A TECHNICAL GUIDE FOR CONDUCTING PEDESTRIAN SAFETY ASSESSMENTS FOR CALIFORNIA COMMUNITIES

University of California, Berkeley
Institute of Transportation Studies
Technology Transfer Program

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PREFACE

During the past 10 years, California has averaged over 620 pedestrian fatalities per year, reflecting a downward trend since the first publication of this guidebook. Nonetheless, pedestrian safety continues to be a challenge to many California communities, and improvement is a top priority. With funding from the California Office of Traffic Safety (OTS), through the National Highway Traffic Safety Administration (NHTSA), the Technology Transfer Program of the Institute of Transportation Studies at the University of California, Berkeley (Tech Transfer) has been offering free Pedestrian Safety Assessments (PSAs) to California communities since 2008.

The first edition of this guidebook was based on material contained in the Federal Highway Administration (FHWA) report, *Pedestrian Road Safety Audit Guidelines and Prompt Lists* (July 2007). The award-winning California PSA Program updated this second edition to incorporate current best practices and the collective experience of our team of evaluators who have conducted 78 PSAs in California over the past five years.

Many individuals and agencies contributed input and ideas to the original guide, authored by Ted Chira-Chavala of UC Berkeley (retired) and Matthew Ridgway and Meghan Mitman of Fehr & Peers. Particular thanks go to Christopher Murphy and Lisa Dixon of OTS, Ken Kochevar of FHWA, William Kootsikas and Rosalind Tianco of NHTSA, Richard Haggstrom and Ken McGuire of Caltrans, Bruce Appleyard of UC Berkeley, and Charles Zegeer of UNC Chapel Hill. We also owe special thanks to Dan Burden of Glatting Jackson, who reviewed several drafts of this manual and provided invaluable suggestions. Rudolph Umbs of FHWA provided helpful comments for the final draft.

This second edition is a result of a collaborative effort by Michelle DeRobertis, Laura Melendy, Eduardo Serafin, and Afsaneh Yavari of UC Berkeley; John Ciccarelli of Bicycle Solutions; Bruce Appleyard of CFA Consultants; Meghan Mitman, Miguel Nuñez, and Matthew Ridgway of Fehr & Peers; and Kamala Parks of Kittelson & Associates. Linda Fogel provided editorial support, and Betsy Joyce redesigned this second edition.

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1. INTRODUCTION

Each year in California, over 3,000 motorists, pedestrians, and bicyclists die as the result of traffic collisions. Pedestrian fatalities represent about 20% of total traffic fatalities in California, significantly exceeding the national average of 11%. During the past 10 years, California has averaged over 620 pedestrian fatalities per year. Pedestrian safety continues to be a challenge to many California communities, and therefore, improved pedestrian safety has been among the top priorities. Pedestrian Safety Assessments (PSAs) are one approach to improving pedestrian safety within California communities, because a PSA enables local agencies to systematically identify the issues and problems and effective remedial options.

This document describes the California PSA process and provides guidelines for evaluators to conduct PSAs. While this book is targeted for application within California, the methods described are applicable outside California. Users of this guidebook outside California should substitute national or locally adopted standards, practices, or references as needed. This guidebook is intended for use by transportation professionals, not the general public.

1.1 ADDED BENEFITS OF IMPROVED PEDESTRIAN SAFETY

Improved pedestrian safety can offer a community many benefits:

- Improved accessibility (particularly for non-drivers)
- Reduced transportation costs
- Increased parking
- Support for transit
- Reduced pollution
- More neighborhood interactions
- Increased opportunities for cultural resource preservation
- Reduced land needs for roads and parking
- Open space preservation
- Improved aesthetics
- Better fitness and health of its citizens
- Reduced auto dependency and reduction of vehicle miles traveled (VMT) growth

All these benefits can also lead to the economic benefits of walkable environments, such as increasing property values, attracting tourists and workers, and improving retail sales. As Dan Burden of Walkable Communities, Inc., explains, “Fix the streets, then the people and businesses will follow.”

Encouraging economic vitality is an integral part of the PSA. Illustrating the economic benefits of improving walkability might motivate California communities to improve their pedestrian-oriented infrastructure and land use by applying for grants, reallocating transportation funds to pedestrian projects, and creating a Pedestrian Master Plan.

The Southern California city of El Cajon provides an example of the economic benefits resulting from improving walkability. In 1999, El Cajon launched a downtown revitalization effort, which included a "road diet" of reducing the number of lanes and road width on East Main Street. The road diet led to slower traffic and created room for widened sidewalks with outdoor dining, landscaping, street furniture, and bulbouts at intersections. In addition, the city adopted a land use plan to add new housing units, offices, and retail that included guidelines to ensure that new development occurs with an urban form that supports walking, and the city enhanced nearby pedestrian walkways to connect to East Main Street. The Community Development Corporation also began sponsoring events to attract people. The downtown revitalization appears to be working. Downtown property values increased by 181% and taxable sales by 66% (compared to 75% and 45%, respectively, in the city at large). Additionally, hotel taxes have increased by 36% and lease rates by 56%, and crime has decreased by 16%. The private sector has invested more that $43 million downtown, and 179 new businesses and 746 new jobs have been created (Pedestrian and Bicycle Information Center).

There are other similar economic vitality success stories, as described in the brochure, *Economic Benefits of Walkable Communities*, published by the California Local Government Commission (*www.lgc.org*).

Sidewalk cafes after East Main Street road diet (walkinginfo.org)

1.2 OBJECTIVE OF THE CALIFORNIA PSA

The objective of the California PSA is to enable California communities to:

- Improve pedestrian safety at specific locations and community-wide
- Create safe, comfortable, accessible, and welcoming environments for pedestrians
- Enhance walkability, livability, and economic vitality

California PSAs focus primarily on pedestrian safety and accessibility needs that are related to infrastructure, engineering, and planning and policy measures. Suggestions for improving education, enforcement, and zoning might be provided as secondary considerations.

Each PSA is conducted by two evaluators who collectively have expertise over a wide range of pedestrian safety-related issues. The evaluators visit the community for one day to conduct the PSA. The PSA also includes pre-visit phone interviews and email communication.

The California PSA evaluates pedestrian safety and accessibility at existing or future roadways and the public realm for a specific community with the aim to provide suggestions to enable the responsible local agency to improve pedestrian safety, create a safe and comfortable environment for pedestrians, and enhance economic vitality.

2. THE CALIFORNIA PSA PROCESS

California PSAs are conducted as follows:

- Identify locations in the community for evaluation
- Obtain relevant information from the responsible local agency during pre-visit interviews
- Convene a meeting with key local agency staff and other stakeholders, as identified by the responsible local agency
- Perform field audits and reviews under various conditions
- Identify best practices
- Benchmark the responsible local agency's policies, programs, and practices on pedestrian safety and accommodations
- Prepare a technical report

Each step is described in the following sections.

2.1 IDENTIFY LOCATIONS IN THE COMMUNITY FOR EVALUATION

This step consists of two parts: ranking the local agency by pedestrian safety performance, and identifying locations in the community for evaluations.

Ranking the Community by Pedestrian Safety Performance

Typically, a local agency served by the PSA is an incorporated city. When visiting a city, the evaluators discuss how its pedestrian safety compares with other California cities of a similar population size in terms of OTS pedestrian safety ranking data. California cities are divided into six population sizing groups:

- Group A: Over 250,000
- Group B: 100,001–250,000
- Group C: 50,001–100,000
- Group D: 25,001–50,000
- Group E: 10,001–25,000
- Group F: 2,501–10,000

In ranking cities with respect to their pedestrian safety performance, evaluators can use frequencies as well as rates (per 10,000 population or per million VMT) of the following collision parameters:

- Total pedestrians killed or injured
- Pedestrians aged 1–14 killed or injured
- Pedestrians aged 15–21 killed or injured
- Pedestrians aged 65 and older killed or injured

Identifying Locations

Evaluators work with the local agency to identify specific locations within the community for the pedestrian safety assessment. This process can be accomplished in a number of ways, including the following.

- Analysis of Statewide Integrated Traffic Records System (SWITRS) data to identify high pedestrian collision and casualty locations, intersections, and road segments (corridors).
- Review of information generated from the Transportation Injury Mapping System (TIMS) from UC Berkeley SafeTREC, available at *http://safetrec.berkeley.edu/tims*.
- Examination of pedestrian collision and casualty density maps (pin maps) based on the local collision database or SWITRS.
- Suggestions from local agency staff based on their familiarity with local pedestrian issues and concerns; areas of importance, such as main streets, new redevelopment areas, or corridors; and citizens' requests and complaints.
- A windshield survey (driving review) of pedestrian facilities to identify potential focus areas, conducted by the evaluators during the PSA.

2.2 OBTAIN RELEVANT INFORMATION FROM THE LOCAL AGENCY

After a PSA is officially initiated, the evaluators conduct a phone interview with the local agency staff prior to their site visit. The evaluators ask about data, documents, previous studies, and any other information relevant for the PSA, as listed in Tables 1, 2, and 3.

During the interview, the evaluators might also request information regarding the community's General Plan and Pedestrian Master Plan, as well as related programs, activities, and policies.

Table 4 shows examples of interview questions. The evaluators might provide the questions prior to the interview to allow time for preparation and staff consultation. Responses are later used to benchmark the community's policies, programs, and practices on pedestrian safety, as shown in Table 7.

TABLE 1: DATA REQUEST CHECKLIST

Provide the following data for the entire community or for pedestrian safety focus locations. Not all items might be relevant or required. If possible, include GIS layers for the requested data.

- ❑ Traffic volumes
- ❑ Pedestrian volumes
- ❑ Location map of key pedestrian generators or nodes (schools, senior centers, parks)
- ❑ Traffic control at focus locations
- ❑ Pedestrian collision and casualty density maps (pin maps), collision history, and collision reports
- ❑ Aerial photographs of focus locations
- ❑ Speed limits and speed surveys
- ❑ As-built drawings for focus locations
- ❑ Future-planned public and private improvements (commercial, residential, and business)
- ❑ Inventory of curb ramps
- ❑ Inventory of missing sidewalks, informal pathways, pedestrian opportunity areas, and walkable destinations where connections do not currently exist
- ❑ List of programmed roadway improvements
- ❑ Information on planned developments and redevelopment areas
- ❑ Key land use features that influence crossing, such as parking lots across streets from key buildings
- ❑ Transit maps, including schedules
- ❑ Truck types and volumes on key roads
- ❑ Trails, greenways, and bike lanes
- ❑ Schools and safe routes to school
- ❑ Locations of school crossing guards

TABLE 2: DOCUMENT REQUEST CHECKLIST

Not all items might be relevant or required. Evaluators will discuss the document requirements with the local agency staff based on the characteristics and conditions present in the community.

- ❑ General Plan (especially the circulation element)
- ❑ Relevant specific plans
- ❑ Zoning ordinance and maps
- ❑ Crosswalk policies and standards
- ❑ Pedestrian master plan or pedestrian and bicycle master plan
- ❑ ADA transition plan for streets and sidewalks
- ❑ Traffic calming program documentation or sample projects
- ❑ Recent development proposals
- ❑ Recent traffic studies
- ❑ Greenway master plans
- ❑ Trail master plans
- ❑ Parks and open space master plans
- ❑ Transit master plans
- ❑ Other regional transportation plans
- ❑ Community policies for approval of projects for traffic calming, sidewalks, etc.
- ❑ Land use maps (existing and planned)

TABLE 3: PARTICIPATING LOCAL MEMBERS

Provide the names of the applicable local members who will participate in the one-day visit. Local members indicated by an asterisk (*) are important participants. Limit local members to a maximum of 12 people. Cities may choose to include regional and state agency representatives, but their participation is not required.

