school, park, bus stop, or hospital and is expected to generate pedestrians on a regular basis, or is located on a route that connects two such pedestrian generators.

Appendix A: Crosswalk Policy



Uncontrolled Crossing Enhancement Toolbox

This section presents best practices for the installation of marked crosswalks at uncontrolled intersections and mid-block locations. Uncontrolled crossings require additional consideration during planning and design since traffic signals and stop signs are not provided to require motorists to stop – they must recognize the pedestrian and yield accordingly. Thus, providing appropriate enhancements to improve the visibility and safety of pedestrians crossing the street at an uncontrolled location is critical.

Crosswalk Safety Research

Several studies of pedestrian safety at uncontrolled crossings have been completed, from which conflicting research had emerged in the past. Studies conducted in San Diego in the 1970s showed that pedestrian collision risk at marked, uncontrolled crosswalks was greater than at unmarked crossings. This led many cities to remove marked crosswalks, as they were suspected of providing a false sense of security that drivers would yield to pedestrians in the crosswalk. However, a more recent study¹ by the Federal Highway Administration (FHWA) comprehensively reviewed crossing safety at 1,000 marked and 1,000 matching unmarked crosswalks in 30 U.S. cities, controlling for site context factors. The study concluded that site factors related to

¹ Zeeger, C., J. Stewart, and H. Huang. *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations*. Publication FHWA-RD-01-142, FHWA, U.S. Department of Transportation, 2001.

Mid-Block Crossings

Crosswalks can be marked at intersections and mid-block points. Mid-block crossings play an important role for pedestrian access; without mid-block crossing locations, pedestrians may face the undesirable choice to detour to a controlled crossing location, detour to an intersection where crossing is legal even if not controlled, or cross illegally (if the midblock crossing is between two signalized intersections). Where signals are spaced far apart (generally more than 600-800 feet), pedestrians may have to detour several minutes to a controlled crossing location. Pedestrians are more likely to wait for a gap in traffic and cross at an unmarked location, rather than travel a distance out of their way to find a marked crosswalk. Mid-block crossings also offer an important safety consideration: fewer potential conflict points between pedestrians and motorists.

pedestrian-involved collisions included pedestrian average daily traffic (ADT), vehicle ADT, number of lanes, median type, and the region of the U.S. At uncontrolled locations on two-lane roads and multi-lane roads with ADT below 12,000 vehicles, FHWA found that the presence of a marked crosswalk alone, compared with an unmarked crosswalk, made no statistically significant difference in the pedestrian crash rate. However, on multi-lane roads with an ADT of greater than 12,000 vehicles (without a raised median) and 15,000 vehicles (with a raised median) the presence of a marked crosswalk without other improvements was associated with a statistically significant higher rate of pedestrian collisions compared to sites with an unmarked crosswalk.

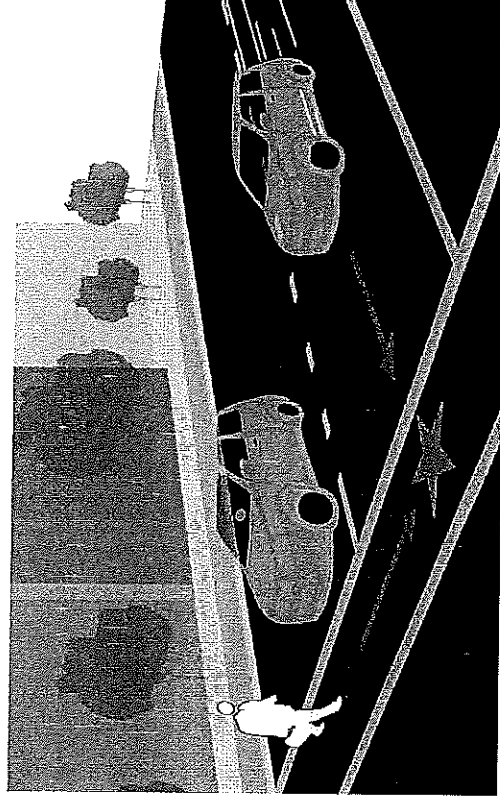


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FHWA stressed that the results of the study should not encourage city officials to simply remove (or fail to install) marked crosswalks. Rather, he suggested adding crosswalk enhancements to the marked crosswalks to balance mobility needs with safety needs. These improvements include providing raised medians on multi-lane roads, installing traffic and pedestrian signals where warranted, adding curb extensions, providing adequate lighting, and designing intersections with tighter turn radii.

In the FHWA study, about 70 percent of the pedestrian crashes occurred at marked crosswalks on multi-lane roads. Of the pedestrian crashes at marked crosswalks, 17.6 percent were classified as multiple-threat collisions. Multiple-threat collisions occur as one car slows down to allow pedestrians to cross, but a second car approaching from behind in the adjacent lane may not see the pedestrian, as illustrated in the image to the right. The slowing vehicle blocks the sight line of both the pedestrian and the second motorist, leading to the pedestrian-vehicle collision. Multi-lane roadways are therefore not well-served by unmarked or marked crosswalks alone. At these sites, the study concluded, engineers should consider countermeasures that provide additional safety to pedestrians and alert motorists to upcoming crosswalks. These countermeasures include advanced yield lines with corresponding signs informing motorists where to yield. Other more substantial measures may also be considered, such as signalization, illumination, or raised medians. The summary table below shows when marking a crosswalk only should not be considered.

Multiple threat conflicts on multi-lane roadways occur where a vehicle yielding to a pedestrian inhibits sight lines to another oncoming vehicle.



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

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

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

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

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

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

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

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



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With these studies as a backdrop, the remainder of this chapter outlines a decision making process to identify appropriate treatments and presents a variety of treatment options to mitigate safety, visibility, or operational concerns at specific locations.

Treatment Selection

At uncontrolled locations, a marked crosswalk with striping only may not provide adequate visibility to the pedestrian crossing, especially at high volume, high speed, or multi-lane crossings. Enhancements should be considered for installation to supplement crosswalk striping. Appropriate treatments should be identified based on:

- Site characteristics: presence of pedestrian desire lines, available sight distance and visibility, lighting
- Geometric configuration of the roadway: number of vehicle travel lanes and presence of curb extensions or median refuge islands
- Travel data: 85th percentile speeds, posted speed limits, and average daily traffic (ADT) volumes.

Marked crosswalks *alone* should not be installed on multi-lane streets (two or more lanes per direction; three or more lanes total) under any of the following conditions²:

- Speeds of greater than 40 miles per hour
- Average daily traffic volumes (ADT) greater than 12,000 without a raised median or pedestrian refuge island
- Average daily traffic volumes (ADT) greater than 15,000 with a raised median or pedestrian refuge island

Locations with speeds and ADT volumes below these thresholds may also warrant enhancements. The Uncontrolled Treatment Toolbox outlines considerations for the use of enhancements in various contexts as summarized in **Table A-1**. This Toolbox may be used to identify potential treatments at a candidate uncontrolled crosswalk location based on the results of **Figures A-1** and **A-2**.

A calculation of Pedestrian Level of Service forms the basis for the treatment identification. Pedestrian Level of Service is the average delay experienced by pedestrians as they are waiting to cross the street. Expected motorist compliance is another key variable for treatment identification. Compliance is based on field observations and engineering judgment. It is meant to reflect typical motorist responses to pedestrians attempting to cross the street. If drivers are likely to stop for a pedestrian, the compliance is rated "high." If drivers rarely stop for pedestrians, compliance is "low." The compliance rate should be assumed to be low for all locations where the speed limit is greater than 30 MPH. **Table 5** summarizes the appropriate treatments based on level of enhancement needed (with the most significant enhancement required with the worst LOS and compliance rates).

² California MUTCD, Section 3B. 18.

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Level 1 represents a minor intervention, appropriate for situations with lower speeds and traffic volumes and high driver yielding rates. Higher levels represent more significant interventions, as may be needed on higher speed or volume roadways, wider roadways, and roadways where motorists are less likely to yield to pedestrians. Treatments may be combined with higher level treatments added to lower level treatments (i.e., flashing beacons with curb extensions). Additional funding sources should be identified as needed for these enhancements. Failing to provide an enhanced crosswalk and/or removing a marked crosswalk should be an option of last resort.

Treatment Options

The following tables described preferred pedestrian safety treatments for uncontrolled locations with different roadway characteristics:

- **Table A-2: Geometric Treatments**
- **Table A-3: Striping and Signage**
- **Table A-4: Signal Hardware and Operational Measures**


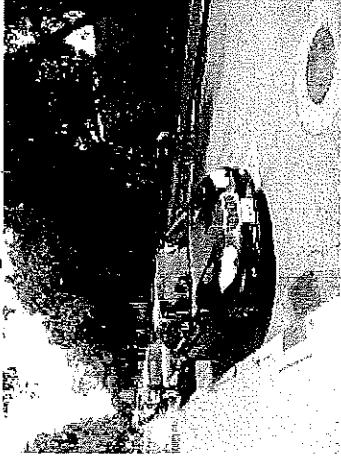
Within each table, devices are categorized in three levels based on the level of safety concern they are meant to address: Level 1 (all cases), Level 2 (enhancements), and Level 3 (advanced enhancements). Categories of improvements are cumulative; for example, a Level 2 device should also include appropriate Level 1 devices.

