

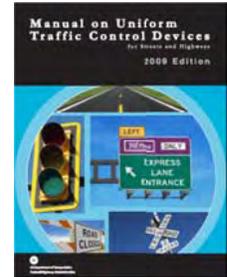
**Appendix C**  
**Pedestrian Safety Action Plan**

## Engineering Countermeasures

This section presents the most commonly used and effective pedestrian crash countermeasures. Each section includes a picture to illustrate a particular point or countermeasure, the crash reduction factor using available information concerning its effectiveness and a web reference for detailed design guidance. The countermeasures follow the outline of Chapter 5 of FHWA's *How to Develop a Pedestrian Safety Action Plan* manual (order will vary slightly).

There are numerous policy, planning, and design guidelines that transportation planners and engineers can use; however, only a few address pedestrian designs thoroughly. AASHTO has recently published the *Guide for Planning, Design, and Operation of Pedestrian Facilities*. An example of a state pedestrian design guide is Washington Department of Transportation's *Pedestrian Facilities Guidebook*; one city/regional example is *Planning and Designing for Pedestrians: Model Guidelines for the San Diego Region*.

Additionally, FHWA has an excellent publication: *PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System* (FHWA-SA-04-003). The *Manual on Uniform Traffic Control Devices* (MUTCD) should be used for selecting appropriate traffic controls: signs, traffic signals, marked crosswalks, and other pavement markings.



Many of the above-mentioned pedestrian policy, planning, and design guidelines were used to develop the following list of some of the more effective countermeasures in terms of improving pedestrian safety. They should also be used by jurisdictions for guidance to fix spot problems and to update and improve agency design manuals, practices and procedures. The actual countermeasure chosen must fit in the context of a particular roadway.



Design manuals and standard specifications should ensure roadways and intersections are designed to maximize pedestrian safety and access. This includes intersection design, curb radii, marked crosswalks, design speed, number of lanes, signal warrants, transit stop design, sidewalk widths, sidewalk setbacks etc. Updating them can be a fairly big effort but can be done once the crash countermeasures have been identified. To start, it is important to identify existing manuals and specifications.

<p>References/Guidance</p> <ul style="list-style-type: none"><li>• <a href="#">MUTCD</a></li><li>• <a href="#">PEDSAFE</a></li><li>• <a href="#">AASHTO - Guide for Planning, Design, and Operation of Pedestrian Facilities</a></li><li>• <a href="#">Washington DOT's Pedestrian Facilities Guidebook</a></li><li>• <a href="#">Planning and Designing for Pedestrians: Model Guidelines for the San Diego Region</a></li></ul>	<p>Examples</p> <ul style="list-style-type: none"><li>• <a href="#">Caltrans Deputy Directive 64, 3-26-01</a></li></ul>
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- 1) Existing transportation-related design manuals and standard specifications
  - Do you have an inventory of all design manuals, standard specifications, other relevant state and local design guidelines? Yes
  - State existing relevant manuals, standard specifications and other local relevant design guidelines that you use:

Institute of Transportation Engineers (ITE) Manual, AASHTO Green Book, TxDOT Design Manual – Urban and Rural, HCM, National ADA Guidelines/PROWAG (not yet formally adopted); Fort Worth Context Sensitive Solutions Guidelines; Texas Department of Licensing and Regulation (TDLR) Guidelines; Master Thoroughfare Plan; Subdivision Regulations; Zoning Ordinances; Fort Worth Traffic Engineering Design Standards & Policy Guide (brown book – mainly used by IPRC).

- 2) Proposed
  - Assess current design guidelines, policies and requirements in existing relevant manuals, standard specifications and other relevant design guidelines.
  - Identify schedule (dates) for routine updating of current manuals, standard specifications and other relevant local design guidelines. In general, pedestrian friendly changes should be made at the same time as other updates.

Considering developing Transit Development Guidelines; two year ongoing effort to update all of Fort Worth’s design standards. Create Transit-Oriented Development plans for future TEX Rail station locations.  
Suggested that Fort Worth investigate National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide  
As Brown Book is largely out of date, phase its use out of the IPRC and TPW.

American Disabilities Act (ADA) transition plans are required in all communities to ensure that all pedestrian facilities will become accessible over time.

<p>References/Guidance</p> <ul style="list-style-type: none"> <li>• <a href="#">Title 28 Part 35.150 Existing facilities (d) Transition Plan</a></li> <li>• <a href="#">Clarification of FHWA’s Oversight Role in Accessibility</a></li> </ul>	<p>Examples</p> <ul style="list-style-type: none"> <li>• <a href="#">City of San Diego, CA ADA Transition Plan</a></li> <li>• <a href="#">County of Sacramento, CA ADA Transition Plan</a></li> </ul>
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- 1) Existing
  - What is the status of your ADA transition plan – date adopted, date revised?
 

Adopted in 1992 – update needed
  - Are you implementing your ADA transition plan into all your projects and programs as required by ADA? Yes
  - Do you have clearly defined policies that spell out when maintenance activities trigger ADA requirements? Yes & No....handled on a case-by-case basis.
  - Do you have a pro-active strategy to make all your facilities ADA compliant over time? Yes – via a 2008 ADA Compliant Pedestrian Curb Ramp Improvement Program Study...need funding to implement.

- State existing status of your ADA plan; address each of the above questions.

Limited resources – City does respond to citizen complaints. Focus is on areas surrounding schools and facilities for the disabled community.

## 2) Proposed

- Assess each of the following:
  - Status of your ADA transition plan – date adopted, date revised.
  - Implementation of ADA requirements into all your projects and programs.
  - Policies that spell out when maintenance activities trigger ADA requirements.
  - Pro-active strategy to make all your facilities ADA compliant over time.
- State policy for each of the above (at a minimum, a time-line for completing each of the above):

See responses to #1; City hopes to update ADA transition plan within the next 10 years?

## Walking-along-the-road crashes

Paved shoulders provide room for pedestrians to walk away from traffic; they also provide room for bicyclists and increase safety for motor vehicle operators. To be effective paved shoulders should be 6 ft wide or more; 4 ft is considered the minimum acceptable width. Where parking is expected shoulders should be 8 to 10 ft. A painted (thermoplastic preferred) edge line should define the edge of the travel lane next to the shoulder.



Crash Reduction Factor 80% - [An Analysis of Factors Contributing to "Walking Along Roadway" Crashes: Research Study and Guidelines for Sideways and Walkways](#). FHWA-RD-01-101

### References/Guidance/Cost Range

- [AASHTO – A Policy on Geometric Design of Highways and Streets Ch. 4 Cross Section Elements - Width of Shoulders](#)
- [Pedsafe – Table 1. Recommended Guidelines for New Sidewalk/Walkway Installation](#)

### Example

- [Allegheny County, PA](#)

## 1) Existing

- Do you routinely provide paved shoulders on rural highways and trunk roads? Yes
- If yes, state your existing policy (include width):

For new construction: 8' on Principal and Major Arterials; 6' on Minor Arterials; 12' on Industrial Streets; 6' on 36' wide Local Option A Streets; Not required on Local Option B and C streets (via MTP Street Development Standards).

Many of the rural roads in recently-annexed areas do not have shoulders. The Annexation Policy Plan & Program adopted in 2004 has slowed the tide of annexations and set guidelines that cover shoulder provisions.

For developer-built roadways: CFA policy references Traffic Engineering Design Standards and Policy Guidelines, which is silent on shoulder widths.

## 2) Proposed

- Assess your current shoulder installation policies.
- State proposed shoulder installation policies:

Adjust CFA policy to align with requirements for city-built roads.

Sidewalks reduce walk-along-the-road crashes by providing positive separation from traffic. Continuous and connected sidewalks are needed along both sides of roadways to prevent unnecessary roadway crossings. Sidewalks should be buffered with a planter strip to increase pedestrian safety and comfort; separation makes it easier to meet ADA requirements for a continuous level passage and for a clear passage around obstacles.



Crash Reduction Factor 88% - <a href="#">An Analysis of Factors Contributing to “Walking Along Roadway” Crashes: Research Study and Guidelines for Sideways and Walkways</a> FHWA-RD-01-101	
<p>References/Guidance/Cost Range</p> <ul style="list-style-type: none"> <li>• <a href="#">PEDSAFE – Sidewalks and Walkways</a>;</li> <li>• <a href="#">PEDSAFE Table 1 Recommended Guidelines</a></li> <li>• <a href="#">City of Seattle – Sidewalk Prioritization Policy</a></li> <li>• <a href="#">AASHTO – Guide for the Planning, Design, and Operation of Pedestrian Facilities – Section 3.2 Sidewalk Design</a></li> </ul>	<p>Examples</p> <ul style="list-style-type: none"> <li>• <a href="#">Boulder, CO</a></li> <li>• <a href="#">University Place, WA</a></li> <li>• <a href="#">Grand Junction, CO</a></li> </ul>

1) Existing

- Do you routinely provide sidewalks on urban and suburban arterials? Yes
- If yes, please state your policy:

CFA Policy, adopted in 2005, requires sidewalks on both sides of all publicly maintained streets within the City (except local industrial streets within industrial parks).

- If so, what is the standard width?

Minimum width is 4 ft, and 5 ft if it is next to the curb. In design districts and areas with form-based codes, larger/wider sidewalks are required.

- Are your sidewalks adjacent to the curb or separated by a planting strip (furniture zone)?

Planting strip/furniture zone for all new development. **[check on required planting strip size]**

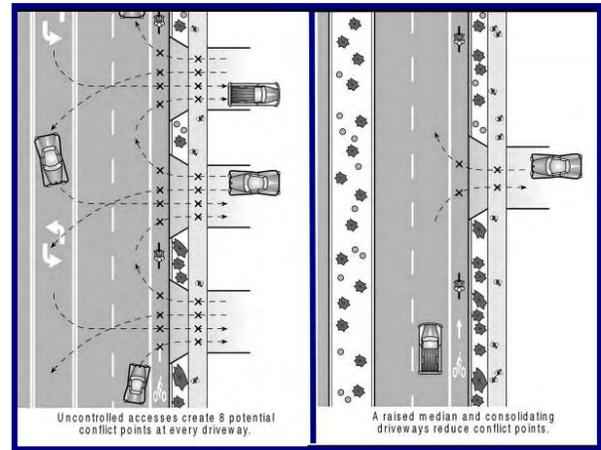
2) Proposed

- Assess your current sidewalk installation policies.
- State proposed sidewalk installation policies:

Consider/revisit standard width of sidewalks and inclusion of “Zone” System (Curb/Furniture/Pedestrian/Frontage). Additionally, include final PROWAG guidance in design recommendations.

Access management can be achieved through the installation of medians and a reduction in the number of driveways. Both countermeasures limit the number of left turns across sidewalks where pedestrians are vulnerable.

Crash Reduction Factor - See individual countermeasures such as medians.
Examples
<ul style="list-style-type: none"> <li>•</li> </ul> <p>References/Guidance/Cost Range</p> <ul style="list-style-type: none"> <li>• <a href="#">FHWA Access Management Publications and Resources</a> <ul style="list-style-type: none"> <li>○ Benefits of Access Management</li> <li>○ Safe Access if Good for Business</li> </ul> </li> <li>• <a href="#">Accessmanagement.org – TRB</a> <ul style="list-style-type: none"> <li>○ <a href="#">TRB Access Management Manual</a></li> </ul> </li> <li>• <a href="#">NCHRP Report 548: A Guidebook for Including Access Management in Transportation Planning</a></li> </ul>



1) Existing

- Do you have an access management policy that is being implemented? Yes
- If yes, please state your policy:

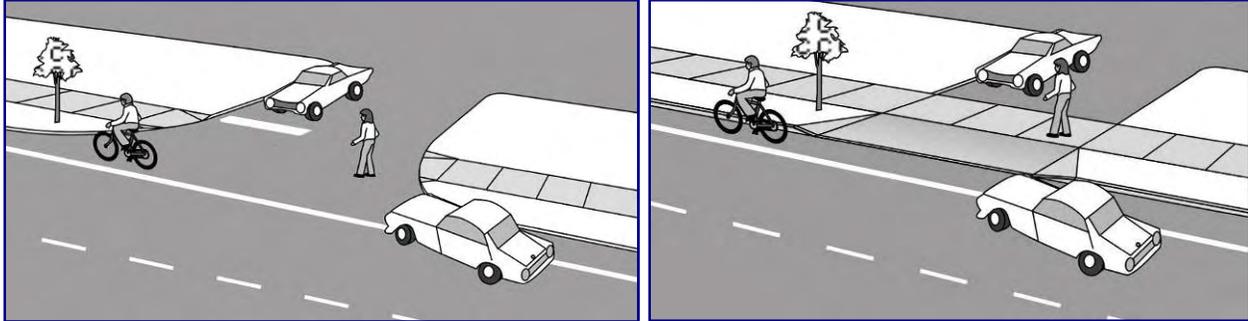
100' minimum distance of driveway spacing to an intersection (50' in residential areas); 50' minimum distance between driveways in residential areas; 75' minimum in commercial areas.  
Back alley access is encouraged for commercial developments.