ADA coordinator*	Name:
Advocates for the disabled	Name:
Bicycle or pedestrian advisory committee members	Name:
Bicycle or pedestrian coordinator*	Name:
Business owners or residents in focus locations	Name:
Business associations	Name:
Caltrans district or headquarters staff	Name:
City architect	Name:
City landscape architect	Name:
City manager or assistant	Name:
City planning department staff* (Long range and development review)	Name:
Civic engagement department staff	Name:
Community development department staff	Name:
Community associations	Name:
Department of aging	Name:
Disability rights advocacy organization	Name:
Elected officials	Name:
Engineering and other public works department staff* (including maintenance staff)	Name:
Health organizations, including EMS	Name:
Local or regional utilities companies	Name:
Neighborhood preservation or services department staff	Name:
Parking management staff	Name:

TABLE 3: PARTICIPATING LOCAL MEMBERS, continued

Pedestrian advocacy organization members	Name:
Planning commission or board members	Name:
Police traffic safety enforcement officer*	Name:
Project development or property owners	Name:
Economic development or redevelopment agency staff	Name:
Regional agency or MPO representative	Name:
Representatives from non-English-speaking communities	Name:
School district staff or PTA leaders	Name:
School or PTA traffic safety committee members	Name:
Senior citizen advocates	Name:
Traffic safety advisory committee members	Name:
Transit services staff	Name:

TABLE 4: PROGRAMS, PRACTICES, AND POLICIES: PRE-VISIT INTERVIEW

Topic	Suggested Questions
Implementation of Americans with Disabilities Act (ADA) Improvements	• Do you have design guidelines specific to your community for ADA improvements? • What are your practices related to the installation of ADA improvements? In particular: – Accessible pedestrian signals – Directional curb ramps – High-contrast truncated domes (detectable warnings) – On-street handicap parking spaces – Contrasting edge bands at commercial driveways and intersections • What are your ADA guidelines for new streets and developments? • Are sidewalk projects included in the capital improvements program?
ADA Transition Plan for Streets and Sidewalks	• Who is your ADA coordinator? • Do you have an ADA Transition Plan? – When was the ADA Transition Plan last updated? – Which of the following public facilities are addressed in the ADA Transition Plan? Curb ramps at intersections Sidewalk gaps Sidewalk obstacles Access at roundabouts Signalization and actuation Public parking lots On-street handicap parking • If no ADA Transition Plan exists: What are your practices for bringing existing public street and shared-use path facilities in line with ADA requirements?
Collection of Pedestrian Volumes	• Do you routinely collect pedestrian volume data? – If yes, do you have a GIS layer with the data? – Do you require or request that pedestrian and bicycle volumes be counted as part of intersection counts for traffic studies?
Collision History and Collision Reporting Practices	• What are your normal practices for reviewing pedestrian-vehicle collision data?
Pedestrian Traffic Control Audits (Signs, Markings, and Signals)	• Do you have a community-wide inventory of pedestrian-related signs, markings, and traffic signals? – If yes, do you have a GIS layer with the data? • Do you conduct a regular assessment of pedestrian-related traffic control devices? • Do you have an internal reporting system allowing you to correct basic issues with pedestrian-related traffic control devices, such as maintenance, removal, relocation, or enhancements?

TABLE 4: PROGRAMS, PRACTICES, AND POLICIES: PRE-VISIT INTERVIEW

Topic	Suggested Questions
Speed Limits and Speed Surveys	• How often do you collect speed data or review speed limits? – What is your policy and practice for setting speed limits? – Have you ever used or are you familiar with USLIMITS2? – What is your practice for posting speed limits in neighborhoods? – What is the maximum speed limit in your community when signs are not placed?
Traffic Signal and Stop Sign Warrants	• Do you use warrants for installation of traffic controls that differ from the California Manual of Uniform Traffic Control Devices (MUTCD)? If yes, what are the warrants for: – Traffic signals – All-way stop control
Inventory of Sidewalks, Informal Pathways, and Key Pedestrian Opportunity Areas	• Do you maintain an inventory of existing and missing sidewalks? If not, do you have plans to do so? • Do you maintain an inventory of informal pathways? – If yes, do you have a GIS layer with the data? • Have you identified areas of latent pedestrian demand, such as cul-de-sac connections to other roadways, waterway crossings, potential shared-use paths, or abandoned railroad tracks? • Are sidewalk projects included in your capital improvements program? • What is your annual funding level to replace sidewalks or to fill existing gaps? • Who is responsible for sidewalk maintenance: your agency or individual property owners? – If property owners, what assistance or guidance do you provide them so that they can make their properties more supportive to walking?
Traffic Calming Program	• Do you have a traffic calming program? – What is contained in the program? – Do you have an inventory of existing locations and traffic calming measures? • How do you address citizen requests for traffic calming? • How have you funded traffic calming projects? • Do your traffic calming efforts involve more than the basic use of speed humps?
Pedestrian Walking Audit Program	• Do you conduct formal or informal walking audits in your community? – Who participates in the walking audits: staff, residents, others? – What actions result from the walking audits?

TABLE 4: PROGRAMS, PRACTICES, AND POLICIES: PRE-VISIT INTERVIEW

Topic	Suggested Questions
Crosswalk Installation, Removal, and Enhancement Policies	• Do you have crosswalk policies? • Do you install marked crosswalks on all approaches of signalized intersections? • How do you make decisions regarding pedestrian-crossing treatments at uncontrolled locations? In particular: – Installation of new crossing treatments – Enhancement of existing crossing treatments – Removal of existing crossing treatments • Do you have guidelines and practices for mid-block crossings, especially when block lengths are long? • What is your practice for replacing signal heads with LED displays or countdown signals? • Are you currently using leading pedestrian intervals (LPIs) at any signalized intersections? • Are you using other electronic pedestrian treatments at signalized intersections? • Are you using electronic crossing aids, such as rectangular rapid flashing beacons, at uncontrolled crossings?
Attention to Pedestrian Crossing Barriers	• How do you address pedestrian access across natural and man-made barriers? In particular: – Grade separated roadways, like freeways – Railroad or light rail tracks – Waterways – Other • What is your practice or policy for improving pedestrian access at bridge crossings? • Do you have examples of bridges or barriers where pedestrian access is inadequate or not provided? • Do you have design guidelines for pedestrian facilities at interchanges and large intersections?
Design Policies and Development Standards	• Do you have design policies for pedestrian treatments, such as reduced corner radii, corner bulbs, or parklets? • Do you have development standards that affect the pedestrian environment? Examples are: – Buildings required to front streets – Narrow vehicle lanes – Limit on the number and width of driveways – Direct pedestrian access through parking lots – Direct pedestrian access from sidewalks – Landscape and pedestrian access requirements within parking lots • Do you have a Streetscape Master Plan or Landscape Architecture Plan? • Do you use a zone system for sidewalk layout? (Zones can include curbs, planters or furniture, walking, and building frontage) • Do you have a policy regarding what can be planted near sidewalks to prevent root problems?

TABLE 4: PROGRAMS, PRACTICES, AND POLICIES: PRE-VISIT INTERVIEW

Topic	Suggested Questions
General Plan: Densities and Mixed-Use Zones	• How does residential density vary in your community and where is it most concentrated? • Do you have mixed-use zones? • Do you use form-based zoning? • Does your General Plan promote active transportation? If yes, through which mechanisms? • Is transit-oriented development addressed in the General Plan? • What are the off-street parking requirements for residential and commercial uses? • Can parking be unbundled or shared between uses?
General Plan: Provisions for Pedestrian Nodes	• Have you identified areas of high pedestrian demand or activity in your General Plan? – If yes, where are these pedestrian nodes? – How does the General Plan accommodate pedestrians in these areas? • Does your General Plan contain thresholds of significance for pedestrian impacts? – If yes, are the impacts quantifiable?
Complete Streets Policy and Traffic Impact Fee Programs	• Do you have a Complete Streets policy that considers pedestrian needs for all infrastructure projects? – How does this apply during the planning, design, development review, and construction phases? • Do you assess impact fees for new development programs to pay for transportation impact mitigations? – If yes, are these funds used for pedestrian infrastructure improvements? – How are the funds distributed?
Specific Plans, Overlay Zones, and Other Area Plans	• Do you have any specific plans? – If yes, for which areas and how is pedestrian access addressed? – How will implementation be financed? • Do you have overlay zones, such as greenways or pedestrian priority areas? – If yes, for which areas and how is pedestrian access addressed? – How will implementation be financed? • Do you have planned unit developments? – If yes, for which areas? – Do you require a highly connected street system, such as a grid pattern or walk and bike access through cul-de-sacs? • Do you have any remaining designated redevelopment areas? – If yes, which areas? – Are you seeking alternative funding sources to complete them? • Do you have other plans that address pedestrian access, such as park, transit, or school renovations?
Historic Sites	• Do you have historic areas in your community? – What kinds of uses are found in these historic areas? – How are pedestrians accommodated? – Do you have pedestrian wayfinding in these areas?

TABLE 4: PROGRAMS, PRACTICES, AND POLICIES: PRE-VISIT INTERVIEW

Topic	Suggested Questions
Pedestrian Master Plan	• Do you have a Pedestrian Master Plan? – If yes, when was it last updated? – Who participated in the development of the plan? – Which funding sources are typically used to fund improvements identified in the plan?
Funding	• Have you applied for grant funding for pedestrian projects? • Have you completed any bicycle or pedestrian projects recently? If yes, what are they? • How much did you spend on average for bicycle or pedestrian improvements over the past 3 to 5 years?
Pedestrian and Bicycle Coordinators	• Do you have a bicycle or pedestrian coordinator on staff? • What percentage of time does the coordinator devote to pedestrian-related work?
General Ordinances	• Do you have a newspaper rack ordinance? – If yes, is pedestrian safety or access addressed? • Do you have street or sidewalk furniture requirements? – If yes, is pedestrian safety or access addressed? • Do you have a bicycle parking ordinance? – If yes, is pedestrian safety or access addressed? • Do you have a street tree ordinance? – If yes, is pedestrian safety or access addressed?
Transportation Demand Management and Transit Policies	• Does your community have a travel demand management (TDM) program or coordinator? • Are businesses that offer free parking to employees required to offer a cash-out alternative? • Do agency employees or other groups have access to EcoPasses, CommuterChecks, or similar programs? • Are commuter benefits required by ordinance? • Do you have a transit-first policy? • What are your policies regarding transit shelters and pedestrian connections to transit stops and stations? • Do you request a site plan for a new transit stop?
Formal Advisory Committee	• Do you have a committee that addresses pedestrian issues (or a Pedestrian Committee that is combined with a Bicycle Committee, Parks, or Recreation Committee)? – If yes, what is the membership of this committee and what are their duties and functions?