TABLE A-1: APPLICATION OF ENHANCED TREATMENTS FOR UNCONTROLLED LOCATIONS			
Pedestrian Level of Service	Expected Motorist Compliance		
	Low (or Speed > 30 mph)	Moderate	High
LOS A-D (average delay up to 30 seconds)	LEVEL 3 2 lane road: In- pavement flashers, overhead flashing beacons Multi-lane road: RRFB Plus LEVELS 1 and 2	LEVEL 2 Curb Extensions, Bus Bulb, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1	LEVEL 1 High Visibility Crosswalk Markings, Advanced Yield Lines, Advance Signage
LOS E-F (average delay greater than 30 seconds)	LEVEL 4 Pedestrian Hybrid Beacon, RRFB, or Direct Pedestrians to Nearest Safe Crossing Plus LEVELS 1 and 2	LEVEL 3 2 lane road: In- pavement flashers, overhead flashing beacons Multi-lane road: RRFB Plus LEVELS 1 and 2	LEVEL 2 Curb Extensions, Reduced Curb Radii, Staggered Pedestrian Refuge Plus LEVEL 1

Notes: A pedestrian refuge island (median) is recommended for consideration in all scenarios with more than 2 lanes of traffic.



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**TABLE A-2:
UNCONTROLLED CROSSINGS: GEOMETRIC TREATMENTS**

Treatment	Description	Level	Estimated Cost
<p>2-1. Fewer Travel Lanes ("Road Diet")</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Fewer travel lanes decrease roadway width and crosswalk length, reduce speeds, reduce left-turn and rear-end collisions, and often eliminate the multiple-threat collision. It takes an average pedestrian almost four seconds to cross each additional travel lane. Therefore, reducing the number of travel lanes minimizes the amount of time that pedestrians are in the crosswalk. More travel lanes than necessary can also increase vehicle travel speeds; research has shown that the severity of pedestrian collisions increases with vehicle travel speed. Where fewer travel lanes are not possible, travel lanes can be narrowed to as little as nine feet, especially left- and right-turn pockets.</p>	<p>Level 1</p>	<p>\$20/LF (Includes removal of existing pavement markings and repainting. Assumes existing curbs remain as is)</p>
<p>2-2. Removal of Sight-Distance Obstructions</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>If objects impede sight-distance, this may result in an unsafe condition where motorists and pedestrians are unable to see each other. Items such as parked cars, signage, landscaping, fencing, and street furniture should be placed in a location that will not obstruct sight distance.</p>	<p>Level 1</p>	<p>\$150/EA (Item removed is anticipated to be no larger than a sign and post)</p>

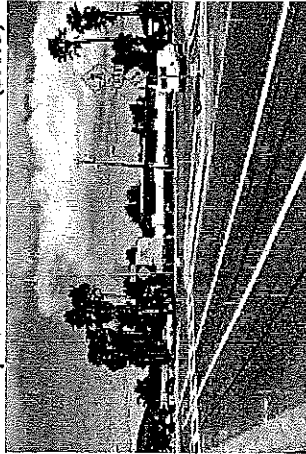
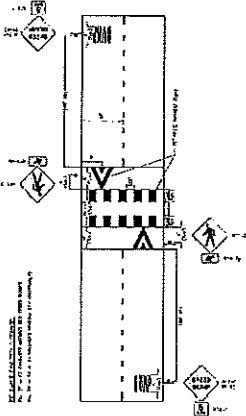
Appendix A: Crosswalk Policy



TABLE A-2: UNCONTROLLED CROSSINGS: GEOMETRIC TREATMENTS			
Treatment	Description	Level	Estimated Cost
<p>2-3. Pedestrian Refuge Island</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Raised islands are placed in the center of the roadway separating opposing lanes of traffic with cutouts or ramps for accessibility along the pedestrian path. Median refuge islands are recommended where right-of-way allows and conditions warrant. Studies show medians are one of the most important safety enhancements available for crosswalks. They simplify complicated multi-lane crossings by breaking the crossings/conflicts into two stages.</p>	<p>Level 1</p>	<p>\$130/LF (New curb and new concrete barrier. Assumes 6 foot median)</p>
<p>2-4. Curb Extensions</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Curb extensions extend the curb and sidewalks further into the roadway, shortening the length of the crosswalk. They act as a traffic calming device by narrowing the effective width of the roadway and slowing turning speeds. Because they extend into the roadway, often past parallel-parked vehicles, they improve visibility for pedestrians. They also provide space for street furniture, landscaping, bicycle parking, and signs and signal poles. Curb extensions can be constructed with reduced curb radii and to accommodate ADA improvements, such as directional curb ramps.</p>	<p>Level 1</p>	<p>\$140/LF (Curb, sidewalk, removal of existing curb, new bollards, does not include curb ramps)</p>

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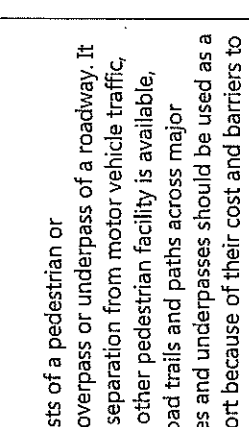
**TABLE A-2:
UNCONTROLLED CROSSINGS: GEOMETRIC TREATMENTS**

Treatment	Description	Level	Estimated Cost
<p>2-5. Split Pedestrian Crossover (SPXO)</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>This measure is similar to traditional median refuge islands; the difference is that the crosswalks in the roadway are staggered such that a pedestrian crosses half of the street and then walks toward traffic to reach the second half of the crosswalk. This measure must be designed for accessibility by including rails and truncated domes to direct sight-impaired pedestrians along the path of travel.</p>	<p>Level 1 Note: see Table 1.1 for a Pedestrian Signal</p>	<p>\$130/LF (Same materials as 6-3)</p>
<p>2-6. Raised Crosswalk</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Raised crosswalks are speed tables (flat-topped speed humps) outfitted with crosswalk markings and signage, providing pedestrians with a level street crossing. By raising the level of the crossing, vehicles drive more slowly through the crosswalk and pedestrians are more visible to approaching motorists.</p>	<p>Level 2</p>	<p>\$18,000/EA</p>

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**TABLE A-2:
UNCONTROLLED CROSSINGS: GEOMETRIC TREATMENTS**

Treatment	Description	Level	Estimated Cost
<p>2-7. Pedestrian Overpass/Underpass</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>This measure consists of a pedestrian or pedestrian/bicycle overpass or underpass of a roadway. It provides complete separation from motor vehicle traffic, normally where no other pedestrian facility is available, and connects off-road trails and paths across major barriers. Overpasses and underpasses should be used as a measure of last resort because of their cost and barriers to their effective/efficient use, with topographical and desire line considerations influencing their design.</p>	<p>Level 3</p>	<p>\$150/SF</p>

Source: Fehr & Peers, 2014.

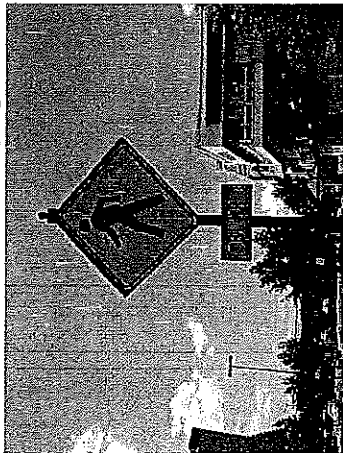
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TABLE A-3: UNCONTROLLED CROSSINGS: STRIPING AND SIGNAGE			
Treatment	Description	Level	Estimated Cost
<p>3-1. High Visibility Markings</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>All uncontrolled marked crosswalks should feature high-visibility markings. Various striping patterns are available. At trail crossings, such as at the Ohlone Greenway, a triple-four crossing with bicycle stencils in the middle to denote a shared crosswalk for bicyclists and pedestrians should be considered.</p>	<p>Level 1</p>	<p>\$6/Foot</p>
<p>3-2. Advanced Yield Line</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Advanced yield lines, often referred to as "sharks teeth", should be striped at all marked, uncontrolled crosswalks on multi-lane roadways. They should be placed 20-30 feet in front of the crosswalk. Their intention is to identify where vehicles should stop when yielding to a pedestrian to maintain adequate sight lines. These are typically used on multi-lane roadways but could be considered on two-lane roadways where driver encroachment and yielding are a concern. They should be used with the "Yield Here to Pedestrians" sign.</p>	<p>Level 1</p>	<p>\$100/EA</p>

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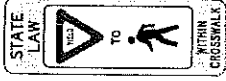
**TABLE A-3:
UNCONTROLLED CROSSINGS: STRIPING AND SIGNAGE**

Treatment	Description	Level	Estimated Cost
<p>3-3. Advanced Warning Signs</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>High-visibility yellow or fluorescent-yellow-green (FYG) signs are posted at crossings to increase the visibility of a pedestrian crossing.</p>	<p>Level 1</p>	<p>\$1,000/EA</p>



