City of
Santa Monica

CITY OF SANTA MONICA

PEDESTRIAN ACTION PLAN

ADOPTED FEBRUARY 23, 2016

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City of
Santa Monica®

CONTENT

ACKNOWLEDGEMENTS

Special thanks to all of the members of the Santa Monica community who contributed throughout the planning process.
Your input and expertise shaped this plan and your continued involvement will make Santa Monica a more pedestrian-friendly community!

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EXECUTIVE SUMMARY

Setting the Stage

Santa Monica is a great place to walk – and we want to make it even better and safer for people of all ages and abilities. This Pedestrian Action Plan recognizes and celebrates walking as a core part of the City's identity and character, while laying out a specific vision, standards, priority projects, and programs to guide improvements to the walking environment over the next 15 years. Making coordinated, strategic and continuous investments for pedestrians can make Santa Monica an even better place to walk.

The Pedestrian Action Plan continues the City's longstanding effort to prioritize people walking in its planning and transportation decisions, promoting equity, and ensuring comfort for a wide range of users. This has included citywide planning efforts such as the 2010 Land Use and Circulation Element, as well as more focused, pedestrian-supportive plans, such as the Downtown Community Plan, Bergamot Area Plan, and public improvement projects. More recently, the City Council has directed creation of "Vision Zero Santa Monica," a goal to eliminate preventable severe injuries and fatalities of people using roadways in the City. The continued evolution of the City and major infrastructure investments such as the new Expo Light Rail line will increase the number of people walking here, and change walking routes. With thoughtful planning, walking can improve community health through injury prevention and increased physical activity.

Streets should be accessible to everyone.

Walking is part of the sustainable Santa Monica lifestyle.

Now, for the first time in the community's history, the Pedestrian Action Plan provides a unified plan for the future of walking in Santa Monica, acknowledging its unique context, challenges, and opportunities while laying out a roadmap for the next 15 years by suggesting practices, programs, and projects that will lead to a safer and more attractive city for visitors and residents.

The framework for this plan was developed through a detailed analysis of land use patterns, community input, collision history, pedestrian environment, socio-economic factors and anticipated demand for walking based on destinations and the opening of the Expo Light Rail line.

Community Themes

Hundreds of community members participated in workshops, meetings, online forums, and surveys to help develop the Pedestrian Action Plan. Their input coalesced around the following four essential cross-cutting themes, which inform the Plan's policies, implementation actions, and overall philosophy:

1. **Walking is part of the sustainable Santa Monica lifestyle and enhances wellbeing.** Residents state that walking is a defining experience of living in Santa Monica, and is vital to staying happy and healthy.

2. **More pedestrians of all ages and fewer collisions.** Consistent with the Council's Vision Zero directive, there is agreement that the number of pedestrians should continue to increase, even while pedestrian fatalities and injuries are reduced and eliminated, so that more people enjoy this wonderful, sustainable activity.

3. **Making the connections, removing the obstacles.** Improving pedestrian connections and removing barriers will increase people's willingness and ability to walk, including reducing barriers to crossing the freeway and major boulevards.

4. **A shared priority, a shared responsibility.** There should be respect and civility among all users of the City's public realm. Pedestrian safety and comfort must be a collaborative effort between walkers, drivers, bike riders, transit riders, and anyone who uses public space.

The Analytical Approach

The Pedestrian Action Plan utilized detailed physical, socio-economic, operational and performance data to develop a robust and fact-based plan of action. Relying on data analysis enables the Pedestrian Action Plan to quantify:

- How many people are walking and where
- The current status of the pedestrian environment
- How well the current pedestrian network and infrastructure works for walking

Meeting Demand

The analysis reveals that walking supply will not meet the demand near the Expo Light Rail station areas at Bergamot, Memorial Parking and Downtown. Today, bi-annual intersection counts show that people walking outnumber vehicles at some of the City's busiest intersections, particularly in Downtown and near the Beach. Detailed future demand modeling considered

residential density, community destinations such as parks and schools, transit hubs, commercial areas, and household characteristics such as vehicle ownership and income. Over 18 percent of Santa Monica is identified as a high demand area for walking, and demand is increasing on streets that have been designed to prioritize regional traffic, in part because of their rich transit and commercial services.

Addressing Safety

Safety was cited as a primary concern for most community members, and a significant factor in the feeling of comfort while walking. Analysis of collision data from 2001-2012 showed an average of 100 reported injury collisions per year. Seniors and youth were disproportionately represented relative to their share of the population. Police reports indicate that approximately 70 percent of crashes were associated with driver failure to yield, indicating that solutions involve all roadway users. Pedestrians were crossing in a marked crosswalk in over 65 percent of collisions. Many crashes occurred with drivers turning left at a signalized intersection or proceeding straight through an intersection.

