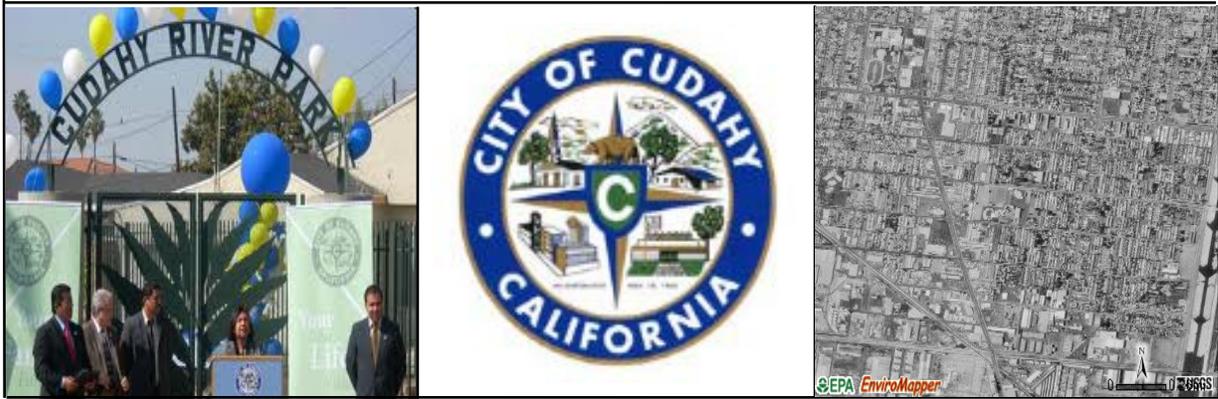


CITY OF CUDAHY

PEDESTRIAN SAFETY ASSESSMENT

Issues, Opportunities, and Enhancement Strategies



Evaluation Team:

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**CITY OF CUDAHY
PEDESTRIAN SAFETY ASSESSMENT**

FINAL REPORT

JUNE 2013

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EXECUTIVE SUMMARY

The City of Cudahy Public Works Department requested that the Technology Transfer Program of the Institute of Transportation Studies at University of California, Berkeley conduct a Pedestrian Safety Assessment (PSA) study. A team of two pedestrian safety experts conducted the PSA field visit for City of Cudahy in March 2013 and prepared this report. The objectives of the PSA are to improve pedestrian safety and to enhance walkability and accessibility for all pedestrians in Cudahy.

The City of Cudahy has been striving to accommodate both existing and future pedestrian demand, with efforts including:

- Partnering with local schools to pursue safe routes to school funding
- Providing enhanced marked crossings near area schools
- Recently completing Traffic Engineering Guidelines that provide guidance on pedestrian related signage and markings

The PSA focused on identifying opportunities to build on these existing efforts and offering ideas for potential enhancements.

Cudahy has a population of approximately 26,000 residents. Based on the 2009 California Office of Traffic Safety (OTS) safety rankings of California cities, Cudahy ranked 8th out of 98 California cities for the number of pedestrian collisions by average population, in the “number of pedestrian injured or killed” category, with 1st being the worst. When looking at the ranking based on daily vehicle miles traveled for cities in the same population group, Cudahy ranked 2nd out of 93. From 2008 to 2010, no pedestrian fatalities were reported within Cudahy.

Chapter 2 provides an overview of collision data for the City.

The remainder of this report presents the findings and suggestions derived from:

- Benchmarking analysis of the City’s existing pedestrian programs, policies, and practices (*Chapter 3*)
- Field walking audit (*Chapter 4*)

BENCHMARKING ANALYSIS OF POLICIES, PROGRAMS, AND PRACTICES

A pedestrian safety interview was conducted with City staff in advance of the PSA field visit to gain an understanding of the existing pedestrian policies, programs, and practices in Cudahy. This interview formed the basis for a benchmarking process that categorized the City’s programs, practices, and policies into three groups:

- Key Strengths (areas where the City is exceeding national best practices)
- Enhancement Areas (areas where the City is meeting best practices)

- Opportunity Areas (areas where the City may not meet best practices)

The benchmarking analysis aims to provide the City with information on current best practices and how the City compares. Cities have differing physical, demographic, and institutional characteristics that may make certain goals or policies more appropriate in some jurisdictions than others. Ultimately, City staff may determine where resources and efforts are best placed for meeting local development and infrastructure goals for pedestrians.

A discussion of the City's pedestrian safety policies, programs, and practices, and ideas for enhancement is presented in *Chapter 3*.

The following is a summary of ideas for Cudahy to consider towards enhancing pedestrian safety.

Proactive Approach to Institutional Coordination

- Seek opportunities to collaborate with local schools to improve pedestrian safety around schools.
- Proactively seek opportunities to collaborate with Metro and other local transit providers to improve pedestrian safety near transit stops.

Implementation of ADA Improvements and ADA Transition Plan

- Complete the ADA Transition Plan to include both public buildings and the public right-of-way to reflect current ADA best practice standards.
- Formalize the position of ADA Coordinator by appointing a current employee to that title, even if it is part-time.
- Implement directional curb ramps where practical.

Pedestrian Safety Program and Walking Audits

- Include regular walking audits in the City-wide pedestrian safety program, based on the suggestions of this PSA. This effort could complement other "green" or health-oriented programs within the City.
- Develop a City-wide educational campaign for all ages.
- Apply for grant funding to implement the campaign discussed above.

Enforcement

- Implement sustained pedestrian safety enforcement efforts and involve the media. Use enforcement as an opportunity for education by distributing pedestrian safety pamphlets in-lieu of, or in addition to, citations.
- Train officers in pedestrian safety enforcement principles.

Neighborhood Traffic Management Programs

- Adopt a traffic calming program that utilizes devices in addition to speed humps.

Pedestrian Traffic Control Audit

- Develop a GIS-based inventory of signs, markings, and traffic signals with pedestrian facilities.
- Develop a crosswalk inventory by conducting audits of the adequacy of current crosswalks.
- Ensure that locations with pedestrian desire lines have crosswalks. The crosswalk policy mentioned below in the Crosswalk Installation, Removal, and Enhancement Policy section [3.3(a)] can help determine the appropriate crossing treatment at uncontrolled locations without marked crosswalks.

Pedestrian-Oriented Speed Limits and Speed Surveys

- Consider pedestrian volumes when setting speed limits and employ traffic calming strategies in locations where speed surveys suggest traffic speeds are too high for pedestrian areas.
- Explore the use of reduced speed limits in school zones.
- Ensure design standards in pedestrian areas do not contribute to a routine need for traffic calming.

Pedestrian-Oriented Traffic Signal and Stop Sign Warrants

- Develop City-specific signal and stop sign warrants that are pedestrian friendly.

General Plan: Densities and Mixed-Use Zones

- Enhance pedestrian-friendly goals, policies, and actions defined in the City's General Plan, possibly through the development of a Pedestrian Master Plan and establishing transit and auto vehicle policies that support a balanced multi-modal transportation network.

Use of Leading Pedestrian Intervals

- Install LPs in areas of high pedestrian activity throughout the City, providing a right-turn-on-red restriction as necessary per recent research findings.

Adoption of Newspaper Rack Ordinance

- Consider adopting a Newspaper Rack Ordinance that specifies the number and location of allowable newspaper racks and ensures the maintenance of a clear pedestrian sidewalk area.

Open Space Requirements

- Consider expanding open space requirements to include provisions for pedestrian safety and accessibility.

Adoption of Bicycle Parking Requirements

- Adopt a Bicycle Parking Ordinance that requires bicycle parking in the City that distinguishes between and includes provisions for both long-term and short-term bike parking, and includes bicycle parking requirements for public parking garages.
- Consider implementation of “branded” racks for the City (with a unique design or City symbol) such as the branded rack program in San Diego.
- Consider adopting a Bicycle Master Plan to prioritize bicycle projects. Adoption of a Bicycle Master Plan also establishes eligibility for grant funding through the Bicycle Transportation Account for implementation of bike projects.

Neighborhood-sized Schools

- Work with the local school districts to establish a policy on neighborhood-sized and oriented schools as part of a Safe-Routes-to-School policy.
- Work with the school districts to establish suggested walking routes and address potential barriers to pedestrian or bicycle access.

Collision History and Collision Reports

- Geo-coding (mapping) and comprehensive monitoring using Crossroads software would allow for more proactive pedestrian safety projects and best practices such as collision typing for countermeasure selection. GIS efforts may be funded through an Office of Traffic Safety grant.
- A field inventory of collision locations and pedestrian volume counts could enhance comprehensive monitoring. With sufficient pedestrian volume data, the City could prioritize collision locations based on collision rates (i.e., collisions/daily pedestrian volume), a practice that results in a more complete safety needs assessment. Treatments could then be identified for each location and programmatic funding allocated in the City's Capital Improvements Program (CIP).Volunteers can collect pedestrian volumes and other data at collision locations.
- Adopt set practices for reviewing collision data on a regular basis, such as once a month, to identify hot-spot locations and potential countermeasures.

Crosswalk Installation, Removal, and Enhancement Policy

- Ensure the crosswalk policy reflects best practices and recent research with respect to the installation, removal, and enhancement of crosswalks, which includes removing crosswalks only as an option of last resort and providing midblock crossings where they

serve pedestrian desire lines. This policy may consider adopting the “triple four” crosswalk striping treatment as used in Sacramento and other jurisdictions in California.

- Include criteria for installing crosswalk enhancements, such as flashing beacons, in-roadway warning lights, or in-roadway pedestrian signs.

Pedestrian Master Plan

- Develop a Pedestrian Master Plan and include policies and suggestions in the Pedestrian Master Plan to prioritize and implement capital and maintenance projects.

Inventory of Sidewalks, Informal Pathways, and Key Pedestrian Opportunity Areas

- Develop an inventory of existing and missing sidewalks in GIS format.
- Expand the sidewalk inventory to include informal pathways and key pedestrian opportunity areas in the City.

Safe-Routes-to-School Program and Grant Funding

- Continue applying for grant funding; apply for infrastructure and non-infrastructure projects. Some of the suggestions in this report may be eligible.
- Develop a comprehensive City-wide Safe-Routes-to-School program that encourages walking to school and highlights preferred walking routes. Such a program may involve schools, advocates, parents, City staff, community health representatives and other stakeholders. School-specific committees may also be considered. Consider scheduling regular, ongoing meetings to maintain stakeholder involvement.

Collection of Pedestrian Volumes

- Routinely collect pedestrian and bicycle volumes by requiring them to be conducted in conjunction with manual intersection turning movement counts.
- Geo-code pedestrian volume data with GIS software along with other data such as pedestrian control devices and collisions to analyze data for trends or hotspots related to pedestrian safety.

Economic Vitality

- Consider establishing a Business Improvement District on Atlantic Boulevard that can fund streetscape and pedestrian improvements. Redevelopment of a major site may provide an opportunity to establish a BID.
- Consider adding overlay zones, such as transit-oriented zones, to the Zoning Code.

General Plan: Provision of Pedestrian Nodes

- Identify pedestrian nodes in future updates to the General Plan.

- Create an overlay district for pedestrian nodes with special pedestrian-oriented guidelines, such as relaxing auto Level of Service standards. Prioritize sidewalk improvement and completion projects in these nodes.

Formal Advisory Committee and Public Involvement

- Consider adding a page to the City's website dedicated to receiving public input regarding transportation issues and a subsection for pedestrian topics. This category or subcategory may allow residents to file comments or complaints for traffic control devices or dangerous conditions.
- Hold public meetings with established forums in the community such as churches, senior centers, or schools.
- Ask the Public Safety Commission to address pedestrian needs.

Design Policies and Development Standards

- Consider adopting a Streetscape Master Plan. Alternatively, a Downtown Specific Plan could serve a similar function for a smaller portion of the city, with design principles that specifically address pedestrian access and safety.

Adoption of Routine Accommodations for New Development/Complete Streets

- Establish a Complete Streets Policy and accommodate all modes in standard cross-sections for collectors and arterials. This policy could include a checklist for use during development application review.

Pedestrian/Bicycle Coordinator

- Identify a staff person to allocate a percentage of their time to serve as Pedestrian/Bicycle Coordinator, performing duties like interdepartmental coordination, grant writing, and staff liaison to local non-profits, advocacy groups, and schools.

Attention to Crossing Barriers

- Identify and create an inventory of pedestrian barriers, along with appropriate remedies or projects.

Transportation Demand Management Program

- Create a TDM program and accompanying website with separate pages for employees, residents, and visitors.
- Develop a TDM policy.

Coordination with Health Agencies

- Seek opportunities for technical collaboration and funding with first responders, public health and health care professionals.

Use of Street Furniture Requirements

- Consider adopting a Street Furniture Ordinance to include guidance for the design of transit stops and locations for additional street furniture amenities, other than those associated with transit stops, as appropriate.

Adoption of Street Tree Requirements

- Consider adopting a Street Tree Ordinance including all development types and specifying where and how often street trees may be planted/ replaced, and which types of trees are appropriate. The ordinance could also allow trees in the parking lane or parking stalls, like those in Virginia Park in Santa Monica.

Historic Sites

- Develop a map to showcase natural or local sites of interest, and link key features in the City, including a possible walking route between the sites. Maps of the tour route and historic documentation materials could be made available online and wayfinding signs, maps, and plaques could also be provided throughout the City.

WALKING AUDIT SUGGESTIONS FOR IMPROVEMENTS

A walking audit was conducted at three focus areas in the City of Cudahy: Elizabeth Learning Center, Atlantic Boulevard, and Teresa Hughes Elementary School, as determined in coordination with City staff. These focus areas were visited and the walking audit identified positive practices and opportunities for improvement. Please see Section 1.5 for important limitations regarding the observations and suggestions in this report.

The observations made during the walking audit were used to suggest policies and physical improvements that could enhance pedestrian safety and accessibility, and in some instances, economic vitality.

A narrative description of walking audit observations and suggestions for enhancements (with graphics) are summarized in *Chapter 4*.

Many of the strategies suggested in this report are appropriate for grant applications, including Office of Traffic Safety (OTS) or Safe-Routes-to-School funding. The strategies may also be incorporated into a bicycle or pedestrian master plan, documents that could set forth bicycle, pedestrian, and streetscape policies for the City. They can also assist in identifying and prioritizing capital improvement projects.

The suggestions presented in this report are based on limited field observations and time spent in the City of Cudahy by the PSA evaluators. These suggestions, which are based on general knowledge of best practices in pedestrian design and safety, are intended to guide City staff in making decisions for future safety improvement projects in the City. They may not incorporate all factors which may be relevant to the pedestrian safety issues in the City.

As this report is conceptual in nature, conditions may exist in the focus areas that were not observed and may not be compatible with suggestions in this report. Before finalizing and implementing any physical changes, City staff may conduct more detailed studies or further analysis to refine or discard the suggestions in this report, if they are found to be contextually inappropriate or appear not to improve pedestrian safety or accessibility due to conditions including, but not limited to, high vehicular traffic volume or speeds, physical limitations on space or sight distance, or other potential safety concerns.