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**TABLE A-3:
UNCONTROLLED CROSSINGS: STRIPING AND SIGNAGE**

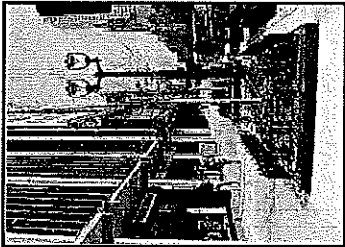
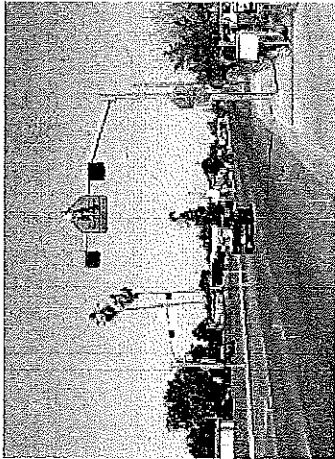
Treatment	Description	Level	Estimated Cost
<p>3-4. In-Street Pedestrian Crossing Sign</p>  <p><i>Image Source: FHWA</i></p>	<p>This measure involves posting regulatory pedestrian signage on lane edge lines and/or road centerlines. The in-street pedestrian crossing sign may be used to remind road users of laws regarding right-of-way at an uncontrolled pedestrian crossing. They can be installed on medians and may also be temporary signs, placed by school crossing guards during school hours.</p>	<p>Level 1</p>	<p>\$400/EA</p>

Source: Fehr & Peers, 2014.

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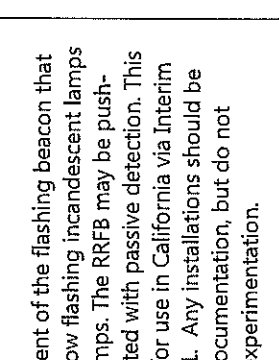
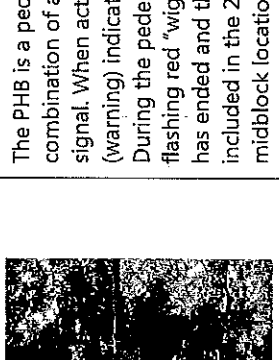


**TABLE A-4:
UNCONTROLLED CROSSINGS: BEACON, LIGHTING, AND SIGNAL TREATMENTS**

Treatment	Description	Level	Estimated Cost
<p>4-1. Pedestrian-Scale Lighting</p>  <p><i>Image source: www.ci.mil.wi.us</i></p>	<p>Pedestrian-scale lighting improves visibility along a pedestrian's path and across driveways. It also improves visibility at pedestrian/vehicle conflict points in crosswalks.</p>	<p>Level 1</p>	<p>\$10,000 per light assuming light every 100 feet</p>
<p>4-2. Flashing Beacon</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Flashing amber lights are installed on overhead or post-mounted signs, in advance of the crosswalk or at the crosswalk's entrance. Full-time flashing beacons are not recommended; flashing beacons are most effective when they are activated by the crosswalk user (they should rest on dark). By resting on dark, they can also be solar powered.</p>	<p>Level 2</p>	<p>\$20,000/EA</p>

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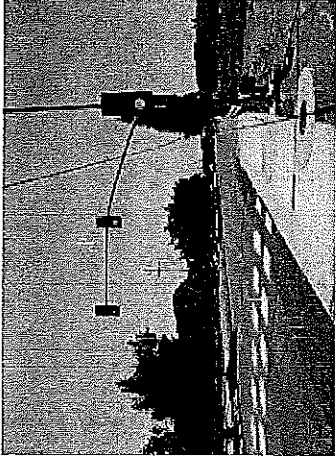
**TABLE A-4:
UNCONTROLLED CROSSINGS: BEACON, LIGHTING, AND SIGNAL TREATMENTS**

Treatment	Description	Level	Estimated Cost
<p>4-3. Rectangular Rapid Flashing Beacon (RRFB)</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>The RRFB is an enhancement of the flashing beacon that replaced the traditional slow flashing incandescent lamps with rapid flashing LED lamps. The RRFB may be push-button activated or activated with passive detection. This treatment was approved for use in California via Interim Approval IA-11-83 in 2011. Any installations should be reported to Caltrans for documentation, but do not require pre-approval for experimentation.</p>	<p>Level 2</p>	<p>\$20,000/EA</p>
<p>4-4. Pedestrian Hybrid Beacon (PHB)</p>  <p><i>Image Source: FHWA</i></p>	<p>The PHB is a pedestrian-activated beacon that is a combination of a beacon flasher and a traffic control signal. When actuated, the PHB displays a yellow (warning) indication followed by a solid red indication. During the pedestrian clearance interval, the driver sees a flashing red "wig-wag" pattern until the clearance interval has ended and the beacon goes dark. The device is included in the 2012 California MUTCD for use at midblock locations.</p>	<p>Level 3</p>	<p>\$80,000/EA</p>

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**TABLE A-4:
UNCONTROLLED CROSSINGS: BEACON, LIGHTING, AND SIGNAL TREATMENTS**

Treatment	Description	Level	Estimated Cost
<p>4-5. Pedestrian Signal</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>A pedestrian signal is a conventional traffic control device with warrants for use based on the MUTCD. The pedestrian warrants were revised with the 2009 Federal and 2012 California MUTCD.</p>	<p>Level 4</p>	<p>\$250,000/EA</p>

Source: Fehr & Peers, 2013.



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Controlled Crosswalk Treatment Toolbox

Controlled crosswalks are located at stop-controlled or signalized intersections. Generally, these crossings do not need enhancements beyond standard crosswalk markings (two parallel lines), as the traffic signal or stop-sign controls allocation of right-of-way. However, in some cases, such as in the Downtown, at skewed intersections, or near schools, the City may consider providing enhanced crossings to create a sense of place or improved aesthetics, or to improve visibility.

All treatments identified in this chapter are required or allowed by the standards and specifications in the *California Manual on Uniform Traffic Control Devices* (CA MUTCD).

Preferred Crossing Treatments

Preferred crossing treatments are identified as the basic pedestrian crossing improvements to be provided at all stop-controlled and signalized intersections. New controlled intersections should be designed with these treatments included; existing controlled intersections that require retrofits may

be prioritized and upgraded as City funds become available. These treatments are based on recommended best practices in pedestrian safety.³

- Mark crosswalks on all legs of the intersection
- Provide advanced stop bars in advance of each crosswalk
- Minimize the number of vehicle traffic lanes pedestrians must cross
- Provide median refuge islands and thumbnails, as width and path of turn maneuvers allow
- Remove sight-distance obstructions
- Provide directional curb ramps for each crosswalk (e.g., two per corner)
- Eliminate free right-turn slip lanes, where feasible, and mitigate for pedestrian safety where they remain
- Locate bus stops on the far-side of the intersection (or in front of mid-block crossings)
- Minimize cycle lengths
- Reduce prevalence or eliminate permitted signal phasing where pedestrian crossings exist
- Provide pedestrian signal heads for all crossings at signalized intersections

³ See *America Walks Signalized Intersection Enhancements that Benefit Pedestrians* <http://americawalks.org/wp-content/uploads/America-Walks-Signalized-Intersection-Enhancement-Report-Updated-8.16.2012.pdf> (2012).

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- Provide adequate pedestrian clearance intervals (crossing time) at signalized intersections

Enhanced Crossing Treatments



At high volume pedestrian crossing locations or other areas designated by the City as pedestrian zones, the City may provide additional crosswalk enhancements at controlled intersections. These treatments provide improve drivers' awareness of pedestrians by slowing traffic through geometric changes, providing signal timing or phasing modifications, or enhancing striping or signing to improve visibility.

The following tables describe the preferred and optional enhanced pedestrian safety treatments that may be used at the City's discretion for controlled locations:

- **Table A-5: Geometric Treatments**
- **Table A-6: Striping and Signage**
- **Table A-7: Signal Hardware and Operational Measures**

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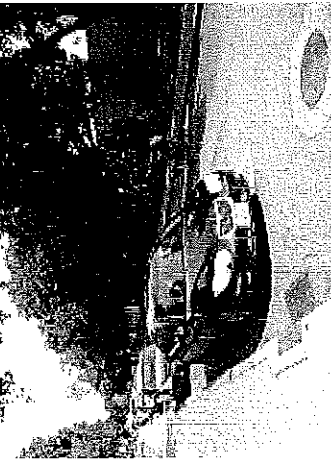

**TABLE A-5:
CONTROLLED INTERSECTIONS: GEOMETRIC TREATMENTS**

Treatment	Description	Level
<p>5-1. Fewer Travel Lanes ("Road Diet")</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Fewer travel lanes decrease roadway width and crosswalk length, reduce speeds, reduce left-turn and rear-end collisions, and often eliminate the multiple-threat collision. An average pedestrian takes almost four seconds to cross each additional travel lane. Therefore, reducing the number of travel lanes minimizes the amount of time that pedestrians are in the crosswalk. More travel lanes than necessary can also increase vehicle travel speeds; research has shown that the severity of pedestrian collisions increases with vehicle travel speed. Where fewer travel lanes are not possible, travel lanes can be narrowed to as little as nine feet, especially left- and right-turn pockets.</p>	<p>Preferred</p>
<p>5-2. Pedestrian Refuge Island with "Thumbnail"</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Median pedestrian islands provide a refuge for pedestrians to stand if they do not have sufficient time to cross a street. They can be enhanced with median pedestrian push buttons at signalized crossings. Median islands can be installed throughout a corridor or only at specific crosswalks.</p>	<p>Preferred</p>