Improving Facilities

Santa Monica is fortunate to have a relatively consistent street and alley system that supports many pathways to destinations. This grid system breaks down with a limited number of streets that cross the I-10 freeway and Pacific Coast Highway, and sometimes limited and challenging conditions crossing major boulevards with multiple lanes of vehicle traffic. Higher speed limits on these streets result in increased severity of injury when crashes occur. Sidewalks are provided on almost 95 percent of Santa Monica streets, and the Plan prioritizes closing the remaining gaps. Pedestrian scale lighting is much more limited, however, and providing adequate sidewalk width and evening illumination to meet increasing demand for walking is a priority going forward. These analyses of pedestrian demand, performance and facilities were used to carefully determine recommendations that serve the needs of all road users and improve walking in Santa Monica.

Plan, Policies, and Actions

The Pedestrian Action Plan includes goals and policies that set citywide direction in key areas related to walking. Policies provide support for pedestrian safety, the elimination of pedestrian barriers, and education efforts, as well as efforts to promote health and sustainability through walking. Perhaps most importantly, the Plan identifies a coordinated set of practices, programs, and projects that will improve the City's walking environment over the next 15 years.

Practices

Practices describe how City departments approach their daily activities. Some of the most important new practices include elevating pedestrian design and concerns when designing any city project, so that pedestrian improvements are naturally incorporated. Maintenance of City facilities is a significant and on-going activity and expense. The Plan recommends that pedestrian upgrades be incorporated into maintenance efforts so they become a day-to-day part of operating activities and budgets. Pursuing strategies to reduce maximum speed limits and increase compliance with posted speeds are proposed to decrease the incidence of crashes and to reduce injury severity when crashes occur.

Community feedback informs all aspects of the plan.

Walking to school promotes health and sustainability.

Programs

Programs provide encouragement, outreach, education and a human touch to encourage walking in Santa Monica. Complementary programs proposed in the Plan include the Vision Zero Santa Monica safety and design program, pedestrian safety campaigns, Safe Routes to School, and a comprehensive wayfinding and signage program. Safe Routes to School programs are geared toward teaching kids about the "rules of the road" and encouraging them to take active transportation to school. Programs provide an opportunity to partner with community organizations and institutions to increase participation and create a culture where walking is a preferred mode of travel.

Infrastructure

The Plan identifies over 100 individual opportunities to meaningfully improve the pedestrian experience through new or enhanced facilities such as crosswalks, curb extensions, wider sidewalks, signals, and pedestrian amenities. Infrastructure projects were prioritized using community expressed values and factors that accounted for access to rapid transit, high collision corridors and intersections, and areas of concentrated jobs and housing. Projects that enhance connections to community assets such as the Downtown, schools, parks, and the beach are particularly prevalent in the Plan. These improvements are anticipated to positively affect the most residents, although they are primarily located in commercial areas. Projects range from large-scale infrastructure projects previously identified, such as better accommodating pedestrians on the northern portion of the Beach Path, to more fine-grained changes, such as installing parklets along Main Street or creating sidewalks on the eastern end of Olympic Boulevard.

The Plan calls for the various capital projects to be completed within a 5-year, 10-year, or 15-year timeframe, depending on project readiness, funding, and priority. Short-term projects include new curb ramps, signal timing changes, pavement markings along paths to schools, sidewalks leading to Bergamot Station, and pedestrian scrambles in Downtown. Longer-term projects include a number of greenways, lighting, reconfigured intersections, new median refuge islands, relocated transit stops, and a concerted effort to overhaul Michigan Avenue (the already-begun "MANGo" project). Other important infrastructure improvements – such as the long-planned capping of Interstate 10 to link Downtown and City Hall – are not specifically called out in the Plan but would be coordinated with the Plan's pedestrian improvements.

Finally, the Plan establishes a monitoring and evaluation strategy to ensure the City is meeting the stated goals over time.

Pedestrian Standards

The Plan includes a number of technical resources related to design and project implementation. These will be included as technical appendices that accompany the final document:

- Appendix A contains specific examples for capital improvements that can be used to apply for funding and further the timely implementation of projects.
- Appendix B provides detailed information about potential funding sources.
- Appendix C examines First Mile-Last Mile pedestrian access to bus and light rail service.
- Appendix D contains a Pedestrian Design Toolkit, which will be leveraged during design and planning of future improvements.