2) Proposed

- Assess your current access management policies.
- State proposed access management policies:

Strengthen the Public Access Easement provisions of the Subdivision Ordinance  
References for achieving this:  
[http://safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_006.htm](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_006.htm)  
Additionally, consider requiring shared driveways for contiguous commercial developments.

Driveways should be designed to look like driveways, not roadway intersections: sidewalks should continue through the driveway, the level of the sidewalk should be maintained, and the driveway should be sloped so that the driver goes up and over the sidewalk (picture on right). Driveways should be away from intersections. The number and width of driveways should be



minimized.

Crash Reduction Factor – TBD Research incomplete	Examples • <a href="#">Portland, OR</a>
References/Guidance/Cost Range • <a href="#">PEDSAFE – Driveway Improvements</a>	

### 1) Existing

- Do you routinely require that driveways be located away from intersections and designed to look like driveways, not intersections? Yes
- If yes, please state your policy:

Min distance of driveway spacing to an intersection (100', except for residential areas where it is 50'); then 50' between driveways in residential areas, 75' in commercial areas. Also using back alley access for commercial developments.

### 2) Proposed

- Assess your current standard plans for the design of driveways.
- State proposed driveway design guidelines:

Standards/typical section for the driveway approach that shows a level sidewalk with the driveway ramping up/down as necessary. Standards for high volume approaches/driveways. Need to have provisions for instances where a driveway is across from a signalized street – driveway needs to be designed more as a street crossing with Pedheads, ramps, and truncated domes.

Illumination greatly increases the driver's ability to see pedestrians walking along the road at night. Double-sided lighting should be provided along wide arterial roadways; this enables drivers to see pedestrians along the road, who may decide to cross anywhere, anytime.



Crash Reduction Factor: <ul style="list-style-type: none"><li>• TBD Research incomplete</li></ul>	Examples <ul style="list-style-type: none"><li>• <a href="#">Santa Monica, CA</a></li></ul>
Reference/Guidance/Cost Range <ul style="list-style-type: none"><li>• <a href="#">PEDSAFE - Roadway Lighting</a></li><li>• <a href="#">AASHTO Roadway Lighting Design Guide</a></li><li>• <a href="#">Roadway Lighting Revisited</a> – Public Road article</li></ul>	

1) Existing

- Do you routinely provide illumination on both sides of the roadway? Yes
- If yes, please state your policy:

Design & Maintenance Guidelines and AASHTO Illumination Guidelines

2) Proposed

- Assess your current standard plans and procedures for providing illumination.
- State proposed design guidelines and installation procedures for illumination for pedestrians walking along the road:

The City should expand on the existing policies to include standardized decorative lighting and pedestrian-scaled lighting

## Crossing the road crashes

Mid-Block Pedestrian accessible crossing islands reduce crashes substantially at uncontrolled locations, especially on busy multi-lane roadways where gaps are difficult to find. A properly designed island breaks an otherwise complex crossing maneuver into two easier steps: a pedestrian looks left, finds an acceptable gap in one direction, crosses to the island, then looks right and finds a second gap.



Crash Reduction Factor: 25% to 46%

- [Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations](#)

Examples:

- [Cathedral City, CA](#)
- [Las Vegas, NV](#)

Reference/Guidance/Cost Range

- [PEDSAFE – Raised Medians](#)
- [Investigation of the Impact of Medians on Road Users](#)

### 1) Existing

- Do you routinely provide pedestrian accessible crossing islands at identified crossing points? No
- If yes, please state your policy:

Case-by-case analysis is used to determine need. Special consideration is given to schools where there is also a crossing guard.

### 2) Proposed

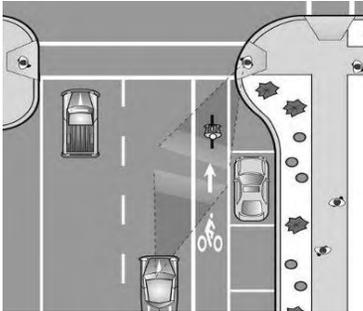
- Assess your current policies for installing crossing islands.
- State proposed crossing island installation policies:

It would be beneficial to develop criteria for implementation sites. Criteria should consider context: how much use it would receive, whether there is a clear origin and destination of pedestrian trips, among other factors.

For more information/guidance, see:

[http://safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_011.htm](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_011.htm)

Curb extensions reduce the total crossing distance on roadways with on-roadway parking and increase visibility: the waiting pedestrian can better see approaching traffic and drivers can better see pedestrians' waiting to cross the road, as their view is no longer blocked by parked cars.



Crash Reduction Factor – TBD Research incomplete

Examples:

- [Fort Plain, NY;](#)
- [Bellevue, WA;](#)
- [Links to projects across country](#)

Reference/Guidance/Cost Range

- [The Effects of Traffic Calming Measures on Pedestrian and Motorist Behavior](#)
- [Pedestrian Safety Impacts of Curb Extensions: A Case Study](#)
- [Walkinginfo.org – Curb Extensions](#)
- [FHWA-HRT-04-091: 9.1.2 Provide Curb Extensions](#)

### 1) Existing

- Do you routinely provide curb extensions at identified crossing points? No
- If yes, please state your policy:

Urban Villages: Five urban villages have received funding for pedestrian improvements, including some with curb extensions, though many are characterized by old infrastructure with difficult existing conditions.  
City does look for other opportunities and considers community input on the matter.

### 2) Proposed

- Assess your current policies for installing curb extensions.
- State proposed curb extension policies:

Consider as a better practice for new development on a case-by-case basis. Consider establishing criteria for implementation sites.

Illumination greatly increases the driver's ability to see pedestrians crossing the road. Increased lighting should be provided at identified primary crossing points.



Crash Reduction Factor:

- 42% at midblock locations
- 54% at intersections

Crossing Locations, Light Conditions, and Pedestrian Injury Severity" by Naved A. Siddiqui, Xuehao Cho, and Martin Guttenplan

Reference/Guidance/Cost Range

- [Informational Report on Lighting Design for Midblock Crosswalks - FHWA-HRT-08-053](#)
- [The Influence of Vertical Illuminance on Pedestrian Visibility in Crosswalk](#)

1) Existing

- Do you routinely provide illumination at primary crossing points? Yes
- If yes, please state your policy:

Lighting is provided at intersections and signals. Not required at crosswalks, required by signals. Location of lighting depends on conditions.

2) Proposed

- Assess your current policies for installing illumination at primary crossing points.
- State proposed illumination installation policies:

Lighting should be installed at all midblock crossings going forward.

## Popular crossing countermeasures and how to improve them

The public often responds to a tragic pedestrian crash with a call for an immediate solution. Commonly requested solutions include traffic signals, flashers, overcrossings or undercrossings, or marked crosswalks. While these can be effective solutions in certain places, in some instances they are not appropriate or effective.

### Traffic signals

The primary purpose of a traffic signal is to assign right-of-way and create gaps in traffic that otherwise would be hard to find. The *MUTCD* warns against the overuse of signals for a variety of reasons. Inappropriate traffic signals may increase crashes. Traffic signals are expensive, from \$70,000 to \$300,000 for one intersection, not including any associated road widening.

But in some cases, the only solution to crossing a busy roadway is to install a pedestrian crossing signal. This is especially true in locations where there is no other signal for a quarter of a mile or more in an area with lots of pedestrian activity.



Traffic signals at intersections may be the only way to create a gap for pedestrians to cross busy multi-lane highways with significant volumes. Since it's difficult to meet MUTCD warrants for a pedestrian signal based solely on existing pedestrian counts, it may be necessary to anticipate how many pedestrians might cross once a signal is installed.

#### Reference/Guidance/Cost Range

- [PEDSAFE – Traffic Signal](#)
- [PEDSAFE – Pedestrian signals](#)
- [Signalized Intersection – An information Guide](#)

#### 1) Existing

- Do you install traffic signals based on anticipated pedestrian volumes? Yes
- If yes, please state your policy:

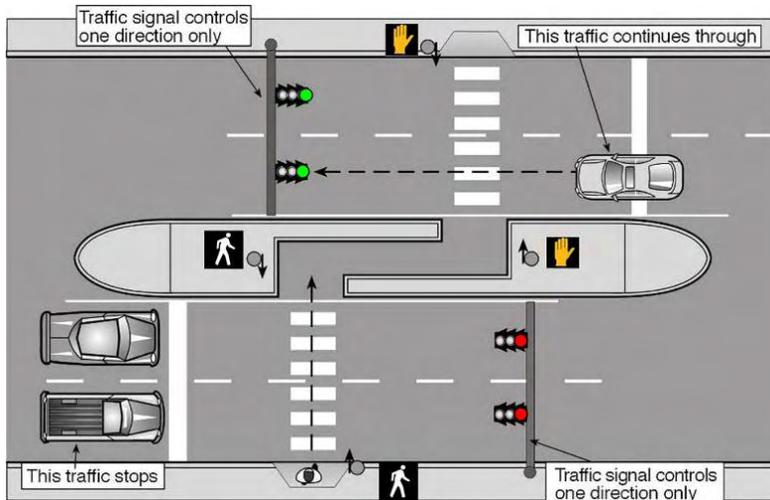
Perform an engineering study to determine signal (or other treatment) need

#### 2) Proposed

- Assess your current policies for installing traffic signals. Determine if there are locations that should have signals but don't due to current policies.
- State proposed traffic signal installation policies for pedestrians:

Look at special situations to determine whether one is warranted using engineering judgment. Some school locations might be worth re-visiting.

A mid-block, two-stage traffic signal at a crossing island helps reduce impacts on motor vehicle flow while helping the pedestrian cross multi-lane roadways. The pedestrian stops one direction of traffic at a time, and the two crossings are separated with a fenced-in median island.



Crash Reduction Factor: TBD Research incomplete
Examples:
Reference/Guidance/Cost Range

1) Existing

- Do you install mid-block, two-stage traffic signals on multi-lane roadways? No

2) Proposed

- Assess your current policies for installing mid-block traffic signals.
- State proposed mid-block traffic signal installation policies for pedestrians:

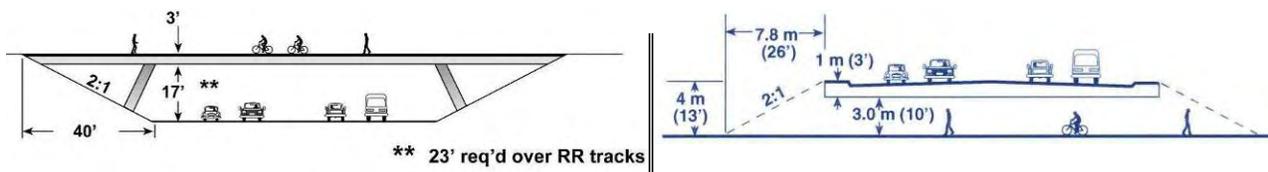
Some situations may warrant consideration of installation.

## Overcrossing or undercrossing

These solutions are appealing because they create complete separation of pedestrians from motor vehicle traffic. However, in practice this rarely occurs because:

- Overcrossings and undercrossings are expensive and cannot be provided at most locations where pedestrians want to cross
- Undercrossings are often prone to security problems due to low visibility
- The out-of-distance travel is so inconvenient many pedestrians will refuse to walk this extra distance and cross at-grade
- Overcrossings or undercrossings are seldom used, and drivers are frustrated when they see pedestrians crossing in the vicinity of an overcrossing or undercrossing; this in turn increases the risk to pedestrians crossing at-grade

The high cost of an overcrossing or undercrossing makes them impractical for all but a few locations. Overcrossings and undercrossings should only be considered at locations where there are high pedestrian volumes, no other alternatives and topography allows easy access. (river crossings, depressed highway/railways).