1. INTRODUCTION

1.1 OBJECTIVE

The City of Cudahy Public Works Department requested that the Technology Transfer Program of the Institute of Transportation Studies (ITS) at University of California, Berkeley conduct a Pedestrian Safety Assessment (PSA) study for various locations within the City. The objectives of the PSA are to improve pedestrian safety and to enhance walkability and accessibility for all pedestrians in Cudahy.

1.2 EVALUATION APPROACH

Prior to visiting the City of Cudahy, the PSA Team (Team) conducted a pre-visit telephone interview with City staff on February 21, 2013. The results from this interview provided input into the benchmarking analysis, as described in Chapter 3. The Team visited the City on March 26, 2013. A meeting was held with the City staff to discuss initial results from the benchmarking analysis and logistics for the field visit.

The Team conducted walking field audits at three locations in Cudahy. The three locations visited included Elizabeth Learning Center, Atlantic Boulevard, and Teresa Hughes Elementary School. Walking audit participants included City staff from the Planning and Public Works Departments.

1.3 ORGANIZATION OF THIS REPORT

Chapter 2 presents background information on pedestrian safety in Cudahy, including the safety rankings for the City and the locations of the highest pedestrian-involved collision locations from 2008 to 2010. *Chapter 3* presents the findings and suggestions from the benchmarking analysis. *Chapter 4* presents the findings and suggestions from the walking audit.

There are two appendices at the end of the report: Appendix A presents a glossary of pedestrian improvement measures, and Appendix B is a resource list.

1.4 ACKNOWLEDGEMENTS

City of Cudahy staff members contributed to the wide range of topics addressed in this report and organized a successful field visit. We would like to acknowledge the following participants:

- Michael Allen, City of Cudahy, Planning Department
- Aaron Hernandez, City of Cudahy, Engineering Department

1.5 DISCLOSURES

The benchmarking analysis aims to provide the City with information on current best practices and how the City compares. Cities have differing physical, demographic, and institutional characteristics that may make certain goals or policies more appropriate in some jurisdictions than others. Ultimately, City staff will determine where resources and efforts are best placed for meeting local development and infrastructure goals for pedestrians.

The suggestions presented in this report are based on limited field observations and limited time spent in the City of Cudahy by the PSA evaluators. These suggestions, which are based on general knowledge of best practices in pedestrian design and safety, are intended to guide City staff in making decisions for future safety improvement projects in the City, and they may not incorporate all factors which may be relevant to the pedestrian safety issues in the City.

As this report is conceptual in nature, conditions may exist in the focus areas that were not observed and may not be compatible with suggestions in this report. Before finalizing and implementing any physical changes, City staff may conduct more detailed studies or further analysis to refine or discard the suggestions in this report, if they are found to be contextually inappropriate or appear not to improve pedestrian safety or accessibility due to conditions including, but not limited to, high vehicular traffic volume or speeds, physical limitations on space or sight distance, or other potential safety concerns.

2. BACKGROUND

The City of Cudahy is an urban community with approximately 26,000 residents. The City is located in central Los Angeles County, approximately 10 miles south of downtown Los Angeles. The City of Cudahy has been striving to accommodate both existing and future pedestrian demand, with efforts including:

- Partnering with local schools to pursue safe routes to school funding
- Providing enhanced marked crossings near area schools
- Recently completing Traffic Engineering Guidelines that provide guidance on pedestrian related signage and markings

2.1 PEDESTRIAN COLLISION HISTORY FOR CUDAHY

Based on the California Office of Traffic Safety (OTS) ranking statistics, the City ranked 2nd out of 98 California cities for the number of pedestrian collisions per daily vehicle miles traveled in 2009 (with 1st position being the worst ranking). From 2008 to 2010 there were no reported pedestrian fatalities within Cudahy, as shown in Figure 2-1.

The Office of Traffic Safety (OTS) collision rankings facilitate funding decisions and identify emerging traffic safety problem areas. The rankings allow cities to compare themselves to other cities with similar-sized populations and help them identify their potential disproportionate traffic safety problem(s). Please note that OTS rankings are only indicators of potential problems; there are many factors that may either understate or overstate a city ranking.

Victim and collision data for the rankings is taken from the latest published California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS) report. OTS provides two types of rankings: 1) victim and collision rankings and 2) DUI arrest rankings.

Victim and collision rankings are based on rates of victims killed and injured or fatal and injury collisions per “1,000 daily-vehicle-miles-of-travel” (2009 CALTRANS) and per “1,000 average population” (2008-2009 Department of Finance) figures. Pedestrian, bicyclist and motorcycle victim rankings do not take into account the size or demographics of a city or county’s pedestrian/bicyclist/motorcyclist population.

A total of 98 cities fall into the population group of 25,001 to 50,000. For victim and collision rankings ranking of “1” would be assigned to the city with the highest number of victims/collisions per 1,000 residents, while a ranking of “98” would be assigned to the city with the lowest number of victims/collisions per 1,000 residents.

The 2009 OTS safety rankings for Cudahy are shown in Table 2-1.

Based on these rankings, the areas of highest concern for traffic safety in Cudahy in 2010 were collisions involving:

- Pedestrians
- Pedestrians younger than 15 years of age
- Hit and run

This assessment and report emphasize safety issues associated with pedestrians, including a focus on older and younger pedestrians through suggested treatments such as road diets, curb extensions, and median refuge islands. Many of the suggestions in this report may also improve safety for bicyclists in Cudahy.

TABLE 2-1: CUDAHY TRAFFIC COLLISIONS AND RANKINGS, 2009

Type of Collision	Victims Killed and Injured	Ranking by Daily Vehicle Miles Traveled (of 98 cities)	Ranking by Average Population (of 98 cities)
Total Fatal and Injury	79	6	42
Alcohol Involved	11	6	36
HBD (Had Been Drinking) Driver < 21	0	61	62
HBD Driver 21 - 34	5	6	13
Motorcycle	2	21	63
Pedestrians	16	2	8
Pedestrians < 15	7	2	1
Pedestrians 65+	0	65	66
Bicyclists	4	31	70
Bicyclists < 15	0	75	75
Speed Related	6	50	86
Nighttime (9:00pm - 2:59am)	8	4	26
Hit and Run	10	1	8
DUI Arrests	80	-	35
Composite	-	6	44

Source: California Office of Traffic Safety, www.ots.ca.gov/Media_and_Research/Rankings/default.asp

2.2 HIGH PEDESTRIAN COLLISION INJURY LOCATIONS

Pedestrian-vehicle collision data for the City of Cudahy for the period from January of 2008 to the end of 2010 was taken from the Statewide Integrated Traffic Records System (SWITRS). The locations of the highest number of pedestrian-involved collision injuries are shown in Table 2-2 and on Figure 2-1. No pedestrian fatalities occurred in the City of Cudahy during this period.

**TABLE 2-2: TOP SIX PEDESTRIAN-VEHICLE COLLISION INJURY LOCATIONS
CUDAHY, 2008-2010**

Intersection	Number of Pedestrian-Involved Collision Injuries
Elizabeth Street & Atlantic Avenue	2
Santa Ana Street & Atlantic Avenue	2
Elizabeth Street & Wilcox Avenue	2
Clara Street & Wilcox Avenue	2
Crafton Avenue & Live Oak Street	2
Atlantic Avenue n/o Live Oak Street	2

Source: California Highway Patrol

Notes: This list is based on number of collisions and does not adjust for vehicle or pedestrian volumes (exposure).

Figure 2-1: Cudahy Vehicle-Pedestrian Collision Frequency (2008-2010)



3. BENCHMARKING ANALYSIS RESULTS AND SUGGESTIONS

Prior to the field visit to the City of Cudahy, the PSA team conducted an in-depth telephone interview on February 21, 2013 with City staff regarding the City's pedestrian safety policies, programs, and practices. The PSA team also reviewed the City's website and relevant documents. The City's responses were analyzed with a benchmarking matrix, as shown in Table 3-1. The City's policies, programs, and practices were compared with national best practices. The benchmarking analysis categorized the City's programs, practices, and policies into three groups:

- Key Strengths (areas where the City is exceeding national best practices)
- Enhancement Areas (areas where the City is meeting best practices)
- Opportunity Areas (areas where the City appears not to meet best practices)

The items in Table 3-1 are further elaborated in the following sections. The City may select strategies for implementation based on local priorities. The PSA Team presented the results of this benchmarking analysis to City staff during the field visit. The items in bold represent the City's current practices.

TABLE 3-1: SUMMARY OF PROGRAMS, POLICIES, AND PRACTICES BENCHMARKING ANALYSIS FOR CUDAHY			
Benchmark Topic	Key Strength	Enhancement	Opportunity
Proactive Approach to Institutional Challenges	Has identified obstacles and has implemented efforts to overcome barriers	Has identified obstacles	Does not have any identified obstacles
Implementation of Americans with Disabilities Act (ADA) Improvements and ADA Transition Plan for Streets and Sidewalks	Uses state-of-the-practice ADA improvements with consistent installation practices	Has clear design guidelines but no regular practices for ADA compliance	No transition plan or ADA coordinator
Pedestrian Safety Program and Walking Audits	Has significant and ongoing programs which include Walking Audits	Has some programs and may have conducted a Walking Audit	Does not have pedestrian safety programs and has not conducted any walking audits
Enforcement	Police Department conducts sustained pedestrian safety-related enforcement efforts, which may include resource sharing with neighboring cities	Police Department conducts some pedestrian safety-related enforcement activities	Police Department does not have Traffic Safety Officer(s)
Traffic Calming Programs	Has a significant traffic calming program with a dedicated funding source	Has a traffic calming program but no dedicated funding source	Does not have a traffic calming program

**TABLE 3-1: SUMMARY OF PROGRAMS, POLICIES, AND PRACTICES
 BENCHMARKING ANALYSIS FOR CUDAHY**

Benchmark Topic	Key Strength	Enhancement	Opportunity
Pedestrian Traffic Control Audit (Signs, Markings, and Signals)	Maintains an inventory of pedestrian signs, markings, and signals	Has a limited inventory of signs, markings, and signals	Does not have an inventory of signs, markings, and signals
Pedestrian-Oriented Speed Limits and Speed Surveys	Employs comprehensive practice to proactively review speed limits such as USLIMITS	Reviews data only in response to reported concerns or frequent collisions	Does not have set practices for speed limit reviews
Pedestrian-Oriented Traffic Signal and Stop Sign Warrants	Uses relaxed warrants for traffic signals and/or all-way stops	Uses MUTCD Warrants	Uses MUTCD Warrants
General Plan: Densities and Mixed Use Zones	Has moderate to high densities in the CBD and mixed use zones	Has moderate densities with separate uses	Has low densities with separate uses
Adoption of Newspaper Rack Ordinance	Has a newspaper rack ordinance that addresses pedestrian safety and access	Has a newspaper rack ordinance, but it does not address pedestrian safety or access	Does not have a newspaper rack ordinance
Adoption of Open Space Requirement	Has an open space requirement that addresses pedestrian safety and access	Has an open space requirement and residential and non-residential landscaping requirements, but does not address pedestrian safety or access	Does not have an open space requirement
Adoption of Bicycle Parking Requirements	Requires bicycle parking with new development	Does not require bicycle parking with new development	Does not require bicycle parking with new development
Use of Neighborhood-sized Schools	Has a policy to encourage neighborhood sized schools	Has some policy to encourage neighborhood sized schools	Does not have a policy to encourage neighborhood sized schools
Use of Leading Pedestrian Intervals (LPI)	Has installed LPIs at appropriate locations	Has installed some LPIs	Has not installed LPIs
Collision History and Collision Reporting Practices	Creates annual reports or employs other comprehensive monitoring practice	Reviews data only following fatalities or other high-profile incident	Does not have set practices for data review
Inventory of sidewalks, informal pathways, and key pedestrian opportunity areas	Maintains an inventory of missing and existing sidewalks and includes sidewalk projects in the CIP	Maintains an inventory of missing sidewalks, informal pathways, and/or pedestrian opportunity areas	Does not have an inventory of missing sidewalks. Informal pathways, or pedestrian opportunity areas
Crosswalk Installation, Removal, and Enhancement Policy	Has a crosswalk policy that reflects best practices for signalized and uncontrolled crosswalk treatments	Has a crosswalk policy but it is not comprehensive or up to date with best practices	Does not have a crosswalk policy

**TABLE 3-1: SUMMARY OF PROGRAMS, POLICIES, AND PRACTICES
BENCHMARKING ANALYSIS FOR CUDAHY**

Benchmark Topic	Key Strength	Enhancement	Opportunity
Preparation of a Pedestrian Master Plan	Has a recently-updated Plan and pedestrian projects have been completed recently	Has a Pedestrian Master Plan but it may be outdated and/or no recent projects from the Plan have been completed	Does not have a Pedestrian Master Plan
Safe-Routes-to-School Program and Grant Funding	Has a Safe Routes to Schools program and funding for recent projects	Does not have a Safe Routes to Schools program but has obtained funding for recent projects	Does not have a Safe Routes to Schools program
Collection of Pedestrian Volumes	Collects pedestrian volumes routinely with intersection counts	Collects some pedestrian volumes, but not routinely	Does not collect pedestrian volumes
Economic Vitality	Has a business improvement districts, and a Downtown Parking District	Has a business improvement district, façade improvement program, or downtown parking policies	Does not have business improvement districts, façade improvement program, or downtown parking policies
General Plan: Provision for Pedestrian Nodes	Pedestrian nodes are identified and pedestrian-oriented policies are in place for these nodes	Pedestrian nodes are identified but pedestrian accommodations are not	Pedestrian nodes are not identified
Formal Advisory Committee and Public Involvement	Has a formal, active Pedestrian Committee	Has formal Transportation Committee	Does not have a Pedestrian Committee
Design Policies and Development Standards	Has a Streetscape Master Plan	Has minimal design policies	Does not have a Streetscape Master Plan or design policies for pedestrian treatments
Adoption of Routine Accommodations for New Development/Complete Streets	Has Routine Accommodations Policy that applies to the development review process and assesses impact fees	Has Routine Accommodations Policy for public works projects only	Does not have a Routine Accommodations Policy
Pedestrian/Bicycle Coordinator	Has a Coordinator on staff who manages the City Pedestrian Program	Occasionally uses a contract Coordinator	Does not have a Pedestrian Coordinator
Attention to Crossing Barriers	Has a recently updated policy and comprehensive inventory of barriers	Has an outdated policy	Does not have a policy for pedestrian crossings at railroads, freeways, etc.