Changes that improve access to rapid transit is prioritized.

CHAPTER 1: BACKGROUND + COMMUNITY PARTICIPATION

Santa Monica is a city of walkers. Most residents, visitors and workers walk on a regular basis for recreation, for exercise, and to get where they need to go. Many residents cite walking as a primary reason they choose to live here. The Pedestrian Action Plan presents a vision for Santa Monica's pedestrians. It's purpose is to ensure comfortable, safe, and attractive places to walk so that walking becomes a first choice for travelling around Santa Monica.

This chapter describes the community process that guided the Plan. It also describes the need for a Pedestrian Action Plan, and the existing policy context that guides it.

Introducing: Vision Zero Santa Monica!

Vision Zero is a national movement to eliminate preventable deaths and serious injuries that result from traffic collisions. It is rooted in the belief that protection of life, health, and safety should be a civic priority. Vision Zero emphasizes shared responsibility among all road users, street design that promotes safety and minimizes risks, and better enforcement and education to prevent unsafe behavior.

On March 17, 2015, the Santa Monica City Council directed a "Vision Zero Santa Monica," and accepted the U.S. Department of Transportation Mayor's Challenge for Safer People and Safer Streets. This cross-cutting policy directive provides a strong imperative for the Pedestrian Action Plan, while prioritizing safety in the City's overall transportation planning and design efforts. It also includes direction for public spaces and streets to be safe for everyone from ages "8 to 80," recognizing the needs of different people at all stages of life, and the importance of protecting our streets' most vulnerable users. Santa Monica joins dozens of other cities nationwide – including nearly 20 in California – that have adopted Vision Zero targets in recent years. This includes Los Angeles, San Diego, San Francisco, and San Jose, as well as Chicago, New York City, Portland and a number of small and mid-size California cities such as San Mateo, Santa Barbara, and Fremont.

Vision Zero Santa Monica acts as an agreement between the community and City to coordinate efforts and concentrate on the elimination of traffic injuries and fatalities. It obligates the City of Santa Monica to consistently prioritize road user safety, and calls for accountability from all users of the roadway. Specifically, Vision Zero Santa Monica calls for the following strategies, each of which is supported by the goals, policies, and actions in the Pedestrian Action Plan:

- **Project Design.** Define and construct projects to improve the safety for people using the street.
- **Operations.** Implement operational changes to reduce vehicle speeds that threaten pedestrian and bike safety.
- **Programs.** Support programs that educate people walking, biking, and driving.
- **Behavior and Enforcement.** Encourage safe behaviors for all road users and engage community leaders in promoting safety, including enforcement of distracted and unsafe vehicle operation.
- **Walkability.** Promote walkable environments – on Downtown streets, in neighborhood commercial areas, along boulevards, and within neighborhoods – to promote health and economic strength.

Vision Zero Santa Monica encourages safe behavior for all road users.

53% of Residents Walk Daily

(Santa Monica Community Survey, 2013)

1.1 The Need for a Pedestrian Action Plan

Beginning with Santa Monica's 1984 General Plan, multiple City plans emphasize prioritizing pedestrians, and many adopted policies address walking. All of these plans have a common vision: they recognize that the vitality of the City relies on an active pedestrian network. After more than 30 years of dialogue, the Pedestrian Action Plan provides a detailed approach to prioritizing pedestrians in the design and operation of the transportation system.

On March 17, 2015 the Santa Monica City Council directed a "Vision Zero" policy to commit all City departments to supporting a vision for pedestrian safety, to eliminate all traffic fatalities and severe injuries. The Council action to join the United States Secretary of Transportation's call for "Safer People, Safer Streets" included striving to ensure that the City's actions reflect that if spaces are designed for people who are 8 or 80, are quality places for all members of the community. This Council action reinforces the call for the strongest possible policy support for pedestrians.

The Pedestrian Action Plan addresses the removal of barriers to enhance safety and comfort for the growing number of pedestrians. The high quality pedestrian network described later in this Plan will support all aspects of the transportation system, including connections to bus stops, light rail stations, and shared parking facilities.

Santa Monica is fortunate to have a comprehensive network of sidewalks to most places in the city that makes getting around on foot possible for most people. Additional pedestrian amenities, education and operations will further optimize the walking Santa Monica experience, making walking an easy and obvious choice for the Santa Monica community. The Plan provides a comprehensive, pedestrian-centered vision, and tools for evaluating all opportunities at every level of the City to improve pedestrian conditions and support the safest possible environment for our City's walkers.