### Crash Reduction Factor:

- Install pedestrian overpass/underpass: 90%-Fatal/Injury - All crashes – 86%
- Install pedestrian overpass/underpass (un-signalized intersection) All crashes – 13%
- Reference: Toolbox of Countermeasures and Their Potential Effectiveness for Pedestrian Crashes [CRF-FHWA-SA-014 May 2008](#)

### Reference/Guidance/Cost Range

- [Walkinginfo.org – overpass/underpasses](#)
- [PEDSAFE – Overpasses/Underpasses](#)
- [FHWA-HRT-04-091: 9.1.6 Grade-Separate Pedestrian Movements](#)

### Examples

- [San Diego, CA](#)
- [Boulder, CO](#)
- [Phoenix, AZ](#)

### 1) Existing

- Do you install separated crossings based on well-defined criteria? No
- If yes, please state your policy:

Have done on case-by-case basis. Example safe routes to school overpass? (Russ Wiles)  
Tower 55 rail interchange will have some crossings that will be closed. There will be a pedestrian undercrossing at Gounah/Goudan.

### 2) Proposed

- Assess your current policies for installing over and undercrossings.
- State proposed over and undercrossing installation policies:

Develop specific criteria for when to consider pedestrian overpass or underpass.

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## Marked crosswalks alone

It is important to create safe places for pedestrians to cross roadways at regular intervals. Marked crosswalks should only be installed where there is an expectation of a significant (where most people cross may differ on rural, suburban, and rural environments) number of pedestrians such as near a school, park or other generator. Without the associated features mentioned so far (signage, islands, curb extensions, illumination etc.), marked crosswalks on their own do not necessarily increase or decrease the security of a pedestrian crossing the roadway, if placed with the following criteria.



- Two-lane roads: No significant difference in crashes
- Multilane roads (*3 or more lanes*):
  - Under 12,000 ADT: no significant difference in crashes
  - Over 12,000 ADT without median: crashes marked > crashes unmarked
  - Over 15,000 ADT and with median: crashes marked > crashes unmarked

Crash Reduction Factor: Varies from no significant difference to 40% with medians

#### Examples

- [City of Seattle Marked Crosswalk Policy](#)

#### Reference/Guidance/Cost Range

- [Safety Effects of Mark vs. Unmarked Crosswalks at Uncontrolled Locations](#)
- [Pedestrian Crosswalk Case Studies](#)

- The study also made the following observations
  - Medians reduce crashes by 40 percent
  - Pedestrians over 65 are over-represented in crashes relative to crossing volumes
  - No evidence was found to indicate that pedestrians are less vigilant in marked crosswalks.

### 1) Existing

- Do you have a program for evaluating, upgrading and installing marked crosswalks at unsignalized locations? Yes
- If yes, please state your policy:

Depends on pedestrian count, City evaluates need for them. Crosswalks are also marked in school crossing areas, where the City works with FWPD to also place a crossing guard.

### 2) Proposed

- Assess your current policies for evaluating, upgrading and installing marked crosswalks at uncontrolled locations.
- State proposed crosswalk policies:

Review new standards in 2011 Texas MUTCD for crosswalk markings at uncontrolled locations, and update City polices accordingly.

## Textured, Stamped, Colored Crosswalks

Textured and/or colored crosswalks are another popular request. Things to consider: they are less visible to drivers than white marked crosswalks, they may create maintenance problems, and they are difficult for pedestrians with disabilities to negotiate. They should only be used at signalized locations and should always include white paint as required in the MUTCD (two-parallel lines, ladder etc).



Crash Reduction Factor:  
TBD Research incomplete

Examples:

- [City of Seattle](#)

Reference/Guidance/Cost Range  
• [MUTCD 3E. Colored Pavements](#)

### 1) Existing

- Do you have an existing policy on installing textured, colored crosswalks? No
- If yes, please state your policy:

Considered on a case-by-case basis, in which local neighborhood associations and policymakers are involved. Maintenance agreements with requestors are encouraged.

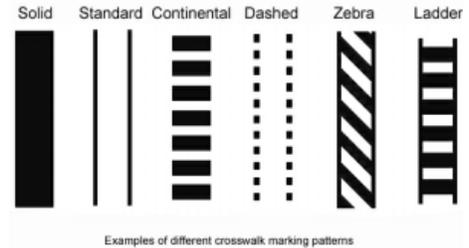
### 2) Proposed

- Assess your current policies for installing textured, colored crosswalks
- State proposed policies for installing textured, colored crosswalks:

Ensure treatments are visible over time to pedestrians and motorists; promote ease of maintenance. Consider maintenance costs over time, as well as experience with previously installed textured crosswalks.

**Improving marked crosswalks:** As previously mentioned, marked crosswalks on their own do not necessarily increase or decrease the security of a pedestrian crossing the roadway. However, their safety can be increased with high visibility pavement markings, advanced stop bars and proper signing

**Using high visibility markings:** This ensures that drivers see the crosswalk, not just the pedestrian. Two parallel lines indicating a marked crosswalk can be almost invisible to the motorist. Ladder style (piano keys) markings should always be used at locations without positive traffic control and are advised at locations with positive traffic control (signals,



stop signs).

1) Existing

- Do you routinely install high-visibility crosswalks? No

2) Proposed

- Assess your current policies for installing high visibility marked crosswalks.
- State proposed high visibility crosswalk installation and design guidelines:

Crash Reduction Factor: TBD Research incomplete	
<p>Reference/Guidance/Cost Range</p> <ul style="list-style-type: none"> <li>• <a href="#">MUTCD- Section 3B.17 Crosswalk Markings</a></li> <li>• <a href="#">PEDSAFE -Marked Crosswalks and Enhancements</a></li> </ul>	<p>Examples:</p> <ul style="list-style-type: none"> <li>• <a href="#">Fort Plain, NY</a></li> <li>• <a href="#">Cambridge, MA</a></li> <li>• <a href="#">Salt Lake City, UT (double ladder)</a></li> <li>• <a href="#">New York, NY (Zebra)</a></li> </ul>

Consider on a case-by-case basis depending on need. Look at how to make crosswalk marking more visible (e.g. white lines on concrete street, outlining lines with black).

High visibility crosswalk markings with advance stop bar (or yield line) and signs at uncontrolled intersections help prevent “multiple-threat” crashes on multi-lane roadways: a driver in the curb lane (Car A) stops to let a pedestrian cross, but so close to the crosswalk as to mask a driver in the adjacent lane (Car B) who is not slowing down. Car B does not have time to react and the pedestrian is struck at high speed. The advance stop bar (or yield line) requires Car A to stop back 30 feet (+/-) so the pedestrian can see if Car B is not stopping. This enables the pedestrian to wait, or even pull back if he has started to proceed into Car B’s lane.

<p>Crash Reduction Factor: TBD Research incomplete</p>		
<p>Reference/Guidance/Cost Range</p> <ul style="list-style-type: none"> <li>• <a href="#">MUTCD Sec. 3B.16 Stop and Yield Lines</a></li> <li>• <a href="#">PEDSAFE – Advanced Stop Lines</a></li> <li>• <a href="#">FHWA-HRT-04-091: 9.1.3 Modify Stop Bar Location</a></li> <li>• <a href="#">Advance Stop Line research</a></li> <li>• See also signing in MUTCD</li> </ul>		
<p>Examples</p> <ul style="list-style-type: none"> <li>• <a href="#">Halifax, Nova Scotia</a></li> </ul>		

- 1) Existing
  - Do you routinely install advance yield bars with signs at crosswalks on multi-lane roadways? No
  
- 2) Proposed
  - Assess your current policies for installing advanced stop (or yield) bars with signs at crosswalks on multi-lane roadways.
  - State proposed stop (or yield) bar and sign installation and design guidelines:
 

Look into installing at sensible locations (e.g. University Drive at TCU)

Stop bars at controlled intersections help keep motor vehicles from encroaching into the marked crosswalk. When combined with ladder style marked crosswalks, they also make it clear that the pedestrian is to walk in the ladder area, not between the stop bar and a parallel line.



Crash Reduction Factor: TBD Research incomplete

1) Existing

- Do you routinely install stop bars at controlled locations? Yes
- If yes, please state your policy:

Part of design standards. The City installs stop bars at all signalized intersections (see Signal Design Guidelines and references)

2) Proposed

- Assess your current policies for installing stop bars at controlled locations.
- State proposed stop bar installation and design guidelines for signalized locations:

Proper signing at uncontrolled marked crosswalks increases the driver’s awareness of a pedestrian crossing. Best practice includes an advanced warning sign and a sign with an arrow at the marked crosswalk using MUTCD compliant fluorescent green walking pedestrian signs.



Crash Reduction Factor: <a href="#">TBD Research incomplete</a>
Reference/Guidance/Cost Range <ul style="list-style-type: none"> <li>• <a href="#">PEDSAFE - Signing</a></li> <li>• <a href="#">MUTCD Chapter 2 Signs</a></li> </ul>
Examples: <ul style="list-style-type: none"> <li>• <a href="#">Bellevue, WA</a></li> <li>• <a href="#">Multiple Cities, NY</a></li> <li>• <a href="#">Baltimore/Washington International Airport, Maryland</a></li> </ul>

1) Existing

- Do you routinely provide MUTCD compliant advanced warning signs and crosswalk signs at pedestrian crossings? Yes
- If yes, please state your policy:

Required by City’s design standards.

2) Proposed

- Assess your current policies for installing crosswalk signs.
- State proposed pedestrian signing installation guidelines:

Upgrade signs to fluorescent green as they are replaced.

In Street Pedestrian Crossing (flop over), mid-road yield or stop signs at uncontrolled marked crosswalks increase the driver’s awareness of a pedestrian crossing. They are often used at school crossings and other locations with vulnerable populations.



Crash Reduction Factor: <a href="#">TBD Research incomplete</a>
Reference/Guidance/Cost Range <ul style="list-style-type: none"> <li>• <a href="#">MUTCD Section 2B.12 In-Street Pedestrian Crossing Signs (R1-6, R1-6a)</a></li> <li>• <a href="#">What effect do in-street crosswalk signs have on drivers?</a></li> <li>• <a href="#">Field Evaluation of Experimental "In-Street" Yield to Pedestrian Signs in Madison, Wisconsin</a></li> </ul>
Examples: <ul style="list-style-type: none"> <li>• <a href="#">Multiple cities NY</a></li> </ul>

1) Existing

- Do you use removable (flop-over), mid-road yield or stop signs at pedestrian crossings?  
Yes
- If yes, please state your policy:

Implemented on a case-by-case basis.

2) Proposed

- Assess your current policies for installing removable signs.
- State proposed removable installation guidelines:

Consider locations requested by neighborhoods. Policy needed to determine specific parameters by which to determine locations to implement.

The **High Intensity Activated Crosswalk (HAWK)** signal uses traditional traffic and pedestrian signal heads but in a different configuration. It includes a sign instructing motorists to "stop on red" and a "pedestrian crossing" overhead sign. When not activated, the signal is blanked out. The HAWK signal is activated by a pedestrian push button or passive pedestrian sensor. The overhead signal begins flashing yellow and then solid yellow, advising drivers to prepare to stop. The signal then displays a solid red and shows the pedestrian a "Walk" indication. Finally, an alternating flashing red signal indicates that motorists may proceed when safe, after coming to a full stop. The pedestrian is shown a flashing "Don't Walk" with a countdown indicating the time left to cross.



Crash Reduction Factor: TBD Research incomplete	
Reference/Guidance/Cost Range	Examples:
<ul style="list-style-type: none"> <li>• <a href="#">City of Tucson DOT</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">RSA Case Study Tucson AZ</a></li> </ul>

- 1) Existing
  - Do you use the HAWK signal at pedestrian crossings? No
- 2) Proposed
  - Assess your current policies for installing the HAWK.
  - State proposed HAWK guidelines:

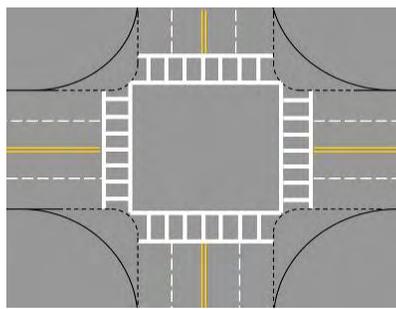
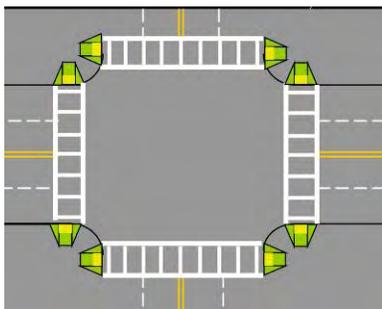
Pilot projects currently being considered. Existing signal equipment can be adapted. Specific locations for implementation have not yet been adopted, but should be proposed after case-by-case consideration.