**TABLE 3-1: SUMMARY OF PROGRAMS, POLICIES, AND PRACTICES
 BENCHMARKING ANALYSIS FOR CUDAHY**

Benchmark Topic	Key Strength	Enhancement	Opportunity
Transportation Demand Management Programs	Has extensive TDM programs and enforces parking cash out, etc.	Has basic TDM programs (Commuter Checks, Guaranteed Ride Home)	Does not have a Travel Demand Management program or policy
Coordination with Health Agencies	Health agencies are involved in the planning of pedestrian facilities and/or programs and collection of collision data	Health agencies have programs to promote healthy lifestyles through active transportation	Health agencies are not involved in pedestrian safety or active transportation
Use of Street Furniture Requirements	Has street or sidewalk furniture requirements that addresses pedestrian safety and access	Has street or sidewalk furniture requirements, but they do not address pedestrian safety or access	Does not have street or sidewalk furniture requirements
Adoption of Street Tree Requirements	Has a street tree ordinance that improves pedestrian safety	Has a street tree ordinance, but it does not address pedestrian safety	Does not have a street tree ordinance
Historic Sites	Cultural and Historic Preservation Plans include a wayfinding and walkability focus	Cultural and Historic Preservation Plans require pedestrian accommodations	Cultural and Historic Preservation Plans do not address pedestrian needs

3.1 KEY STRENGTHS

(a) Proactive Approach to Institutional Coordination

Numerous agencies have jurisdiction over components of Cudahy’s transportation network, including public utility companies and Metro. Institutional coordination associated with multiple agencies is necessary because of non-local control of right-of-way and differing policies regarding pedestrian accommodation. For example, Caltrans policies have historically discouraged proposals for bulbouts, wider sidewalks, and other pedestrian-oriented improvements. Recent Context Sensitive Solutions and Routine Accommodations policies within Caltrans (refer to the revised Deputy Directive 64: www.calbike.org/pdfs/DD-64-R1.pdf) now require the agency to consider multimodal needs and engage in collaborative community planning. These new policies may reduce institutional challenges, and the City may work with Caltrans and other agencies to identify new opportunities for joint planning of transportation facilities.

The City has identified obstacles relating to enhancing sidewalks adjacent to train tracks and improving pedestrian connectivity across borders with neighboring cities. City of Cudahy staff also identified an example of efforts to overcome institutional obstacles, specifically working with the City of South Gate to promote pedestrian connections with a proposed development along the border between the two cities.

Suggestions for Potential Improvement

- Seek opportunities to collaborate with local schools to improve pedestrian safety around schools.
- Proactively seek opportunities to collaborate with Metro and other local transit providers to improve pedestrian safety near transit stops.

3.2 ENHANCEMENT AREAS

(a) Implementation of ADA Improvements and ADA Transition Plan

Compliance with the Americans with Disability Act (ADA) guidelines is important not only to enhance community accessibility, but also to improve walking conditions for all pedestrians.

Cudahy does not have City-specific design guidelines for ADA improvements, but follows state and federal design guidelines for pedestrian facilities. Curb ramps are upgraded to meet the latest ADA standards as the result of new construction or modifications to that location. New curb ramps include truncated domes per City standards.

An ADA Transition Plan sets forth the process for bringing public facilities into compliance with ADA regulations. An ADA Transition Plan could address public buildings, sidewalks, ramps, and other pedestrian facilities. An ADA Coordinator is typically responsible for administering an ADA Transition Plan. The role of ADA Coordinator is assumed by public works staff.

Suggestion for Potential Improvement

- Complete the ADA Transition Plan to include both public buildings and the public right-of-way to reflect current ADA best practice standards.
- Formalize the position of ADA Coordinator by appointing a current employee to that title, even if it is part-time.
- Implement directional curb ramps where practical. The Standard Drawings for the City of Sacramento include best practices for directional curb ramp design (see drawing T-77 at:
<http://www.cityofsacramento.org/utilities/pubs/stdspecs/Transportation.pdf>).



*Example of Two ADA-accessible Curb Ramps per Corner
Image source: Armor-Tile*

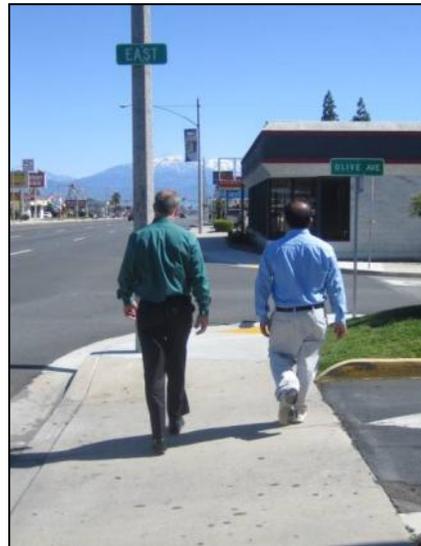
(b) Pedestrian Safety Program and Walking Audits

Walking audits provide an interactive opportunity to receive feedback from key stakeholders about the study area as well as discuss potential solutions and their feasibility. They can be led by City staff, advocacy groups, neighborhood groups, or consultants. Education is a critical

element for a complete and balanced approach to improving pedestrian safety. Education campaigns may target pedestrians of all ages, especially emphasizing education of school children where safe walking habits may be instilled as lifelong lessons. The City pays for crossing guards at local schools and the Sherriff's department has conducted educational activities at local schools.

Suggestion for Potential Improvement

- Include regular walking audits in the City-wide pedestrian safety program, based on the suggestions of this PSA. This effort could complement other "green" or health-oriented programs within the City.
- Develop a City-wide educational campaign for all ages:
 - Campaigns may include advertisements on buses and bus shelters, an in-school curriculum, community school courses, public service announcements, and/or brochures, among many other strategies. The Street Smarts program in San José, California, provides a model pedestrian safety education program (see www.getstreetsmarts.org for more information).
 - The Bicycle Transportation Alliance has developed a pedestrian safety curriculum for 2nd-3rd graders, which incorporates physical education, health, and social responsibility (refer to: www.bta4bikes.org/docs/PedSafetyCurriculumFinal.doc). Other safety curriculum resources are available at: www.saferoutespartnership.org/state/5638/5722.
 - Sample pedestrian safety brochures are available at: <http://safety.fhwa.dot.gov/media/brochures.htm>, and www.aaafoundation.org/products/index.cfm.
- Apply for grant funding to implement the campaign discussed above.



(c) Enforcement

Enforcement of pedestrian right-of-way laws and speed limits is an important complement to engineering treatments and education programs. The City of Cudahy contracts with the Los Angeles Sherriff Department. A handful of deputies are within the city border at any given time. They are asked to monitor school areas during arrival and dismissal times. Additionally, the Sherriff's Department has been involved in pedestrian education activities at local schools.

Suggestions for Potential Improvement

- Implement sustained pedestrian safety enforcement efforts and involve the media. Use enforcement as an opportunity for education by distributing pedestrian safety pamphlets in-lieu of, or in addition to, citations. The Miami-Dade

**The 3-E's of
Pedestrian Safety:**

Engineering

Education

Pedestrian Safety Demonstration Project provides a model for the role of media in the sustained effectiveness of enforcement. Information is available at:

http://www.miamidade.gov/MPO/docs/MPO_ped_safety_demo_eval_report_200806.pdf.

- Train officers in pedestrian safety enforcement principles. The Madison, Wisconsin Department of Transportation has developed a DVD in collaboration with the Madison Police Department to train traffic officers in pedestrian and bicycle issues (for more information see <http://www.walkinginfo.org/library/details.cfm?id=2865>). The Bicycle Transportation Alliance in Portland, Oregon offers Pedestrian Safety Enforcement Training (for more information on this five-hour course see: http://www.bta4bikes.org/at_work/pedestriangrants.php).

(d) Neighborhood Traffic Management Programs

Neighborhood Traffic Management Programs (NTMP) and policies set forth a consensus threshold on neighborhood requests and approvals, as well as standard treatments and criteria.

The City of Cudahy has adopted a Citywide Speed Hump Installation Policy and developed City of Cudahy Traffic Engineering Guidelines that provide guidance on additional traffic calming devices. The speed hump policy identifies the process for installing traffic calming devices; however, no dedicated funding source is available.



Suggestion for Potential Improvement

- Adopt a traffic calming program that utilizes devices in addition to speed humps.
- Consider referring to the following resources for traffic calming best practices:
 - www.trafficcalming.org
 - *Traffic Calming Guidelines from the City of Danville*
(http://www.danville.ca.gov/Your_Community/Traffic_Concerns.aspx)
 - *Traffic Calming Guidelines from the City of Anaheim*
(<http://www.anaheim.net/article.asp?id=1703>)
 - *Traffic Calming Guidelines from the City of La Habra*
(<http://www.ci.la-habra.ca.us/article.cfm?id=191>).

(e) Pedestrian Traffic Control Audit

The 2009 federal *Manual of Uniform Traffic Control Devices* (MUTCD) requires the installation of countdown pedestrian signals for all new signals. Replacing traffic signal bulbs with LED bulbs is also suggested to increase visibility and improve efficiency.

The City has an out of date inventory of signs, markings, and traffic control devices. A contractor for the city addresses complaints regarding the functionality of traffic control devices. Cudahy has not completed a conversion of pedestrian signal heads to countdown signals.



Image source:
www.livablestreets.com

Suggestions for Potential Improvement

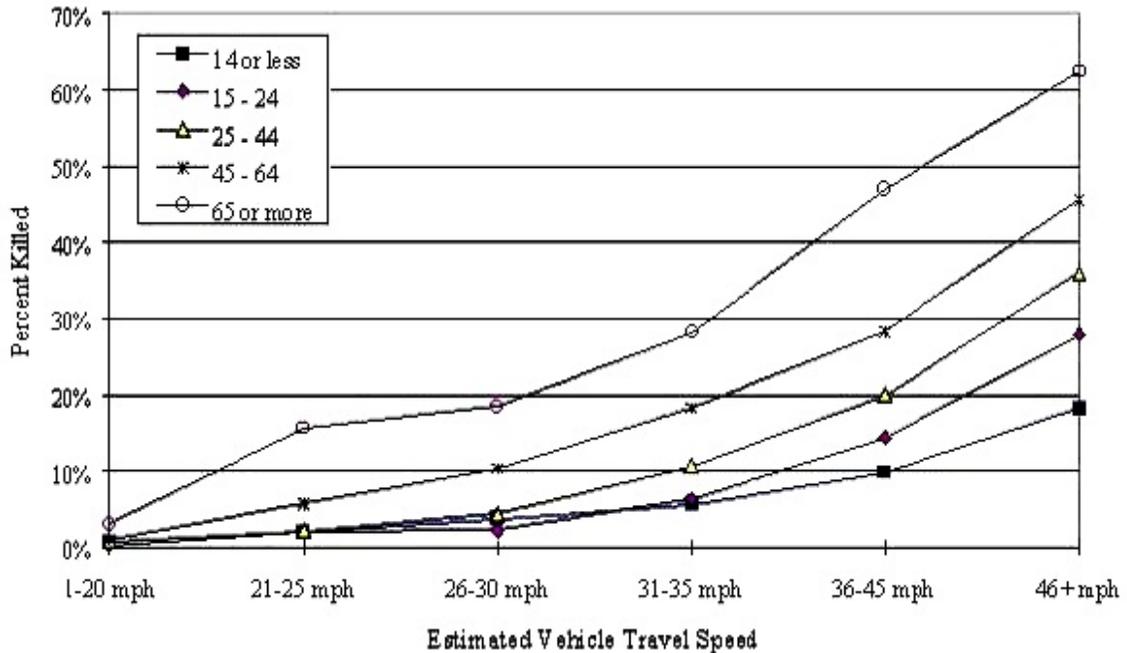
- Develop a GIS-based inventory of signs, markings, and traffic signals with pedestrian facilities.
- Develop a crosswalk inventory by conducting audits of the adequacy of current crosswalks. Seattle's inventory of its marked crosswalks may serve as a model. (see http://www.seattle.gov/transportation/cwp_back.htm)
- Ensure that locations with pedestrian desire lines have crosswalks. The crosswalk policy mentioned below in the Crosswalk Installation, Removal, and Enhancement Policy section [3.3(a)] can help determine the appropriate crossing treatment at uncontrolled locations without marked crosswalks.

(f) Pedestrian-Oriented Speed Limits and Speed Surveys

As shown in Figure 3-1, pedestrian fatality rates increase exponentially with vehicle speed. Thus, reducing vehicle speeds in pedestrian zones may be one of the most important strategies for enhancing pedestrian safety.

A recent policy directive from the California Department of Transportation, pursuant to the California Vehicle Codes (CVC) and resulting in changes to the California Manual on Uniform Traffic Control Devices (MUTCD), provides state and local municipalities with the authority to reduce the posted speed limit if an engineering and traffic study demonstrates that a different (lower) speed limit may be a better fit based on local conditions. The allowable reduction is five miles per hour from what the posted speed limit needs to be based on the 85th percentile speed of free-flowing traffic.

Figure 3-1: Fatal Injury Rates by Vehicle speed, by Pedestrian Ages
 (Florida, 1993-1996, pedestrians in single-vehicle collisions)



In Cudahy, speed surveys are conducted every five to seven years following MUTCD guidelines. Speed limit signs are not typically posted on local streets, as the prima facie limit is 25 mph.

Suggestions for Potential Improvement

- Consider pedestrian volumes when setting speed limits and employ traffic calming strategies in locations where speed surveys suggest traffic speeds are too high for pedestrian areas.
- Explore the use of reduced speed limits in school zones.
- Ensure design standards in pedestrian areas do not contribute to a routine need for traffic calming.

(g) Pedestrian-Oriented Traffic Signal and Stop Sign Warrants

Providing all-way stop or signal control at an intersection may improve pedestrian safety by reducing speeds and controlling pedestrian-vehicle conflicts. The MUTCD defines warrants for installing signals and stop signs. Cudahy follows MUTCD requirements for both stop sign and signal warrants; however, jurisdictions may choose to define relaxed pedestrian criteria to encourage pedestrian safety. Best practices for stop-sign warrant application include:

- Requiring a collision history of three instead of five years based on routine underreporting

- Reducing traffic volume thresholds based on latent demand
- Providing consideration for school children, pedestrians and traffic speeds

Suggestion for Potential Improvement

- Develop City-specific signal and stop sign warrants that are pedestrian friendly.

(h) General Plan: Densities and Mixed-Use Zones

Planning principles contained in a city’s General Plan can provide an important policy context for developing pedestrian-oriented, walkable areas. Transit-oriented development, higher densities, and mixed uses are important planning tools for pedestrian-oriented areas.

Allowable residential densities vary from one du/ac to 20 du/ac and accessory units are permissible. Mixed-use is allowed by Cudahy’s General Plan; however, no mixed use developments have been constructed.

Suggestions for Potential Improvements

- Enhance pedestrian-friendly goals, policies, and actions defined in the City’s General Plan, possibly through the development of a Pedestrian Master Plan and establishing transit and auto vehicle policies that support a balanced multi-modal transportation network.