TABLE 4: PROGRAMS, PRACTICES, AND POLICIES: PRE-VISIT INTERVIEW

Topic	Suggested Questions
Public Involvement and Feedback Processes	• Do you have mechanisms for obtaining public comments on bicycle and pedestrian issues other than public meetings? Specifically: – Do you have a direct link on your agency's webpage to a forum for public comments? – Do you have a hotline? – Do you have a smartphone app?
Economic Vitality	• Have business improvement districts (BIDs) been established in your retail zones? – If yes, do the BIDs fund sidewalk or streetscape improvements? • Do you have a façade improvement program? • What are your central business district parking policies? – Do they encourage non-auto access or a park-once environment?
Pedestrian Safety Education Program	• Do you have a pedestrian safety or traffic-education curriculum in your community's schools? – At community centers? • Are pedestrian or walking safety brochures available? • Do you conduct pedestrian safety education campaigns using methods like yard signs, bumper stickers, or radio messages? • Do you use social media to obtain public input or conduct educational or informational campaigns? • Are motorists provided information or instruction specific to pedestrian laws and ordinances?
Proactive Approach to Institutional Coordination	• Within your agency, are there institutional obstacles to improving the pedestrian environment, such as fire department demands for roadway space or level-of-service (LOS) vehicle thresholds? • Have you experienced challenges to improving the pedestrian environment due to demands by other institutions? In particular: – Caltrans – Emergency responders – School districts – Railroads – Transit agencies – Other • Describe one or more of your community's most successful efforts to overcome such barriers.
Safe Routes to Schools	• Do you have an ongoing Safe Routes to Schools program (aside from grant submission cycles)? • Have you applied for Safe Routes to Schools grants? – If yes, did you receive funding? • Have you completed any Safe Routes to Schools projects recently? – If yes, describe the project locations and pedestrian-related improvements.

TABLE 4: PROGRAMS, PRACTICES, AND POLICIES: PRE-VISIT INTERVIEW

Topic	Suggested Questions
Coordination with Schools	• Are new or renovated schools located within existing neighborhoods? • Do you utilize 15 MPH school zones? • Does your agency staff communicate regularly with the local school districts regarding student walking access? • Do you provide incentives to schools to locate in existing neighborhoods? • Do you encourage schools to design or remodel their site to encourage walking access?
Enforcement	• Does your police department have traffic safety officers? – If yes, how much of their time is spent on pedestrian safety-related responsibilities? • Do you have police patrols on foot or on bicycles? • Have officers been trained on law enforcement techniques that improve pedestrian safety and access? • Do you conduct pedestrian-oriented enforcement activities, such as school drop-off enforcement? • Do you team with police from other communities for pedestrian safety issues? Particularly: – Do you share police resources? – Do you share data?
Coordination with Emergency Responders and Transit Providers	• Are the fire or police departments involved in the planning or design of roadway facilities? – Do they participate in test runs of roadway designs that are aimed to reduce speed and improve pedestrian access, such as fire truck access at pedestrian bulbouts? – Do they balance their response time needs with roadway designs that benefit pedestrian safety and access? • Are transit agencies involved in the planning or design of roadway facilities? – Do they participate in test runs of roadway designs that are aimed to reduce speed and improve pedestrian access, such as bus access at pedestrian bulbouts? – Do they balance their operating needs with roadway designs that benefit pedestrian safety and access? – Do they prioritize direct pedestrian access to their major stops and stations?
Coordination with Health Agencies	• Do you coordinate with your community's health agencies on pedestrian-focused issues? • Do they collect collision data? • Do they promote healthy lifestyles through active transportation?

2.3 CONVENE A MEETING WITH AGENCY STAFF

On the day of the site visit, the evaluators meet with the local agency and other representatives to review the purpose and scope of the PSA, the focus area locations, and expected deliverables. Evaluators also share the initial results of the benchmarking analysis. At this meeting, the local agency can provide, or the evaluators might request, additional information. Staff can invite other local partner agencies and individuals to participate at this meeting.

2.4 PERFORM FIELD AUDITS AND REVIEWS

The evaluators conduct the field audits and reviews at the identified locations. The review format and participants selected are based on the method applicable for the geographic location and characteristics of the focus areas.

During the audit, the evaluators consider the following major themes:

- **Needs of pedestrians**—Do pedestrian facilities address the needs of all pedestrians?
- **Connectivity and convenience of pedestrian facilities**—Are safe, continuous, and convenient paths provided along pedestrian routes throughout the study area?
- **Traffic**—Are design, posted, and operating traffic speeds compatible with pedestrian safety?
- **Behavior**—Do pedestrians or motorists regularly use or ignore pedestrian facilities?
- **Construction**—Have the effects of construction on pedestrian safety and accessibility been addressed adequately?
- **School presence**—Is the safety of children in school zones adequately considered?

The following field audits and reviews are available, and each is described below.

- Walking audit
- Nighttime audit
- Economic vitality walking audit
- Target citizen group walking audit
- Windshield audit
- Aerial photograph audit, GIS-based audit, or both
- Proposed development audit
- Existing site layout audit, especially for schools, retail areas, and parks
- Intercept surveys
- Focus group interviews

Where possible, the PSA includes a walking audit of the focus areas, as well as a windshield audit of the larger areas. A walking audit is considered the most effective method to observe issues and problems and identify improvement opportunities. The other field review methods are performed based on the scope of the PSA, the evaluators' judgment and time availability, and the availability of participants during the one-day visit.

Walking Audit

A walking audit is appropriate for examining an intersection or cluster of intersections, a short corridor or road segment, an entire neighborhood that is to be traffic calmed, a school area, or a pedestrian zone or node. Before the audit, either the local agency or the evaluators develop a walking audit route map to determine the focus, such as collision hot spots, or pedestrian concerns, such as high-speed arterials. Stops are planned for every 200–400 feet along the route. A sample route map is shown in Figure 1.

A Walking Audit Checklist, as shown in Table 5, is an important tool to guide the walking audit. The evaluators can tailor the checklist to fit the needs of the focus area. The FHWA Pedestrian Road Safety Audit Guidelines and Prompt Lists in Appendix A can also be used.

During the audit, positive practices are observed, and issues and areas for improvement are noted. Observations are made on how motorists are behaving around pedestrians, and notes are taken on pedestrian behaviors, especially at intersections, and if, where, and why pedestrians are crossing to avoid the intersection. For each area of improvement, the team discusses ways to address pedestrian safety concerns. The walking audit is highly interactive, with many observations and "teachable moments" explored during the walk. It is a means for the staff to see through the eyes of the pedestrian.

Photographs are taken throughout the audit. The Caltrans photo log (http://video.dot.ca.gov/photolog) and Google StreetView images can be used to view the focus areas before and after the walking audit.

When feasible, a walking audit concludes with a debrief session. Observations are noted on the route map or an aerial photograph, as shown in Figure 2. The debriefing could also be used as an opportunity to validate the location of key pedestrian generators and walking desire lines to connect the generators or nodes.

The materials required for the walking audit are:

- Walking Audit Checklist
- Walking audit route map
- Aerial photograph for each focus area
- Clipboards, pens, post-its, camera, measuring tape or wheel, and safety vests

Audit participants could include those who can provide information on the focus areas, such as pedestrian destinations, collision history, common "near misses," demographics and other relevant neighborhood information, and current city policies and practices. Persons who are—or will be—responsible for planning or implementing safety improvement measures can also be included.

Potential participants include:

- Elected officials
- Bicycle or pedestrian coordinator
- Police traffic safety enforcement officer
- Engineering or public works department staff
- ADA coordinator
- Transit services staff (if transit is present in the focus area)
- Business leaders or residents in the focus areas
- Business associations
- Resident or neighborhood associations
- Downtown or neighborhood planners or redevelopment agency staff
- User group or advocacy group representatives (such as the Traffic Calming Advocacy Group)
- School officials and PTA leaders
- Parks and recreation staff
- Parking management staff
- Health agencies and organizations, including emergency medical services

FIGURE 1: SAMPLE WALKING AUDIT ROUTE MAP

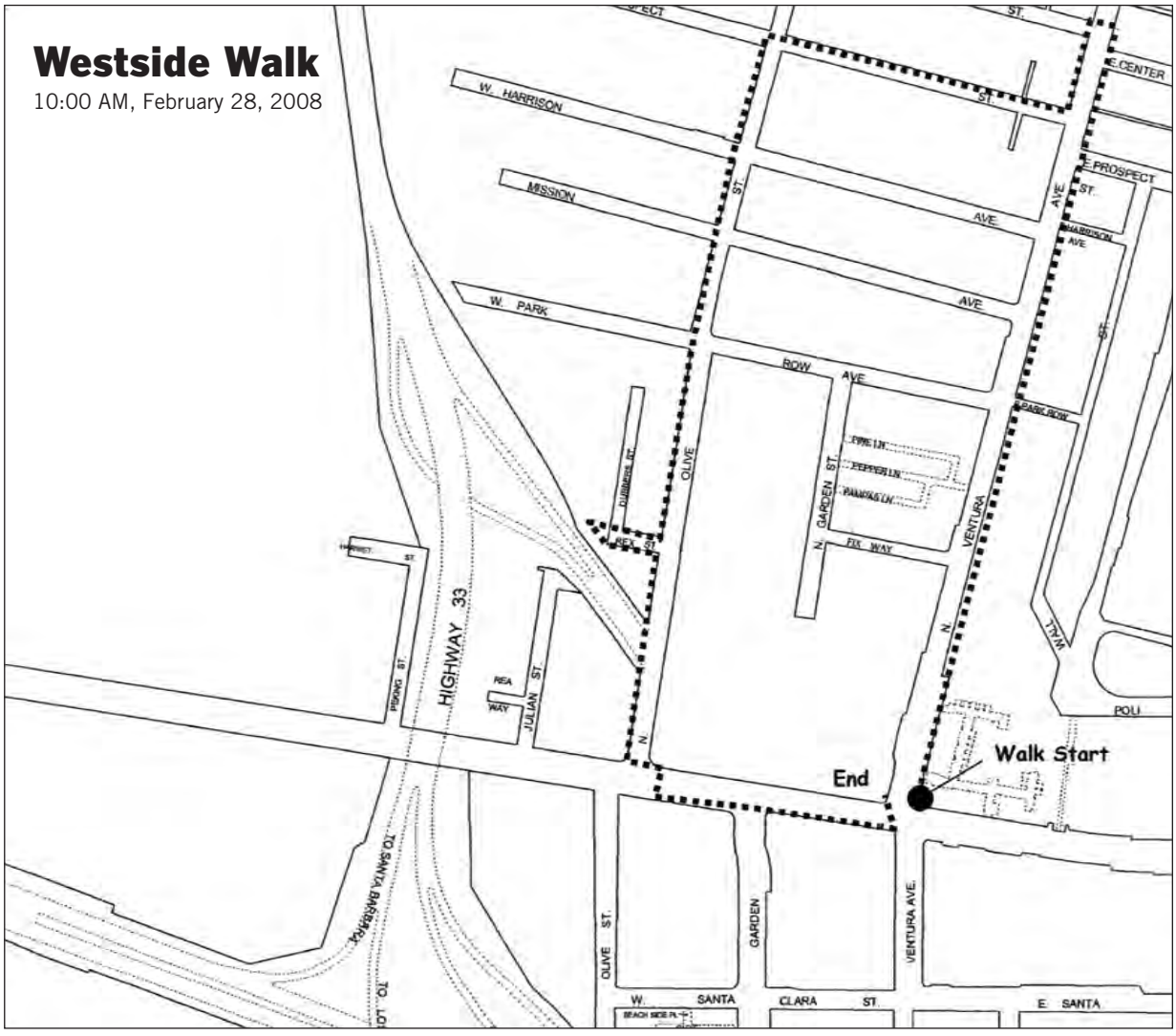

TABLE 5: SAMPLE WALKING AUDIT CHECKLIST

Great Places

- ❑ Is there street activity (sidewalk cafes, vendors, etc.)?
- ❑ Are activities and uses, such as newspaper racks or sidewalk cafes, organized?
- ❑ Is traffic calmed with bulbouts, roundabouts, chicanes, etc.?
- ❑ Are links to transit provided?
- ❑ Are medium- to high-density land uses present?
- ❑ Is the street network a grid?
- ❑ Are street widths between two and four lanes?
- ❑ Is parking used on the street (helping to create a buffer between moving cars and pedestrians)?
- ❑ Is a bike lane used on the street (helping to create a buffer between moving cars and pedestrians)?
- ❑ Is there public art?
- ❑ Do buildings provide a sense of enclosure (positioned near or at the sidewalk)?
- ❑ Do buildings provide sufficient transparency (about 70%–90% window glazing and set proximate to the street)?
- ❑ Are there many pedestrians in view during all business hours?
- ❑ Is there a tree canopy or other means to achieve shade and create a sense of place?
- ❑ Is there an absence or minimal number of interrupting driveways? If there are driveways, are they designed for use by pedestrians?