For more information, see:  
[http://safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_012.htm](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_012.htm)  
 Or, contact City of Austin, as nearly 30 HAWK signals have been installed there.

## Intersection geometry:

Intersection geometry has a profound effect on pedestrian safety as it determines to a large extent whether or not drivers will perceive pedestrians, the length of crosswalks, and the speed of approaching and turning vehicles. Intersection design will determine whether best practices for meeting ADA requirements can be applied. For example, tight curb radii will usually allow for two ramps at each corner as opposed to just one. A tight, square intersection is particularly important for the older driver who may find it impossible to turn his/her head to see motorists coming into the intersection at an obtuse angle.

Tighter curb radii benefit pedestrians by shortening the crossing distance, bringing crosswalks closer to the intersection, increasing visibility of pedestrians, and slowing right-turning vehicles. The appropriate radius must be calculated for each corner of an intersection; difficult turns for occasionally occur (for example a large moving truck turning onto a local roadway using a part of another lane).



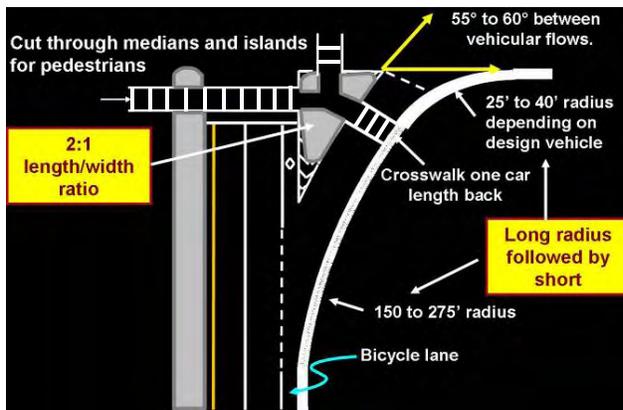
Crash Reduction Factor: TBD Research incomplete
Reference/Guidance/Cost Range <ul style="list-style-type: none"><li>• <a href="#">PEDSAFE Curb Radius Reduction</a></li><li>• <a href="#">FHWA-HRT-04-091 9.1.1 curb radius</a></li></ul>
Examples: <ul style="list-style-type: none"><li>• <a href="#">Bethesda, Montgomery County, MD;</a></li><li>• <a href="#">City of Seattle 4.8.2 Design Criteria;</a></li></ul>

- 1) Existing
  - Do you routinely encourage tight radii at urban/suburban intersections? No

- 2) Proposed
  - Assess your current curb radii design guidelines.
  - State proposed curb radii design guidelines:

Use 30' radius for arterials, depending on design vehicle and number of lanes.

“Lamb/pork-chop” shaped islands between an exclusive right-turn lane and through lanes shorten the crossing distance, reduce pedestrian exposure and improve signal timing. The island enables pedestrians and drivers to negotiate one conflict separately from the others. The island should have the longer tail pointing upstream to the approaching right-turn driver; so drivers approach at close to 90° and are looking at the crosswalk. The crosswalk is placed one car length back from the intersecting roadway so the driver can move forward once the pedestrian conflict has been resolved. The right-turning driver can focus on cross traffic and the pedestrian can focus on cross or through traffic.



Crash Reduction Factor: TBD Research incomplete

Reference/Guidance/Cost Range

- [PEDSAFE - Improved Right-Turn Slip-Lane Design](#)

Examples:

- [St. Petersburg, FL](#)
- 

### 1) Existing

- Do you routinely provide pedestrian-friendly lamb/pork-chop shaped islands (long tail design) at right-turn lanes? No

### 2) Proposed

- Assess your current policies for installing “lamb/pork-chop” island.
- State proposed “lamb/pork chop” design guidelines:

Consider on case-by-case basis depending on design. Look at new design options (check new Caltrans guidelines on freeway on/off ramps, as well as Florida DOT).

Median islands at controlled intersections channelize and slow down left-turning vehicles. However, signalized intersections should be designed to allow pedestrians to cross the entire roadway during a single signal cycle.



Crash Reduction Factor: 25% to 46%

See [Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations](#)

Reference/Guidance/Cost Range

- [PEDSAFE - Raised Medians](#)

Examples

- [Cathedral City, CA](#)
- [Naples, FL](#)
- [University Place, WA](#)
- [Tucson, AZ](#)

#### 1) Existing

- Do you routinely provide pedestrian accessible median islands at controlled intersections and are the signals timed so pedestrians can cross in one cycle? Yes
- If yes, please state your policy:

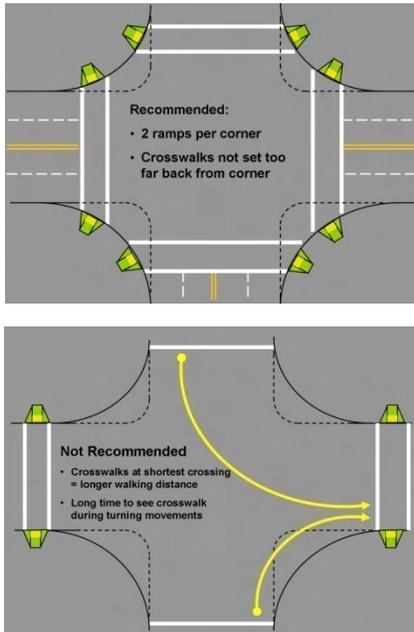
Provided on all new installations; when the median is more than 20' wide, a two stage crossing is deployed.

#### 2) Proposed

- Assess your current policies for signal timing and installing median islands at controlled intersections.
- State proposed median installation and design guidelines

Need to revise design guidelines to require this of developers and ensure two stage crossings are not giving conflicting messages to pedestrians.

Proper curb ramp placement and design ensures that pedestrians cross in crosswalks, close to the intersection, where drivers can see them, and without undue delay. Curb ramps should be aligned with the crosswalk direction of travel which can only be achieved with two ramps at a corner. Ramps (wings not included) must be wholly contained within the marked crosswalk. Poorly placed or oriented ramps force wheelchair users to make long detours and they may not cross in the allotted time at a signalized intersection or they may be crossing outside the crosswalk lines where drivers don't expect them.



Crash Reduction Factor: TBD Research incomplete
Reference/Guidance/Cost Range <ul style="list-style-type: none"> <li>• <a href="#">PEDSAFE – Curb Ramps</a></li> <li>• FHWA – ADA memo</li> <li>• <a href="#">Access Board Public Rights of Way</a></li> </ul>
Examples: <ul style="list-style-type: none"> <li>• <a href="#">Austin, TX</a></li> <li>• <a href="#">Albany, NY</a></li> </ul>

1) Existing

- Do you routinely provide two curb ramps at all corners of all signalized intersections?  
Yes
- If yes, please state your policy:

The City follows TMUTCD and PROWAG. This is a standard feature on all complete signal installations.

2) Proposed

- Assess your current policies for installing curb ramps at signalized intersections.
- State proposed curb ramp guidelines at signalized intersections.

Need to revise policies to have developers follow the Signal Design Guidelines used by TPW Signals unit. Ensure consistent policies are being used throughout TPW.

## Signalized Intersections:

All signalized intersections where pedestrians are reasonably expected to cross should have the following characteristics.

Pedestrian signal indications ensure pedestrians will know when the signal phasing allows them to cross, and when they should not be crossing. On one-way roadways a pedestrian approaching from the opposite direction cannot see the vehicle signal heads and may not realize an intersection is signalized, nor know when it is safe to cross. Left turn arrows are not visible to the pedestrian.



Crash Reduction Factor: TBD Research incomplete

Reference/Guidance/Cost Range

- [MUTCD – Sec. 4B.03 Advantages and Disadvantages of Traffic Control Signals](#)
- [MUTCD – Sec.4E.03 Application of Pedestrian Signal Heads](#)
- [PEDSAFE – Pedestrian Signals](#)

Examples:

- [Portland, OR](#)

### 1) Existing

- Do you routinely provide pedestrian signal indicators at signalized intersections? Yes
- If yes, please state your policy:

Signal Design Guidelines of TPW Signals unit

### 2) Proposed

- Assess your current policy for installing pedestrian signal indicators.
- State proposed policy for installing pedestrian signal indicators:

Current policy is sufficient.

Marked crosswalks at signalized intersections indicate to the driver where to expect pedestrians and help keep the crossing area clear of vehicles. All legs of a signalized intersection should be marked though considerations should be made where there are no facilities or destinations.



Crash Reduction Factor: TBD Research incomplete

Reference/Guidance/Cost Range

- [MUTCD – Section 3B.17 Crosswalk Markings](#)

#### 1) Existing

- Do you routinely provide marked crosswalks on all legs of signalized intersections? Yes
- Please state your policy:

Signal Design Guidelines of TPW Signals unit.

#### 2) Proposed

- Assess your current policies for marking crosswalks at signalized intersections.
- State proposed marked crosswalk installation policies for signalized intersections:

TPW Signals unit is currently investigating different crosswalk designs (continental, parallel, etc) to determine which is most effective and economical.

A WALK signal long enough to get pedestrians started and a clearance interval long enough to ensure a pedestrian can fully cross the roadway is required by the MUTCD. The new MUTCD is proposing an assumed pedestrian speed of 3.5 feet/second (formerly 4 feet/second). In some states, such as California, 2.8 feet/second is approved for use at locations where there are vulnerable populations.



Crash Reduction Factor: 37%  
If following intervals specified by ITE  
*Determining Vehicle Change Intervals: A  
Proposed Recommended Practice (1985)*

Reference/Guidance/Cost Range

- [MUTCD - Section 4E.10 Pedestrian Intervals and Signal Phases](#)

#### 1) Existing

- What is your standard? Do you use the variability allowed by the MUTCD based on the characterization of your pedestrians? Yes
- Please state your policy:

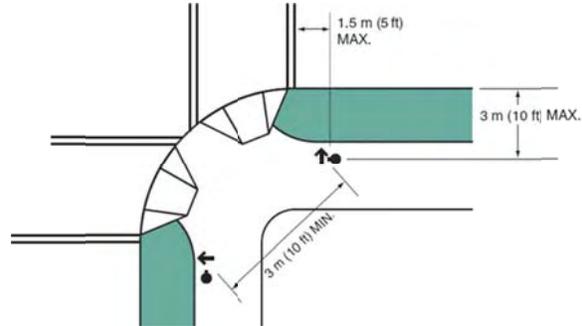
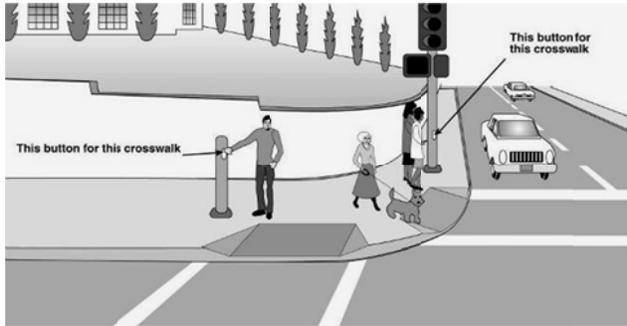
Signal Design Guidelines of TPW Signals unit & Texas MUTCD

#### 2) Proposed

- Assess your current standards assumed pedestrian walking speed.
- State proposed signal “walk time” standards:

Current policy is sufficient

Location of push buttons placed where a pedestrian who is in a wheelchair or is visually impaired can easily reach them, and that clearly indicate which crosswalk the button regulates. Where a preset cycle operates, push buttons are not needed. Typically, this will be in downtown/central business districts and other areas of high pedestrian use where pedestrians can be expected at every signal cycle.



Reference/Guidance/Cost Range

- [MUTCD - Section 4E.09 Accessible Pedestrian Signal Detectors](#)

1) Existing

➤ How do you ensure that pedestrian push buttons are placed where they can be reached?

➤ Please state your policy:

PROWAG guidelines

➤ Do you routinely avoid using pedestrian push buttons in downtown/central business districts and other areas of high pedestrian use? Yes

➤ Please state your policy:

Signal Design Guidelines of TPW Signals unit

2) Proposed

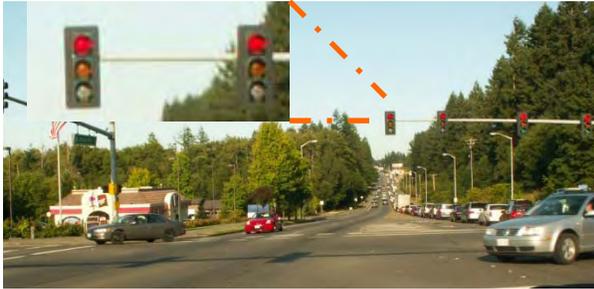
➤ Assess your current policies for installing and locating pedestrian push buttons.