Pedestrians have been a primary focus in the implementation of major streetscape projects that contribute to the public realm, including along Pico, Wilshire, and Ocean Park Boulevards; the Third Street Promenade and Transit Mall in Downtown; and numerous beach area improvements. However, despite these significant projects, the City has not identified a method to systematically improve its pedestrian facilities across the City for a consistent and comprehensive network.

Further, until now, the City has not established an ongoing program for data gathering to monitor improvements that benefit pedestrians. This will be a key step for achieving grant funding from regional and federal resources to finance physical enhancements to the pedestrian network, or to fund operational and program-based initiatives. The Pedestrian Action Plan addresses these policy and infrastructure needs, while providing a community roadmap for the future of walking in Santa Monica.

Vision Zero is a strategy to eliminate all traffic fatalitie and severe injuries.

Santa Monica boasts a higher number of pedestrians per square mile than other similarly-sized Southern California cities. One reason that people want to live, visit, shop and work here is because walking to all these activities is convenient and enjoyable. Walking is such an accepted and fundamental part of the Santa Monica experience that it does not naturally present itself for advocacy or specific funding priority. The current pedestrian renaissance coupled with awareness of the need for improved infrastructure shortfalls is changing this. This Plan provides the central link, ensuring that upgrades to the City's walking facilities address current and future demand, while anticipating the rising trend for walking as a critical first mile-last mile component of transit and rail travel.

THIS PEDESTRIAN ACTION PLAN :
1) IDENTIFIES COMMUNITY CONCERNS
2) ANALYZES SANTA MONICA CONDITIONS
3) PROPOSES ACTIONS

BY INCLUDING:

- Community vision
- Data analysis
- Goals and policies that address four key themes
- Existing and future conditions
- Short and long term actions
- Toolbox
- Implementation
- Measuring and monitoring

The Walking School Bus combines safety, education, and fun.

The Farmer's Market is a creative use of the street that enlivens public space.

Health

The Surgeon General's 2015 'Call to Action on Walking and Walkable Communities' reinforces the ability to combat chronic disease nationwide and the importance of this public health strategy. Forward-thinking cities all over the nation have adopted policies to support walking through street design and operations, and Americans are becoming aware that walking is a convenient and inexpensive way to stay healthy. Contributing to walking's popularity are baby boomers - a generation of movers and shakers, runners and sports-lovers who will stay active well into their later years, trading in their roller blades and skis for walking shoes. Growing awareness of the need to combat the national epidemic of obesity is leading public health officials to encourage walking for well-being. Recent Santa Monica data shows that 6 out of 10 people walk for physical activity, while the number of adults who walk for transportation grew 6% from 2005 to 2010.

Sustainability

Santa Monicans are proud to be on the cutting edge of a national trend towards sustainability. The focus on reducing greenhouse gas emissions is both a national and Santa Monica community priority. To reduce greenhouse gas emissions, the City is coordinating improvements to the transit and pedestrian networks in addition to implementing strategies for reducing the overall number of automobile trips. Transportation accounts for 38 percent of Santa Monica's greenhouse gas emissions.

Transportation

As the City prepares for the arrival of light rail transit, it is anticipated that interest in walking will expand, placing new demands on sidewalks and pathways. New walkers will join the scores of people including seniors and young Santa Monicans who depend upon walking for daily transportation. New street designs are emerging to embrace the demand for people walking and biking. The projects and programs of the Pedestrian Action Plan will make walking a natural first choice, improving the walking environment to benefit the individual walker, the Santa Monica community, and the global environment. Nearly 79% of residents surveyed for this plan walk on a regular basis for recreation or exercise, including over 5% who walk to their place of work. Locally, 9% of Santa Monica households do not own a car and coordinate their daily routines on foot, bike or by transit.

Recreation

Santa Monica is known for its natural beauty, wonderful weather, and variety of active lifestyles. Walking is also a community building activity in Santa Monica, providing an opportunity to meet people who live and work nearby. Santa Monica's Wellbeing Project reports that local relationships could be stronger to support wellbeing. During the outreach for the 2010 Land Use and Circulation Element Update, walking was identified as a favorite outdoor activity in Santa Monica, with many people citing its social benefits which could be enhanced if the popularity of walking increases.

1 Pedestrian is injured each week, on average, in Santa Monica.

Comfort

Currently, 60% of residents say they are comfortable walking along the existing pedestrian network, which leaves a large percentage of Santa Monicans who are uneasy about being a pedestrian. If 40% of residents are uncomfortable, the City has work to do to improve their walking experience, employing the most current operations and design for safety to inspire these residents to choose walking.