(i) Use of Leading Pedestrian Intervals

Leading Pedestrian Intervals (LPIs) provide pedestrians with a “head start” signal timing before vehicles on the parallel street are allowed to proceed through an intersection. A 2000 study by the Insurance Institute for Highway Safety found that the LPI reduces conflicts between turning vehicles and pedestrians by enhancing the visibility of the pedestrian in the crosswalk.¹ No LPIs are installed in Cudahy.

Suggestion for Potential Improvement

- Install LPIs in areas of high pedestrian activity throughout the City, providing a right-turn-on-red restriction as necessary per recent research findings².

(j) Adoption of Newspaper Rack Ordinance

Newspaper racks may obstruct walkways and reduce accessibility and pedestrian visibility when ordinances are not in place. A Newspaper Rack Ordinance improves the



¹ Van Houten, R.; Retting, R.A.; Farmer, C.M.; and Van Houten, J. 2000. Field evaluation of a leading pedestrian interval signal phase at three urban intersections. *Transportation Research Record* 1734:86-92.

² Hubbard, S, Bullock, D and J. Thai, Trial Implementation of a Leading Pedestrian Interval: Lessons Learned, ITE Journal, October 2008, pp. 32-41.

pedestrian realm by reducing clutter and organizing sidewalk zones. A Newspaper Rack Ordinance details size, location, and maintenance requirements. Cudahy's Municipal Code provides guidance on the placement of newspaper racks.

Suggestion for Potential Improvement

- Consider adopting a Newspaper Rack Ordinance that specifies the number and location of allowable newspaper racks and ensures the maintenance of a clear pedestrian sidewalk area.

(k) Open Space Requirements

Residents typically rate open space as among a jurisdiction's key assets and needs. Open space may encourage walking, especially for recreational trips.

Landscaping requirements and lot coverage limits result in open space provisions for residential and non-residential land uses.

Suggestion for Potential Improvement

- Consider expanding open space requirements to include provisions for pedestrian safety and accessibility.

(l) Adoption of Bicycle Parking Requirements

Bicyclists become pedestrians after parking their bicycles. Safe and convenient bicycle parking is essential for encouraging bicycle travel (especially in-lieu of vehicle travel). Cudahy's municipal code does not include bicycle parking requirements.

Suggestions for Potential Improvement

- Adopt a Bicycle Parking Ordinance that requires bicycle parking in the City that distinguishes between and includes provisions for both long-term and short-term bike parking, and includes bicycle parking requirements for public parking garages, such as the Oakland bicycle parking ordinance (<http://www.oaklandpw.com/AssetFactory.aspx?did=3337>).
- Consider implementation of "branded" racks for the City (with a unique design or City symbol) such as the branded rack program in San Diego.
- Consider adopting a Bicycle Master Plan to prioritize bicycle projects. Adoption of a Bicycle Master Plan also establishes eligibility for grant funding through the Bicycle Transportation Account for implementation of bike projects.



Sample bicycle racks

(image source: <http://www.cityofmadison.com/trafficEngineering/documents/MadisonBikeParking.pdf>)

(m) Neighborhood-sized Schools

Neighborhood-sized schools, as opposed to mega schools on the periphery, are a key ingredient for encouraging walking and bicycling to school. In addition, pedestrian and ADA improvements could be prioritized near schools. The City does not have a formal policy to encourage neighborhood-sized schools.

Suggestion for Potential Improvement

- Work with the local school districts to establish a policy on neighborhood-sized and oriented schools as part of a Safe-Routes-to-School policy.
- Work with the school districts to establish suggested walking routes and address potential barriers to pedestrian or bicycle access.

3.3 OPPORTUNITY AREAS

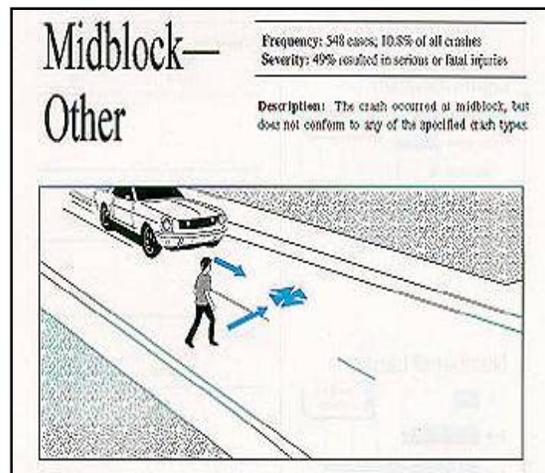
(a) Collision History and Collision Reports

Identifying and responding to collision patterns on a regular basis is an important reactive approach to pedestrian safety (which may be combined with proactive measures).

The City of Cudahy does not set practices for the review of collision data. Collision data is available through and maintained by the Sherriff’s Department.

Suggestions for Potential Improvement

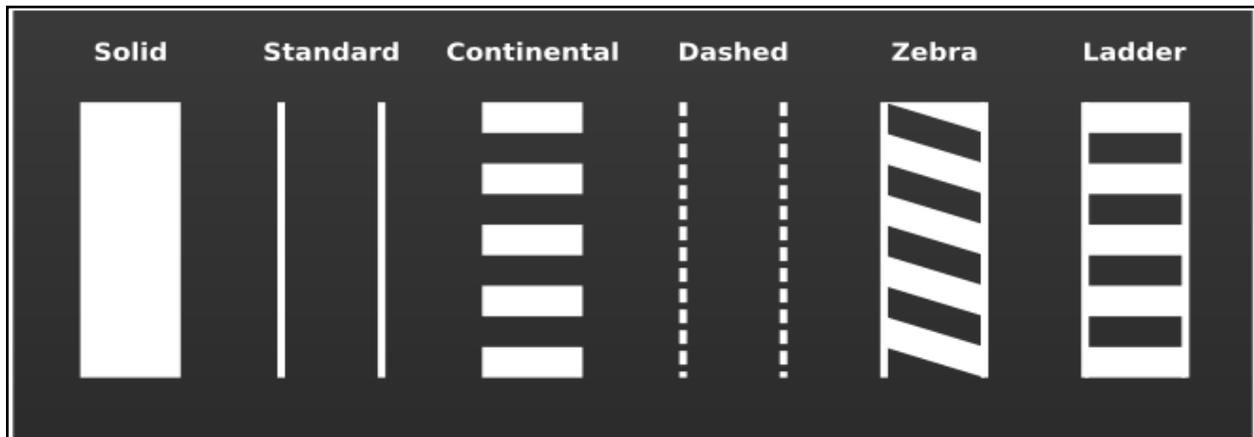
- Geo-coding (mapping) and comprehensive monitoring using Crossroads software would allow for more proactive pedestrian safety projects and best practices such as collision typing for countermeasure selection. GIS efforts may be funded through an Office of Traffic Safety grant. The City can use iSWITRS for easy access to collision data (<http://iswitrs.chp.ca.gov>).



- A field inventory of collision locations and pedestrian volume counts could enhance comprehensive monitoring. With sufficient pedestrian volume data, the City could prioritize collision locations based on collision rates (i.e., collisions/daily pedestrian volume), a practice that results in a more complete safety needs assessment. Treatments could then be identified for each location and programmatic funding allocated in the City's Capital Improvements Program (CIP). Volunteers can collect pedestrian volumes and other data at collision locations.
- Adopt set practices for reviewing collision data on a regular basis, such as once a month, to identify hot-spot locations and potential countermeasures.

(b) Crosswalk Installation, Removal, and Enhancement Policy

A formal policy for crosswalk installation, removal, and enhancement provides transparency in decision-making and adopts best practices in pedestrian safety and accommodation. The City currently does not have a crosswalk policy in place and the City makes decisions regarding crosswalks on a case by case basis. Cudahy uses related research to inform the decisions to provide marked crossings at uncontrolled locations. Figure 3-2 provides a sample crosswalk decision tool that can be employed to determine locations where marked uncontrolled crossings are appropriate. Once the decision to provide a marked crossing has been made, the decision on what type of crossing would be based on Table 3-2. This table provides guidance on the type of appropriate crossing and enhancement treatments that are appropriate based on that location's number of lanes, average daily traffic, posted speed limit, and presence of a raised median. These samples may be studied further before application to local conditions.



Standard Crosswalk Marking Patterns
Image source: FHWA, Planning and Designing for Pedestrian Safety Course, 2008

Suggestion for Potential Improvement

- Ensure the crosswalk policy reflects best practices and recent research with respect to the installation, removal, and enhancement of crosswalks, which includes removing crosswalks only as an option of last resort and providing midblock crossings where they serve pedestrian desire lines. This policy may consider adopting the “triple four” crosswalk striping treatment as used in Sacramento and other jurisdictions in California.

- Include criteria for installing crosswalk enhancements, such as flashing beacons, in-roadway warning lights, or in-roadway pedestrian signs.

Crosswalk policy resources include:

- Sacramento Crosswalk Policy:
www.cityofsacramento.org/transportation/dot_media/engineer_media/pdf/PedSafety.pdf
- Stockton Crosswalk Policy:
www.stockton.gov/publicworks/publications/PedGuidelines.pdf
- Federal Highway Administration Study on Marked versus Unmarked Crosswalks:
http://safety.fhwa.dot.gov/ped_bike/docs/cros.pdf
- National Cooperative Highway Research Program Report on Crosswalks at Uncontrolled Locations: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_562.pdf
- Caltrans/UC Berkeley Study on Pedestrian/Driver Behavior at Marked versus Unmarked Crosswalks: <http://repositories.cdlib.org/its/tsc/UCB-TSC-RR-2007-4>

Figure 3-2: Sample Feasibility Analysis for Treatments at Uncontrolled Locations

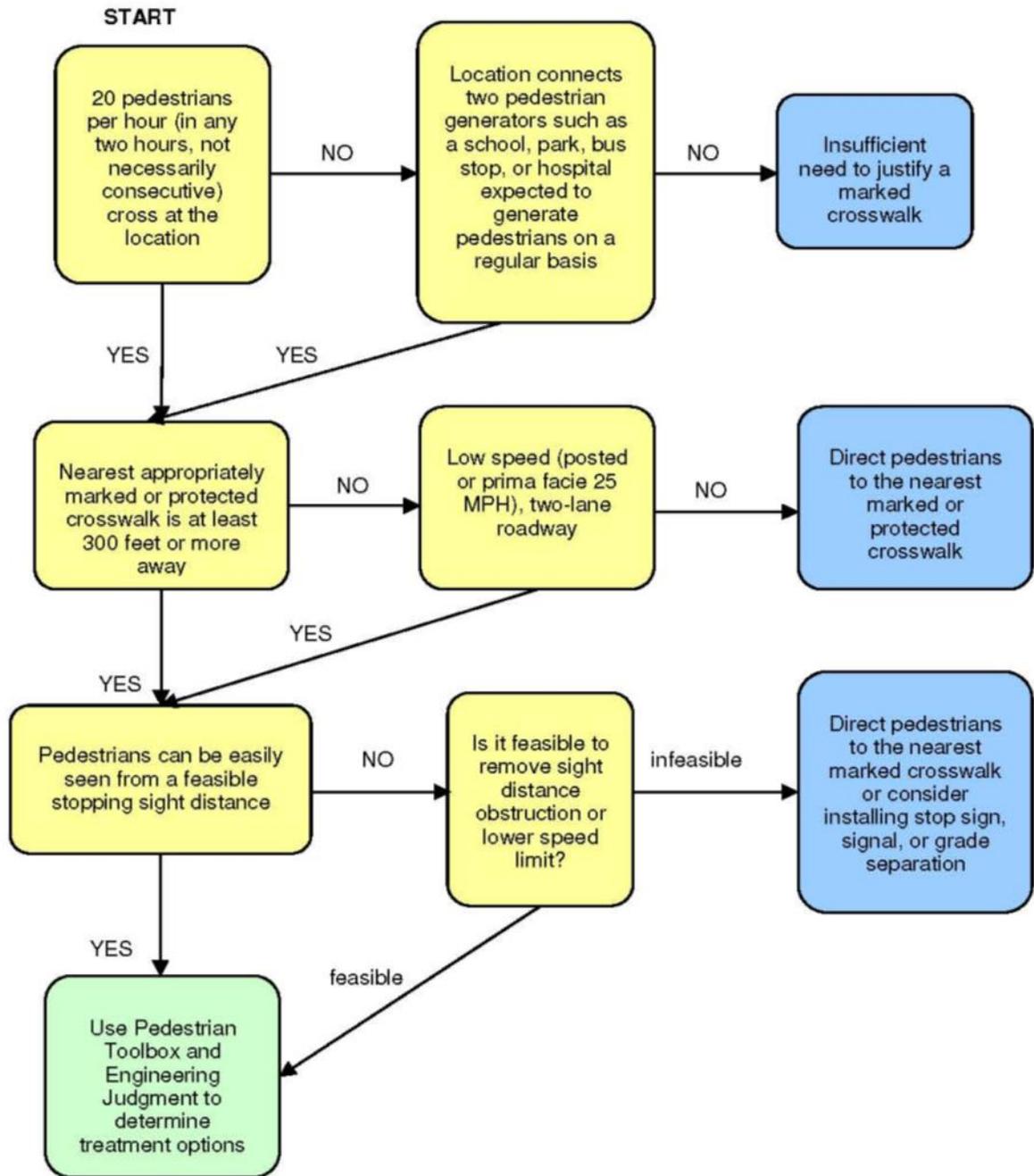


TABLE 3-2: SAMPLE SUMMARY OF CROSSING TREATMENTS FOR STREETS OF VARYING LANES, POSTED SPEED LIMITS, AND AVERAGE DAILY TRAFFIC

Level One: Two-Lane Streets			
Number of Cars	Posted Speed		
(average daily traffic)	30 miles per hour or less	35 miles per hour	40 miles per hour or more
<i>Up to 15,000 cars per day</i>	<i>Triple-four</i>	<i>Triple-four</i>	<i>Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices</i>
<i>15,000 cars or more per day</i>		<i>Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices</i>	<i>Pedestrian signal or bridge</i>
Level Two: Three-Lane Streets			
Number of Cars	Posted Speed		
(average daily traffic)	30 miles per hour or less	35 miles per hour	40 miles per hour or more
<i>9,000 cars or fewer per day</i>	<i>Triple-four</i>	<i>Triple-four</i>	<i>Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices</i>
<i>9,000-12,000 cars per day</i>		<i>Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices</i>	
<i>12,000-15,000 cars per day</i>	<i>Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices</i>		<i>Pedestrian signal or bridge</i>
<i>15,000 cars or more per day</i>		<i>Pedestrian signal or bridge</i>	

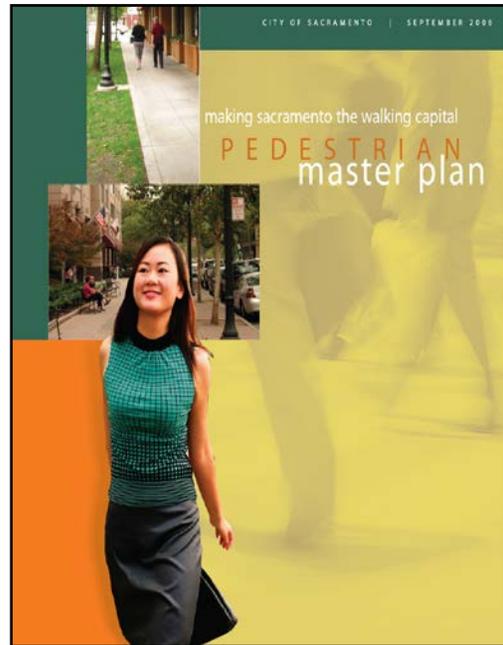
Level Three: Four or More Lanes With a Raised Median			
Number of Cars	Posted Speed		
(average daily traffic)	30 miles per hour or less	35 miles per hour	40 miles per hour or more
9,000 cars or fewer per day	Triple-four	Triple-four	Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices
9,000-12,000 cars per day	Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices	Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices	Pedestrian signal or bridge
12,000-15,000 cars per day			
15,000 cars or more per day	Pedestrian signal or bridge	Pedestrian signal or bridge	
Level Four: Four or More Lanes Without a Raised Median			
Number of Cars	Posted Speed		
(average daily traffic)	30 miles per hour or less	35 miles per hour	40 miles per hour or more
9,000 cars or fewer per day	Triple-four	Triple-four	Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices
9,000-12,000 cars per day	Triple-four plus a pedestrian refuge or other Level 1 device	Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices	Pedestrian signal or bridge
12,000-15,000 cars per day	Triple-four plus a pedestrian refuge, overhead flashing beacons, or other Level 1 and 2 devices		
15,000 cars or more per day	Pedestrian signal or bridge	Pedestrian signal or bridge	

(c) Pedestrian Master Plan

This type of plan includes a large menu of policy, program, and practice suggestions, as well as site-specific (and prototypical) engineering treatment suggestions. A Pedestrian (or Pedestrian/Bicycle) Master Plan documents a jurisdiction’s vision for improving walkability and pedestrian safety; establish policies, programs, and practices; and outline the prioritization and budgeting process for project implementation. Combining this with a Complete Streets Policy (described below) would address other suggestions in this report. Cudahy has a draft Pedestrian Master Plan and is in the process of completing the document.