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**TABLE A-5:
CONTROLLED INTERSECTIONS: GEOMETRIC TREATMENTS**

Treatment	Description	Level
<p>5-3. Removal of Sight-Distance Obstructions</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>If objects impede sight-distance, an unsafe condition may arise where motorists and pedestrians are unable to see each other. Items such as parked cars, signage, landscaping, fencing, and street furniture should be placed in a location that will not obstruct sight-distance.</p>	<p>Preferred</p>
<p>5-4. Directional Curb Ramps with Truncated Domes</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Curb ramps offer wheelchair access to/from the sidewalk and crosswalk. Truncated domes, or tactile strips, warn blind pedestrians that they are about to enter a crosswalk. The best practice for curb ramps is to install two per corner so that each ramp points directly into the crosswalk and to the curb ramp at the other side of the street. Corner bulbouts can be used to increase the amount of space available for directional curb ramps.</p>	<p>Preferred</p>

Appendix A: Crosswalk Policy


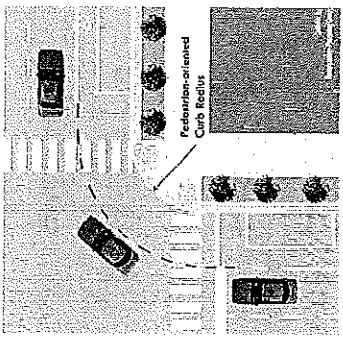
**TABLE A-5:
CONTROLLED INTERSECTIONS: GEOMETRIC TREATMENTS**

Treatment	Description	Level
<p>5-5. Right-Turn Lane Design</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Free right-turns allow vehicles to turn right at high speeds. Since the vehicles are not typically controlled by the traffic signal in this circumstance, crosswalks across the turn lanes are usually uncontrolled crosswalks. Controlled right-turn movements are preferable for pedestrians because they require a vehicle to stop on red before turning right. Where "pork-chop" islands that channelize right-turns are necessary to provide acceptable turning radii, raised crosswalks are a pedestrian enhancement. Other options include signalizing the crossing (especially if it is multi-lane) and designing the "pork-chop" for slower speeds and better visibility of pedestrians.</p>	<p>Preferred</p>
<p>5-6. Far-Side Bus Stops</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Far-side bus stops allow pedestrians to cross behind the bus, improving pedestrian visibility. Far side bus stops also enhance transit operations by providing a guaranteed merging opportunity for buses. Exceptions for far-side bus stops include considerations for bus routing, sufficient sidewalk area, and conflicts with parking, land uses, or driveways.</p>	<p>Preferred</p>

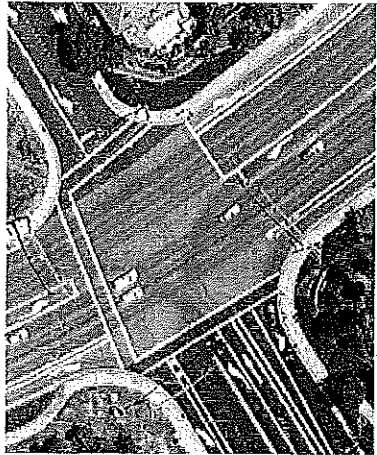
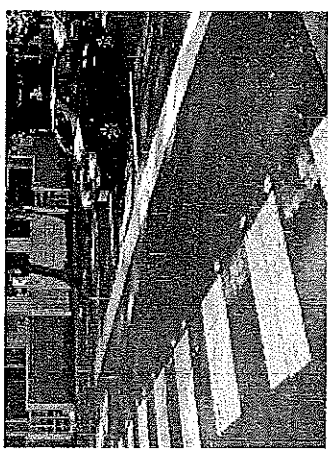
Appendix A: Crosswalk Policy



**TABLE A-5:
CONTROLLED INTERSECTIONS: GEOMETRIC TREATMENTS**

Treatment	Description	Level
<p>5-7. Curb Extensions</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Curb extensions extend the curb and sidewalks farther into the roadway, shortening the length of the crosswalk. They act as a traffic calming device by narrowing the effective width of the roadway and slowing turning speeds. Because they extend into the roadway, often past parallel-parked vehicles, they improve visibility for pedestrians. They also provide space for street furniture, landscaping, bicycle parking, and signs and signal poles. Curb extensions can be constructed to accommodate ADA improvements, such as directional curb ramps.</p>	<p>Enhanced</p>
<p>5-8. Reduced Turn Radius</p>  <p><i>Image Source: AARP</i></p>	<p>Vehicles travel faster through turns with a large radius. Reducing the radius of a corner is an effective way of reducing vehicle speeds. In suburban environments, turn radii generally do not need to exceed 30 feet. In urban environments turn radii can be 10 feet or less, especially where the meeting of one-way streets prohibits turning movements. Where on-street parking is permitted and/or bicycle lanes are present on one or both streets, consideration for further reductions of radii should occur acknowledging that the effective radius is increased with on-street parking. Corner curb radii on multi-lane streets should acknowledge that trucks turning right can turn into two lanes.</p>	<p>Enhanced</p>



Appendix A: Crosswalk Policy

TABLE A-6: CONTROLLED INTERSECTIONS: STRIPING AND SIGNAGE		
Treatment	Description	Level
<p>6-1. Marked Crosswalks</p>  <p><i>Image Source: Google Maps</i></p>	<p>Marking a crosswalk across all approaches of an intersection improves pedestrian accessibility. At a four-way intersection, a closed crosswalk forces pedestrians to cross via three crosswalks instead of one. Crosswalks on all approaches can often be accommodated without a significant impact to traffic signal operations.</p> <p>At controlled trail crossings, high-visibility triple-four trail crossings with bicycle legends in the middle should be considered to indicate a shared crossing space for bicyclists and pedestrians.</p>	Preferred
<p>6-2. Advanced Stop Bar</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Advanced stop bars are placed five to seven feet in front of crosswalks. They keep vehicles from encroaching into the crosswalk when stopped at a red signal or stop sign.</p>	Preferred

Appendix A: Crosswalk Policy

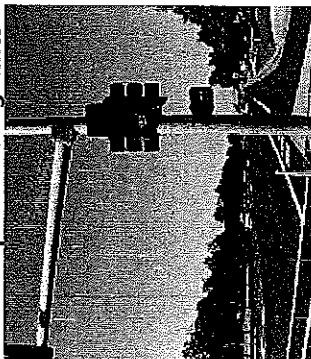



**TABLE A-6:
CONTROLLED INTERSECTIONS: STRIPING AND SIGNAGE**

Treatment	Description	Level
<p>6-3. High Visibility Markings</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>High-visibility crosswalks at controlled locations are appropriate in areas with high pedestrian volumes, at crosswalks with skewed geometries, or near sensitive land uses (such as schools).</p>	<p>Enhanced</p>
<p>6-4. Textured Pavement or Colored Crosswalks</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Textured pavement can be used in crosswalks or in intersections as an aesthetic enhancement. Because of its texture, it may also calm traffic by slowing vehicles before they cross an intersection. It can also make crosswalks more visible. Textured pavement can be made of brick or, alternatively, both concrete and asphalt can be stamped to look like brick or stone. At controlled locations, standard crosswalk striping should be provided in addition to the textured pavement. A smooth, non-slip surface is preferable.</p>	<p>Enhanced</p>

Appendix A: Crosswalk Policy

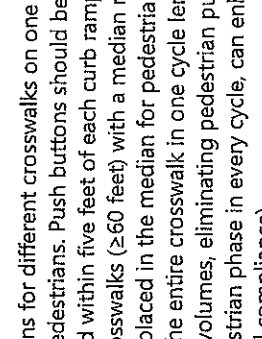
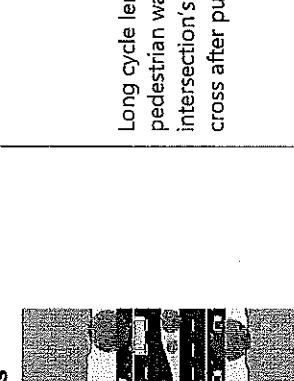
**TABLE A-7:
CONTROLLED INTERSECTIONS: SIGNAL HARDWARE AND OPERATIONAL MEASURES**

Treatment	Description	Level
<p>7-1. Adequate Crossing Times</p>  <p>Image Source: Fehr & Peers</p>	<p>The 2012 California MUTCD requires a walking speed of 3.5 feet per second be assumed to determine crossing times as a default minimum (4.0 feet per second was previously the guidance). A speed slower than 3.5 feet per second can be used where slower pedestrians routinely use the crosswalk, such as locations near schools, hospitals, or senior centers.</p>	<p>Preferred</p>
<p>7-2. Pedestrian Countdown Signal</p>  <p>Image Source: Fehr & Peers</p>	<p>Pedestrian countdown signals give pedestrians "Walk" and "Don't Walk" signals with a second-by-second countdown for each phase. Research suggests that pedestrians are more likely to obey the "Don't Walk" signal when delivered using a countdown signal. The device has been shown to enhance safety for all road users. The 2012 California MUTCD requires that all new pedestrian signals be countdown signals.</p>	<p>Preferred</p>