➤ State proposed push button installation guidelines:

Current policies are sufficient.

**Signal timing techniques** to reduce the incidence of crashes that occur while the pedestrian is crossing with the WALK signal include protected left-turn phases, lead pedestrian intervals and pedestrian countdown signals.

**Protected left-turn phases** that allow pedestrians to cross without interference from left-turning drivers; red (then green) left turn arrows make it clear to drivers they must wait before turning (especially important where there are double right or double left turns).



<b>Crash Reduction Factor:</b> <ul style="list-style-type: none"><li>• 99% for Left turn crashes for vehicles</li><li>• TBD Research incomplete for Pedestrians</li></ul>
<b>Reference/Guidance/Cost Range</b> <ul style="list-style-type: none"><li>• <a href="#">MUTCD - Section 4D.06 Application of Steady Signal Indications for Left Turns</a></li><li>• <a href="#">FHWA-HRT-04-091: 4.2.2 "Protected-Only" Left-Turn phasing</a></li></ul>

1) Existing

- Do you routinely provide protected left turns at signalized intersections? Yes
- Please state your policy:

Signal Design Guidelines of TPW Signals unit

2) Proposed

- Assess your current policies for provided protected left turns at intersections.
- State proposed protected left turn guidelines:

Current policy is sufficient.

Lead Pedestrian Interval (LPI) reduces conflicts between turning vehicles and pedestrians when turning vehicles encroach into the crosswalk before pedestrians leave the curb. The LPI releases pedestrians 3-5 seconds prior to the green light for vehicles so pedestrians can enter and occupy the crosswalk before turning drivers enter it.



<p>Crash Reduction Factor: 5%  <a href="#">Reference Toolbox of Countermeasures and their Potential Effectiveness for Pedestrian Crashes</a></p>
<p>Reference/Guidance/Cost Range</p> <ul style="list-style-type: none"> <li>• <a href="#">PEDSAFE – Pedestrian Signal Timing</a></li> </ul>
<p>Examples:</p> <ul style="list-style-type: none"> <li>• <a href="#">Orlando, FL</a></li> <li>• <a href="#">St. Petersburg, FL</a></li> </ul>

1) Existing

- Do you provide a LPI at signalized intersections with known turning conflicts? Yes
- If yes, please state your policy:

Used on a case-by-case basis: Signal Design Guidelines of TPW Signals unit

2) Proposed

- Assess your current policies for installing LPIs.
- State proposed LPI installation guidelines:

Need to consider more widespread deployment in downtown Fort Worth with audible indications for the visually impaired; discuss merit of restricting turns on red in the downtown; use of protected right turns. Look towards XTO's forthcoming pedestrian safety proposal for synergy.

Pedestrian countdown signals tell the pedestrians how much time is left in the pedestrian clearance interval and encourages pedestrians to finish crossing before the crossing time runs out. It also reduces the number of pedestrians who initiate a crossing too late in the cycle.



Crash Reduction Factor: 25%[Reference Toolbox of Countermeasures and their Potential Effectiveness for Pedestrian Crashes](#)

Reference/Guidance/Cost Range

- [MUTCD - Section 4E.07 Countdown Pedestrian Signals](#)
  - [Proposed for 2009 MUTCD all new installations be countdowns – page 313 item 331](#)

Examples:

- [Monterey, CA](#)
- [San Francisco, CA](#)

#### 1) Existing

- Do you provide countdowns at signalized intersections where it would help? Yes
- If yes, please state your policy:

Signal Design Guidelines of TPW Signals unit & Texas MUTCD

#### 2) Proposed

- Assess your current policies for installing countdowns at signalized intersections.
- State proposed countdown signal guidelines:

Continue retrofitting signals with countdown signals.

## Other techniques to slow traffic:

Road diets: reducing the number of travel lanes a pedestrian has to cross can be beneficial to all users. A well-documented technique takes a 4-lane undivided roadway (2 lanes in each direction) and reconfigures it to 2 travel lanes, a center-turn lane and 2 bike lanes (without changing the curb lines). The benefits for pedestrians include fewer lanes to cross and slower traffic speeds. The center-turn lane also creates space for pedestrian crossing islands. The bike lanes add a buffer for pedestrians as well as a place for bicyclists to ride. Variations include reducing a multi-lane one-way roadway by one lane; narrowing the travel lanes to slow traffic and create space for bike lanes; or moving the curbs in to narrow the roadway.



Crash Reduction Factor - 29% for all types of crashes. Unknown specifically for pedestrians. [Ref Toolbox of Countermeasures & Potential Effectiveness](#)

Examples

- [El Cajon, CA](#)

References/Guidance/Cost Range

- [PEDSAFE – Lane Reduction](#)
- [Evaluation of Lane Reduction "Road Diet" Measures and Their Effects on Crashes and Injuries](#)
- [Road Diets: Fixing the Big Roads](#)
- [Road Diet Handbook: Setting Trends for Livable Streets](#)

### 1) Existing

- Do you routinely consider reducing the number of travel lanes where practical? Yes
- If yes, please state your policy:

In cases where a bike facility is proposed and in Urban Villages

### 2) Proposed

- Assess your current policies for reducing the number of travel lanes.
- State proposed road diet installation guidelines:

Identify funding sources to implement more road diets. Look towards Charlotte, NC as an example.

Additional possible implementation spot: University Blvd south of Berry St.

Look at ADT numbers to identify further possible road diets.

For more information about road diets, see:

[http://safety.fhwa.dot.gov/provencountermeasures/fhwa\\_sa\\_12\\_013.htm](http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_013.htm)

Speed Management Policy - Arterial Roadway Design: high speeds make it harder to avoid a crash, and increase the severity of a crash and the likelihood of a fatality. Speed reduction should be a primary tool in reducing pedestrian crashes. Simply lowering speed limits is usually ineffective. Roadways must be redesigned to encourage lower speeds.



Crash Reduction Factor:

- [See Desktop Reference for Crash Reduction Factors](#)

Reference/Guidance/Cost Range

- [FHWA Speed Management Speed Management Strategic Initiative](#)

#### 1) Existing

- Do you have a speed management policy? Are your design standards predicated on slow speeds in urban environments? No
- If yes, please state your policy:

Existing policies emphasize quick and smooth movement of traffic.

#### 2) Proposed

- Assess your current speed management policies.
- State proposed speed management policies to slow speeds in urban environments:

Continue incremental changes to designs that emphasize lower speeds.

Speed Limits: Reducing speed is critical to reducing the frequency and severity of pedestrian crashes. While many of the countermeasures suggested in this document will have the effect of managing speed, it is also important to have policies in place that articulate optimal speed limits and objectives for reducing speed. This includes articulating how speeds limits are established.



<p>Crash Reduction Factor:</p> <ul style="list-style-type: none"> <li>• 70% for pedestrians with speed enforcement.</li> </ul>	<p>Examples</p> <ul style="list-style-type: none"> <li>• <a href="#">Phoenix, AZ</a></li> <li>• <a href="#">Bellevue, WA</a></li> </ul>
<p>Reference/Guidance/Cost Range</p> <ul style="list-style-type: none"> <li>• <a href="#">USLimits 2</a></li> </ul>	

1) Existing

- Do you have clearly articulated optimal speed limits; and do you have policies for how speed limits are established? Yes
- If yes, state existing optimal speed limits and policies for how speed limits are established:

Speed limit set by ordinance or based upon 85% of engineering analysis speed. The analysis is followed by a speed zone ordinance amendment. On all local residential streets the prima facie speed limit according to state law is 30 mph. Rural or county roads are 60 mph or greater according to the definitions set in the Texas Traffic and Criminal Laws Manual.

2) Proposed

- Assess your current, stated optimal speed limits and policies for how speed limits are State proposed optimal speed limits and polices for how speed limits should be established – could be completely new, a revision of current practices and policies:

More discussion is needed on matching street design standards to the desired speeds.

Residential Roadway Design: residential roadways built in the last few decades are often wide and barren, encouraging speeds higher than appropriate such as roadways where children can be expected. Good residential roadway designs are narrow and have on-roadway parking, tight curb radii, short block lengths, buffered sidewalks with roadway trees, short building setbacks, and roadway lights (also see “V. Land Use and Site Design”).



Crash Reduction Factor: TBD Research incomplete
Reference/Guidance/Cost Range <ul style="list-style-type: none"> <li>• <a href="#">How to Develop a Pedestrian Safety Action Plan</a> <ul style="list-style-type: none"> <li>○ See chapter 1: Planning &amp; Designing for Pedestrian Safety – The Big Picture</li> </ul> </li> </ul>

1) Existing

- Have you adopted pedestrian-oriented residential roadway design guidelines? Yes
- If yes, please state your policy:

Areas governed by form-based codes use pedestrian-oriented design guidelines. Residential street widths: 24’ (no parking); 28’ (with parking). Straight line streets are limited in length by (long block) section of Subdivision Rules and Regulations. MTP Standards say local streets should form a well-connected network that provides for safe, direct, and convenient access by automobile, bicycling, and walking.

2) Proposed

- Assess your current residential roadway design guidelines.
- State proposed residential roadway design guidelines:

City Council adopted a Context-Sensitive Street Design policy in 2009, which should be included in the MTP amendment planned for 2012. (consider changing language in MTP guidelines about connectivity from “should” to “shall.”)

Traffic calming slows traffic inside neighborhoods. Common techniques include mini traffic circles, speed humps, diverters, chokers, and chicanes to break up long straight roadways. In general, traffic calming treatments which require road users to go side to side (chicanes and mini traffic circles) are preferred over treatments which require motorists to go up and down (speed humps). It is critical that traffic calming treatments be properly located and designed especially for emergency vehicles.



Crash Reduction Factor: <a href="#">varies by countermeasure</a> <a href="#">See Desktop Reference for Crash Reduction Factors</a>
Reference/Guidance/Cost Range <ul style="list-style-type: none"> <li>• <a href="#">PEDSAFE – Traffic Calming</a></li> </ul>
Examples <ul style="list-style-type: none"> <li>• <a href="#">Sacramento, California</a></li> <li>• <a href="#">Clark County, WA (traffic calming and emergency vehicles)</a></li> <li>• <a href="#">Village of Great Neck Plaza, New York</a></li> </ul>

1) Existing

- Do you routinely consider traffic calming on neighborhood roadways? Yes
- If yes, please state your policy:

Program is currently unfunded. As dictated by the Subdivision Ordinance, for all public and private streets, urban type lots limit length of blocks to 1,320, limited local streets are limited to 800 ft, and large lots (150+ ft wide) are limited to 1,950 ft. In the Downtown CBD and Inner City Lots (zoned MU), 500 ft is the maximum block face length. Other treatments also have been used.

2) Proposed

- Assess your current policies for installing traffic calming measures.
- State proposed traffic calming and design guidelines:

Request reinstatement of funding for program. Also, look at using new tools and develop standard designs for certain techniques.

## Work-zone related pedestrian crashes:

Work zones for public and private development must provide for safe and accessible pedestrian routes. Pedestrians should not be forced out into the roadway and detours should not be unreasonably long or inconvenient.



Crash Reduction Factor:  
TBD Research incomplete

### Reference/Guidance/Cost Range

- [Accommodating Pedestrians in Work Zone](#)
- [MUTCD Chapter 6D Pedestrian and Worker Safety](#)
- [Checklist for Accommodating Pedestrians in Temporary Traffic Control Areas](#)

### Examples

- [Albany, NY](#)

### 1) Existing

- Do you have policies for providing for pedestrian safety and access in work zones (public and private projects)? Yes
- If yes, please state your policy:

Inconsistent and unclear policies. Contractors follow rules set by TxDOT and MUTCD. In most cases, the funding entity sets the rules.

### 2) Proposed

- Assess your current policies for pedestrian access in and around work zones.
- State proposed policies for pedestrians access in and around work zones:

More consistent and clearer policies are needed.

## Transit-Related Countermeasures:

Many crashes involve a pedestrian crossing the roadway to access transit. Since pedestrian roadway-crossing solutions are applicable to transit stops, transportation agencies should collaborate with transit agencies to facilitate access and crossing. This is especially important if changes need to be made to the transit system. For example, transportation agencies can provide input on pedestrian patterns (counts) to help transit authorities decide where to place stops for adequate and efficient service, and cooperate in consolidating or adding transit stops as needed. While marking a crosswalk may not be necessarily at all locations; rather, locating stops where it is possible for a pedestrian to cross safely is recommended. This requires coordination between the transit agency and the transportation authority which manages the roadway. This is particularly important in situations where school children use public transport



Sidewalks or paved shoulders provide pedestrian access to all transit stops. This is required to make them ADA accessible.