Good Streets

- ❑ Are the sidewalk environments:
  - ❑ continuous and wide enough two people?
  - ❑ buffered from traffic with landscape strips?
  - ❑ shaded with street trees?
- ❑ Are lanes narrow (10–11 feet) or appropriate for the area type (neighborhood, commercial, downtown, etc.)?
- ❑ Are medians present?
- ❑ Are bicycle accommodations (bicycle lanes, signs, etc.) provided?
- ❑ Is the number of lanes appropriate for the traffic volume?
- ❑ If there are one-way streets, are motorists' speeds and yielding behaviors supportive of walking?

Good Intersections

- ❑ Are intersections compact (with curb extensions or refuge islands)?
- ❑ Are crosswalks provided on all approaches?
- ❑ At signalized intersections:
  - ❑ Are pedestrian priority signals (leading pedestrian intervals or scrambles) provided?
  - ❑ Are conflicts in crosswalks limited by prohibiting right turns on red or with protected left turn phases?
  - ❑ Are advance limit lines provided?
  - ❑ Are countdown signals provided?

Good Crossings

- ❑ Are crossings highly visible, with curb extensions, low profile landscaping, and high visibility markings?
- ❑ Are crossings marked and signed?
- ❑ Are high-emphasis crosswalk markings used on arterial streets?
- ❑ Are quasi-signals, such as in-pavement lighting or overhead beacons, used where appropriate?
- ❑ If the crossing has multiple lanes, is the stop or yield bar set back from the crossing?
- ❑ Is there adequate lighting?
- ❑ If the crossing has multiple lanes, is there a median separating the crossing from each conflict direction?

FIGURE 2: GRAPHICAL PRESENTATION OF ISSUES AND SOLUTIONS

Nighttime Audit

A nighttime audit is conducted when pedestrian collision data indicate that collisions in a focus area are occurring after dark or during sunrise or sunset times. The Walking Audit Checklist can be followed, with particular emphasis on nighttime issues, such as lighting or activities that generate nighttime pedestrians, like movie theaters or bars. Evaluators can conduct the audit by observing conditions at the focus area from a parked vehicle. The audit might include observations of impaired or distracted pedestrians and their behavior and apparel (whether visible at night), as well as impaired or distracted motorists.

The nighttime audit is usually in addition to a daytime walking audit, so it might only be necessary for the evaluators plus a city staff member to participate.

The materials required for the nighttime audit are:

- ❑ Walking Audit Checklist
- ❑ Walking audit route map
- ❑ Aerial photograph for each focus area
- ❑ Clipboards, pens, post-its, camera, measuring tape or wheel, safety vests, safety caps, flashlights, and a tool to measure the ambient light at key locations visited
  Note: Safety vests must be retroreflective and are not an optional item.

Economic Vitality Walking Audit

As a component of the standard walking audit, the group can identify the following opportunities for improving walkability and economic vitality of the area.

- Buildings that could be enhanced through façade improvement programs
- Redevelopment sites for mixed-use development with ground-floor retail
- Adding streetscapes and street furniture
- Sidewalk cafes
- Relocating parking behind buildings
- Increasing "eyes on the street"
- Parking management strategies to reduce cruising for parking and establishing a "park once" environment
- Connecting commercial areas to open space (waterfront, parks, and so on)
- Traffic calming
- Wayfinding enhancements and establishing a sense of place
- Transit-oriented development
- Bringing "feet to the pavement" in the evenings, on weekends, mid-day, and so on (land use mix of theaters, restaurants, gyms, residential, and offices)

Applicable participants include staff from the redevelopment agency, property owners or developers, residents, and business owners, as identified by the local agency.

Target Citizen Group Walking Audit

Target citizen groups are helpful for addressing specific pedestrian safety concerns or walkability issues. The group might include seniors, children, non-English speakers, or disabled persons. The Walking Audit Checklist is used, with emphasis on relevant issues, such as crossing distances and walking speed, curb ramps and cross slopes, and signs.

Target citizen group walking audits are scheduled for specific observation times, such school drop-off or pick-up. When necessary, the audit might occur before the initial on-site meeting, and that meeting might be replaced with focus group meetings.

The materials required for the target citizen group walking audit are:

- ❑ Walking Audit Checklist
- ❑ Walking audit route map
- ❑ Aerial photograph for each focus area
- ❑ Clipboards, pens, post-its, camera, measuring tape or wheel, and safety vests and caps

Citizen group representatives can supplement participants in the standard walking audit as needed, including:

- ➜ School district representatives
- ➜ PTA representatives
- ➜ Senior citizens or their advocates (such as AARP)
- ➜ Disabled citizens or their advocates
- ➜ Representatives from non-English speaking communities (and a translator if necessary)

Windshield Audit

During a windshield audit, roadway and pedestrian conditions are observed while driving through the focus areas. This method is appropriate for areas that are geographically dispersed or too large to observe on foot. It also provides an important view of the focus area from the driver's perspective. The Walking Audit Checklist is used throughout the driving tour, as applicable.

The materials required for the windshield audit are:

- ❑ Walking Audit Checklist
- ❑ Windshield audit route map and driving directions
- ❑ Aerial photograph for each focus area
- ❑ Vehicle, clipboards, pens, post-its, camera, measuring tape or wheel, and safety vests

In addition to the participants for the standard walking audit, each vehicle should have a non-participant driver. Ideally, all participants should travel in the same vehicle to facilitate group discussions during the audit.

Aerial Photograph Audit or GIS-Based Audit

An aerial photograph or GIS-based audit can supplement the standard walking or windshield audit. This audit uses larger scale aerial photographs or GIS layers to consider issues such as pedestrian path connectivity. The scope of the audit is determined after reviewing the community's visioning and planning documents and the availability of GIS layers.

The materials required for the aerial audit are:

- ❑ Neighborhood-wide or community-wide aerial photographs or GIS layers
- ❑ Pens, post-its, camera, computer, and projector (as needed)
- ❑ Relevant community visioning and planning documents

Potential participants include those familiar with city policies and practices related to infrastructure improvements, long-range planning, and community development, including:

- ➜ City traffic engineer
- ➜ City transportation planner
- ➜ City bicycle or pedestrian coordinator
- ➜ Community development department staff
- ➜ Neighborhood preservation department staff
- ➜ Neighborhood services staff
- ➜ Redevelopment agency staff
- ➜ Planning or zoning commissioner
- ➜ Elected official

Proposed Development Audit

This audit reviews the site plans for a proposed development. The review considers potential walkability issues associated with the site plan, such as wide streets, single uses, driveway and garage placements, street connectivity, transit, accessibility, proximity of parks and schools to all homes, the mix of uses, and cul-de-sacs. Block circumferences of up to 1,400 feet are considered walkable; greater circumferences are less supportive. Figure 3 shows an example of an assessment checklist for a proposed development audit.

When feasible, the development audit is supplemented with a walking audit to view the existing conditions of the development site.

The materials required for the development audit are:

- ❑ Site plans for the proposed development
- ❑ Growth scorecard to assess development site
- ❑ Pens and post-its

Potential participants include those familiar with city policies and practices related to infrastructure improvements, short-range planning, and the proposed development, including:

- ➜ City traffic engineer
- ➜ City planner
- ➜ City bicycle or pedestrian coordinator
- ➜ Community development department staff
- ➜ Neighborhood services staff
- ➜ Project developer

FIGURE 3: SAMPLE CHECKLIST FOR PROPOSED DEVELOPMENT REVIEW

Pedestrian Smart Growth Scorecard (From Sacramento Smart Growth Implementation Guide)

Section 1: Proximity

1.1: Walking distance to transit stop (Bus, Light Rail)	Assessment	Rating	Score:
On site/across the street	Excellent	4	☐
up to 1325 feet (approx. 5 minute walk)	Good	3	
up to 2650 feet (approx. 10 minute walk)	Acceptable	2	
up to 3975 feet (approx. 15 minute walk)	Minimal	1	
Not applicable/transit not available		0	

1.2: Proximity to off-site restaurants, entertainment centers, retail shops, libraries, civic centers, parks services (bank, post office, barber and the like)	Assessment	Rating	Score:
Adjacent/across street	Excellent	4	☐
up to 1325 feet (approx. 5 minute walk)	Good	3	
up to 2650 feet (approx. 10 minute walk)	Acceptable	2	
up to 3975 feet (approx. 15 minute walk)	Minimal	1	
Not applicable/none		0	

1.3: Residential development projects: proximity to grocery, convenience stores, household supplies	Assessment	Rating	Score:
On-site, adjacent/across street	Excellent	4	☐
up to 1325 feet (approx. 5 minute walk)	Good	3	
up to 2650 feet (approx. 10 minute walk)	Acceptable	2	
up to 3975 feet (approx. 15 minute walk)	Minimal	1	
Not applicable		0	

1.4: Residential development projects: proximity to schools or day care	Assessment	Rating	Score:
On-site, adjacent/across street	Excellent	4	☐
up to 1325 feet (approx. 5 minute walk)	Good	3	
up to 2650 feet (approx. 10 minute walk)	Acceptable	2	
up to 3975 feet (approx. 15 minute walk)	Minimal	1	
Not applicable		0	

1.5: Commercial development projects: proximity to residential, restaurant or retail shops services (bank, post office, barber, etc.)	Assessment	Rating	Score:
On-site	Excellent	4	☐
Adjacent/across street	Very good	3	
up to 1325 feet (approx. 5 minute walk)	Acceptable	2	
up to 2650 feet (approx. 10 minute walk)	Minimal	1	
Not applicable		0	

Section 2: Site Optimization and Compactness

2.1: Location of building(s) relative to public sidewalk	Assessment	Rating	Score:
Adjacent	Excellent	4	☐
Separated by open plaza or outdoor seating area	Good	3	
Separated by open landscaped area with connecting pathways	Acceptable	2	
Separated by fenced outdoor yard with connecting pathways	Minimal	1	
Not applicable		0	

2.2: Location of on-site parking relative to public sidewalk	Assessment	Rating	Score:
Located behind or within building	Excellent	4	☐
Located to side of building	Good	3	
Adjacent with connecting pathways	Acceptable	2	
Adjacent with landscape screening	Minimal	1	
Not applicable		0	

Pedestrian Smart Growth Scorecard (Page 2)

Section 3: Accessibility and Mobility

3.1: Provide pedestrian amenities for transit	Assessment	Rating	Score:
Direct pathway to light rail transit station	Excellent	4	☐
Direct pathway to bus shelter with seat, and schedule information	Good	3	
Adjacent to public sidewalk with loading area and seating	Acceptable	2	
Bus stop with signage	Minimal	1	
Not applicable		0	