Appendix A: Crosswalk Policy


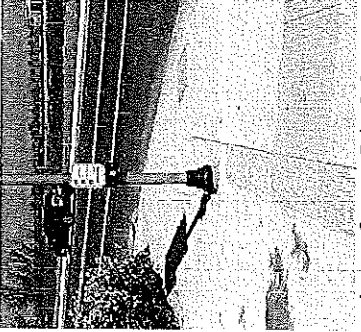


**TABLE A-7:
CONTROLLED INTERSECTIONS: SIGNAL HARDWARE AND OPERATIONAL MEASURES**

Treatment	Description	Level
<p>7-3. Pedestrian Signals and Push Buttons</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Mounting push buttons for different crosswalks on one pole can be confusing for blind pedestrians. Push buttons should be separated by ten feet and placed within five feet of each curb ramp, one per crosswalk. At long crosswalks (≥60 feet) with a median refuge island, push buttons can be placed in the median for pedestrians who may not be able to cross the entire crosswalk in one cycle length. In areas with high pedestrian volumes, eliminating pedestrian push buttons and providing a pedestrian phase in every cycle, can enhance walkability (and signal compliance).</p>	<p>Preferred</p>
<p>7-4. Short Cycle Lengths</p>  <p><i>Image Source: Institute of Transportation Engineers</i></p>	<p>Long cycle lengths at signalized intersections result in long pedestrian wait times to cross a street. By shortening an intersection's cycle length, pedestrians do not have to wait as long to cross after pushing the button to request a "Walk" signal.</p>	<p>Preferred</p>

Appendix A: Crosswalk Policy

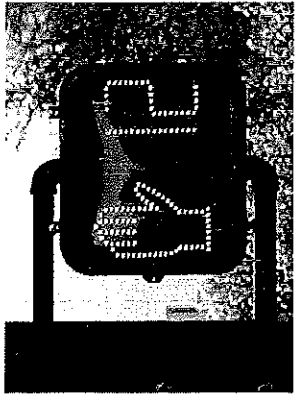

**TABLE A-7:
CONTROLLED INTERSECTIONS: SIGNAL HARDWARE AND OPERATIONAL MEASURES**

Treatment	Description	Level
<p>7-5. Protected Left-Turns</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Where permitted left-turns are allowed, denoted by a "Left Turn Yield on Green" sign, left-turning vehicles can conflict with pedestrians in the crosswalk. By making the left-turn protected, so that it is allowed only with a green arrow, the "Walk" signal at a crosswalk occurs at the same time that through- and right-turning vehicles in the same direction receive a green light. This reduces the risk of left-turning vehicle conflicts with the opposing crosswalk; since left-turns typically occur at a higher speed than right-turns, collisions of increased severity can be avoided by protecting left-turns.</p>	<p>Preferred</p>
<p>7-6. Accessible Pedestrian Signals</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Accessible pedestrian signals (APS) and detectors provide information, such as "Walk" indications and direction of crossing, in non-visual formats to improve accessibility for blind pedestrians. Audible options for accessible pedestrian signals include audible tones and speech messages. Vibrotactile push-buttons are effective options that alleviate the impacts of noise created by audible pedestrian signals. They are also accessible to deaf pedestrians. APS should always be provided when two push buttons are located on one pole and where persons with disabilities are expected frequently at a crossing. At other locations, APS is currently a best practice, but is expected to become a requirement when the proposed rulemaking of the <i>Public Rights of Way Accessibility Guidelines</i> (PROWAG) is finalized.</p>	<p>Enhanced</p>

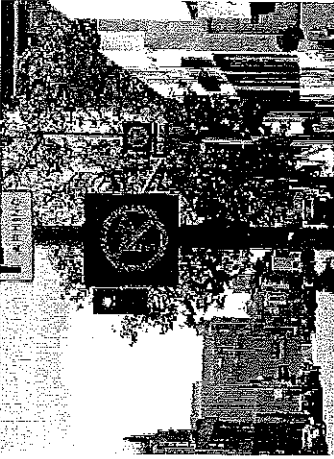

Appendix A: Crosswalk Policy



**TABLE A-7:
CONTROLLED INTERSECTIONS: SIGNAL HARDWARE AND OPERATIONAL MEASURES**

Treatment	Description	Level
<p>7-7. Pedestrian Recall</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Pedestrian recall gives pedestrians a "Walk" signal at every cycle. No push-button or detection is necessary since a "Walk" signal will always be given. Pedestrian recalls are useful in areas with high levels of pedestrian activity. They demonstrate that an intersection is meant to serve both vehicles and pedestrians. In general, pedestrian recall should be used if pedestrians actuate a "Walk" signal 75 percent of the time during three or more hours per day. Recall can be used 24-hours a day or during peak hours for pedestrians (in which case push buttons should continue to be provided).</p>	<p>Enhanced</p>
<p>7-8. No Right Turn on Red</p>  <p><i>Image Source: FHWA</i></p>	<p>When attempting to turn right on red, motorists must look left to see if the road is clear; motorists often do not look right before turning and may not see pedestrians to their right. Restricting right turns on red can reduce conflicts between vehicles and pedestrians. "Blank out" turn restriction signs (see 11-9 below) are more effective than conventional "No Right Turn on Red" signs. "No Right Turn on Red" signs that specify time-of-day restrictions or "When Pedestrians are Present" are confusing to motorists and are often disregarded.</p>	<p>Enhanced</p>


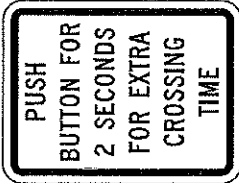
Appendix A: Crosswalk Policy

TABLE A-7: CONTROLLED INTERSECTIONS: SIGNAL HARDWARE AND OPERATIONAL MEASURES		
Treatment	Description	Level
<p>7-9. Blank-Out Turn Restriction LED Sign</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>The ubiquity of conventional turn restriction signs, usually for no right turn on red, contributes to their disregard by motorists. Blank out turn restriction signs activate only when the specified movement is prohibited. The LED sign is also very visible.</p>	<p>Enhanced</p>
<p>7-10. Animated Eyes</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>Animated eyes pedestrian signals feature eyes that move from side to side when a "Walk" signal is given. The signals remind pedestrians to look for turning vehicles before proceeding into the crosswalk. Research has indicated that animated eyes pedestrian signals reduce conflicts between vehicles and pedestrians.</p>	<p>Enhanced</p>

Appendix A: Crosswalk Policy



**TABLE A-7:
CONTROLLED INTERSECTIONS: SIGNAL HARDWARE AND OPERATIONAL MEASURES**

Treatment	Description	Level
<p>7-11. Leading Pedestrian Interval (LPI)</p>  <p><i>Image Source: Fehr & Peers</i></p>	<p>A leading pedestrian interval (LPI) advances the "Walk" signal for a few seconds while through-vehicles continue to receive a red indication. By allowing pedestrians to get a head start into the crosswalk, it can reduce conflicts between pedestrians and turning vehicles. The 2012 California MUTCD recommends that LPIs be at least three seconds in duration. Right-turn on red restrictions may be needed with LPIs are installed in locations with lower pedestrian volumes.</p>	<p>Enhanced</p>
<p>7-12. Push Button for Extended Crossing Time</p>  <p><i>Image Source: FHWA</i></p>	<p>Some pedestrians may need extra time to safely cross a street. Traffic signals can be retrofitted to provide pedestrians with increased crossing time by extending the duration of a pushbutton press.</p>	<p>Enhanced</p>

Source: Fehr & Peers, 2014.

CITY OF ASHLAND

Transportation Commission Action Item List

December 21, 2017

Action Items:

1. Super Sharrow analysis for downtown
 - a. Commission motion-Council/Downtown Committee support the urgent implementation
 - i. Follow up-Council at the August 1, 2016 study session voiced support for the super sharrow concept and forwarded to the Downtown for review and analysis.

Meeting Minutes:

Mr. Faught explained the Transportation Commission was working on a potential shuttle program as an alternative mode from a transit standpoint and thought the Transportation Commission should continue working on the transportation piece. Council supported the super sharrow project for the interim and wanted the Committee to review the proposal then disband. The remaining charges for the Committee would go into the broader context of urban design. Council also wanted the Transportation Commission to continue researching the trolley or shuttle component and public transportation in general. Council would look into the urban design study for the downtown after the election and form a new committee then.