Lighting should be provided at or near all transit stop locations to provide additional personal security.



The following policies are recommended:

Location of transit stops is critical for safety and accessibility. Transportation agencies should work with transit agencies to ensure that:

1. Bus stops are easily accessible: a stop should not be moved to a far side location if this location requires a lot of out-of-direction travel for users.
2. Bus stops are located where the driver can easily stop and move back into traffic.
3. Bus stops are located where passengers with disabilities can board the bus.

1) Existing

Crash Reduction Factor: Many already discussed. See [desktop reference](#)

Reference/Guidance/Cost Range

- [How Far, By Which Route, and Why?](#)
- [Pedestrian Safety Guide for Transit Agencies](#)
- [PEDSAFE - Transit Stop Treatments](#)
- [Guidebook for Mitigating Fixed-Route Bus-and-Pedestrian Collisions](#)

- Do you collaborate with transit providers to ensure stops are properly located? Yes, but only in signing for bus stops, not the location of the stops except on occasions of relocation coordination.
- Do you collaborate with transit providers to ensure stops have sidewalks to make them accessible? Not always, stops are chosen independent of sidewalk accessibility. Transit does install sidewalks at stops.
- Do you collaborate with transit providers to ensure pedestrians can cross the roadway wherever there is a transit stop? Yes, on a case-by-case basis.
- Do you collaborate with transit providers to provide adequate lighting at transit stops? Not a defined policy, handled case-by-case. The T handles lighting at transit shelters and stops.

## 2) Proposed

- State proposed guidelines at transit stops for locating, accessing, crossing, and lighting:  

Coordinated policies between the City and the T need to be developed and enhanced.
--

Transportation agencies should collaborate with transit agencies to facilitate access and crossing. The collaborating is critical since transit agencies need transportation agency support to make changes to their system. Transportation agencies should:

1. Provide input on pedestrian patterns (counts) to transit agencies for their consideration as they decide where to place stops for adequate and efficient service. Provide cooperation in consolidating or adding transit stops as needed. Transit agencies typically try to improve transit efficiency by minimizing the number of stops while recognizing that stops too far apart may deter pedestrian usage
2. Cooperate with transit agencies to move stops to locations where it is easier to cross the roadway. In general, far side locations are preferred for pedestrian safety, as pedestrians cross behind the bus, and the bus can leave without having to wait for pedestrians to cross. However, there are locations where a nearside stop is safer for operational reasons.
3. At mid-block locations, coordinate with transit agencies to place crosswalks (where warranted) behind the bus stop so pedestrians cross behind the bus, where they can see oncoming traffic; it also enables the bus driver to pull away without endangering pedestrians.

## Land Use and Site Design

Land use patterns impact pedestrian crashes. Pedestrian crash severity is higher in suburban, auto-oriented locations where speeds are faster and drivers don't expect pedestrians. Pedestrian crashes are less severe in established, traditional urban areas where drivers are more aware of pedestrians. Sample land use and site design techniques that encourage more walking and help manage speed and therefore affect crash rates include:

### References/Guidance

- See How to Develop a Pedestrian Safety Action Plan - Chapter 1: Planning and Designing for Pedestrian Safety—The Big Picture
  - Appendix G: Pedestrian-Related Land Use Planning Resources

- 1) Buildings that define roadways. Buildings located at the back of the sidewalk give the driver sense of enclosure; buildings set back with large parking lots in front can give the impression of wide high-speed roads.
- 2) Mixed-use development: Buildings with retail on the bottom and housing on the top encourage pedestrian activity.
- 3) Roadway connectivity encourages walking because of the reduced travel distance to reach destinations (cul-de-sacs without connector paths reduce pedestrian connectivity).
- 4) Parking should not be placed between the sidewalk and buildings; on-roadway parking is a very effective way to slow traffic and encourage pedestrian-oriented development.
- 5) Access management principles should be extended to parking: single lots serving multiple stores are preferred over single stores each with its own parking and driveway(s).
- 6) School siting and space requirements should ensure that schools are placed in neighborhoods, have pedestrian access and allow for shared facilities with parks and community centers.

### 1) Existing

- Have you adopted city codes for future development that create a pedestrian-friendly environment for each of the following?

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## 2) Proposed

- Assess current land-use codes and requirements for each of the above.
- Identify schedule (dates) for routine updating of current codes and requirements listed above. In general, pedestrian friendly changes should be made at the same time as other updates:

Consider developing incentive program to promote above pedestrian-friendly policies.

Regarding school siting: More initiative is needed at regional level for working on better coordination between schools and city districts, as overlapping jurisdictions present difficulties.

Reinstate practice of FWPD safety review of school sites.

## Education and Enforcement

### Education

Public education is essential to reduce pedestrian crashes. It also builds public support for programs, projects and policies to reduce pedestrian crashes. To be effective, it must target those behaviors within selected age groups that will most likely result in fewer pedestrian crashes.



#### References/Guidance

- [See How to Develop a Pedestrian Safety Action Plan Chapter 5 Education solutions](#)
- [Evaluation of the Miami-Dade Pedestrian Safety Demonstration Project](#)

- [Traffic Education of Children 4-12 Years Old](#)
- [Guidelines for Developing Traffic Safety Educational Materials for Spanish-Speaking Audiences](#)

Examples

- [Comprehensive School-Age Pedestrian Safety Program Orange County, FL](#)
- [Walk Safe Program Miami-Dade County, FL](#)
- [Law Enforcement Pedestrian Safety – San Diego, CA](#)

1) Existing

- What are your current education projects and programs for reducing pedestrian crashes?
- Please describe:

None

2) Proposed

- Assess your current education projects and programs. Are you able to demonstrate that it is reducing crash rates with any age groups?
- State details for proposed changes (if needed).

Improve coordination on a county level to ensure all schools are covered. Also develop an adult safety education program focused on downtown Fort Worth in addition to a program to be deployed by neighborhood groups.

Partnerships with non-profit groups, the private sector, and other local governmental agencies are an excellent way to get the entire community involved in safety education projects and programs. This includes schools, neighborhood groups, advocacy organizations and local businesses, as well as local health departments, hospitals and public safety officials such as firefighters and other first responders.



References/Guidance

- [A Resident's Guide for Creating Safe and Walkable Communities - FHWA](#)
- [Case Study No. 11: Balancing Engineering, Education, Law Enforcement, and Encouragement](#)

Examples

- [PEDS Take Back the Streets Project - Atlanta, GA](#)
- [Pedestrian Safety Enforcement DVDs - Madison, WI](#)

1) Existing

- What are your current partnerships with public and non-profit groups and the private sector to promote education projects and programs for reducing pedestrian crashes?
- Please describe:

Hospitals' annual safety fairs, Safe Routes to School.

## 2) Proposed

- Assess your current partnerships. Are you able to demonstrate that it is reducing crash rates with any age groups?
- State details for proposed changes:

### Possible programs:

- Neighborhood groups educational program.
- Work with XTO, Downtown Fort Worth Inc., Fort Worth Water Company, Chamber of Commerce and other corporate citizens to educate adults, especially downtown.
- Partner with a "Safe Communities" effort.

## Enforcement

Enforcement is an essential element of an overall program to reduce pedestrian crashes. To be effective, it must be done in partnership with the community and law enforcement while targeting motorist and pedestrian behaviors that will most likely result in fewer pedestrian crashes.



### References/Guidance

- [See How to Develop a Pedestrian Safety Action Plan Chapter 5 Enforcement solutions](#)
- [Evaluation of the Miami-Dade Pedestrian Safety Demonstration Project](#)
- [Law Enforcement Pedestrian Safety - NHTSA](#)
- [The Center for Education and Research in Safety \(CERS\) Enforcement Program](#)
- [SRTS "Pedestrian Decoy" Operations](#)

### Examples

- [Red Light Photo Enforcement, West Hollywood, CA](#)
- [Neighborhood Speed Watch Programs, Phoenix, AZ](#)

## 1) Existing

- What are your current enforcement programs for reducing pedestrian crashes?
- Please describe:

Nothing ongoing but will work with the media to coordinate program in reaction to any notable incident. Some coordination is done with schools when enforcement is requested in addition to routine DUI education program with schools. Also, occasional coordination of safety public service announcements with TxDOT.

## 2) Proposed

- Assess your current enforcement programs. Are you able to demonstrate that it is reducing crash rates with any age groups?
- State details for proposed changes (if needed):

Evaluate and report on program successes (refer to NHTSA's DDACTS – Data Driven

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Approaches to Crime and Traffic Safety).

Collaboration with local law enforcement is an essential element of an enforcement program to reduce pedestrian crashes. To be effective, it must be done in partnership with schools and other community leaders.



- References/Guidance
- [Safe Routes to School - Enforcement](#)

- Examples
- [Comprehensive Traffic Safety Program for All Age Groups - Solano County, California](#)
  - [Cross Safely Drive Safely - University of Massachusetts, Amherst, MA](#)

1) Existing

- Do you have a safety committee or other organizational structure that provides a forum for regular and ongoing communication between law enforcement officers, local schools and other community leaders?
- Please describe:

Yes, through the School Safety Program that partners with school officials in developing safe routes to schools for the young pedestrians. Additionally, through neighborhood association meetings, coordination with school crossing guards, and FWPD officers assigned to schools.

2) Proposed

- Assess your current communication structures. Is there ongoing communication that helps law enforcement focus enforcement on motorist and pedestrian behaviors that reduce pedestrian crashes
- State details for proposed changes (if needed):

- Establish a downtown safety committee through Downtown Fort Worth Inc
- Establish a Fort Worth Pedestrian advisory committee
- Coordinate with JPS Health Network & Tarrant County Public Health
- Develop a focused 3+ months Education and Enforcement campaign (similar to better block), to be deployed at “hot spots”
- Program similar to the Denver roving ROW enforcer – a person traveling through the city educating residents on proper driving/yielding issues
- Investigate setting “Safety Corridors” where needed

## Data Collection, Analysis and Prioritization

Identifying where crashes occur can be an inexpensive easy way to identify high crash locations, corridors and neighborhoods. It can be done electronically or on a simple pin map that is done by hand. Typically, five years of crash data should be displayed. In rapidly changing areas, three years might be appropriate. In older areas that are not changing, seven years may be appropriate. Once completed, it should be used as a baseline to focus resources and select counter measures.



### 1) Existing

- Do you routinely collect pedestrian crash location data and display this on a map? Yes, as of April 2012; do you use data to focus resources and select counter measures? Yes,
- If yes, state existing practice:

Planning to use the data to focus/prioritize enforcement efforts.

### 2) Proposed

- Assess your current practice for collecting and displaying pedestrian crash location data – are you satisfied with them – are they providing you with what you need to identify high crash locations, corridors and neighborhoods? Assess how you use the data.
- State proposed practice – could be completely new, a revision of current practice or a restating of existing practices.

Develop practices and procedures - coordinate data analysis between FW Planning & Development Dept, FWPD, NCTCOG, and TxDOT.

Computerized, timely, geo-coded pedestrian crash data are extremely useful to determine whether pedestrian crashes are occurring at a) spot locations, b) along corridors, c) in a neighborhood area, d) throughout an entire jurisdiction (poor standard practice such as failing to install pedestrian indicators at signals), or e) among certain populations (e.g., children, older adults). Typically, five years of crash data should be displayed. In rapidly changing areas, three years might be

### Geographic Information Systems

- [Wikipedia GIS](#)

#### Examples of communities using GIS

Metropolitan Transportation Commission

- [San Fran Bay Area MTC Maps and Data](#)
  - [Sharing GIS information](#)

#### Examples of using SWITRS to compile police report information.

- [California Highway Patrol](#)
  - [CHP SWITRS](#)

appropriate. In older areas that are not changing, seven years may be appropriate. In addition to crash reports agencies should look at other sources of data such as hospitals. See the references to hospital data in the green reference box.

- [Injury to Pedestrians and Bicyclists: An Analysis based on Hospital Emergency Department Data](#)
- [San Francisco pedestrian injury surveillance: Mapping, under-reporting, and injury severity in police and hospital records](#)

Once categorized, this information can be used to select countermeasures, focus resources, and set priorities for engineering, education and enforcement programs.