3.2: Provide direct sidewalk connections	Assessment	Rating	Score:
Multiple entrances along all public sidewalks	Excellent	4	☐
At least one entrance along a public sidewalks	Good	3	
Shaded, well marked pathway from public sidewalk	Acceptable	2	
Paved area from public sidewalk	Minimal	1	
Not applicable		0	

3.3: Relationship to automobile access	Assessment	Rating	Score:
Drive on access to rear of building(s) or alley access	Excellent	4	☐
Driveway along public sidewalk with delineated pedestrian crossings	Good	2	
Driveway across public sidewalk	Minimal	1	
Not applicable		0	

3.4: Facilitate connections to public outdoor space	Assessment	Rating	Score:
Access to multi-use trails or pedestrian pathways	Yes	4	☐
Not applicable		0	

Section 4: Street Network

4.1: Street pattern	Assessment	Rating	Score:
Entire street pattern is a grid	Excellent	4	☐
Street pattern has mix of grid, loops and cul-de-sacs	Good	3	
Street pattern with loops and cul-de-sacs and pedestrian connections	Acceptable	2	
Street pattern with loops and cul-de-sacs	Minimal	1	
Not applicable		0	

4.2: Block lengths (long side)	Assessment	Rating	Score:
Less than 400 feet	Excellent	4	☐
400-500 feet	Good	3	
501-600 feet	Acceptable	2	
Greater than 600 feet	Minimal	1	
Not applicable		0	

4.3: Continuation of existing neighborhood street pattern into new project	Assessment	Rating	Score:
	Yes	4	☐
	No	1	
	Not applicable	0	

Overall Pedestrian Rating

(Total of all scores)/(number of measures scored>0) ☐

4 = Excellent
3= Good
2 = Moderate
1 = Poor

Existing Site Audit

An existing site audit reviews the site layouts for existing land use. The review considers potential walkability issues, such as wide streets, single uses, driveway and garage placements, street connectivity, transit, accessibility, proximity of parks and schools to all homes, the mix of uses, and cul-de-sacs. Block circumferences of up to 1,400 feet are considered walkable; greater circumferences are less supportive. Figure 3 shows an example of an assessment checklist for a proposed development audit.

When feasible, the site audit is supplemented with a standard walking audit.

The materials required for the site audit are:

- ❑ Site plans
- ❑ Scorecard to assess site
- ❑ Pens and post-its

Potential participants include those familiar with city policies and practices related to infrastructure improvements and land use, including:

- ➜ City traffic engineer
- ➜ City planner
- ➜ City bicycle or pedestrian coordinator
- ➜ Community development department staff
- ➜ Neighborhood services staff
- ➜ School officials and PTA leaders
- ➜ Parks and recreation staff

Intercept Surveys

Intercept surveys with pedestrians and motorists can be conducted during a standard walking audit when additional information is needed. The decision to conduct an intercept survey can be made in advance or on the spot. These brief surveys address issues such as:

- ➜ Why is a pedestrian not using the marked crosswalk?
- ➜ Why is a pedestrian not using the overcrossing?

The materials required for an intercept survey are clipboards, pens, and business cards.

Focus Group Interviews

Focus group or small group interviews can be conducted before or after a standard walking audit to obtain additional information regarding the context, constraints, and opportunities for a focus area. Focus groups are especially helpful when paired with a target citizen group walking audit. In this case, the target group representatives participate in a more in-depth debrief of the walking audit and brainstorm potential solutions.

The materials required for the interviews are:

- ❑ Meeting room for the size of the focus group (10–15 people)
- ❑ Flip chart and markers, tape, and name tags
- ❑ Pens and post-its
- ❑ Aerial photographs of the focus areas
- ❑ Camera, computer, and projector (as needed)

Walking audit participants can be invited to participate in the focus groups, especially those responsible for planning or implementing pedestrian improvement measures. Focus group representatives can include:

- ➜ School district representatives
- ➜ PTA representatives
- ➜ School children
- ➜ Senior citizens or their advocates (such as AARP)
- ➜ Disabled citizens or their advocates
- ➜ Representatives from non-English speaking communities (and a translator if necessary)
- ➜ Representatives of civic, neighborhood, or business associations

2.5 SUGGEST IMPROVEMENTS

The evaluators make suggestions for site-specific and community-wide pedestrian improvements based on the findings from the field audits, reviews, data analysis, and application of appropriate best practices based on those findings. Table 6 describes various measures that can be implemented to improve pedestrian safety.

The evaluators also consult published standards, best practices, and safety resources, as shown in Appendix B.

TABLE 6: PEDESTRIAN IMPROVEMENT MEASURES

TRAFFIC CONTROL COUNTERMEASURES

Measure	Description	Benefits	Application
Traffic Signal or All-Way Stop	Conventional traffic control devices with warrants 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. Possible exceptions are based on demonstrated pedestrian safety concerns (collision history).
Pedestrian Hybrid Beacon	Pedestrian-actuated signal that combines a flasher and a traffic control signal. When actuated, the signal displays a yellow warning light, followed by a solid red light. During the pedestrian–crossing interval, the driver sees a flashing red, wig-wag pattern. When the clearance interval ends, the beacon stops.	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 met. Appropriate for multilane roadways.
Overhead Flashing Beacon	Flashing amber lights are installed on overhead signs before the crosswalk or at the entrance.	The blinking lights increase the number of drivers yielding for pedestrians and reduce pedestrian-vehicle conflicts. Flashing beacons can also improve conditions on multilane roadways.	Best used in places where motorists cannot see a traditional sign because of topography or other barriers.
Rectangular Rapid Flashing Beacon	Enhances the overhead flashing beacon by using rapid-flashing LED lamps instead of the traditional slow-flashing incandescent lamps. Beacons can be activated with a push-button or by pedestrian detection.	Initial studies suggest that the stutter flash is effective based on drivers' increased yielding behavior. Solar panels reduce energy costs associated with the device.	Appropriate for multilane roadways. Interim approval by FHWA.
In-Roadway Warning Light	Both sides of a crosswalk are lined with pavement markers, often containing an amber LED strobe light. Lights can be activated with a push-button or by pedestrian detection.	Provides a dynamic visual cue, and is effective in bad weather when visibility is low.	Best in locations with low bicycle ridership, because the raised markers present a hazard. Might not be appropriate in areas with extreme winter conditions because of high maintenance costs. Might not be appropriate for locations with bright sunlight. The lights might confuse drivers if pedestrians do not activate them or if the lights are falsely activated.

TABLE 6: PEDESTRIAN IMPROVEMENT MEASURES

TRAFFIC CONTROL COUNTERMEASURES

Measure	Description	Benefits	Application
High-Visibility Markings and Signs	High-visibility markings are crosswalk striping styles, such as the ladder and the triple four. Zebra-style markings were once popular in Europe, but have been phased out because the signal-controlled puffin is more effective. High-visibility signs that use the approved fluorescent yellow-green color are posted at crossings to increase the visibility of an upcoming pedestrian crossing.	FHWA ended its approval process for testing fluorescent-yellow crosswalk markings and found that they had no discernable benefit over white markings.	Beneficial in areas with high pedestrian activity, such as near schools, in areas where travel speeds are high or motorist visibility is low, and crossings at uncontrolled locations.
In-Street Pedestrian Crossing Sign	Regulatory pedestrian signage posted on lane edge lines and road center lines. The sign can be used to remind motorists of laws regarding right of way at an unsignalized pedestrian crossing. If applicable, STATE LAW can appear at the top of the sign. The legend STOP FOR or YIELD TO can be used in conjunction with the appropriate symbol.	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 should be used only in states where the law specifically requires that drivers stop for a pedestrian in a crosswalk.
Pedestrian Crossing Flag	Square flags of various colors, mounted on a stick and stored in sign-mounted holders on both sides of the street at crossing locations. The pedestrian carries the flag while crossing the roadway.	Makes pedestrians more visible to motorists.	Appropriate for mid-block and uncontrolled crosswalks with low visibility or poor sight distance.
Advanced Yield Line	Standard white stop or yield limit lines are placed in advance of marked, uncontrolled crosswalks.	Increases pedestrian visibility for motorists, reduces the number of vehicles encroaching on the crosswalk, and improves pedestrian conditions on multilane roadways. It is also an affordable option.	Useful in areas where pedestrian visibility is low and in areas with aggressive drivers, because advance limit lines help prevent drivers from encroaching on the crosswalk. Addresses the multiple-threat collision on multilane roads.

TABLE 6: PEDESTRIAN IMPROVEMENT MEASURES

GEOMETRIC TREATMENTS

Measure	Description	Benefits	Application
Pedestrian Overpass or Underpass	Pedestrian-only roadway overpass or underpass. 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.	Provides uninterrupted flow of pedestrian movement separate from the vehicle traffic.	Grade separation 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, because it is expensive and visually intrusive.
Road Diet (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.	A good traffic calming and pedestrian safety tool, particularly in areas that would benefit from curb extensions but have infrastructure in the way. Also improves pedestrian conditions on multilane roadways.	Roadways with surplus roadway capacity (typically multilane roadways with less than 15,000 to 17,000 average daily traffic) and high bicycle volumes, and roadways that would benefit from traffic calming measures.
Median Pedestrian Island (Refuge)	A raised island is placed in the center of a roadway, separating opposing lanes of traffic with cutouts for accessibility along the pedestrian path.	Allows pedestrians to focus on each direction of traffic separately. The island 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 multilane road and act as a supplement to additional pedestrian tools.	Recommended for multilane roads wide enough to accommodate an ADA-accessible median.
Staggered Median Pedestrian Island	Similar to a traditional median pedestrian island, but the crosswalks in the roadway are staggered so that a pedestrian first crosses half the street and then must walk toward traffic to reach the second half of the crosswalk. The path must be designed for accessibility by including rails and truncated domes to direct sight-impaired pedestrians along the path of travel.	Increases the concentration of pedestrians at a crossing and provides better traffic views for pedestrians. Motorists are better able to see pedestrians as they walk through the staggered median.	Best used on multilane roads with obstructed pedestrian visibility or with offset intersections.

TABLE 6: PEDESTRIAN IMPROVEMENT MEASURES

GEOMETRIC TREATMENTS

Measure	Description	Benefits	Application
Curb Extension (Bulbout)	The curb is extended into the street, making the sidewalk wider. The intent is to slow traffic and increase driver awareness.	Narrows the distance that a pedestrian has to cross and increases the sidewalk space on the corner. The extension also improves emergency vehicle access and makes it difficult for drivers to turn illegally.	Due to the high cost of installation, a curb extension or bulbout is suitable only for 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.
Reduced Curb Radius	Reduces the radius of a curb to require motorists to make a tighter turn.	Narrows the distance that pedestrians have to cross. Like curb extensions, they reduce traffic speed and increase driver awareness, but are less difficult and expensive to implement.	Beneficial on streets with high pedestrian activity, on-street parking, and no curb-edge transit service. More suitable for wider roadways and roadways with a low volume of heavy truck traffic.
Curb Ramp	Sloped ramps that are constructed at the edge of a curb (normally at intersections) as a transition between the sidewalk and a crosswalk.	Provides easy access between the sidewalk and roadway for people using wheelchairs, strollers, walkers, crutches, handcarts, or bicycles. Also helpful for pedestrians with mobility impairments who have trouble stepping up and down high curbs.	Must be installed at all intersections and mid-block locations where pedestrian crossings exist, as mandated by the 1973 Rehabilitation Act and 1990 Americans with Disabilities Act. Where feasible, a curb ramp should be provided for each crosswalk at an intersection, 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, and encourages lower travel speeds by providing visual and tactile feedback when approaching the crosswalk.	Appropriate for multilane roadways, roadways with lower speed limits that are not emergency routes, and roadways with a high level of pedestrian activity, such as near schools or shopping malls.