- b. Staff in process of developing solicitation document in order to perform engineering review, recommendations and design of a super sharrow project for the downtown corridor. Scoping will include super sharrow location and truck parking along with public meetings and coordination with ODOT.
- c. Kittleson & Associates has been tasked with performing feasibility analysis with respect to installation of a super sharrow through the downtown corridor. Once the technical memorandum is complete results will be presented before TC.
- d. Kittleson has created a draft feasibility analysis and staff is reviewing
- e. Staff has requested FY18/19 biennium budget approval for funding a super sharrow striping project.
- f. The biennium budget including the super sharrow striping project has been adopted by the City Council.
- g. *Traffic Engineer analyzing signal timing adjustments and stop sign installation per Kittleson's recommendation.*
- h. *Federal Highway Administration (FHWA) is no longer permitting supersharrow in the system.*

i. Green box sharrows will be permitted by the FHWA if there is ongoing analysis with defined parameters and metrics. Staff to work with ODOT/Engineering to perform final green box sharrow layouts and obtain necessary approvals to move forward.

2. TSP Update and Internal Circulator Feasibility Analysis (Updated July 2017)

a. Budget for Engineering Services-including TSP update with core analysis of an internal circulator transit system (feasibility analysis). FY18/19 budget process

i. Biennium budget has been adopted by Council and will fund TSP update (July 2017)

b. Develop Request for Proposal (RFP) for Engineering Services (TSP update and Circulatory Feasibility). Draft January 26, 2017

c. Solicit consultant responses (July 2017)

i. Solicitation Advertised and responses due August 1, 2017

d. Perform consultant select (August/September 2017)

i. One proposal response received from Kittleson Associates

ii. Staff has rejected sole proposal from Kittleson & Associates

iii. Staff to release transit feasibility study as a standalone (proposals due November 30th)

1. Release transit study September/October for 1 month

2. Grade proposals

3. Select consultant

4. Award contract

iv. Staff to reissue the TSP update at a future date to be determined

3. Main St. Crosswalk truck parking

a. Review and provide for alternate truck parking that does not block crosswalk across Main St. at the Water St. intersection.

b. ODOT has placed installation of a signal at the Water St. intersection in the surface transportation project list. This signal will eliminate parking adjacent to the crosswalks at the Water/Main St. intersection. Staff to verify dates of proposed installation with ODOT.

c. ODOT to begin engineering design for project on 10/2018. Construction is currently scheduled for 2021. Dates via ODOT are subject to change.

4. Citizen request for speed and volume analysis on Bellview along with traffic calming for right hand turn movements onto Bellview from Sisksiyou Blvd.

a. Staff to set counters out as time allows.

b. Staff to discuss corner layout with ODOT

c. Staff discussed corner radii with ODOT. Staff to develop comprehensive map of corners for

discussion with ODOT on physical improvements to reduce speed when leaving Siskiyou Blvd. (June/July 2017)

- d. Speed/volume study complete, reference attached breakdowns that compare previous data to new data (same locations).
 - e. *Commission to discuss comprehensive traffic calming policy and guidelines at future meetings.*
 - f. *Staff and Commission to develop comprehensive traffic calming program to be adopted by City Council. First discussion occurred at the October 2017 meeting. Follow up discussion to continue until final policy recommendation to City Council is developed.*
 - g. Staff meeting onsite with ODOT (September 2017)
 - h. *Staff met with ODOT regarding intersections along Siskiyou Blvd. and support narrowing the intersections to curb speed when making right hand turn movements from Siskiyou.*
5. Citizen request for intersection analysis of Morton/Euclid/Pennsylvania
- a. *Traffic Engineer to review intersection for potential improvements.*
6. Siskiyou Blvd. and Sherman St. intersection issues
- a. Citizen reported potential hazard with length of intersection (Siskyou)
 - b. Staff forwarded information to Traffic Engineer for review and recommendations
 - c. *Traffic Engineer working with ODOT on signal timing to increase "all red" phase to 2 seconds as an improvement. (June 2017)*
7. Iowa St. safety concerns (May 2017)
- a. Staff has conducted speed/volume studies on Iowa St. and Garfield St.
 - b. The speed trailer was placed onsite
 - c. Staff has contacted Traffic Engineer to perform corridor safety study, to include recommendations in bicycle lane/boulevard improvements, crosswalks, speed reduction treatments, 4-way stop improvements and signage. (June 2017) Traffic Engineer to scope project and begin specific traffic counts/turning movement analysis when school is back in session. Analysis will include walking audit of corridor with citizens, traffic engineer, staff and police.
 - d. Traffic Engineer has begun intersections counts and corridor review.
 - e. Staff has scheduled walking audit for November 7th at 3pm onsite with citizen group.
 - f. *Walking audit occurred with residents. Consultant traffic engineer will generate complete site corridor and safety improvement analysis.*
8. Traffic Calming Policy Development

- a. Based on Citizen interaction with the Transportation Commission, Staff and the TC have developed an outline of a robust traffic calming program. This program relates to Citizen requests for calming such as at Bellview (reference item #4).
 - b. Staff is developing a brochure/flowchart and refining traffic calming policy for a final review before the Transportation Commission before being taken before the City Council.
 - c. ***Draft brochure part of December 2017 packet for review. Final draft to be discussed at January 2018 meeting.***
9. Siskiyou Blvd. and Tolman Creek Intersection Improvements (Bumpouts)
 - a. ***After the public hearing with respect to installation of a 4-way stop controlled intersection at Tolman Creek and Siskiyou Blvd, Commission members requested the analysis and possible construction of additional pedestrian improvements, namely curb bumpouts. Staff has done some informal work to date and as time allows will develop the project drawings and discuss with ODOT.***
10. Transportation Commission Municipal Code Revision
 - a. Director Brown has drafted an update to the existing Transportation Commission Municipal Code language (AMC 2.5x). The Commission reviewed and commented on draft language at the November 16, 2017 meeting.
 - b. ***Staff will take final comments from Commission and create final draft for legal review.***





CITY OF
ASHLAND

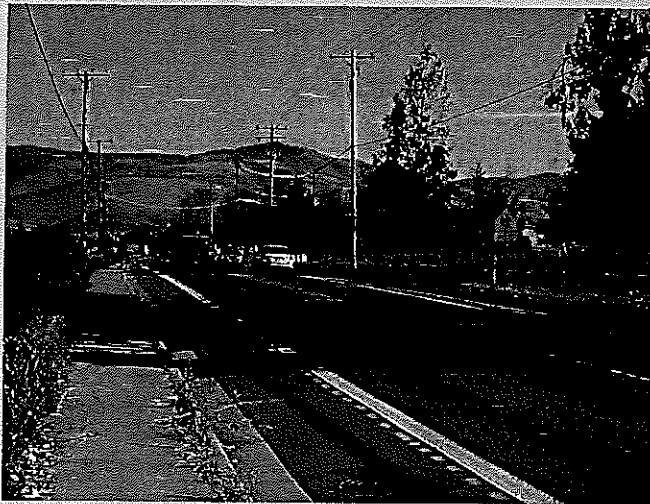


Traffic Calming Program Guide

How does the program work?

YOU SHOULD CONSIDER PARTICIPATING IN THIS PROGRAM IF YOUR NEIGHBORHOOD IS EXPERIENCING PROBLEMS SUCH AS:

- *Vehicles Traveling faster than the posted speed limit
- *Motorists using the neighborhood street as a short cut
- *High number of traffic accidents
- *Pedestrians and bicyclists are uncomfortable using the street



The Program works in two phases.

Phase 1 - Passive Measures

Phase 1 focuses on passive, less restrictive measures like education programs, enforcement, pavement markings, and signing. Should Phase 1 measures prove ineffective at reducing speeds, traffic volume, or improving safety then phase 2 of the program can be implemented.

Phase 2 - Physical Treatments

Phase 2 of the program can implement traffic calming devices such as speed cushions or traffic circles based on engineering design and evaluation.

Phase 2

WHAT IS INVOLVED

Phase 2 of the Traffic Calming Program begins approximately 5 to 6 months after the implementation of Phase 1. If the passive measures are not successful at reducing speeds, Phase 2 needs are determined by comparing before and after study data from Phase 1. If after study data indicates traffic problems still exist and there is continued neighborhood support for further action, then the area is reviewed for consideration of physical treatments.

Possible Phase 2 Solutions

- Curb Extensions
- Speed Cushions
- Traffic Circles/Speed Dots
- Medians
- Chicanes
- Entry Treatments
- Stationary Radar Signs
- Diverters
- Turn Restrictions/Partial Closures



While helping reduce speeds, physical treatments such as landscape medians and landscape traffic circles can also enhance the character and value of the neighborhood. Each physical traffic calming treatment is unique. Installation of physical treatments is determined by traffic engineering analysis & design with emphasis placed on four main factors.

Safety - Vehicle Speeds - Traffic Volume - Area Typography

Based on the data collected and the existing conditions, a treatment or combination treatments may be recommended. Of course, any recommendation action will be based on sound engineering and planning principals, as well as consideration for emergency response. If a project proceeds to Phase 2, a community survey and/or meeting is held to discuss the traffic calming improvements and to obtain neighborhood support.

How does my street qualify and what treatment options?