The data can also be used in crash typing (see web reference to Ped/Safe Guide). Crash typing categorizes all crashes based on situational and behavioral circumstances and is a way to target countermeasures in engineering, education and enforcement programs at very specific types of crashes.

[PEDSAFE- Crash Typing](#)

#### 1) Existing

- Do you routinely collect and geo-code pedestrian crash data? Yes
- If yes, state existing practice:

In the early stages; NCTCOG maintains data on a local level

#### 2) Proposed

- Assess your current practices for collecting, geo-coding and analyzing pedestrian crash data. Are you satisfied with them – are they providing complete, reliable information that allows you to make good choices about where focus your resources?
- State proposed crash data collection and geo-coding procedures – could be completely new, a revision of current practice or a restating of existing practices.

Pedestrian counts along with field observations (e.g., driver yielding, conflicts, and pedestrian assertiveness) can be very useful in understanding pedestrian behavior and in considering the need for facilities. Counts and behavior studies, when combined with crash data, can also provide insights into specific crash causes and potential countermeasures. On-site observations will often reveal behavior patterns that lead to design changes. Before and after counts can be used to measure success which in turn can be used to help secure funding. Pedestrian counts are also important to assess when and where signals, stop signs and marked crosswalks should be installed.

#### References/Guidance

- [How to Develop a Pedestrian Safety Action Plan - Appendix B: How to Conduct Pedestrian Counts and Behavior Studies](#)

#### 1) Existing

- Do you routinely collect pedestrian counts and complete crossing observations?
- Yes / No State existing practice:

No

2) Proposed

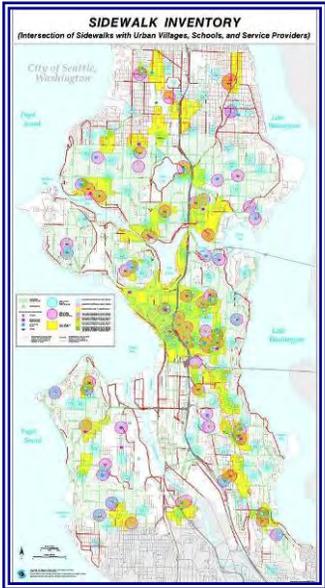
- Assess your current practices for collecting pedestrian data and how you use pedestrian data. Are you satisfied with them – are they providing good information that is then being used to make design decisions and prioritize projects?
- State proposed pedestrian count and observation procedures along with a statement on how the data will be used – could be completely new, a revision of current practice or a restating of existing practices.

Request this be added to Downtown Fort Worth Inc’s annual study.

Sidewalk inventories help identify system gaps and unsafe conditions. Sidewalk inventories can simply identify where sidewalks do or do not exist. More extensive sidewalk inventories assess the condition of existing sidewalks (frequently done for ADA purposes). When combined with crash data, pedestrian counts, behavior studies and traffic characteristics, they can be very useful in prioritizing locations for improving existing sidewalks, filling in short gaps between existing sidewalks and installing new sidewalks. It is recognized that completing comprehensive sidewalk inventories can be expensive. When resources are scarce, an alternative approach is to inventory smaller areas focused around schools, neighborhood commercial areas, neighborhood centers and facilities that serve people with special needs.

**Sidewalk Inventory**

- [City of San Antonio, TX](#)
- [Long Beach, CA](#)
- [Castle County, DE & Cecil County, MD](#)
- [Tucson, AZ](#)
- [Burlington, VT - Sidewalk Strategic Plan Development](#)



1) Existing

- Do you have an inventory of your sidewalks?
- Do you have an inventory of the condition (e.g., width and surface if available) of your sidewalks?
- State existing practice:

Yes: inventory of most of the City exists. Very basic inventory of conditions exists (not including widths), though most information is collected via citizen reports.

2) Proposed

- Assess your current practices for inventorying sidewalks. Are you satisfied with them – are they providing information that is then being used to make decisions about where to make sidewalk improvements and install new sidewalks?
- State proposed sidewalk inventory procedures

More funding is needed to carry out the inventory. Data collection could be connected

to comprehensive plan update cycle.

Marked crosswalk inventories at controlled, uncontrolled, intersections and midblock locations are needed to establish annual re-marking programs and to work with local transit agencies (wherever there is a transit stop, there needs to be a location to cross the roadway). When combined with crash data, pedestrian counts, behavior studies and traffic characteristics, they can be very useful in prioritizing locations for evaluating the crosswalk and then identifying measures to upgrade and improve the crosswalk. Maintaining an up-to-date inventory of marked crosswalks is particularly important since the majority of pedestrian crashes involve crossing the roadway. ADT (Average Daily Traffic), road widths (number of lanes) and speeds are three of the most important factors to consider when evaluating crosswalks. When combined with actual crash data and pedestrian counts, this information can be very useful in prioritizing locations for making crossing improvements and determining where to install new marked crosswalks.

- Examples
- [City of Seattle](#)
  - [City of Seattle – Policy](#)
  - [WSDOT Design Manual Ch. 1025 – Pedestrian Design Considerations](#)

[Safety Effects of Mark vs. Unmarked Crosswalks at Uncontrolled Locations](#) Table 11 page 54

Table 11. Recommendations for installing marked crosswalks and other needed pedestrian improvements at uncontrolled locations.<sup>1</sup>

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**											
	≤ 48.3 km/h (30 mi/h)	56.4 km/h (35 mi/h)	64.4 km/h (40 mi/h)	≤ 48.3 km/h (30 mi/h)	56.4 km/h (35 mi/h)	64.4 km/h (40 mi/h)	≤ 48.3 km/h (30 mi/h)	56.4 km/h (35 mi/h)	64.4 km/h (40 mi/h)	≤ 48.3 km/h (30 mi/h)	56.4 km/h (35 mi/h)	64.4 km/h (40 mi/h)
Two lanes	C	C	P	C	C	P	C	C	N	C	P	N
Three lanes	C	C	P	C	P	P	P	P	N	P	N	N
Multilane (four or more lanes) with raised median***	C	C	P	C	P	N	P	P	N	N	N	N
Multilane (four or more lanes) without raised median	C	P	N	P	P	N	N	N	N	N	N	N

C = Candidate sites for marked crosswalks  
 P = Possible increase in pedestrian crash risk may occur if crosswalks are added without other pedestrian facility enhancements.  
 N = Marked crosswalks alone are insufficient, since pedestrian crash risk may be increased by providing marked crosswalks alone

1) Existing

- Do you have an inventory of your marked crosswalks? No
- Do you have ADT, number of lanes and speed information for your roadways? Yes
- State existing practice:

NCTCOG maintains this data

2) Proposed

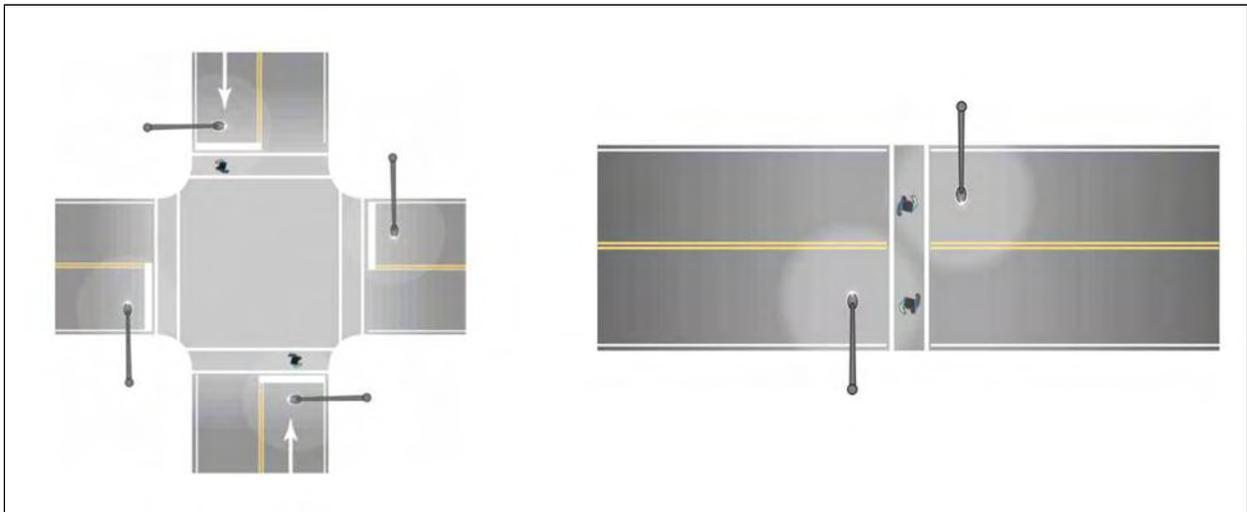
- Assess your current practices for inventorying marked crosswalks. Are you satisfied with them – are they providing information that is being used to make decision about where

to re-mark crosswalks – make other crosswalk improvements? What change(s), if any, need to be instituted to ensure inventories of marked crosswalks are routinely completed and used?

- Assess your current practices for collecting and using ADT/number of lanes/speed information. Are you satisfied with them – do you have the information and is it being used to make decisions about locating marked crosswalks and making crosswalk improvements?
- State proposed marked crosswalk inventory procedures

If possible, enhance upcoming transportation impact fee study to capture crosswalks and roadway features, including visual inspection of major arterials. Additionally, if possible, build on the Fort Worth Code Enforcement App to get citizens to help in capturing inventory data.

**Lighting Inventory:** Providing appropriate lighting at pedestrian crossing locations is one of the most important factors to consider when evaluating and improving crosswalks. A disproportion of pedestrian crashes occurs at night. When combined with actual crash data and pedestrian counts, information about lighting can be very useful in prioritizing locations for making lighting improvements.



#### 1) Existing

- Do you have lighting information where there are roadway crossings? No
- Do you use it to evaluate crosswalks, existing/proposed marked crosswalks? No
- State existing practice:

Very limited lighting information – existing roadway lighting information was provided by utility company (Tri-County). Effort underway to ensure lighting exists on all arterial roadways. Information on where crosswalks are placed is not provided to lighting staff.

#### 2) Proposed

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- Assess your current practices for collecting and using lighting information. Are you satisfied with them – do you have the information and is it being used to make decisions about making lighting improvements at crossing locations?
- State proposed lighting information collection procedures and how the information will be used to make decisions on lighting improvements at crossing locations:

Would like to have a system to get better information, requiring more resources, as only one staff person is working on this issue, and is focused on installations. Effort should be made to review all plans to ensure lighting gets installed (piggyback on mapping done by utility companies).

Existing projects and programs should be listed and described in one place to allow for overall agency coordination and to avoid duplication. Examples include programs to repair sidewalks, install new sidewalks, install new curb ramps, install countdown signals, upgrade crosswalks, implement safe routes to school programs and implement enforcement and education programs.

1) Existing

- Do you have an inventory of all pedestrian related programs and projects? No

2) Proposed

- What change(s), if any, need to be instituted to ensure that you have an updated inventory of current projects and programs?
- State proposed project and program tracking procedures:

Would like to have better information on all of these projects and programs. Departments should share GIS Shape files.

Pedestrian crash data along with other data (described earlier) should always be considered when prioritizing agency projects and programs. This will help ensure that all projects and programs make pedestrian improvements where appropriate. Since most pedestrian infrastructure is built in conjunction with other projects, inclusion of pedestrian crash data when prioritizing projects is of particular importance.

1) Existing

- Do you routinely consider (include) pedestrian crash data, along with other data, when prioritizing projects and programs? Yes
- If yes, state existing practice:

Pedestrian crash data is considered when projects are planned. Funding for repairs is prioritized by location (proximity to schools, transit, etc).

2) Proposed

- State proposed practice along with changes needed to make sure that all projects and programs are routinely prioritized based, in part, on addressing pedestrian crashes

(could be completely new, a revision of current practice or a restating of existing practices):

Include enforcement and education in the process, and review sidewalk inventory. Help identify high priority locations that can go into Comprehensive Plan and be programmed into Capital Improvement Projects. It would help to identify projects in different council districts and have a certain amount of funding allocated. Sidewalks are currently treated differently because they are built by developers and maintained by property owners.

Prioritizing pedestrian safety improvements is the final step once all appropriate data has been collected. Priorities should be established based on a variety of factors including safety consequences, cost, travel demand, availability of right-of-way, federal and / or state mandates and public support. Countermeasures can be phased and divided into temporary or permanent improvements. (Note: Many pedestrian improvements can be made in conjunction with other projects regardless of their priority. See section on funding)

References/Guidance:

- See How to Develop a Pedestrian Safety Action Plan – Chapter 4 Analyzing Information and Prioritizing Concerns

Examples:

- [San Diego – Pedestrian Project Priorities](#)
- [Seattle - New sidewalk construction prioritization criteria](#)

1) Existing

- Do you routinely prioritize (rank) pedestrian safety improvements based on crash data, along with other data? No - challenge with sidewalk projects, as resources are limited and residents are often unaware it is their responsibility.