The primary focus of the Pedestrian Action Plan is for all people to feel comfortable engaging in the City's most popular and sustainable activity.

Tourism and Economic Vitality

Santa Monica's downtown was ranked in the nation's top ten by Forbes Magazine because of its walkability. Our neighborhoods provide miles of landscaped sidewalks and street furnishings designed to make walking a pleasant experience. Residents and visitors alike frequently enjoy walking as a convenient way of exploring the City. To this point, Santa Monica travel and tourism statistics show that over 70% of hotel visitors choose to visit Santa Monica without a car. From window shopping, strolling on the beach and pier, getting to school and work, or dashing out to the corner store instead of jumping in the car, walking defines the character of Santa Monica that attracts visitors from all over.

Local travel data shows that over **70%** of hotel patrons visit Santa Monica without a car.

Safety

A review of traffic collision statistics shows that the City averages 100 pedestrian-involved collisions annually including both injury and non-injury collisions. There is a need to improve future comfort and safety for the growing number of Santa Monica walkers. Walking is critical to the livability, economic, and sustainability priorities of the City. Community outreach and stakeholder input makes it increasingly clear that there is a desire for the City to improve pedestrian design, integrate multi-modal transportation operations, and provide community education to reduce driver and pedestrian error. The City can prioritize optimal pedestrian design with different work groups coordinating efforts and education so that preventable incidents related to driver and pedestrian error can be eliminated where possible.

Wide tree-lined sidewalks make walking a pleasant experience.

Well-designed pedestrian facilities allow for increased foot traffic and activity for businesses

Downtown Santa Monica is nationally recognized for its walkability.

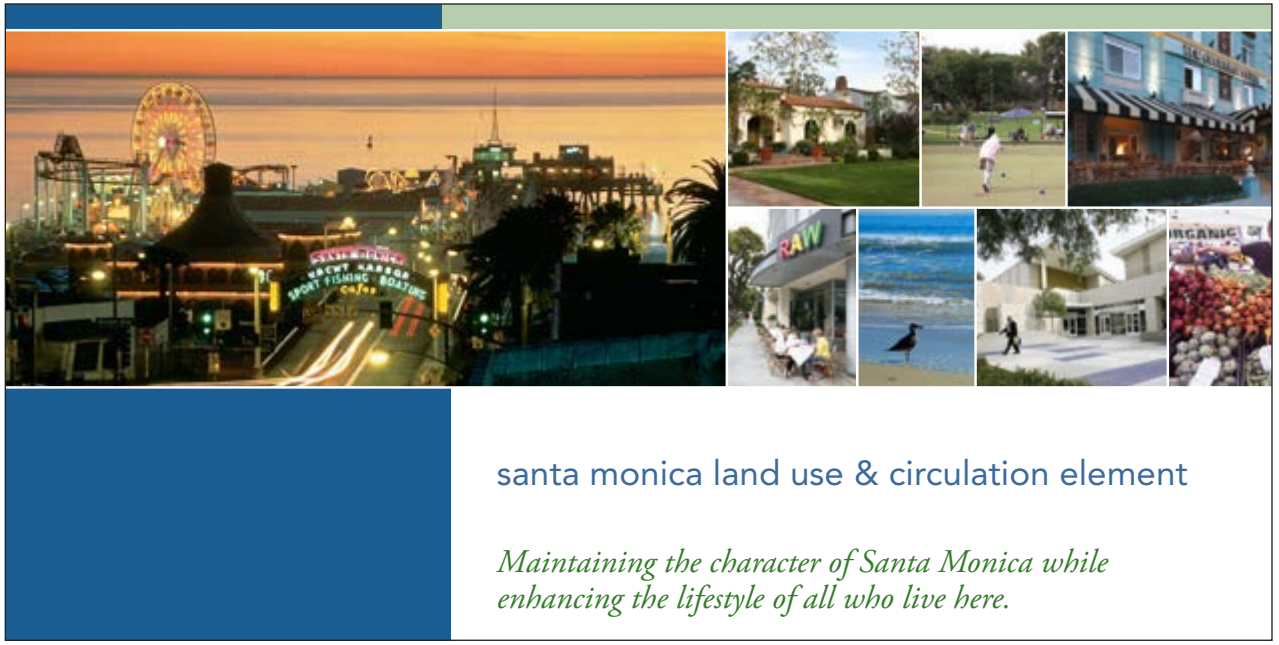
1.2 Policy Context

The Pedestrian Action Plan translates the community's vision for walking into specific goals, policies, standards, and implementation actions that can be incorporated into departmental work plans. It provides detailed new guidance in the following key areas:

- Pedestrian facility design guidelines and standards
- Specific proposed pedestrian improvements and locations
- A timeline for funding and implementing new pedestrian facilities
- Operations and enforcement actions that prioritize pedestrian safety
- Design and operations strategies to implement Vision Zero Santa Monica.