Qualification Requirements	<p>15% of traffic at or above 30mph OR 25% of peak hour traffic is non-local AND At least 50% of households are supportive of developing a Phase 1 plan (based on return ballots)</p>	<p>15% of traffic at or above 35mph OR 25% of peak hour traffic is non-local AND At least 50% of households are supportive of moving into Phase 2 (based on return ballots)</p>
Treatment Options	<ul style="list-style-type: none"> • Traffic Safety Campaign • Signage • Pavement Markings • Trimming Vegetation • Target Police Enforcement • Speed Watch Program • Radar Speed Trailer • Speed Signs (Radar) 	<ul style="list-style-type: none"> • Curb Cushions • Speed Cushions • Traffic Circles/Speed Dots • Medians • Chicanes • Entry Treatments • Stationary Radar Signs • Diverter • Turn Restrictions/Partial Closures

Tips

HOW CAN YOU MAKE YOUR LOCAL STREETS SAFER?

As a parent:

Educate your children

Ensure that your children know and understand the rules of the road. Children are the primary pedestrians on local streets. Studies have shown children have difficulty making safe judgments about traffic dangers. Do not let children play in the street. Warn them about starting into the road after pets and toys. Select bright color clothing for children that will be near traffic. Teach your children to stop and look both ways before crossing the street.

Set a good example

Be a courteous driver and drive the speed limit. Let children off on the correct side of the road when dropping them off at school. Ensure that your children wear a safety helmet when riding their bikes.

Don't rush

Do not rush while driving. Leave enough time when getting children to and from school. Urgency may cause you to disregard traffic safety.

**Get involved and do your part to improve traffic safety.
Working together we can make Ashland streets safer.**

Traffic Calming Citizen Action Request Form

Contact Name: _____

Address: _____

City: Ashland State: OR Zip Code: 97520

Daytime phone: _____

E-mail address: _____

Location of concern:

Please mark all that apply

- | | |
|---|--|
| <input type="checkbox"/> Speeding | <input type="checkbox"/> Pedestrian Safety |
| <input type="checkbox"/> Accidents | <input type="checkbox"/> Sight Distance |
| <input type="checkbox"/> Traffic Volume | <input type="checkbox"/> Other (please describe) |

Mail completed form to:

City of Ashland
Public Works Department
51 Winburn Way
Ashland, OR 97520



Memo

CITY OF
ASHLAND

Date: December 13, 2017
From: Scott A. Fleury
To: Transportation Commission
RE: Commission Goal Setting-Open House

BACKGROUND:

The Commission should discuss final details on notifications to the public and key stakeholders, final agenda development and what materials are needed at the meeting itself.

The meeting has been scheduled for February 1st, 2018 at 6pm in the Community Center. Staff has reserved the room from 5-9pm in order to allow for setup and takedown time.

Draft Stakeholders List:

- **City of Ashland Citizens**
- **City of Ashland Advisory Commissions/Committee's**
- **Southern Oregon University (Fred Creek)**
- **RVTD**
- **Trials Master Plan Committee**
- **City of Ashland Police**
- **United Way**
- **Ashland Supportive Housing**
- **City of Ashland Parks and Recreation**
- **Chamber of Commerce**
- **Jackson County Housing Authority**
- **Ashland School District**

Media Opportunities:

- **City of Ashland Website**
- **Mayoral Announcement at Council Meeting**
- **Parks and Recreation Website**
- **Daily Tidings article**
- **Letter to the editor**
- **Sneak Preview**
- **Facebook postings**
- **Word of mouth**

Draft Materials List:

- Tables/chairs
- Sign in sheet(s)
- Name tags and fat pens so people can write their name
- Each table needs a flip chart, easel, and pens
- Each table needs a few pieces of paper or small notepad and a pencil for each participant
- One large map (taped to wall or on a display board/easel)
- Sample illustration of the GIS overlay system (either as a slide or a display board)
- If feasible, a display listing upcoming street projects by street
- Flow chart showing how a project is initiated and implemented, including public process if any.
- Timeline illustrating how long it takes to get a project initiated and completed, including public process, if any.

Draft Meeting Agenda

I. Welcome (15 minutes)

- Explain purpose of meeting (who)
- Describe process to be followed
- Explain how participant input will be used

II. Small Group discussions (1 hour)

III. Group Reports (30 minutes)

IV. Closing and Next Steps (5 minutes)

CONCLUSION:

The Commission should finalize plans for the February goal setting meeting. Draft facilitator information attached.

Sue Newberry

General public

Reps from

Chamber of Commerce

Transit patrons

Climate change committee

please clarify

Claudia Alick

Roxane Beigel-Coryell

Cindy Bernard

Isaac Bevers

Stuart Green

Adam Hanks

Jim Hartman

Gregory Jones

Marni Koopman

James McGinnis

Claire Pryor

Louise Shawkat

Bryan Sohl

Planning commission

Troy Brown Jr

Michael Dawkins

Deborah Miller

Melanie Mindlin

Bill Molnar

Haywood Norton

Roger Pierce

Dennis Slattery

Lynn Thompson

Trail Master Plan Update Committee

David Chapman, chair

Torsten Heycke

Stephen Jensen

Jim McGinnis

Luke Brandy

Jim Lewis

Mike Gardiner

Disabled community

Disabled United in Direct Empowerment

Police

Ashland Police Department

Jan Sanderson Taylor

United Way

Sue Crader

Ashland Supportive Housing

**Transportation Commission
Community Meeting
February 1, 2018**

Instructions to Facilitators * D R A F T *

Getting Started:

- Introductions: Go around the table and ask names and what street they live on.
- Ask if someone would be willing to record comments on the flip chart.
- Ask who would like to start.
- If no one offers their thoughts right away, go around the table and ask each person what is most important to them.
- Help your recorder consolidate comments into bullet points by summarizing. For example, you might say, "Okay, let me summarize. You would like us to focus on easier street crossings for pedestrians. Is that a good summary of what you said?"
- You can also use this strategy if someone going on and on....say something like, "Excuse me, before we go any further let me see if I can summarize your point for the list."
- Sometimes one or two people dominate a table. If that happens, say you want to make sure everyone has a chance to contribute. Then ask people who haven't said much.....what do you think? Or, we haven't heard from you yet. What is important to you?
- If you ask follow up questions, keep them neutral.
 - Can you explain what you mean?
 - Would you tell us again where that problem is?
 - Is there anything more you want to say?

Facilitator Role

- Your job is to be neutral and to stimulate others to participate.
 - Record key elements of each comment.
 - Encourage all comments, even if they don't seem practical or realistic.
 - Do not complain about the past or introduce limits like funding, staffing, etc.
 - Do not offer your own ideas or make suggestions about what they might like to suggest.
 - You may be knowledgeable about issues, questions or ideas that come up, but please resist the desire to explain or educate people. For example, people may want to talk about traffic calming. We know Public Works is developing a program. Or people might complain about crossing the street where you know a crosswalk is going in. Accept that they want this, rather than explaining it is in the works. Just nod your head and have the comment recorded.
- At five minute warning, ask who would be willing to share the ideas written on the flip chart with the larger group.

City of Ashland Transportation Commission Community Meeting
For Discussion September 28, 2017

Purpose of Meeting

Ashland Municipal Code (AMC) 2.10.065 encourages advisory commissions to establish annual goals and action items that reflect the body's charge. The purpose of this meeting is to invite input from the public to aid Transportation Commissioners in developing goals that reflect community priorities.

Facilitation

The meeting will be facilitated by the TC so as to alleviate demands on staff. TC members will be in a facilitation/listening mode, will not respond to public comments, and will not hold discussions or make decisions at the meeting.

Proposed Date – Pick a date at our September 28 meeting.

We are looking at an early November time frame, probably in the evening. Some possible dates are: November 1, 2, 6, 7, 8, 9, and possibly November 13, 14, 15. NOTE: The TC meeting in November will be on Thursday November 16.

Facility Needs - List of possible facilities at our 9/28 meeting

Accessible facility with room for at least 6 tables with 8 chairs per table; ability to tape charts to wall; easels with paper and markers for each table. An ideal facility has enough room for the entire group to assemble first and then go to tables. Adequate parking.

Stakeholders

In addition to the general public, what groups should we invite, how do we contact them, and who will contact them? The list is in development but we want input from Commissioners

Publicity and Invitations

What media do we use and who will arrange?

(e.g., Mail or hand delivery, Newspaper Ads and press releases, City website, City Facebook page, other Social media postings)

Meeting Agenda

I. Welcome (15 minutes)

- Explain purpose of meeting
- Describe process to be followed
- Explain how participant input will be used.

II. Small Group discussions (1 hour)

III. Group Reports (30 minutes)

IV. Closing and Next Steps (5 minutes)

Chapter 2.13 TRANSPORTATION COMMISSION

Sections:

2.13.010

Purpose and Mission

2.13.020

Established Membership

2.13.030

Powers and Duties, Generally

2.13.040

Powers and Duties, Specifically

2.13.050

Traffic Sub-Committee

2.13.010 Purpose and Mission

A. *Role.* The Transportation Commission advises the City Council and Planning Commission on transportation related issues specifically as they relate to safety, planning, funding and advocacy for bicycles, transit, parking, pedestrian and all other modes of transportation.

B. *Mission.* The need for a Transportation Commission is emphasized in the Transportation Element:

“Ashland has a vision - to retain our small-town character even while we grow. To achieve this vision, we must proactively plan for a transportation system that is integrated into the community and enhances Ashland’s livability, character and natural environment. ... The focus must be on people being able to move easily through the City in all modes of travel. Modal equity then is more than just a phase. It is a planning concept that does not necessarily imply equal financial commitment or equal percentage use of each mode, but rather ensures that we will have the opportunity to conveniently and safely use the transportation mode of our choice, and allow us to move toward a less auto-dependent community.”