2) Proposed

- Assess your current prioritization practices – are you satisfied with them – are they giving you prioritized lists that you believe will reduce crashes and increase use?
- State proposed prioritization criteria:

Develop prioritization and ranking criteria, and then identify funding sources.

## Public Involvement

Public involvement is another excellent way to get a better product. It also builds public support for programs and policies to reduce pedestrian crashes. To be effective, stakeholders must feel listened to and heard.

### References/Guidance

- See [How to Develop a Pedestrian Safety Action Plan – Chapter 2 Involving Stakeholders](#)

### 1) Existing

- What is your current policy for involving the public in policies, projects and programs?
- Please describe:

Public meetings and online survey were conducted during development of Walk Fort Worth plan. The plan will also be presented to neighborhood associations, hearings at City Hall, etc. Planning & Development's neighborhood education section delivers information to residents.

Capital projects inform neighborhoods to solicit input and notify residents within certain distance of project.

Social media – Facebook, Twitter, online videos – are also being used with both the bike plan and pedestrian plan.

Urban village plans have used charrettes.

### 2) Proposed

- Assess your current policies for public involvement. Is the public satisfied with them? Has working with the public been a good experience for your agency? Is it producing better outcomes?
- State details for proposed changes (if needed):

Process has been working well in development of pedestrian/bicycle plans, though attendance at public meetings was low. Great response to pedestrian survey (over 1,600); increase online and virtual methods of reaching residents, with increase of educational content. Better marketing of meetings/workshops is also needed.

Emphasize going to residents instead of expecting they will come to City events. Send staff to neighborhood association meetings, senior centers, schools, etc.

A Pedestrian Advisory Board (PAB) is another excellent way to get a better product. They also build public support for policies, programs and policies to reduce pedestrian crashes. To be effective, stakeholders must be involved in the review of policies, programs and projects.

### References/Guidance

- See [How to Develop a Pedestrian Safety Action Plan](#)
  - [Chapter 2 Involving Stakeholders](#)
  - [Appendix A: How to Create and Run an Effective Pedestrian Advisory Board](#)
- include sample Resolutions creating a PAB

1) Existing

- Do you have a PAB that regularly reviews policies, programs and projects? No

2) Proposed

- Assess the creation of a PAB. If you already have a PAB, is there a good working relationship between the PAB and your agency? Is it producing better outcomes?
- State details for a new PAB(or changes to if there is an existing PAB):

An advisory board or committee would be beneficial, including representatives from all sectors: transit, Mayor's committee, businesses, social service agencies, public health, professionals, etc.

Other governmental agencies are also stakeholders. Building positive, working relationships is essential for coordination on regional planning issues; it also provides a way to coordinate on solving specific problems such as identifying high crash locations where additional enforcement may be needed, and coordinating transit stops with crossing locations.

References/Guidance

- See How to Develop a Pedestrian Safety Action Plan – Chapter 2 Involving Stakeholders

1) Existing

- Do you routinely coordinate with other agencies on crash data collection and analysis; and implementation of infrastructure and programs (e.g. corridor enforcement focus areas; education in schools located in high crash neighborhoods etc) Yes / No
- Please describe:

Some coordination with other agencies for data collection is done

2) Proposed

- Assess your current practices for working with other agencies.
- State proposed practices for working with other agencies:

More routine coordination would be beneficial. Mechanism is needed to communicate more regularly.

Special interest groups are also important stakeholders. These include business, advocacy and neighborhood groups as well as more broadly representative community leaders. Building positive, working relationships is essential for building support for solving pedestrian safety issues at the neighborhood level.

References/Guidance

- See How to Develop a Pedestrian Safety Action Plan – Chapter 2 Involving Stakeholders

1) Existing

- Do you routinely coordinate with special interest groups to solve pedestrian problems? Yes

- Please describe:

Some coordination is done with downtown entities (DFWI, XTO), school districts, etc.

## 2) Proposed

- Assess your current practices for working with special interest groups.
- State proposed practices for working with special interest groups:

More formalization is needed – also need to coordinate more with business groups.

Individual stakeholder involvement is an excellent way to get a better product. Public stakeholders should be viewed as partners who are the on-the-ground scouts who can identify problems, needs and opportunities. To be effective, stakeholders must be involved in a regular, ongoing and systematic way. Additionally, they must be listened to and responded to when they contact your agency.

### References/Guidance

- See How to Develop a Pedestrian Safety Action Plan – Chapter 2 Involving Stakeholders

## 1) Existing

- Do you routinely provide for individual stakeholder involvement? No

## 2) Proposed

- Assess your policies for involving individual stakeholders.
- State proposed policy for working with individual stakeholders:

A more formalized outlet for stakeholder involvement is needed (e.g. PAB if established).

## Providing Funding

Complete Streets (also called routine accommodation) is the most cost-effective funding strategy for reducing pedestrian crashes and encouraging more walking by including pedestrian improvements in all projects, programs and maintenance activities. The majority of pedestrian infrastructure (including accessibility improvements) is built in conjunction with other projects. This approach allows for significant improvements over time, even if there is no special funding available for pedestrian safety improvements.

<p>References/Guidance</p> <ul style="list-style-type: none"><li>• See How to Develop a Pedestrian Safety Action Plan<ul style="list-style-type: none"><li>○ Chapter 6 Funding</li><li>○ Appendix D List of Funding Sources</li></ul></li><li>• <a href="#">SAFETEA-LU General Funding Requirements for Bicycles and Pedestrians</a></li><li>• <a href="#">SAFETEA-LU</a></li></ul>	<p>Examples</p> <ul style="list-style-type: none"><li>• <a href="#">California Blueprint for Bicycling and Walking: Report to the Legislature, 5-2002</a></li></ul>
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### 1) Existing

- Do you routinely consider pedestrian safety improvements (counter measures from earlier in document) in all projects, programs (e.g. drunk driving campaigns) and maintenance activities? Yes
- Do you have adopted complete roadways (streets) and/or routine accommodation requirements? Yes (on new streets)

### 2) Proposed

- Assess your current practices and requirements for including pedestrian safety improvements in all projects, programs and maintenance activities.
- State proposed requirements:

Identify countermeasures that work best in different situations (refer to PedSafe document).  
Impact Fee Study will be looking at different street classifications; consider ways to make streets more complete when street reconstruction projects are undertaken.  
New street standards include complete street features but some guidelines say “should;” strengthen language to say “shall.”

Dedicated funds and set-asides for pedestrian projects allow for immediate action in addressing high crash locations, corridors, and other targeted areas. They can be federal, state or local funds and are often a percentage of another fund.

<p>References/Guidance:</p> <ul style="list-style-type: none"><li>• See How to Develop a Pedestrian Safety Action Plan - Chapter 6 Funding</li><li>• <a href="#">Funding Sources for Bicycle and Pedestrian Projects</a></li><li>• <a href="#">CA SHSP</a></li></ul>
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- [Federal - SHSP](#)

Examples:

- Contact your Caltrans District Local Assistance contact at <http://www.dot.ca.gov/hq/LocalPrograms/dlae.htm> – look for examples of developer set asides, sale of development rights, local levies etc.)

1) Existing

- Do you have set aside funds that are dedicated to pedestrian safety projects and programs? Yes

- Please describe:

\$150,000 per year from red-light cameras used for sidewalks, prioritized for projects with most need/demand.

Urban Village streetscape project design centralized on enhancing pedestrian amenities. Staff routinely seeks local, state, and federal funding for improvements.

2) Proposed

- Assess your current set aside funding sources.
- State proposed dedicated funding sources that your department is willing to pursue.

- Transportation utility user fee – include earmark for pedestrian improvements
- Future bond for Capital Improvement Programs
- CDBG funds
- TIGER grants

## Goals/Objectives/Commitment

Clear goals are needed for a pedestrian plan to be successful in reducing pedestrian crashes and increasing the number of pedestrian trips. They allow for the development of practical and achievable strategies; they also provide a way to measure progress over time.

### Examples

- **Walkinginfo.org**
  - [Community Vision and Objectives](#)
- **City of Morena CA**
  - [Pedestrian and Bicycle Master plan](#)
- **City of Sacramento**
  - [Pedestrian Master Plan](#)

### 1) Existing

- Do you have clearly stated goals for reducing pedestrian crashes and increasing the number of pedestrian trips? Yes / No
- If yes, state existing policy:

The City Council's Strategic Goals include making Fort Worth a safe city and improving mobility.

### 2) Proposed

- Assess your current goals – are you satisfied with them – are they what you want?
- State proposed goals – could be completely new, a revision of current goals or a restating of existing goals:

Developing specific goals in the pedestrian plan with benchmarks – promote and provide an efficient and equitable accessible transportation pedestrian network to encourage more pedestrian trips.

Each Plan also requires specific and measurable objectives designed to reduce the risk factors that lead to crashes as well as to encourage more walking. If recognized and embraced, they help provide the rationale for allocating resources to implement necessary countermeasures.

### References/Guidance

[NHTSA – Economic cost of crashes](#)

### Examples

- **City of Marina**
  - [Guidelines for healthy Streets](#)
- **Marin County, CA**
  - [Case Study - PEDSAFE](#)
    - health, congestion, air pollution
- **Clemson, SC**
  - [Case Study – PEDSAFE](#)
    - Revitalization

### 1) Existing

- Do you have clearly articulated objectives that can be accomplished by reducing crashes and encouraging walking? **No**

### 2) Proposed

- Assess your current, stated objectives that can be accomplished by reducing crashes and encouraging walking – are you satisfied with them – are they what you want?

N/A

- State proposed objectives – could be completely new, a revision or restating of existing objectives:

Reduce crashes by 10%, increase walking 2%, increase recreational walking – by 2020

Commitment to safety for all modes including pedestrians (pedestrians are included in the definition of “traffic”) should be a top goal and priority of local transportation agencies. Once this commitment is made, it allows transportation agencies to allocate funds in reducing all crash types, including pedestrian crashes.

Examples
• <a href="#">King County, WA</a>

1) Existing

- Do you have a clearly stated commitment to safety for all modes in your agency mission statement? Yes
- State existing policy:

City Council’s Strategic Goals, City’s Comprehensive Plan, TPW Traffic Engineering’s mission statement

2) Proposed

- Assess your current agency mission statement.
- State proposed agency mission statement:

Current statements sufficiently address safety

## Evaluation/accountability

No plan will be successful unless it is implemented and continually evaluated. The following are some measures to consider:

- a) Performance measures (benchmarks) evaluate whether a plan is meeting its goals (e.g. to reduce pedestrian crashes and increase walking). In all cases, performance measures must be measurable. Examples include, number of crashes involving pedestrians, number of injuries, number of fatalities (are they going down); and number of people walking (census, counts etc).
- b) Infrastructure accomplishments can also be measured (e.g. miles of shoulders constructed; sidewalks built, crosswalks improved, ramps constructed, systems completed, etc.). Measuring infrastructure accomplishments is important though it is not an end in itself and should not be considered successful unless it reduces pedestrian crashes and increases use.
- c) Other measurements include sales and events (e.g. walking shoes sold participation in public runs and walks; use of public transit etc.). While less scientific, these measurements give an indication of whether walking is generally increasing.

Evaluation of results ensures that implemented countermeasures are effective in reducing crashes and improving safety; it also helps ensure future funding opportunities if the plan is perceived as a success. Success should be measured against the objectives set forth in the Pedestrian Safety Action Plan – typically to reduce pedestrian crashes by a certain number and/or percentage.

### 1) Existing

- Have you established a baseline that can be used to evaluate your efforts to reduce pedestrian crashes and increase the number of pedestrian trips? Yes
- Do you routinely evaluate results of your efforts to reduce pedestrian crashes? Yes / No
- Please describe:

Baseline set for pedestrian plan, using American Community Survey (ACS) data, City-distributed surveys, and crash data. Other projects and locations are evaluated case-by-case.

### 2) Proposed

- State proposed evaluation measures (must be measurable)

- See objectives on crashes and walking
- Follow-up survey after improvements are implemented would be beneficial
- Add pedestrian questions to annual city services survey
- Incorporate with future bike share use data
- Safe Routes to Schools evaluations through the schools
- Input from major employers