The Pedestrian Action Plan complements – and is supported by – the following Plans and policies:

LAND USE AND CIRCULATION ELEMENT (2010, REVISED IN 2015). The Land Use and Circulation Element (LUCE) is a comprehensive vision for the City's future. It integrates land use strategies and transportation activities citywide to promote active living and sustainability. At the basis of the LUCE pedestrian strategy is the idea that a complete, high-quality pedestrian network is necessary to make all aspects of the transportation system function well. Adopted LUCE policies prioritize inclusive walking for people of all ages and abilities, providing access to a diverse community of people and neighborhoods.



The 2010 Land Use and Circulation Element (updated in 2015) redefined the role of streets to accommodate a variety of different transportation types, not just automobiles.

VISION ZERO SANTA MONICA (2015). Sets a citywide policy goal of eliminating preventable pedestrian injuries and fatalities.

SANTA MONICA BIKE ACTION PLAN (2011). Describes a powerful vision for fun, comfortable bicycling conditions throughout Santa Monica, while keeping pedestrian safety in mind.

SUSTAINABLE CITY PLAN (1994; REVISED IN 2003, 2006, AND 2014). Incorporates measurable social, environmental, and economic sustainability goals to unify the City's sustainability efforts. Identifies walking in transportation strategies to reduce greenhouse gas emissions and increase sustainable transportation options.

SANTA MONICA URBAN FOREST MASTER PLAN (2010). Preserves and diversifies the tree canopy to broaden the benefits of Santa Monica's urban forest. Urban forests improve the conditions for walking with shade and buffers from moving vehicles.

OPEN SPACE ELEMENT (2001) AND THE PARKS AND RECREATION MASTER PLAN (1997). Describes goals and initiatives for development of a network of parkland and open space. As major destinations for residents and places for fitness routines, the parks play a strong role in walking. Public spaces need to be safe for people walking and can encourage walking as part of daily life.

1.3 Community Engagement and the Planning Process

The outreach for the 2010 Land Use and Circulation Element (LUCE) revealed the need for an increased focus on walking and the pedestrian environment, and set the stage for the Pedestrian Action Plan. For a six-year period, beginning in 2004, LUCE workshops and events inspired community-wide conversations about the City's future and issues that affect people's quality of life. Encouraging and improving walking emerged as one of the key issues. Thousands of Santa Monicans shared their opinions and concerns about the ways people move around the City, the destinations that matter most to them, and the physical conditions that the current generation needs to foster in order to lay a sustainable foundation that supports the next one.

Throughout the LUCE process, improvements to Santa Monica's pedestrian environment arose as a strongly expressed community priority. Based on this input, the LUCE seeks "...to make walking safe and pleasurable for everyone, on all streets and at all times of day. The Plan pays particular attention to the needs of children, the elderly and disabled" (LUCE, p. 15).

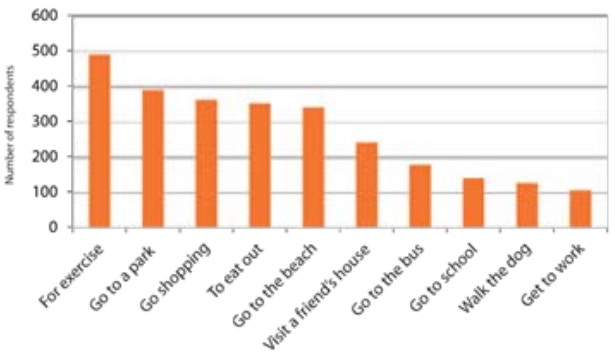
Since LUCE adoption, the effort to make walking more appealing has continued in the planning efforts for the Bergamot Area Plan, Downtown Community Plan, the Memorial Park Neighborhood Plan, and in requirements for private projects developed during that time frame. These plans each consider ways to more effectively tie existing neighborhoods to goods, services, and transit. They also seek to implement the LUCE target of "No Net New P.M. Trips" by off-setting existing and new automobile trips with alternative travel options.