Suggestion for Potential Improvement

- *Develop a Pedestrian Master Plan and include policies and suggestions in the Pedestrian Master Plan to prioritize and implement capital and maintenance projects, which could address the following:*
 - *Development of a comprehensive, Citywide crosswalk policy and toolbox*
 - *Pedestrian connectivity*
 - *Prioritization of sidewalks and other pedestrian facility improvements*
 - *Opportunities and barriers to pedestrian travel*
 - *Public safety and “eyes on the street” design guidelines*
 - *Consistency of treatments*
 - *Interdepartmental coordination*



*Example Pedestrian Master Plan
from the City of Sacramento*

(d) Inventory of Sidewalks, Informal Pathways, and Key Pedestrian Opportunity Areas

A GIS-based sidewalk inventory enables project identification and prioritization, as well as project coordination with new development, roadway resurfacing, etc.

The City does not maintain an inventory of existing or missing sidewalks, though sidewalks are missing at few locations. Sidewalk projects are funded through street improvement projects, with annual sidewalk project funding ranging between approximately \$40,000 and \$60,000.

Suggestion for Potential Improvement

- Develop an inventory of existing and missing sidewalks in GIS format.
- Expand the sidewalk inventory to include informal pathways and key pedestrian opportunity areas in the City.

(e) Safe-Routes-to-School Program and Grant Funding

Safe-Routes-to-School programs encourage children to safely walk or bicycle to school. The Marin County Bicycle Coalition was an early champion of the concept, which has spread nationally (refer to best practices at www.saferoutestoschools.org). Safe-Routes-to-School programs are important both for increasing physical activity (and reducing childhood obesity) and for reducing morning traffic associated with school drop-off (as much as 30% of morning peak hour traffic). Funding for Safe-Routes-to-School programs and/or projects is available at the state (see: <http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/sr2s.htm>) and federal levels (see: <http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/srts.htm>).

Cudahy has applied for state Safe-Routes-to-School funding, but has not been selected for grant funding in recent grant cycles. Cudahy does not have a Safe-Routes-to-School Program.



Example Safe Routes to School Activity

Suggestions for Potential Improvement

- Continue applying for grant funding; apply for infrastructure and non-infrastructure projects. Some of the suggestions in this report may be eligible.
- Develop a comprehensive City-wide Safe-Routes-to-School program that encourages walking to school and highlights preferred walking routes. Such a program may involve schools, advocates, parents, City staff, community health representatives and other stakeholders. School-specific committees may also be considered. Consider scheduling regular, ongoing meetings to maintain stakeholder involvement.

(f) Collection of Pedestrian Volumes

Pedestrian volume data is important for prioritizing projects, developing collision rates, and determining appropriate pedestrian infrastructure. Cudahy does not regularly collect pedestrian or bicycle counts, nor does the City require that bicycle or pedestrian counts be collected with manual intersection counts.

Suggestions for Potential Improvement

- Routinely collect pedestrian and bicycle volumes by requiring them to be conducted in conjunction with manual intersection turning movement counts.
- Geo-code pedestrian volume data with GIS software along with other data such as pedestrian control devices and collisions to analyze data for trends or hotspots related to pedestrian safety.

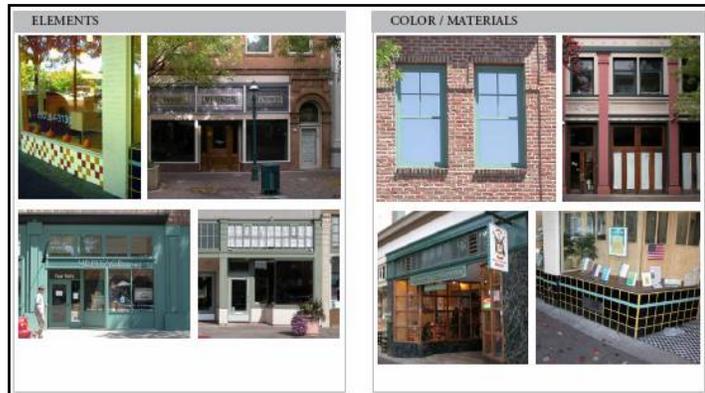
(g) Economic Vitality

Improving pedestrian safety and walkability can enhance economic vitality. Similarly, enhancing economic vitality through innovative funding options such as Business Improvement Districts (BIDs), parking management, and facade improvement programs can lead to more active pedestrian areas and encourage walking.

Cudahy does not have a BID, façade improvement program, or policies that promote a park-once environment.

Suggestion for Potential Improvement

- Consider establishing a Business Improvement District on Atlantic Boulevard that can fund streetscape and pedestrian improvements. Redevelopment of a major site may provide an opportunity to establish a BID.



Sample store facades

- Consider adding overlay zones, such as transit-oriented zones, to the Zoning Code such as the City of Palo Alto's Pedestrian and Transit Oriented Development Combining District Regulations in §18.34 of the Municipal Code (see: http://www.amlegal.com/nxt/gateway.dll/California/paloalto_ca/title18zoning*/chapter1834pedestrianandtransitorientedd).

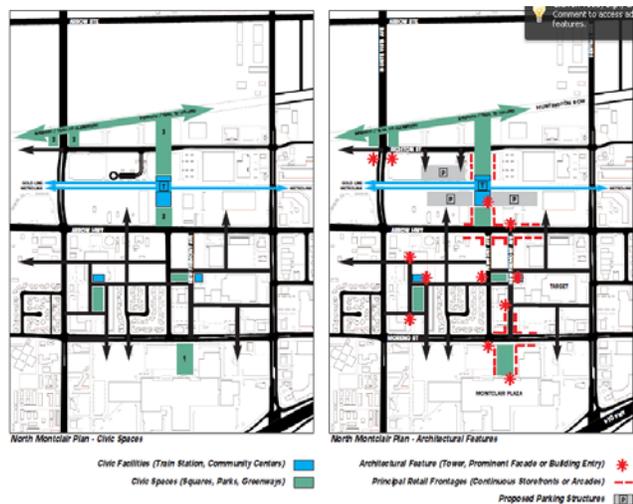
(h) General Plan: Provision of Pedestrian Nodes

As noted above, a city's General Plan is a key opportunity to establish the framework for pedestrian orientation. The Circulation Element of the Plan typically assigns roadway typologies, which can include a layered network approach with prioritized corridors for transit, pedestrian, bicycle, and auto travel.

The City's current General Plan does not identify pedestrian nodes.

Suggestions for Potential Improvement

- Identify pedestrian nodes in future updates to the General Plan.
- Create an overlay district for pedestrian nodes with special pedestrian-oriented guidelines, such as relaxing auto Level of Service standards. Prioritize sidewalk



Source: North Montclair Downtown Specific Plan

improvement and completion projects in these nodes.

(i) Formal Advisory Committee and Public Involvement

Advisory committees serve as important sounding boards for new policies, programs, and practices. A citizens' pedestrian advisory committee is also a key component of proactive public involvement for identifying pedestrian safety issues and opportunities. Responding to public concerns through public feedback mechanisms represents a more proactive and inclusive approach to pedestrian safety compared to a conventional approach of reacting to pedestrian collisions.



The City has a Public Safety Commission composed of appointed members. This committee deals with a variety of issues, including transportation.

Cudahy residents may file comments or complaints for safety improvements on City streets via phone, email, or in-person visits to City Hall.

Suggestion for Potential Improvement

- Consider adding a page to the City's website dedicated to receiving public input regarding transportation issues and a subsection for pedestrian topics. This category or subcategory may allow residents to file comments or complaints for traffic control devices or dangerous conditions.
- Hold public meetings with established forums in the community such as churches, senior centers, or schools.
- As the Public Safety Commission to address pedestrian needs.

(j) Design Policies and Development Standards

Design policies and development standards can improve the pedestrian walking experience, encourage walking, enhance economic vitality, and offer funding opportunities for pedestrian improvements. The City's zoning ordinance includes development standards relating to lot coverage, setbacks, building heights, and other design considerations, that guide development.

Suggestion for Potential Improvement

- Consider adopting a Streetscape Master Plan. Alternatively, a Downtown Specific Plan could serve a similar function for a smaller portion of the city, with design principles that specifically address pedestrian access and safety.

(k) Adoption of Routine Accommodations for New Development/Complete Streets

Routine Accommodations or Complete Streets Policies accommodate all modes of travel and travelers of all ages and abilities. Through the development review process, the City reviews ADA compliance, the provision of sidewalks, and pedestrian accessibility.

5.1 - Architectural Standards

5.1.010 - Architectural Types

A. Requirements

1. **Purpose.** This Chapter identifies the architectural types allowed within the Specific Plan area, and provides design standards for each type, to ensure that proposed development is consistent with the City's goals for building form, character, and quality within North Montclair. This Chapter serves the same function as specific ordinances utilized by other cities to establish design standards for particular building types (such as Pasadena's "City of Gardens" ordinance).

2. **Applicability.** Each proposed building shall be designed in compliance with the standards of this Chapter for the applicable architectural type, except for public and institutional buildings, which because of their unique disposition and application are not required to comply with building type requirements.

3. **Allowable architectural types by zone.** Each proposed building shall be designed as one of the types allowed by the following table for the zone applicable to the site:

Architectural Type	Architectural Types Allowed		
	NR	CR	TC
Mansion	Y	Y	
Rowhouse	Y	Y	
Bungalow Court	Y	Y	
Sideyard Housing	Y	Y	
Court	Y	Y	
Court with Truck-under Parking	Y	Y	
Live/Work		Y	Y
Stacked Dwellings		Y*	Y**
Commercial Block			Y

Mansion Apartment Rowhouse
 Bungalow Court Sideyard Housing
 Court with Truck-under Parking Stacked Dwellings

Suggestion for Potential Improvement

- Establish a Complete Streets Policy and accommodate all modes in standard cross-sections for collectors and arterials. This policy could include a checklist for use during development application review.

The following jurisdictions have established practices for Complete Streets and Routine Accommodations, including implementation of these policies through multi-modal level of service thresholds, and may serve as models for Cudahy:

- Fort Collins, Colorado's Multi-Modal Level of Service Manual: www.fcgov.com/link-disclaimer.php?TABID=5andURL=http://www.co.larimer.co.us/engineering/GMARdStds/AppendixH%2010-01-02.pdf
- Charlotte, North Carolina's Urban Street Design Guidelines: www.charmeck.org/Departments/Transportation/Urban+Street+Design+Guidelines.htm
- Sacramento Transportation and Air Quality Collaborative Best Practices for Complete Streets: www.completestreets.org/documents/FinalReportII_BPCompleteStreets.pdf
- San Francisco, California, Department of Public Health's Pedestrian Quality Index: www.sfpbes.org/HIA_Tools/PEQI.pdf
- San Francisco County Transportation Authority's Multi-modal Impact Criteria: www.sfcta.org/images/stories/Planning/CongestionManagementPlan/2007%20-%20appendix%2005%20-%20tia.pdf

(l) Pedestrian/Bicycle Coordinator

In a sampling of pedestrian-oriented California cities, a full-time pedestrian/bicycle coordinator is typically provided for cities in excess of 100,000 population. Cudahy does not currently have a Bicycle/Pedestrian Coordinator, though various staff assist with bicycle and pedestrian activities.

Suggestion for Potential Improvement

- Identify a staff person to allocate a percentage of their time to serve as Pedestrian/Bicycle Coordinator, performing duties like interdepartmental coordination, grant writing, and staff liaison to local non-profits, advocacy groups, and schools.

(m) Attention to Crossing Barriers

Crossing barriers such as railroads, freeways, and major arterials, may discourage or even prohibit pedestrian access. Additionally, crossing barriers are often associated with vehicle-pedestrian collisions (including severe injuries and fatalities). Identifying and removing barriers, as well as preventing new barriers, is essential for improving walkability and pedestrian safety.

The City has not identified pedestrian barriers within the City, though features such as train tracks and the Los Angeles River pose challenges to crossing some locations.

Suggestions for Potential Improvement

- Identify and create an inventory of pedestrian barriers, along with appropriate remedies or projects.

(n) Transportation Demand Management Program

Transportation Demand Management (TDM) programs encourage multi-modal travel by incentivizing non-auto options. As new development occurs, TDM programs can be expanded, formalized, and strengthened. Cudahy does not have a TDM program or TDM coordinator.