TABLE 6: PEDESTRIAN IMPROVEMENT MEASURES

GEOMETRIC TREATMENTS

Measure	Description	Benefits	Application
Right-Turn Slip Lane (Channelized Right-Turn Lane)	Separates the right-turn lane from the other lanes with a striped area. The lane separates right-turning traffic and streamlines right-turning movements. Providing pedestrian crossing islands within the intersection and optimizing motorists' view of pedestrians and vehicles to the right and left would improve this measure.	Narrows the distance that a pedestrian has to cross and reduces turning vehicle speeds.	Appropriate for intersections with a high volume of right-turning vehicles.
Chicane	Sequence of tight serpentine curves (usually an S-shape curve) in a roadway, used on city streets to slow cars.	Calms traffics and improves pedestrian safety.	Chicanes can be created on streets with high traffic volume if the number of through lanes is maintained. They can also be created on high-volume residential streets to slow traffic. Chicanes can be constructed by alternating parallel or angled parking in combination with curb extensions.

TABLE 6: PEDESTRIAN IMPROVEMENT MEASURES

PEDESTRIAN ACCESS AND AMENITIES

Measure	Description	Benefits	Application
Marked Crosswalk	Provides designated pedestrian crossings using painted markings on the pavement.	Designated crossings might improve walkability and reduce jaywalking.	Marked crosswalks alone should not be installed on multilane roads with more than 10,000 vehicles per day. Enhanced crosswalk treatments should supplement the marked crosswalk.
Textured Pavers	Textured pavers come in a variety of materials, such as concrete, brick, or stone, and can be constructed to create a textured pedestrian surface.	Highly visible to motorists, pavers provide a visual and tactile cue to motorists and delineate a separate space for pedestrians. They also aesthetically enhance the streetscape.	Appropriate for areas with a high volume of pedestrian traffic and roadways with low visibility 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.	Improves driver and pedestrian safety.	Appropriate for multilane roadways and roadways with a higher posted speed limit or high vehicle volumes or collision rates.
Accessibility Upgrades	Audible pedestrian signals, accessible push buttons, and truncated domes are installed at crossings to accommodate pedestrians with disabilities.	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 others, the countdown is displayed only during the flashing Don't Walk phase.	Increases pedestrian awareness and lets them know when to speed up if the pedestrian phase is about to expire.	The 2012 MUTCD requires all pedestrian signals to incorporate countdown signals within 10 years.

TABLE 6: PEDESTRIAN IMPROVEMENT MEASURES

TRANSIT

Measure	Description	Benefits	Application
High-Visibility Bus Stop Location	Places 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 (Bus Bulb, Nub, Curb Extension, or Bus Bulge)	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.	Increases pedestrian visibility at bus stops and encourages transit ridership.	Appropriate at sites with high patron volumes.

2.6 BENCHMARKING POLICIES, PROGRAMS, AND PRACTICES

NHSTA uses benchmarking as a tool to evaluate safety programs. To create a benchmark, the PSA evaluators analyze the local agency's responses to the pre-visit survey. The community's pedestrian policies, programs, and practices are then compared with national best practices, as shown in Table 7.

The benchmarking analysis categorizes the community's programs, practices, and policies into three groups:

- Key strength: Area where the community is exceeding national best practices
- Enhancement: Area where the community is meeting best practices
- Opportunity: Area where the community appears not to meet best practices

The community may select strategies for implementation based on local priorities.

TABLE 7: POLICY, PROGRAMS, AND PRACTICES BENCHMARKS

Topic	Key Strength	Enhancement	Opportunity
Implementation of Americans with Disabilities Act (ADA) Improvements	Uses state-of-the-practice (PROWAG) ADA improvements with consistent installation practices.	Has clear design guidelines, but no regular practices for ADA compliance.	Has minimal design guidelines and practices related to ADA requirements.
ADA Transition Plan for Streets and Sidewalks	Has ADA transition plan in place and an ADA coordinator.	Partial or outdated ADA transition plan or an ADA coordinator.	No transition plan or ADA coordinator.
Collection of Pedestrian Volumes	Collects pedestrian volumes routinely with intersection counts and has a GIS database.	Collects some pedestrian volumes, but not routinely.	Does not collect pedestrian volumes.
Collision History and Collision Reporting Practices	Creates annual reports or employs other comprehensive monitoring practices.	Reviews data only following fatalities or other high-profile incidents.	Does not have set practices for data review.
Pedestrian Traffic Control Audits (Signs, Markings, and Signals)	Maintains an inventory of pedestrian signs, markings, and signals in GIS.	Has a limited inventory of signs, markings, and signals.	Does not have an inventory of signs, markings, and signals.
Speed Limits and Speed Surveys	Employs comprehensive practices to proactively review speed limits, such as USLIMITS. Considers traffic calming before raising speed limits in pedestrian zones.	Reviews data only in response to reported concerns or frequent collisions.	Has minimal set practices for speed limit reviews.
Traffic Signal and Stop Sign Warrants	Uses relaxed warrants for traffic signals and all-way stops.	Uses relaxed warrants for traffic signals or all-way stops.	Uses MUTCD warrants.
Inventory of Sidewalks, Informal Pathways, and Key Pedestrian Opportunity Areas	Maintains an inventory of missing and existing sidewalks in GIS and includes sidewalk projects in the Capital Improvement Plan.	Maintains an inventory of missing sidewalks, informal pathways, or pedestrian opportunity areas.	Does not have an inventory of missing sidewalks, informal pathways, or pedestrian opportunity areas.
Traffic Calming Program	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, or the program only includes speed humps.
Pedestrian Walking Audit Program	Has significant and ongoing programs that include regular walking audits.	Has no safety program, but has conducted walking audits sporadically.	Does not have a pedestrian safety program and has not conducted a walking audit.

TABLE 7: POLICY, PROGRAMS, AND PRACTICES BENCHMARKS

Topic	Key Strength	Enhancement	Opportunity
Crosswalk Installation, Removal, and Enhancement Policies	Has a crosswalk policy that reflects best practices for signalized and uncontrolled crosswalk treatments.	Has no policy, but has an established crosswalk installation, removal, and enhancement practice in place.	Does not have a policy or set practices for addressing crosswalk installation, removal, or enhancement.
Attention to Pedestrian Crossing Barriers	Has a recently updated policy and comprehensive inventory of barriers. Has design guidelines for addressing barriers.	Has no policy, but has identified some barriers and taken steps to improve pedestrian access.	Does not have a policy or practices for addressing pedestrian crossings at railroads, freeways, and so on.
Design Policies and Development Standards	Has a Streetscape Master Plan or other design guidelines reflecting current best practices.	Has minimal design policies.	Does not have a Streetscape Master Plan or design policies for pedestrian treatments.
General Plan: Densities and Mixed-Use Zones	Has moderate to high densities in the central business district and mixed-use zones and progressive parking policies.	Has moderate densities with separate uses.	Has low densities with separate uses.
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.
Complete Streets Policy and Traffic Impact Fee Programs	Has a Complete Streets policy that applies to the development review process and assesses multimodal impact fees.	Has a Complete Streets policy only for public works projects.	Does not have a Complete Streets policy.
Specific Plans, Overlay Zones, and Other Area Plans	Pedestrian-oriented design, walkability, or placemaking is stressed in the plans.	Plans require pedestrian accommodations and placemaking.	Plans do not address pedestrian needs or do not exist.
Historic Sites	Cultural and historic preservation plans include a wayfinding and walkability focus.	Historic areas have been identified, and pedestrian access is addressed.	No plan is in place, and little consideration is given for pedestrian access in historic areas.

TABLE 7: POLICY, PROGRAMS, AND PRACTICES BENCHMARKS

Topic	Key Strength	Enhancement	Opportunity
Pedestrian Master Plan	Has a recently updated plan, and pedestrian projects have been recently completed.	Has a plan, but it might be outdated or no recent projects from the plan have been completed.	Does not have a Pedestrian Master Plan.
Funding	Has a dedicated annual funding stream for pedestrian projects and local grant matches.	Depends on grant funding for projects, and is successful in obtaining grants.	Only moderately successful in obtaining grant funding or has trouble spending funds when given grants.
Pedestrian and Bicycle Coordinators	Has a coordinator on staff who manages the agency's pedestrian program.	Occasionally uses a part-time contract coordinator.	Does not have a pedestrian coordinator.
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.
Use of Street or Sidewalk Furniture Requirements	Has street or sidewalk furniture requirements that address 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.
Bicycle Parking Requirements	Has adopted bicycle parking requirements that address pedestrian safety and access.	Has bicycle parking requirements, but they might not address pedestrian safety or access.	Does not require bicycle parking.
Street Tree Requirements	Has a street tree ordinance that improves pedestrian safety and access.	Has a street tree ordinance, but it does not address pedestrian safety or access.	Does not have a street tree ordinance.
Transportation Demand Management (TDM) and Transit Policies	Has a transit first policy, extensive TDM programs, and enforces parking cash out.	Has basic voluntary TDM programs, such as Commuter Checks or Guaranteed Ride Home.	Does not have a TDM program or policy.
Formal Advisory Committee	Has a formal, active pedestrian committee.	Has an ad hoc pedestrian committee.	Does not have a pedestrian committee.
Public Involvement and Feedback Process	Has a formal, active public feedback process (web-enabled).	Has a limited public feedback process.	Does not have a public feedback process.

TABLE 7: POLICY, PROGRAMS, AND PRACTICES BENCHMARKS

Topic	Key Strength	Enhancement	Opportunity
Economic Vitality	Has several business improvement districts, an established facade improvement program, and progressive downtown parking policies.	Has a business improvement district, facade improvement program, or downtown parking policies.	Does not have business improvement districts, a facade improvement program, or downtown parking policies.
Pedestrian Safety Education Program	In addition to a pedestrian safety curriculum in schools, provides brochures or conducts education campaigns.	Has some traffic safety education programs that include pedestrians.	Does not have pedestrian safety education programs.
Proactive Approach to Institutional Coordination	Has identified obstacles and has implemented efforts to overcome barriers.	Has identified obstacles.	Does not have any identified obstacles.
Safe Routes to Schools	Has an ongoing Safe Routes to Schools program and funding for recent projects.	Has obtained funding for recent projects, but has no community-wide Safe Routes to Schools program.	Does not have a Safe Routes to Schools program and has not obtained recent funding.
Coordination with Schools	Has a policy to encourage neighborhood-sized schools and coordinates with schools for pedestrian improvements.	Does not have a policy to encourage neighborhood-sized schools, but coordinates with local schools for pedestrian improvements.	Does not have a policy to encourage neighborhood-sized schools, does not coordinate with local schools, and recent schools have been "mega schools" on the periphery.
Enforcement	Police department conducts sustained pedestrian safety-related enforcement efforts, which may include resource sharing with neighboring communities.	Police department conducts some pedestrian safety-related enforcement activities.	Police department does not have traffic safety officers.
Coordination with Emergency Responders and Transit Providers	Emergency response and transit agencies are involved in all aspects of pedestrian facility planning and design (including pilot testing), and they balance their desires with pedestrian safety.	Emergency response or transit agencies are involved in some aspects of pedestrian facility planning and design.	Emergency response and transit agencies are not involved in pedestrian facility planning and design.
Coordination with Health Agencies	Coordinates with health agencies in the planning of pedestrian facilities and 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.