Community members have continued to regularly express the importance of making Santa Monica a safe, convenient, and pleasant place to walk. Residents and merchants often contact City Hall seeking solutions to pedestrian safety concerns, suggesting new stop signs, asking for the installation of crosswalks, inquiring about flashing in-pavement light systems next to crosswalks, or reporting unsafe behavior. With 79 percent of Santa Monicans indicating that they walk daily or a few times a week (2013 Residents Survey), there are many eyes on the street to help define the needs of the walking public.

Following on these efforts, the outreach for the Pedestrian Action Plan has focused on addressing community concerns and prioritizing them through City programs and public works projects. Community engagement for the Pedestrian Action Plan involved community meetings, on-line conversations, and participation in neighborhood events to gather priorities and ideas. This forged a deeper understanding of issues and priority projects while building strategic alliances and new sources of pedestrian advocacy.

Figure 1.3 Input by Commissions and Stakeholders

Figure 1.1 Why Santa Monicans Walk



Source: City of Santa Monica Pedestrian Survey, 2013.

WHAT THE SANTA MONICA COMMUNITY SAID:

- More, improved **crosswalks**
- Wider, well maintained **sidewalks**
- **Separate paths** for bikes and pedestrians
- **Beautiful walking routes** with trees, landscape, public art
- **Enforcement** of pedestrian-related vehicle violations
- Improved **lighting** at sidewalks, walkways and intersections
- **Clean** sidewalks, walkways, and beaches
- More, maintained and visible crossing **lights in the road** (In-roadway Warning Lights or IWRL)
- **Traffic Signals** with shorter waits and more time to cross
- New, improved freeway **crossings** and pedestrian **overpasses**

COMMUNITY SURVEYS. The planning process included many surveys administered by City of Santa Monica staff, and by the newly-formed Santa Monica Walks!, a nonprofit organization engaged in making Santa Monica more walkable. Over 600 in-person surveys were completed during the Santa Monica Festival, National Night Out and other local events. Pedestrian-related questions were also incorporated into an annual city-wide resident survey. The City's Pedestrian Survey results provided information about the reasons people walk in Santa Monica (see Figure 1.1). Treasured walking places include the beach, Palisades Park, neighborhood parks, the Promenade, Main Street, and Montana Avenue. Many Santa Monicans see walking as recreation, though this Plan anticipates that the new EXPO light rail line will bring an increase in utilitarian trips as people walk to and from the station to make longer trips they used to make by car.

PUBLIC WORKSHOP #1. The first public workshop was held in January 2013 with over 70 participants. Attendees were asked about their walking habits and how they felt about walking in Santa Monica. The attendees offered thoughts on how walking could be made safer and more enjoyable for everyone, and what could be done to make them want to walk more.

Members of the public voiced great support for pedestrian culture at this kick-off meeting and were most concerned about safety. Many ideas were suggested to make walking more pleasant; such as additional lighting. There were also many suggestions for improving the pedestrian experience and safety at intersections: including crosswalks, speed limit reductions, scramble crossings, synchronized lights, and removal of allowed right turns on red for vehicles.