Suggestions for Potential Improvement

As part of a comprehensive TDM program:

- Create a TDM program and accompanying website with separate pages for employees, residents, and visitors.
- Develop a TDM policy which:
 - Incentivizes non-auto travel options (e.g., commuter checks, parking cash-out programs, transit passes, etc.)
 - Involves the local transit provider(s) in major decisions

(o) Coordination with Health Agencies

Involving non-traditional partners such as Emergency Medical Service (EMS) personnel, public health agencies, pediatricians, etc., in the planning or design of pedestrian facilities may create opportunities to be more proactive with pedestrian safety, identify pedestrian safety challenges and education venues, and secure funding. Additionally, under-reporting of pedestrian-vehicle

collisions could be a problem that may be partially mitigated by involving the medical community in pedestrian safety planning.³

Police and Fire Department staff is involved in the City's plan-check process. The City does not include health agencies or professionals in the planning and design of pedestrian facilities.

Suggestion for Potential Improvement

- Seek opportunities for technical collaboration and funding with first responders, public health and health care professionals.

(p) Use of Street Furniture Requirements

Street furniture encourages walking by accommodating pedestrians with benches to rest along the route or wait for transit; trash receptacles to maintain a clean environment; street trees for shade, etc. Uniform street furniture requirements also enhance the design of the pedestrian realm and may improve economic vitality. Cudahy's Municipal Code does not include street furniture requirements.

Suggestion for Potential Improvement

- Consider adopting a Street Furniture Ordinance to include guidance for the design of transit stops and locations for additional street furniture amenities, other than those associated with transit stops, as appropriate.

(q) Adoption of Street Tree Requirements

Street trees enhance the pedestrian environment by providing shade and a buffer from vehicles. Street trees may also enhance property values, especially in residential neighborhoods. However, street trees, when improperly selected, planted, or maintained, may cause damage to adjacent public utilities.

Cudahy's Municipal Code does not include street tree requirements.



Suggestion for Potential Improvement

- Consider adopting a Street Tree Ordinance including all development types and specifying where and how often street trees may be planted/ replaced, and which types of trees are appropriate. The ordinance could also allow trees in the parking lane or parking stalls, like those in Virginia Park in Santa Monica.

³ Sciortino, S., Vassar, M., Radetsky, M. and M. Knudson, "San Francisco Pedestrian Injury Surveillance: Mapping, Underreporting, and Injury Severity in Police and Hospital Records," *Accident Analysis and Prevention*, Volume 37, Issue 6, November 2005, Pages 1102-1113

(r) Historic Sites

Historic walking routes, such as the famous Freedom Trail in Boston, encourage walking and enhance economic vitality. Cudahy does not have a Historic Registry. The City does not have a historic or open space walking route, map, or wayfinding program.

Suggestion for Potential Improvement

- Develop a map to showcase natural or local sites of interest, and link key features in the City, including a possible walking route between the sites. Maps of the tour route and historic documentation materials could be made available online and wayfinding signs, maps, and plaques could also be provided throughout the City.



4. WALKING AUDIT RESULTS AND SUGGESTIONS

Walking audits are typically conducted as an initial step to improve the pedestrian environment within the selected area. During a walking audit, positive practices are observed and issues and opportunity areas are noted. Observations are based on how motorists are behaving around pedestrians and how pedestrians are behaving, especially at intersections (for example, if pedestrians are crossing at unmarked locations to avoid certain intersections). For each opportunity area, the group discusses possible suggestions to address pedestrian safety concerns. Walking audits are highly interactive, with many observations explored during the walk. They are a means to observing and learning how to “see through the eyes of the pedestrian.”



This chapter presents the observations and suggestions made during the walking audit conducted in the City of Cudahy on March 1, 2012. The suggestions are based on best practices and discussions with the participant group regarding local needs and feasibility. A glossary of the pedestrian improvement measures is presented in Appendix A.

The evaluation team worked with City staff to select the focus areas for the walking audit based on the following criteria:

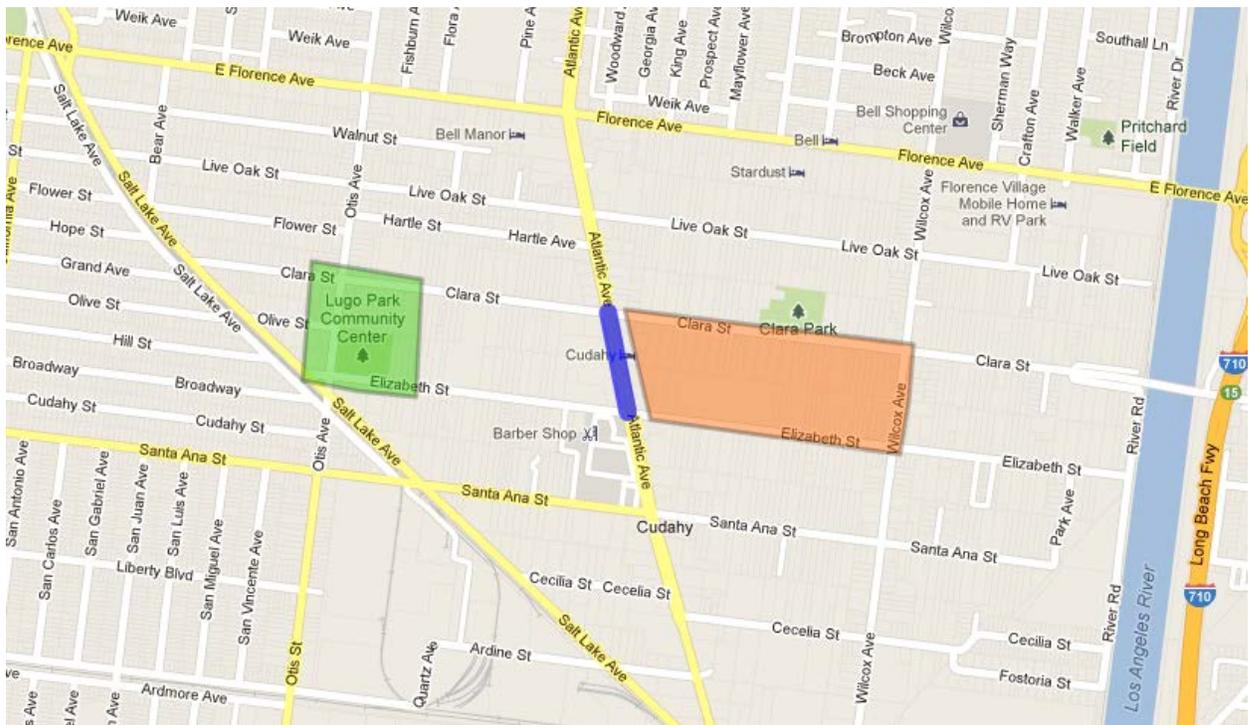
- Demonstrated pedestrian safety concerns
- Presence of children/school-related pedestrians
- No other project has specifically addressed pedestrian safety needs in the area
- Proximity to key generators, such as transit, retail, parks, and schools
- Availability of prototypical sites for broader Citywide application of suggestions

The walking audit covered three focus areas in the City of Cudahy:

1. Elizabeth Learning Center
2. Atlantic Avenue
3. Teresa Hughes Elementary School

An overview of the walking audit focus areas are shown in Figure 4-1. The following sections present the key issues identified during the walking audit. Suggestions are presented to respond to the issues at each site. Focus area summary graphics, with a compilation of all suggestions, are provided in the discussion.

Figure 4-1: Walking Audit Locations



-  Walking Audit Location 1
Elizabeth Learning Center
-  Walking Audit Location 2
Atlantic Avenue
-  Walking Audit Location 3
Teresa Hughes Elementary School

4.1 GENERAL CITYWIDE SUGGESTIONS

Several positive practices were identified in the field, including:

- Far-side bus stops
- Most bus stops included seating, shelter, and a trash receptacle
- Proper design and placement of speed humps with optical speed bars
- ADA-compliant curb ramps with truncated domes
- Striping of crosswalks at all legs of signalized intersections

The following general suggestions for physical enhancements are appropriate for City-wide implementation:

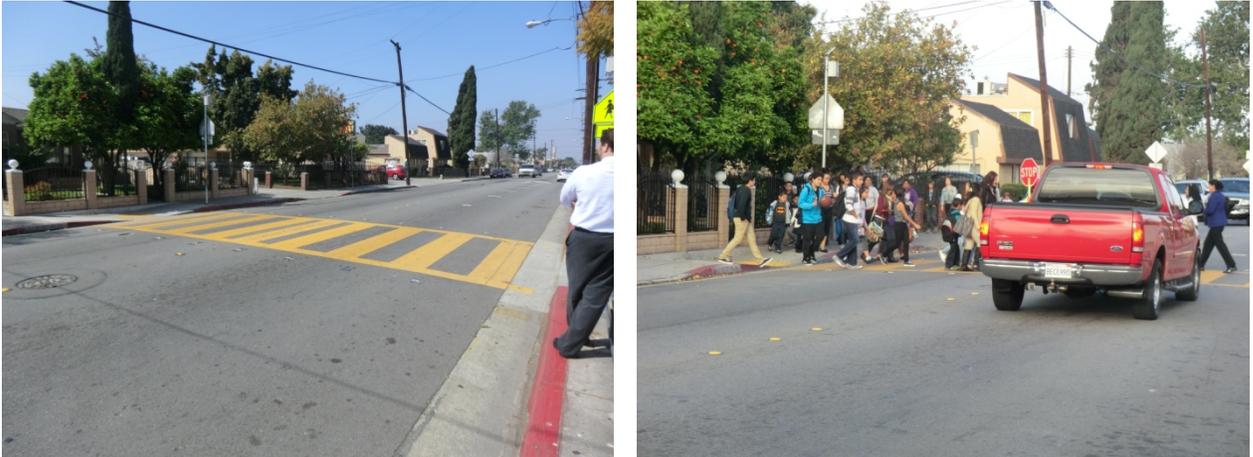
- Use a high-visibility crosswalk striping pattern for uncontrolled crosswalks
- Use a parallel crosswalk striping pattern for controlled crosswalks
- Continue to maintain sidewalk clear zones
- Add stop bars for stop-sign or signal controlled crossings
- Add yield limit lines for uncontrolled crossings
- Ensure green times are adequate for pedestrians (3.5 feet/second or less)
- Provide a pedestrian buffer zone between street and sidewalks, including street trees
- Install new fluorescent yellow green (FYG) signage for uncontrolled marked crossings
- Strive for “pedestrian-friendly” medians, which are wide enough (at least 6’) for pedestrian refuge and curb extensions that reduce crossing distances and tighten vehicular turning radii, where feasible
- Install curb extensions for pedestrian crossings, where feasible
- Provide directional curb ramps, rather than diagonal ramps, where appropriate
- Trim hedges along the Los Angeles River Bike Path and at intersections where landscaping may obstruct sight distance (i.e. Atlantic Avenue & Patata Street)
- Work with local schools to implement drop-off/pick-up “valet” programs

4.2 SITE-SPECIFIC SUGGESTIONS

Focus Area 1: Elizabeth Learning Center

Setting

Elizabeth Learning Center (ELC) is located on Elizabeth Street, between Atlantic Avenue and Wilcox Avenue. ELC has frontages with access on Elizabeth Street and Clara Street. The school is surrounded primarily by residential uses, in addition to open space and a convenience store across the street.



The existing midblock crossing on Elizabeth Street leads to the primary pedestrian entrance at Elizabeth Learning Center.

Observations

Elizabeth Street is approximately 36 feet wide and Clara Street is approximately 44 feet wide. Both streets include one travel lane in each direction and parking on both sides of the street, with overnight restrictions. During school arrival and dismissal periods, pedestrian and vehicle activity occurs on both streets, with heavier pedestrian flows on Elizabeth Street. Both Elizabeth Street and Clara Street have midblock crossings and speed humps along the ELC frontages. Local circulation patterns indicate that ELC is a major generator of pedestrian activity from the surrounding residences and also generates substantial on-street drop-off/pick-up activity.

There is a marked midblock uncontrolled crosswalk that provides access to the ELC entrance on Elizabeth Street. This crossing provides a yellow high-visibility crosswalk striping pattern, fluorescent yellow-green signage, curb ramps with truncated domes, and in-roadway flashing lights. A crossing guard is stationed there during school arrival and dismissal periods. During the school arrival period it was observed that most students cross at the crosswalk. The crossing guard controls the crossing and waits for a group of pedestrians to collect on the sidewalk before stepping out to stop vehicular traffic in both directions, allowing students to cross. A high driver yielding compliance to the crossing guard and students was observed. However, it was also observed that some students actuate the in-roadway lights while they are waiting for the crossing guard to begin crossing. This results in driver confusion because the motorists see the lights go on and expect that children are about to cross, when they are not. Over time this may lead to pedestrian-vehicle conflicts based on inconsistent use of in-roadway lights at different times and locations.

Clara Street provides two midblock crossings between Atlantic Avenue and Wilcox Avenue. In addition to providing the same pedestrian amenities as the midblock crossing on Elizabeth Street, the western marked uncontrolled crossing includes stop bars.

Several hundred feet to the east is another midblock marked crosswalk that provides the same pedestrian amenities; however, this crossing includes a full signal to control the crossing and no crossing guard. Either crossing treatment is adequate, given the posted speed limit, number of

travel lanes, and estimated volumes. However, the eastern crossing has a full signal, therefore when a pedestrian uses the push-button motorists will encounter a red indication, requiring them to stop. When a pedestrian uses the push-button at the western crosswalk, motorists encounter flashing in-roadway lights, which alone do not require motorists to stop. The potentially inconsistent expectations of pedestrians and drivers at these two crossings in close proximity to each other may result in pedestrian-vehicle conflicts.

Most parents and motorists observed exhibited prudent behaviors, such as crossing at the crosswalk and parking to drop-off; however, there were several instances of undesired behaviors, such as dropping off in the travel lane or red zones, resulting in obstructed sight distance.

The signalized intersection of Clara Street & Wilcox Avenue is frequently used by pedestrians in the area and includes several positive practices such as yellow high-visibility crosswalk striping pattern on all approaches with stop bars. One block to the east Clara Street provides access to the Los Angeles River Bicycle Path.

The all-way stop intersection of Elizabeth Street & Wilcox Avenue, which is also frequently used by local pedestrians, does not have crosswalks on any approaches.