2.7 PREPARE THE TECHNICAL REPORT

After the community visit, the evaluators prepare a technical report describing their findings and suggestions. The report offers insights on collision hot spots as well as key pedestrian nodes. The report might also include:

- Items that can be implemented immediately
- Suggestions for prioritizing the greatest safety and overall walkability
- Comparison of walkability opportunities with cities in its class
- Suggestions for future policies for new development and redevelopment
- Community-wide policies, programs, and practices

Many pedestrian improvement measures included in the report provide a basis for the community to apply for grants to implement the suggestions or conduct further studies. The report also includes the list of resources and reference documents in Appendix C. A list of additional resources for optional inclusion is shown in Appendix D.

APPENDIX A: MAJOR TOPICS AND DETAILED PROMPT LISTS FOR FIELD REVIEWS

The following matrix and prompt lists are adapted from the *FHWA Pedestrian Road Safety Audit Guidelines and Prompt Lists,* July 2007. The detailed prompt lists on the following pages expand on each topic identified in the matrix.

MATRIX OF TOPICS FOR FIELD REVIEW

Topic	Subtopic	PSA Zones			
		A. Streets	B. Street Crossings	C. Parking Areas/Adjacent Developments	D. Transit Areas
Pedestrian Facilities	1. Presence, Design, and Placement	Sidewalks, paths, ramps, and buffers	Crossing treatments, intersections	Sidewalks and paths	Seating, shelter, waiting/ loading/ unloading areas
	2. Quality, Condition, and Obstructions	Sidewalks, paths, ramps, and buffers	Crossing treatments, (see prompts in A)	Sidewalks and paths (see prompts in A)	Seating, shelter, waiting/loading/unloading areas (see prompts in A)
	3. Continuity and Connectivity	Continuity/ connectivity with other streets and crossing	Continuity/ connectivity of crossing to pedestrian network; channelization of pedestrians to appropriate crossing points	Continuity/ connectivity of pedestrian facilities through parking lots/adjacent developments	Connectivity of pedestrian network to transit stops
	4. Lighting	Pedestrian level lighting along the street	Lighting of crossing	Pedestrian level lighting in parking lots/adjacent developments	Lighting at and near transit stop
	5. Visibility	Visibility of all road users	Visibility of crossing/waiting pedestrians and oncoming traffic	Visibility of pedestrians and backing/turning vehicles; visibility of pedestrian path	Visibility of pedestrians/waiting passengers and vehicles/buses
Traffic	6. Access management	Driveway placement and design along streets	Driveway placement next to intersections	Driveway placement and use in relation to pedestrian paths	n/a
	7. Traffic Characteristics	Volume and speed of adjacent traffic, conflicting conditions	Volume and speed of traffic approaching crossing conflicting movements	Traffic volume and speed in parking lots and developments, conflicting conditions	Volume and speed of adjacent traffic and traffic at crossings to bus stops, conflicting conditions.
Traffic Control Devices	8. Signs and Pavement Markings	Use and condition of signs, pavement markings, and route indicators	Use and condition of signs, pavement markings, and crossing indicators	Use and condition of signs, pavement markings for travel path and crossing points	Use and condition of transit-related signs and pavement markings
	9. Signals	n/a	Presence, condition, timing, and phasing	n/a	See prompts in B

Master and Detailed Prompt Lists for Field Reviews

This prompt list addresses street usage and applies to the Streets category in the Matrix of Topics for Field Review.

STREETS

Subtopic	Detailed Prompt	
A.1 Presence, Design, and Placement	A.1.1	Are sidewalks provided along the street?
	A.1.2	If no sidewalk is present, is there a walkable shoulder (e.g. wide enough to accommodate cyclists/pedestrians) on the road or there pathway/trail nearby?
	A.1.3	Are shoulder/sidewalks provided on both sides of bridges?
	A.1.4	Is the sidewalk width adequate for pedestrian volumes?
	A.1.5	Is there adequate separation distance between vehicular traffic and pedestrians?
	A.1.6	Are sidewalk/street boundaries discernable to people with visual impairments?
	A.1.7	Are ramps provided as an alternative to stairs?
A.2 Quality, Conditions, and Obstructions	A.2.1	Will snow storage disrupt pedestrian access or visibility?
	A.2.2	Is the path clear from both temporary and permanent obstructions?
	A.2.3	Is the walking surface adequate and well maintained?
A.3 Continuity and Connectivity	A.3.1	Are sidewalks/walkable shoulders continuous and on both sides of the street?
	A.3.2	Are measures needed to direct pedestrians to safe crossing points and pedestrian access ways?
A.4 Lighting	A.4.1	Is the sidewalk adequately lit?
	A.4.2	Does street lighting improve pedestrian visibility at night?
A.5 Visibility	A.5.1	Is the visibility of pedestrians walking along the sidewalk/shoulder adequate?
A.6 Driveways	A.6.1	Are the conditions at driveways intersecting sidewalks endangering pedestrians?
	A.6.2	Does the number of driveways make the route undesirable for pedestrian travel?
A.7 Traffic Characteristics	A.7.1	Are there any conflicts between bicycles and pedestrians on side walks?
A.8 Signals, Signs and Pavement Markings	A.8.1	Are pedestrian travel zones clearly delineated from other modes of traffic thought the use of striping, colored an/or textured pavement, signing, and other methods?
	A.8.2	Is the visibility of signs and pavement markings adequate during the day and night to both the pedestrian and motorists?
A.9 Pedestrian Push Buttons and Signals	A.9.1	Are the push buttons accessible to all pedestrians? Are the Pedestrian Signals visible to all pedestrians?

Master and Detailed Prompt Lists for Field Reviews

This prompt list applies to the Street Crossings category in the Matrix of Topics for Field Review.

STREET CROSSINGS

Subtopic	Detailed Prompt
B.1 Presence, Design, and Placement	B.1.1 Do wide curb radii lengthen pedestrian crossing distances and encourage high-speed right turns? B.1.2 Do channelized right turn lanes minimize conflicts with pedestrian? B.1.3 Does a skewed intersection direct drivers' focus away from crossing pedestrian? B.1.4 Are pedestrian crossings located in areas where sight distance may be a problem? B.1.5 Do raised medians provide a safe waiting area (refuge) for pedestrians? B.1.6 Are supervised crossings adequately staffed by qualified crossing guards? B.1.7 Are marked crosswalks wide enough? B.1.8 Do at-grade railroad crossings accommodate pedestrians safely? B.1.9 Are crosswalks sited along pedestrian desire lines? B.1.10 Are corners and curb ramps appropriately planned and designed at each approach to the crossing? See the prompts in the Streets category for potential issues on obstructions and protruding objects that apply to street crossings.
B.2 Quality, Condition, and Obstructions	B.2.1 Is the crossing pavement adequate and well maintained? B.2.2 Is the crossing pavement flush with the roadway surface?
B.3 Continuity and Connectivity	B.3.1 Does pedestrian network connectivity continue through crossings by means of adequate, waiting areas at corners, curb ramps, and marked crosswalks? B.3.2 Are pedestrians clearly directed to crossing points and pedestrian access ways?
B.4 Lighting	B.4.1 Is the pedestrian crossing adequately lit?
B.5 Visibility	B.5.1 Can pedestrians see approaching vehicles at all legs of the intersection/ crossing and vice versa? B.5.2 Is the distance from the stop (or yield) line to a crosswalk sufficient for drivers to see pedestrians? B.5.3 Do other conditions exist where stopped vehicles may obstruct visibility of pedestrians?
B.6 Access Management	B.6.1 Are driveways placed close to crossings?
B.7 Traffic Characteristics	B.7.1 Do turning vehicles pose a hazard to pedestrians? B.7.2 Are there sufficient gaps in the traffic to allow pedestrians to cross the road? B.7.3 Do traffic operations (especially during peak periods create a safety concern for pedestrians?

STREET CROSSINGS (continued)

Subtopic	Detailed Prompt
B.8 Signs and Pavement Markings	B.8.1 Is paint on stop bars and crosswalks worn, or are signs worn, missing, or damaged? B.8.2 Are crossing points for pedestrians properly signed and/or marked?
B.9 Signals	B.9.1 Are pedestrian signal heads provided and adequate? B.9.2 Are traffic and pedestrian signals timed so that wait times and crossing times are reasonable? B.9.3 Is there a problem because of an inconsistency in pedestrian actuation (or detection) types? B.9.4 Are all pedestrian signals and push buttons functioning correctly and safely B.9.5 Are ADA accessible push buttons provided and properly located?

Master and Detailed Prompt Lists for Field Reviews

This prompt list applies to the Parking Areas and Adjacent Developments category in the Matrix of Topics for Field Review.

PARKING AREAS AND ADJACENT DEVELOPMENTS

Subtopic	Detailed Prompt
C.1 Presence, Design, and Placement	C.1.1 Do sidewalks/paths connect the street and adjacent land uses? C.1.2 Are the sidewalks/paths designed appropriately? C.1.3 Are buildings entrances located and designed to be obvious and easily accessible to pedestrians?
C.2 Quality, Conditions, and Obstructions	See the prompts in the Streets category for potential issues on obstructions and protruding objects that apply to sidewalks and walkways at parking areas and adjacent developments.
	See the prompts in the Streets category for potential issues on surface conditions that apply to sidewalks and walkways at parking areas and adjacent developments. C.2.1 Do parked vehicles obstruct pedestrian paths?
C.3 Continuity and Connectivity	C.3.1 Are pedestrian facilities continuous? Do they provide adequate connections for pedestrian traffic? C.3.2 Are transitions of pedestrian facilities between developments/ projects adequate?
C.4 Lighting	See the prompts in the Streets and Street Crossing categories for potential issues on lighting that apply to sidewalks and walkways at parking areas and adjacent developments.
C.5 Visibility	C.5.1 Are visibility and sight distance adequate?
C.6 Access Management	C.6.1 Are travel paths for pedestrians and other vehicle modes clearly delineated at access openings? C.6.2 Do drivers look for and yield to pedestrian when turning into and out of driveways?
C.7 Traffic Characteristics	C.7.1 Does pedestrian or driver behavior increase the risk of a pedestrian collision? C.7.2 Are buses, cars, bicycles, and pedestrians separated on the site and provided with their own designated areas for travel?
C.8 Signs and Pavement Markings	C.8.1 Are travel paths and crossing points for pedestrians properly signed and/or marked?

Master and Detailed Prompt Lists for Field Reviews

This prompt list applies to the Transit Areas category in the Matrix of Topics for Field Review.