(Ord. 3003, amended, 02/18/2010; Ord. 2975, added, 11/18/2008)

2.13.020 Established Membership

A. *Voting Members.* The Transportation Commission is established and shall consist of seven (7) voting members as designated by the Mayor and confirmed by the council. Voting members will all be members of the community at large and will represent a balance of interest in all modes of transportation.

B. *Staff Liaison.* The Director of Public Works or designee shall serve as the primary staff liaison and as Secretary of the Commission

C. *Nonvoting Ex Officio Membership.* . Including the staff liaison, there will be twelve (12) total nonvoting ex officio members who will participate as needed and will include one member of the Council as appointed by the Mayor, Community Development and Planning, Police, Fire, Southern Oregon University, Ashland Schools, Oregon Department of Transportation, Rogue Valley Transportation District, Ashland Parks and Recreation, Jackson County Roads, Airport Commission. (Ord. 3076, amended, 11/06/2012; Ord. 3003, amended, 02/18/2010; Ord. 2975, added, 11/18/2008)

2.13.030 Powers and Duties, Generally

The Transportation Commission will review and make recommendations on the following topics as it relates to all modes of Transportation:

1. Safety: will develop, coordinate and promote transportation safety policies and programs;

2. Planning:

*Will review and serve as the primary body to develop recommendations to the City's long range transportation plans and assist with ancillary transportation plans (sidewalk and safe routes to school, transit, traffic, parking, etc.).

*Will review and make recommendations to the Planning Commission in Type III Planning Actions during the pre-application process.

3. Funding: will make recommendations to the Public Works Director and Budget Committee on the transportation section of the City's Capital Improvements Program;

4. Advocacy: will advocate and promote all modes of transportation to ensure that modal equity is a reality in Ashland.

*Facilitate coordination of transportation issues with other governmental entities.

*Select one or more members to attend meetings with other transportation related committees in the Rogue Valley.

*Examine multi-modal transportation issues. (Ord. 3003, amended, 02/18/2010; Ord. 2975, added, 11/18/2008)

5. The Transportation Commission will review and forward traffic implementation designs to the Public Works Director for final approval and implementation. (Ord. 3003, amended, 02/18/2010; Ord. 2975, added, 11/18/2008)

2.13.050 Sub-Committees

A. *Purpose.* The purpose of Sub-Committees is to enable the Sub-Committee to focus on specific transportation topics of concern and bring back critical information for discussion to the whole body. *Membership.* Sub-Committees will be established for a specified purpose and duration and will consist of three regular members of the Transportation Commission who shall sit concurrently on the full Commission. Specific sub-committee members shall be appointed by the Transportation Commission. The Public Works Director and Transportation Commission Chair shall determine what matters warrant Sub-Committee involvement and meetings shall be convened on an as needed basis.

C. *Minutes.* Meetings must be noticed and must have summary minutes. No decisions will be made at the Sub-Committee level. All recommendations will go to the full Transportation Commission. All Sub-Committee summary minutes will be forwarded for the next scheduled Transportation Commission meeting. (Ord. 3003, amended, 02/18/2010; Ord. 2975, added, 11/18/2008)

MOTOR VEHICLE CRASH SUMMARY

MONTH: NOVEMBER, 2017

NO. OF ACCIDENTS: 23

Rep	DATE	TIME	DAY	LOCATION	NO. VEH	PED INV.	BIKE INV.	INJ.	DUII	CITED	PROP DAM.	HIT/ RUN	CITY VEH.	CAUSE - DRIVER ERROR
NR	1	11:50	Wed	E Main St near N First St	2	N	N	N	N	N	N	N	N	V1 was stopped on side of the road making a delivery when v2 tapped the mirror of v1 in passing, causing damage. Dv2 was found and information was exchanged.
R	1	16:27	Wed	Will Dodge Way	2	N	N	N	N	N	Y	N	N	Dv2 backed into parked v1 while pulling out of a parking stall. Information exchanged.
R	2	15:13	Thur	Siskiyou Blvd	3	Y	N	Y	N	Y	Y	N	N	Dv1 was stopped behind other cars waiting for a ped to cross, rear-ended by v2 and v3. Dv3 cited following too closely.
R	3	08:38	Fri	Thornton Way	1	N	N	N	N	Y	Y	N	N	Dv1 ran off the road, through a fence and struck the side of a house. Dv1 cited for careless driving and driving while suspended.
R	3	15:50	Fri	Ashland St near Tolman Creek Rd	2	N	N	N	Y	Y	Y	Y	N	Dv1 was rear-ended by dv2. Dv2 cited for DUII-drugs, hit and run, reckless driving.
R	6	16:11	Mon	N Main St	2	N	N	N	N	Y	Y	N	N	Dv1 was stopped in a line of traffic. Dv2 rear-ended v1, and was cited for following too closely.
NR	7	15:20	Tue	Ashland St at Tolman Creek Rd	2	N	N	N	N	N	N	N	N	Dv1 was stopped at light, v2 stopped behind v1. Dv2 began to roll forward impacting v1. Minor damage, information exchanged.
R	7	16:15	Tue	Lithia Way near Pioneer St	1	N	Y	P	N	N	N	N	N	Dv1 made a right turn across bike lane cutting off bicycle traveling on either bike lane or sidewalk (conflicting stories), and bike struck v1. Information exchanged.
R	8	15:36	Wed	Ashland St	2	N	N	N	N	Y	Y	N	N	Dv1 was driving in right lane, had the right of way. Dv2 pulled out from driveway and struck v1. Dv2 cited for failure to yield.
R	10	11:02	Fri	Fifth St at C St	2	N	N	N	N	N	Y	N	N	Dv1 northbound on Fifth St. Dv2 eastbound on C St did not yield, and struck v1 in intersection. No citation, info exchanged.
R	14	12:10	Tue	Ashland St at Tolman Creek Rd	2	N	N	N	N	Y	Y	N	N	Dv1 and Dv2 crashed mid-intersection. Dv1 cited for failure to obey traffic control device.
R	15	19:54	Wed	Orange Av near Drager St	2	N	N	N	N	N	Y	N	N	Dv1 crashed into a parked vehicle while making a right turn. Dv1 not cited, info exchanged.

Rep	DATE	TIME	DAY	LOCATION	NO. VEH	PED INV.	BIKE INV.	INJ.	DUII	CITED	PROP DAM.	HIT/ RUN	CITY VEH.	CAUSE - DRIVER ERROR
R	16	18:15	Thur	N Main St near Maple St	2	N	N	P	N	Y	Y	N	N	Dv1, stopped behind traffic at a red light, was rearended by dv2. Info exchanged.
R	16	23:10	Thur	Takelma Way near Clay St	2	N	N	N	Y	Y	Y	N	N	Dv1 struck parked v2. Dv1 arrested DUII.
R	18	UNK	Sat	Tolman Creek Rd at Aubry Circle	1	N	N	N	Y	Y	Y	N	N	Dv1 ran into an electric utility cabinet. Dv1 cited for DUII, Reckless Driving, driving while suspended, driving uninsured.
R	20	15:04	Mon	Ashland St at Clay St	2	N	N	P	N	Y	Y	N	N	Dv1 was traveling westbound in the left lane (Ashland St) when Dv2 pulled out of Clay St to make a left turn onto eastbound Ashland St, colliding with v1. Dv2 cited for failure to obey traffic control device.
NR	21	08:30	Tue	E Main St near Sherman St	2	Y	N	N	N	N	N	N	N	Dv1 stopped suddenly for a ped in the crosswalk. Dv2 rearended v1. Information exchanged.
R	24	15:40	Fri	N Main St near Church St	2	N	N	N	N	N	Y	N	Y	Dv2, operating a city vehicle, backed into parked v1. Information exchanged.
R	24	16:12	Fri	Siskiyou Blvd at Morton St	2	N	N	N	N	Y	Y	N	N	Dv1 was crossing Siskiyou Blvd southbound at Morton St and ran into the side of v2 which was travelling SE on Siskiyou. No citation.
NR	26	19:40	Sun	Park St	1	N	N	N	N	N	U	N	N	Dv1 was exiting the parking lot and hit the edge of the storm grate which caused the grate to fall into the drain. Then the front of v1 fell into the drain. Report only.
R	27	12:41	Mon	A St near Second St	2	N	N	N	N	N	Y	N	N	V1 was parked on side of the street, but too far from the curb. Dv2 drove past but the rear bumper of v2 caught the front bumper of v1. Info exchanged.
R	29	08:17	Wed	California St at Quincy St	2	N	N	N	N	Y	Y	N	N	Dv1, southbound, was struck by dv2, eastbound, in the intersection. Dv2 cited for failure to obey traffic control device (yield sign)
NR	29	16:20	Wed	Hargadine St near Enders Alley	2	N	N	N	U	N	U	Y	N	Dv1 was parked on the side of the street. v2 struck v1 and kept driving. No leads.