Suggestions for Potential Improvement (See Figure 4-2)

1. Enhance the uncontrolled midblock crossing on Elizabeth Street with the following treatments:
 - a. Replace in-pavement roadway lights with a rectangular rapid flashing beacon, which has been shown to improve driver yielding rates and provides better daytime visibility than in-roadway lights
 - b. Install yield limit lines
 - c. Install a triple-four crosswalk striping pattern upon street resurfacing
 - d. Install a curb extension on the south side of Elizabeth Street to improve pedestrian visibility, shorten the crossing distance, and prevent motorists from stopping along the red zone to drop-off/pick-up
2. Additional drop-off/pick-up area can be gained by utilizing the school's parking lot as a counterclockwise loop for drop-off/pick-up that would allow pedestrians direct access to the campus. This would require a new curb cut east of the existing curb cut to the school's parking lot on Elizabeth Street and restricting morning parking in the spaces adjacent to the building that would be used as the drop-off/pick-up area. The drop-off/pick-up area may be set-up to include a "valet" service where staff or volunteers assist students exiting/entering the cars and facilitate traffic flow, similar to the program in place at Ellen Ochoa Learning Center.
3. Implement consistent crossing treatments at the two midblock crossings on Clara Street. This may be done either by replicating the eastern crossing with the full signal to the west or replicating the treatments suggested for Elizabeth Street above at both crossings on Clara Street.
4. Consider signal modifications that address pedestrian-vehicle conflicts to the intersection of Clara Avenue & Wilcox Avenue based on pedestrian activity and/or collision history:

- a. Protected left-turn phasing
- b. Leading pedestrian interval
5. Enhance the intersection of Elizabeth Street & Wilcox Avenue with the following treatments:
 - a. Strip high-visibility yellow school crosswalks (triple-four) on all approaches
 - b. Install flashing stop signs to make traffic control devices more visible
6. Install east-west bicycle lanes, between Salt Lake Avenue and the Los Angeles River Bike Path, improving bicycle accessibility between residences, open space, schools, commercial uses on Atlantic Avenue, and the Los Angeles River Bike Path. Two options are provided:
 - a. Option 1 - Clara Street Bike Lanes: Clara Street is 44 feet wide, which would allow for a cross-section of seven-foot parking lanes, five-foot bicycle lanes, and 10-foot travel lanes (Option 1 is shown in accompanying graphic).
 - b. Option 2 – Clara Street/Live Oak Bike Lane Couplet: Install a bicycle lane westbound on Clara Street and eastbound on Live Oak Street (these directions were chosen so that the bike lane would be placed on the opposite side of the school to minimize conflicts between motorists parking or dropping-off/picking-up and cyclists in the bike lane). A shared lane marking (sharrow) would be provided in the direction opposite each bicycle lane.
7. Request additional enforcement in the area to deter illegal pedestrian and motorist behaviors.



Pedestrians on Elizabeth Street.



Western midblock crossing on Clara Street with crossing guard.

Figure 4-2: Elizabeth Learning Center



Focus Area 2: Atlantic Avenue

Setting

Atlantic Avenue is a four-lane arterial with a landscaped raised median, posted speed limit of 35 miles per hour, parking on both sides of the street, minimum five foot sidewalks, and a variety of land uses. All four-legged intersections formed with Atlantic Avenue in Cudahy are signalized with marked crosswalks on all legs. Observations indicate Atlantic Avenue serves a variety of road users, particularly pedestrians, transit patrons, and motorists.

Observations

Atlantic Avenue is approximately 74 feet wide with two travel lanes in each direction, a landscaped raised median with left-turn pockets at intersections, and on-street parking. Atlantic is the only four-lane arterial in Cudahy and provides access to the majority of Cudahy's non-residential land uses. Observations indicated a high level of vehicular traffic and pedestrian traffic from local destinations and transit stops. On-street parking is limited to two hours during business hours and most businesses provide off-street parking. Observations also indicated pedestrian-vehicle conflicts were minimized because the intersections within the study segment are signalized, provide marked pedestrian crossings, and motorists appeared accustomed to the relatively high levels of pedestrian activity along Atlantic Avenue.

Suggestions for Potential Improvement (see Figure 4-3)

1. Enhance the intersections through signal treatments such as leading pedestrian intervals or protected left-turn phasing that further address vehicle-pedestrian conflicts at signalized intersections on Atlantic Avenue.
2. Install curb extensions at intersections on Atlantic Avenue.
3. Explore opportunities to provide north-south bicycle facilities in Cudahy. Based on access to local land uses and north south connectivity in Cudahy, Atlantic Avenue is a good candidate; however, the current street width and configuration are insufficient to accommodate bicycle lanes without the removal of on-street parking.

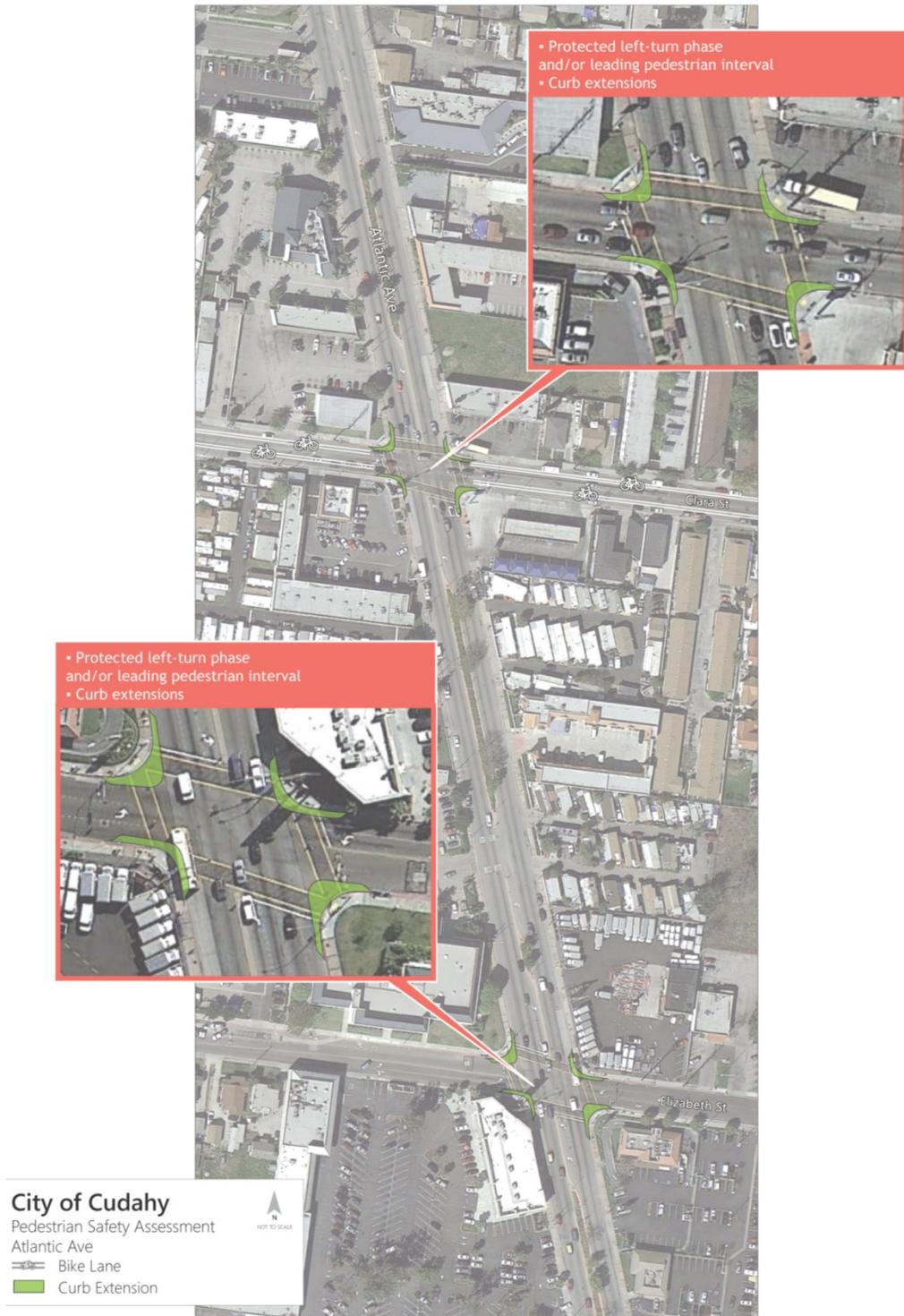


Atlantic Avenue looking north.



Atlantic Avenue looking south.

Figure 4-3: Atlantic Avenue



Focus Area 3: Teresa Hughes Elementary School

Setting

Teresa Hughes Elementary School (THES) is situated in a predominantly residential area. The school has frontage on Clara Street, east of Otis Avenue. Clara Street is a two lane roadway with parking on both sides of the street.

Observations

Primary pedestrian access to THES is available from Clara Street. A signalized marked midblock crossing is provided on Clara Street just east of the main entrance. In addition to being signalized, the crossing includes stop bars, high-visibility yellow crosswalk striping, and curb ramps.

Drop-off/pick-up activity is concentrated on Clara Street. The south side of Clara Street immediately in front of the school includes a turnout area that is designated for school drop-off and pick-up between 7:30 AM and 8:30 AM and 2:30 PM and 3:30 PM, respectively. The area designated for school loading extends beyond the length of the turnout to include most of the frontage along Clara Street to Otis Avenue. Otis Avenue & Clara Street and the signalized midblock crossing adjacent to the school provide controlled crossing locations in close proximity to the school along walking paths to the main entrance.

There are two all-way stop intersections on Otis Avenue south of Clara Street that provide high-visibility yellow school crosswalks on two of the legs. One of the intersections, Otis Avenue & Olive Street, also includes an overhead beacon that flashes red.

Suggestions for Potential Improvement (See Figure 4-4)

1. Implement a drop-off/pick-up “valet” service where staff or volunteers assist students exiting/entering the cars and facilitate traffic flow, similar to the program in place at Ellen Ochoa Learning Center.
2. Enhance the signalized midblock crossing on Clara Street with the following treatments:
 - a. Install a curb extension on the south side of Clara Street to improve pedestrian visibility, shorten the crossing distance, and prevent motorists from stopping along the red zone to drop-off/pick-up
 - b. Install a triple-four crosswalk striping pattern upon street resurfacing, with reflective pavement markers on the leading edge
3. The suggestion to install bicycle lanes on Clara Street, discussed above for Elizabeth Learning Center, includes this segment and provides improved bicycle connectivity to the school and nearby residences.
4. Install high-visibility (triple-four) yellow school crosswalks on all legs of the all-way stop-controlled intersections on Otis Avenue between Clara Street and Salt Lake Avenue (at Elizabeth Street and Olive Street) and enhance the visibility of the existing stop signs by replacing the overhead beacon with flashing stop signs.





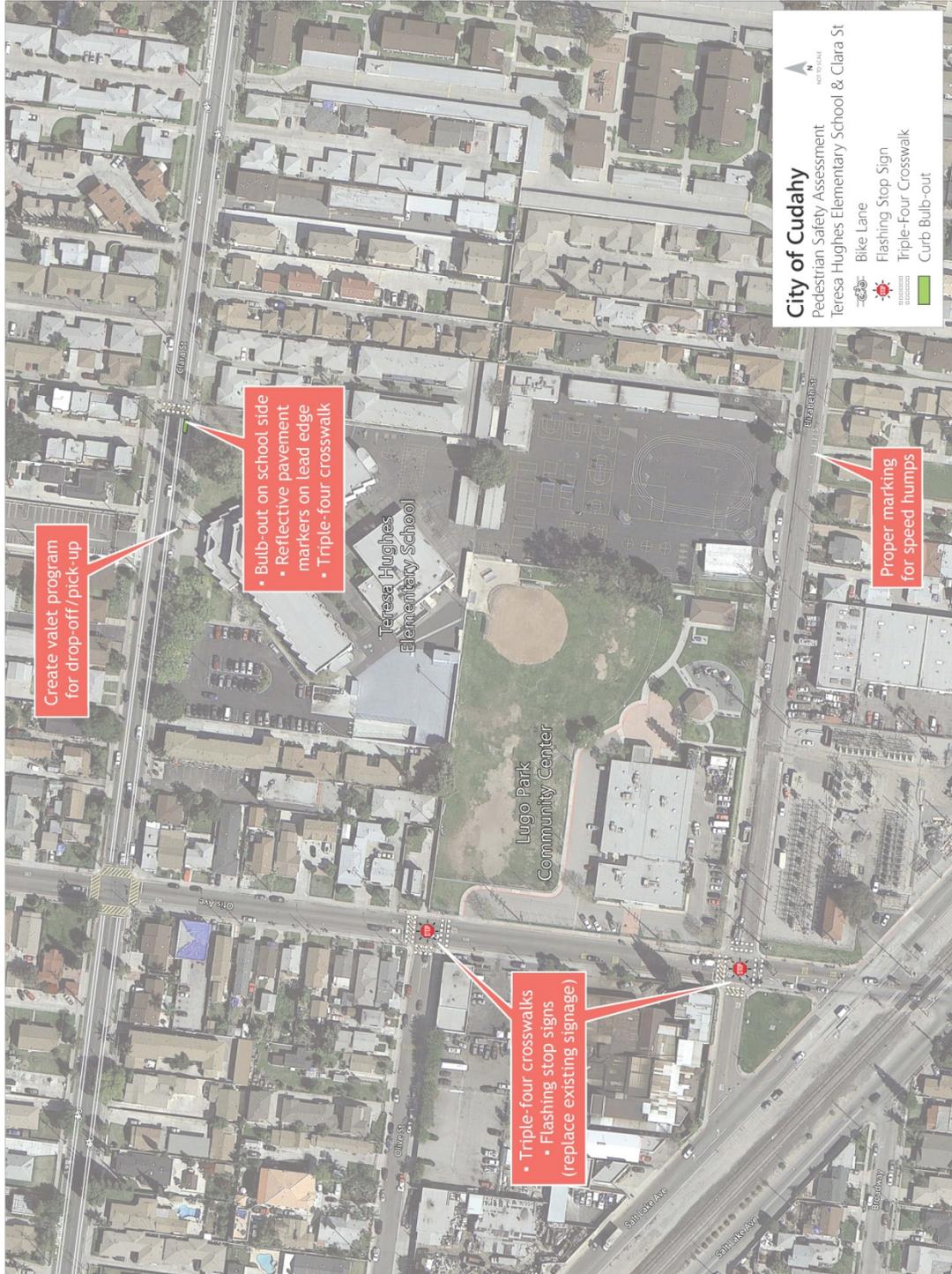
Top and bottom images show the south side of Clara Street, including the designated drop-off/pick-up area extending beyond the turnout.



Top and bottom images show the north side of Clara Street, including the signalized midblock crossing.



Figure 4-4: Teresa Hughes Elementary School



APPENDIX A: GLOSSARY OF PEDESTRIAN IMPROVEMENT MEASURES

PEDESTRIAN IMPROVEMENT MEASURES			
Measure	Description	Benefits	Application
Traffic Control Countermeasures			
Traffic Signal or All-Way Stop	Conventional traffic control devices with warrants for use based on the Manual on Uniform Control Devices (MUTCD).	Reduces pedestrian-vehicle conflicts and slows traffic speeds.	Must meet warrants based on traffic and pedestrian volumes; however, exceptions are possible based on demonstrated pedestrian safety concerns (collision history).
HAWK Beacon Signal	HAWK (High Intensity Activated Crosswalks) are pedestrian-actuated signals that are a combination of a beacon flasher and a traffic control signal. When actuated, HAWK displays a yellow (warning) indication followed by a solid red light. During pedestrian clearance, the driver sees a flashing red “wig-wag” pattern until the clearance interval has ended and the signal goes dark.	Reduces pedestrian-vehicle conflicts and slows traffic speeds.	Useful in areas where it is difficult for pedestrians to find gaps in automobile traffic to cross safely, but where normal signal warrants are not satisfied. Appropriate for multi-lane roadways.
Overhead Flashing Beacons	Flashing amber lights are installed on overhead signs, in advance of the crosswalk or at the entrance to the crosswalk.	The blinking lights during pedestrian crossing times increase the number of drivers yielding for pedestrians and reduce pedestrian-vehicle conflicts. This measure can also improve conditions on multi-lane roadways.	Best used in places where motorists cannot see a traditional sign due to topography or other barriers.
Stutter Flash	The Overhead Flashing Beacon is enhanced by replacing the traditional slow flashing incandescent lamps with rapid flashing LED lamps. The beacons may be push-button activated or activated with pedestrian detection.	Initial studies suggest the stutter flash is very effective as measured by increased driver yielding behavior. Solar panels reduce energy costs associated with the device.	Appropriate for multi-lane roadways.