TRANSIT AREAS

Subtopic	Detailed Prompt
D.1 Presence, Design, and Placement	D.1.1 Are bus stops sited properly? D.1.2 Are safe pedestrian crossings convenient for transit and school bus users? D.1.3 Is sight distance to bus stops adequate? D.1.4 Are shelters appropriately designed and placed for pedestrian safety and convenience?
D.2 Quality, Condition, and Obstructions	D.2.1 Is the seating area at a safe and comfortable distance from vehicle and bicycle lanes? D.2.2 Do seats (or persons sitting on them) obstruct the sidewalk or reduce its usable width? D.2.3 Is a sufficient landing area provided to accommodate waiting passenger, boarding/alighting passengers, and through/bypassing pedestrian traffic at peak times? D.2.4 Is the landing area paved and free for problems such as uneven surfaces, standing water, or steep slopes? D.2.5 Is the sidewalk free of temporary/permanent obstructions that constrict its width or block access to the bus stop?
D.3 Continuity and Connectivity	D.3.1 Is the nearest crossing opportunity free of potential hazards for pedestrians? D.3.2 Are transit stops part of a continuous network of pedestrian facilities? D.3.3 Are transit stops maintained during periods of inclement weather?
D.4 Lighting	D.4.1 Are access ways to transit facilities well lit to accommodate early-morning, late afternoon, and evening?
D.5 Visibility	D.5.1 Are open sightlines maintained between approaching buses and passenger waiting and loading areas?
D.6 Traffic Characteristics	D.7.1 Do pedestrians entering and leaving buses conflict with vehicles, bicycles, or other pedestrians?
D.7 Signs and Pavement markings	D.8.1 Are appropriate signs and pavement markings provided for school bus and transit stops?

APPENDIX B: BEST PRACTICES RESOURCES

The following matrix and prompt lists are adapted from the *FHWA Pedestrian Road Safety Audit Guidelines and Prompt Lists,* July 2007. The detailed prompt lists on the following pages expand on each topic identified in the matrix.

Matrix of Best Practices Corresponding to Topics in the Field Review

Topic	Subtopic	PSA Zones			
		A. Streets	B. Street Crossings	C. Parking Areas/Adjacent Developments	D. Transit Areas
Pedestrian Facilities	1. Presence, Design, and Placement	S1, S2, S5, P1, P2, P3, P4, P11, R1, R6, R7	S1, S2, S5, P1, P2, P3, P4, P11, P13, R1, R2, R4, R6, R7	S1, S2, S5, P1, P2, P3, P4, R1, P6, P7, P12, R1, R6, R7	S1, S2, S5, P1, P2, P4, P5, P8, P9, P10, R1, R6, R7
	2. Quality, Condition, and Obstructions	S1, S2, P1, P2, P3, P4, P11, R1, R6, R7	S1, S2, P1, P2, P3, P4, P11, P13, R1, R2, R4, R6, R7	S1, S2, P1, P2, P3, P4, P6, P7, R1, R6, R7	S1, S2, P1, P2, P4, P5, P8, P9, P10, R1, R6, R7
	3. Continuity and Connectivity	S2, S5, P1, P2, P3, P4, P11, R1, R6, R7	S2, S5, P1, P2, P3, P4, P11, P13, R1, R4, R6, R7	S2, S5, P1, P2, P3, P4, P6, P7, R1, R6, R7	S2, S5, P1, P2, P4, P8, P9, P10, R1, R6, R7
	4. Lighting	S1, P1, P2, P3, P4, R1, R6, R7	S1, P1, P2, P3, P4, P13, R1, R4, R6, R7	S1, P1, P2, P3, P4, P6, P7, R1, R6, R7	S1, P1, P2, P4, P8, P9, P10, R1, R6, R7
	5. Visibility	S1, S2, P1, P2, P3 P4, R1, R6, R7	S1, S2, P1, P2, P3, P4, P13, R1, R2, R4, R6, R7	S1, S2, S4, P1, P2, P3, P4, P6, P7, R1	S1, S2, P1, P2, P4, P8, P9, P10, R1, R6, R7
Traffic	6. Access management	S1, R1, R6, R7	S1, R1, R6, R7	S1, P3, P6, P7, P8, P12, R1, R6, R7	N/A
	7. Traffic Characteristics	S1, P5, R7, R1, R6, R7, P16	S1, P3, P5, R1, R2, R4, R6, R7, P16	P6, P7, R1, R6, R7, P14	P8, P9, R1, R6, R7, P15
Traffic Control Devices	8. Signs and Pavement Markings	S2, S3, S4, R1, R4, R6, R7	S2, S3, S4, R4, P3, P11, P13, R1, R4, R6, R7	S2, S3, S4, R4, P3, P6, P11, P12, R1, R6, R7	S2, S3, S4, P8, P10, R1, R6, R7
	9. Signals	N/A	S2, S3, S4, P13, R1, R2, R4, R6, R7	N/A	S2, S3, S4, P8, R1, R6, R7

RELEVANT STANDARDS, BEST PRACTICES, AND SAFETY RESOURCES FOR ENGINEERING RECOMMENDATIONS

Standards

S1 AASHTO, *A Policy on Geometric Design of Highways and Streets* (Green Book)
https://bookstore.transportation.org/collection_detail.aspx?ID=110S2
ADA Accessibility Guidelines (ADAAG)
www.ada.gov/2010ADAstandards_index.htm

S3 *Manual on Uniform Traffic Control Devices* (MUTCD)
http://mutcd.fhwa.dot.gov/ser-pubs.htm

S4 *California Manual on Uniform Traffic Control Devices*
www.dot.ca.gov/hq/traffops/signtech/mutcdsupp

S5 United States Access Board, *Public Rights of Way* (PROWAC)
www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way

Best Practices

P1 FHWA, *Designing Sidewalks and Trails for Access, Part I, A Review of Existing Guidelines*
http://safety.fhwa.dot.gov/ped_bike/docs/ada.pdf

P2 FHWA, *Designing Sidewalks and Trails for Access Part II, Best Practices Guide*
www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/sidewalk2/pdf.cfm

P3 FHWA, *Accessible Sidewalks and Street Crossings - An Informational Guide* (FHWA-SA-03-019)
www.bikewalk.org/pdfs/sopada_fhwa.pdf

P4 AASHTO, *Guide for the Planning, Design, and Operation of Pedestrian Facilities*
https://bookstore.transportation.org/item_details.aspx?id=119

P5 AASHTO, *Guide for the Development of Bicycle Facilities*
https://bookstore.transportation.org/collection_detail.aspx?ID=116

P6 *Parking Management Best Practices*
www.planning.org/APAStore/Search/Default.aspx?p=3502

P7 Urban Land Institute (ULI), *The Dimensions of Parking*
www.amazon.com/Dimensions-Parking-Urban-LandInstitute/dp/0874208270

P8 EPA, *Pedestrian and Transit Friendly Design Guidelines*
www.epa.gov/dced/pdf/ptfd_primer.pdf

P9 Easter Seals Project, *Bus Stop Checklist*
www.walkinginfo.org/library/details.cfm?id=3126

Best Practices (continued)

P10 Pedestrian and Bicycle Information Center (PBIC), *Transit Waiting Environments*
www.walkinginfo.org/library/details.cfm?id=2925

P11 United States Access Board, *A Checklist for Accessible Sidewalks and Street Crossings*
www.walkinginfo.org/library/details.cfm?id=67

P12 ULI, *Shared Parking Second Edition*
www.uli.org

P13 ITE, *Electronic Toolbox for Making Intersections More Accessible for Pedestrians*
www.ite.org/accessible

P14 FHWA, *A Resident's Guide for Creating Safe and Walkable Communities*
http://safety.fhwa.dot.gov/ped_bike/ped_cmnity/ped_walkguide

P15 FHWA, *A Resident's Guide for Creating Safe and Walkable Communities*
http://safety.fhwa.dot.gov/ped_bike/ped_cmnity/ped_walkguide

P16 USLIMITS Speed Limit Selection Toolkit
www.uslimits.org

Safety Resources

R1 *A Guide for Reducing Collisions Involving Pedestrians* (NCHRP Report 500)
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v10.pdf

R2 *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations* (HRT-04-100)
www.fhwa.dot.gov/publications/research/safety/04100

R3 *How to Develop a Pedestrian Safety Action Plan* (FHWA-SA-05-12)
www.walkinginfo.org/pp/howtoguide2006.pdf

R4 *Improving Pedestrian Safety at Unsignalized Crossings* (NCHRP Report 562)
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_562.pdf

R5 *Road Safety Audits: Case Studies* (FHWA-SA-06-17)
http://safety.fhwa.dot.gov/intersection/resources/fhwasa09027/188.htm

R6 PEDSAFE: The Pedestrian Safety Guide and Countermeasure Selection System
www.walkinginfo.org/pedsafe

R7 Pedestrian and Bicycle Crash Analysis Tool (PBCAT)
www.bicyclinginfo.org/bc/pbcat.cfm

APPENDIX C: PSA RESOURCE LIST

Evaluators must include the following resource list as an appendix to all PSA reports.

- *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
  www.walkinginfo.org
- National Center for Safe Routes to School
  www.saferoutesinfo.org
- *Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations* (HRT-04-100)
  www.fhwa.dot.gov/publications/research/safety/04100
- *How to Develop a Pedestrian Safety Action Plan* (FHWA-SA-05-12)
  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/intersection/resources/fhwasa09027/188.htm
- *Pedestrian Road Safety Audit Guidelines and Prompt Lists*
  http://drusilla.hsrc.unc.edu/cms/downloads/PedRSA.reduced.pdf
- PEDSAFE: The Pedestrian Safety Guide and Countermeasure Selection System
  www.walkinginfo.org/pedsafe
- Pedestrian and Bicycle Crash Analysis Tool (PBCAT)
  www.bicyclinginfo.org/bc/pbcat.cfm
- FHWA, *A Resident's Guide for Creating Safe and Walkable Communities*
  http://safety.fhwa.dot.gov/ped_bike/ped_cmnity/ped_walkguide
- FHWA Pedestrian Safety Training Courses:
  - Developing a pedestrian safety action plan (two-day course)
    next California course: www.google.com/calendar/embed?src=lssandt@email.unc.edu
  - Designing for pedestrian safety (two-day course)
    next California course: www.google.com/calendar/embed?src=lssandt@email.unc.edu
  - Planning and designing for pedestrian safety (three-day course)
    next California course: www.google.com/calendar/embed?src=lssandt@email.unc.edu

APPENDIX D: RESOURCES FOR EVALUATORS

The following agencies and resources offer helpful information.
Evaluators do not have to include these resources in the final PSA report.

- AASHTO Strategic Highway Safety Plan: A Comprehensive Plan to Substantially Reduce Vehicle-Related Fatalities and Injuries on the Nation's Highways
  http://safety.transportation.org/doc/Safety-StrategicHighwaySafetyPlan.pdf
- American Automobile Association Foundation for Traffic Safety
  www.aaafoundation.org
- American Traffic Safety Services Association
  www.atssa.com
- California Office of Traffic Safety offers information about grants, training events, publications, reports, and statistics online.
  www.ots.ca.gov
- California Strategic Highway Safety Plan (SHSP)
  www.dot.ca.gov/SHSP
- CATSIP, the California Active Transportation Information Pages, provides authoritative, evidence-based information on practices, methods, and resources to support efforts to improve the safety, efficiency, and attractiveness of pedestrian, bicycle, and other types of non-motor-vehicle travel.
  www.catsip.berkeley.edu
- FHWA safety programs aim to make roadways safer. The comprehensive website lists news, tools, policies, and more.
  http://safety.fhwa.dot.gov
- SafeTREC, the Safe Transportation Research and Education Center at UC Berkeley, maintains a comprehensive list of resources relating to traffic safety.
  http://safetrec.berkeley.edu
  http://safetrec.berkeley.edu/links
- TIMS, the Transportation Injury Mapping System
  www.tims.berkeley.edu
- Walk Score™ provides a composite walkability score for an address and can be useful for comparing focus areas within a community.
  www.walkscore.org

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