PEDESTRIAN IMPROVEMENT MEASURES			
Measure	Description	Benefits	Application
In-Roadway Warning Lights	Both sides of a crosswalk are lined with pavement markers, often containing an amber LED strobe light. The lights may be push-button activated or activated with pedestrian detection.	This measure provides a dynamic visual cue, and is increasingly effective in bad weather.	Best in locations with low bicycle ridership, as the raised markers present a hazard to bicyclists. May not be appropriate in areas with heavy winter weather due to high maintenance costs. May not be appropriate for locations with bright sunlight. The lights may cause confusion when pedestrians fail to activate them and/or when they falsely activate.
High-Visibility Signs and Markings	High-visibility markings include a family of crosswalk striping styles including the "ladder" and the "triple four." One style, the zebra-style crosswalk pavement markings, were once popular in Europe, but have been phased out because the signal-controlled puffin is more effective (see notes). High-visibility fluorescent yellow green signs are made of the approved fluorescent yellow-green color and posted at crossings to increase the visibility of a pedestrian crossing ahead.	FHWA recently ended its approval process for the experimental use of fluorescent yellow crosswalk markings and found that they had no discernible benefit over white markings.	Beneficial in areas with high pedestrian activity, as near schools, and in areas where travel speeds are high and/or motorist visibility is low.
In-Street Pedestrian Crossing Signs	This measure involves posting regulatory pedestrian signage on lane edge lines and road centerlines. The In-Street Pedestrian Crossing sign may be used to remind road users of laws regarding right of way at an unsignalized pedestrian crossing. The legend STATE LAW may be shown at the top of the sign if applicable. The legends STOP FOR or YIELD TO may be used in conjunction with the appropriate symbol.	This measure is highly visible to motorists and has a positive impact on pedestrian safety at crosswalks.	Mid-block crosswalks, unsignalized intersections, low-speed areas, and two-lane roadways are ideal for this pedestrian treatment. The STOP FOR legend shall only be used in states where the state law specifically requires that a driver must stop for a pedestrian in a crosswalk.

PEDESTRIAN IMPROVEMENT MEASURES			
Measure	Description	Benefits	Application
Pedestrian Crossing Flags	Square flags of various colors, which are mounted on a stick and stored in sign-mounted holders on both side of the street at crossing locations; they are carried by pedestrians while crossing a roadway.	This measure makes pedestrians more visible to motorists.	Appropriate for mid-block and uncontrolled crosswalks with low visibility or poor sight distance.
Advanced Yield Lines	Standard white stop or yield limit lines are placed in advance of marked, uncontrolled crosswalks.	This measure increases the pedestrian's visibility to motorists, reduces the number of vehicles encroaching on the crosswalk, and improves general pedestrian conditions on multi-lane roadways. It is also an affordable option.	Useful in areas where pedestrian visibility is low and in areas with aggressive drivers, as advance limit lines will help prevent drivers from encroaching on the crosswalk. Addresses the multiple-threat collision on multi-lane roads.
Geometric Treatments			
Pedestrian Overpass/Underpass	This measure consists of a pedestrian-only overpass or underpass over a roadway. It provides complete separation of pedestrians from motor vehicle traffic, normally where no other pedestrian facility is available, and connects off-road trails and paths across major barriers.	Pedestrian overpasses and underpasses allow for the uninterrupted flow of pedestrian movement separate from the vehicle traffic.	Grade separation via this measure is most feasible and appropriate in extreme cases where pedestrians must cross roadways such as freeways and high-speed, high-volume arterials. This measure should be considered a last resort, as it is expensive and visually intrusive.
Road Diet (aka Lane Reduction)	The number of lanes of travel is reduced by widening sidewalks, adding bicycle and parking lanes, and converting parallel parking to angled or perpendicular parking.	This is a good traffic calming and pedestrian safety tool, particularly in areas that would benefit from curb extensions but have infrastructure in the way. This measure also improves pedestrian conditions on multi-lane roadways.	Roadways with surplus roadway capacity (typically multi-lane roadways with less than 15,000 to 17,000 ADT) and high bicycle volumes, and roadways that would benefit from traffic calming measures.

PEDESTRIAN IMPROVEMENT MEASURES			
Measure	Description	Benefits	Application
Median Refuge Island	Raised islands are placed in the center of a roadway, separating opposing lanes of traffic with cutouts for accessibility along the pedestrian path.	This measure allows pedestrians to focus on each direction of traffic separately, and the refuge provides pedestrians with a better view of oncoming traffic as well as allowing drivers to see pedestrians more easily. It can also split up a multi-lane road and act as a supplement to additional pedestrian tools.	Recommended for multi-lane roads wide enough to accommodate an ADA-accessible median.
Staggered Median Refuge Island	This measure is similar to traditional median refuge islands; the only difference is that the crosswalks in the roadway are staggered such that a pedestrian crosses half the street and then must walk towards traffic to reach the second half of the crosswalk. This measure must be designed for accessibility by including rails and truncated domes to direct sight-impaired pedestrians along the path of travel.	Benefits of this tool include an increase in the concentration of pedestrians at a crossing and the provision of better traffic views for pedestrians. Additionally, motorists are better able to see pedestrians as they walk through the staggered refuge.	Best used on multi-lane roads with obstructed pedestrian visibility or with off-set intersections.
Curb Extension	Also known as a pedestrian bulb-out, this traffic-calming measure is meant to slow traffic and increase driver awareness. It consists of an extension of the curb into the street, making the pedestrian space (sidewalk) wider.	Curb extensions narrow the distance that a pedestrian has to cross and increases the sidewalk space on the corners. They also improve emergency vehicle access and make it difficult for drivers to turn illegally.	Due to the high cost of installation, this tool would only be suitable on streets with high pedestrian activity, on-street parking, and infrequent (or no) curb-edge transit service. It is often used in combination with crosswalks or other markings.

PEDESTRIAN IMPROVEMENT MEASURES			
Measure	Description	Benefits	Application
Reduced Curb Radii	The radius of a curb can be reduced to require motorists to make a tighter turn.	Shorter radii narrow the distance that pedestrians have to cross; they also reduce traffic speeds and increase driver awareness (like curb extensions), but are less difficult and expensive to implement.	This measure would be beneficial on streets with high pedestrian activity, on-street parking, and no curb-edge transit service. It is more suitable for wider roadways and roadways with low volumes of heavy truck traffic.
Curb Ramps	Curb ramps are sloped ramps that are constructed at the edge of a curb (normally at intersections) as a transition between the sidewalk and a crosswalk.	Curb ramps provide easy access between the sidewalk and roadway for people using wheelchairs, strollers, walkers, crutches, handcars, bicycles, and also for pedestrians with mobility impairments who have trouble stepping up and down high curbs.	Curb ramps must be installed at all intersections and mid-block locations where pedestrian crossings exist, as mandated by federal legislation (1973 Rehabilitation Act and 1990 Americans with Disabilities Act). Where feasible, separate curb ramps for each crosswalk at an intersection should be provided rather than having a single ramp at a corner for both crosswalks.
Raised Crosswalk	A crosswalk whose surface is elevated above the travel lanes.	Attracts drivers' attention; encourages lower travel speeds by providing visual and tactile feedback when approaching the crosswalk.	Appropriate for multi-lane roadways, roadways with lower speed limits that are not emergency routes, and roadways with high levels of pedestrian activity, such as near schools, shopping malls, etc.

PEDESTRIAN IMPROVEMENT MEASURES			
Measure	Description	Benefits	Application
Improved Right-Turn Slip-Lane Design	Right-turn slip lanes (aka channelized right-turn lanes) are separated from the rest of the travel lanes by a pork chop-shaped striped area. This measure separates right-turning traffic and streamlines right-turning movements. Improved right-turn slip lanes would provide pedestrian crossing islands within the intersection and be designed to optimize the right-turning motorist's view of the pedestrian and of vehicles to his or her left.	This measure reduces the pedestrian's crossing distance and turning vehicle speeds.	Appropriate for intersections with high volumes of right-turning vehicles.
Chicanes	A chicane is a sequence of tight serpentine curves (usually an S-shape curve) in a roadway, used on city streets to slow cars.	This is a traffic-calming measure that can improve the pedestrian environment and pedestrian safety.	Chicanes can be created on streets with higher volumes, given that the number of through lanes is maintained; they can also be created on higher-volume residential streets to slow traffic. Chicanes may be constructed by alternating parallel or angled parking in combination with curb extensions.
Pedestrian Access and Amenities			
Marked Crosswalk	Marked crosswalks should be installed to provide designated pedestrian crossings at major pedestrian generators, crossings with significant pedestrian volumes (at least 15 per hour), crossings with high vehicle-pedestrian collisions, and other areas based on engineering judgment.	Marked crosswalks provide a designated crossing, which may improve walkability and reduce jaywalking.	Marked crosswalks alone should not be installed on multi-lane roads with more than about 10,000 vehicles/day. Enhanced crosswalk treatments (as presented in this table) should supplement the marked crosswalk.

PEDESTRIAN IMPROVEMENT MEASURES			
Measure	Description	Benefits	Application
Textured Pavers	Textured pavers come in a variety of materials (for example, concrete, brick, and stone) and can be constructed to create a textured pedestrian surface such as a crosswalk or sidewalk. Crosswalks are constructed with the pavers, or can be made of stamped concrete or asphalt.	Highly visible to motorists, this measure provides a visual and tactile cue to motorists and delineates a separate space for pedestrians, as it provides a different texture to the street for pedestrians and motorists. It also aesthetically enhances the streetscape.	Appropriate for areas with high volumes of pedestrian traffic and roadways with low visibility and/or narrow travel ways, as in the downtown area of towns and small cities.
Anti-Skid Surfacing	Surface treatment is applied to streets to improve skid resistance during wet weather. This is a supplementary tool that can be used to reduce skidding in wet conditions.	Improves driver and pedestrian safety.	Appropriate for multi-lane roadways and roadways with higher posted speed limit and/or high vehicle volumes or collision rates.
Accessibility Upgrades	Treatments such as audible pedestrian signals, accessible push buttons, and truncated domes should be installed at crossings to accommodate disabled pedestrians.	Improves accessibility of pedestrian facilities for all users.	Accessibility upgrades should be provided for all pedestrian facilities following a citywide ADA Transition Plan.
Pedestrian Countdown Signal	Displays a "countdown" of the number of seconds remaining for the pedestrian crossing interval. In some jurisdictions the countdown includes the walk phase. In other jurisdictions, the countdown is only displayed during the flashing don't walk phase.	Increases pedestrian awareness and allows them the flexibility to know when to speed up if the pedestrian phase is about to expire.	The forthcoming 2009 MUTCD is expected to require all pedestrian signals to incorporate countdown signals within ten years. The signals should be prioritized for areas with pedestrian activity, roadways with high volumes of vehicular traffic, multi-lane roadways, and areas with elderly or disabled persons (who may walk slower than others may).

PEDESTRIAN IMPROVEMENT MEASURES			
Measure	Description	Benefits	Application
Transit			
High-Visibility Bus Stop Locations	This measure should include siting bus stops on the far side of intersections, with paved connections to sidewalks where landscape buffers exist.	Provides safe, convenient, and inviting access for transit users; can improve roadway efficiency and driver sight distance.	Appropriate for all bus stops subject to sight distance and right-of-way constraints.
Transit Bulb	Transit bulbs or bus bulbs, also known as nubs, curb extensions, or bus bulges are a section of sidewalk that extends from the curb of a parking lane to the edge of the through lane.	Creates additional space at a bus stop for shelters, benches, and other passenger amenities.	Appropriate at sites with high patron volumes, crowded city sidewalks, and curbside parking.
Enhanced Bus Stop Amenities	Adequate bus stop signing, lighting, a bus shelter with seating, trash receptacles, and bicycle parking are desirable features at bus stops.	Increase pedestrian visibility at bus stops and encourage transit ridership.	Appropriate at sites with high patron volumes.

APPENDIX B: RESOURCE LIST

RESOURCE LIST
A Guide for Reducing Collisions Involving Pedestrians (NCHRP Report 500) http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v10.pdf
Pedestrian and Bicycle Information Center http://www.walkinginfo.org/
National Center for Safe Routes to School http://www.saferoutesinfo.org/
Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations (HRT-04-100) http://www.thrc.gov/safety/pubs/04100/index.htm
How to Develop a Pedestrian Safety Action Plan (FHWA-SA-05-12) http://www.walkinginfo.org/pp/howtoguide2006.pdf
Improving Pedestrian Safety at Unsignalized Crossings (NCHRP Report 562) http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_562.pdf
Road Safety Audits: Case Studies (FHWA-SA-06-17) http://safety.fhwa.dot.gov/rsa/rsa_cstudies.htm
Pedestrian Road Safety Audit Guidelines and Prompt Lists http://drusilla.hsrb.unc.edu/cms/downloads/PedRSA.reduced.pdf
PEDSAFE: The Pedestrian Safety Guide and Countermeasure Selection System (FHWA-SA-04-003) http://www.walkinginfo.org/pedsafe/
Pedestrian and Bicycle Crash Analysis Tool (PBCAT) http://www.bicyclinginfo.org/bc/pbcats.cfm
FHWA, A Resident's Guide for Creating Safe and Walkable Communities http://safety.fhwa.dot.gov/ped_bicycle/ped/ped_walkguide/index.htm
FHWA, Pedestrian Safety Guide for Transit Agencies (FHWA-SA-07-017) http://safety.fhwa.dot.gov/ped_bicycle/ped/ped_transguide/
FHWA Pedestrian Safety Training Courses:
<u>Developing a pedestrian safety action plan (two-day course)</u> next California course: http://www.google.com/calendar/embed?src=lssandt@email.unc.edu
<u>Designing for pedestrian safety (two-day course)</u> next California course: http://www.google.com/calendar/embed?src=lssandt@email.unc.edu
<u>Planning and designing for pedestrian safety (three-day course)</u> next California course: http://www.google.com/calendar/embed?src=lssandt@email.unc.edu
Adapted from FHWA <i>Pedestrian Road Safety Audit Guidelines and Prompt Lists</i>

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