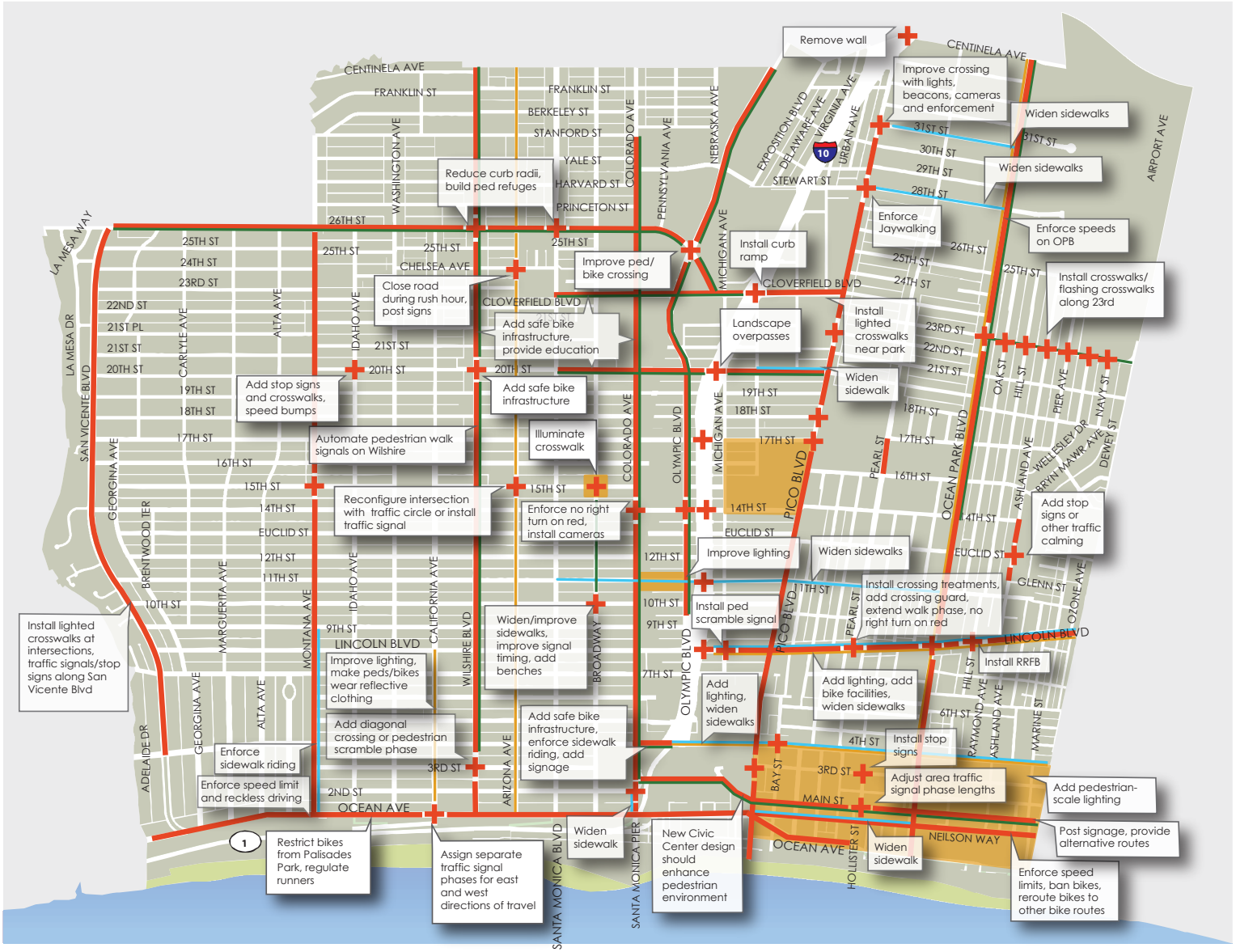
PUBLIC WORKSHOP #2. The second workshop was held on September 22, 2014, to discuss and collect comments on elements to be included in the draft Pedestrian Action Plan. The event was a formal meeting of the Planning Commission, with over 60 participants from the public.

Participants viewed a series of poster boards that summarized the work to date depicting existing conditions for pedestrians, demand for pedestrian facilities, and suggested projects and programs. The pedestrian design tool kit was also provided, allowing members of the public to comment on the proposed components of the Plan. An open microphone period welcomed comments and questions about people's key issues and gave input to the Planning Commission.

Participants were supportive of the plan, stressing the desire for the City to adopt a Vision Zero policy and to ratify the City's complete street practices as a formal policy. Many community members recommended education be targeted towards risky driver behavior rather than towards pedestrians given the data showing that fault frequently was due to a driver's failure to yield.

Support for specific elements of the plan included pedestrian scrambles, more crosswalks, leading pedestrian intervals, and focus on areas around schools. It was also noted that crossing over the I-10 Freeway was problematic due to heavy traffic volumes and a lack of infrastructure such as curb ramps. It was suggested that these impediments acted as a serious barrier to pedestrians, and the need for easy crossing would only increase once Expo light rail is operational.

Figure 1.2 Community Input from Survey Participants



Community members participated in an online survey in 2013. This map represents the suggestions.

ONLINE FORUM. The workshop feedback was used to create a unique online Town Hall forum hosted by Mindmixer (Now known as MySidewalk), where members of the public could participate in an extended multi-month discussion about the issues that most mattered to them. This allowed participants to exchange ideas about important issues and stay informed about the progress of the plan. The project team encouraged this discussion by having a contest called "The Question of the Week," where a guiding question was released each week for public discussion. A prize was awarded to the individual that participated the most in the discussion. During the six months that this online tool was active, the site received 2,665 visits, 1,476 unique visitors, and 12,714 page views. This process extended public input beyond the typical public meeting and survey tools, to gather diverse voices and opinions, and reduce barriers to participation.

This innovative online process generated a number of comments and suggestions about how to improve street crossings, calm traffic, improve lighting, and increase the capacity of sidewalk space for pedestrians (see Figure 1.2). The most frequent comment was to reduce conflicts between bicycles and pedestrians on City sidewalks. The idea with the second-most number of votes was improving pedestrian safety at intersections by implementing a number of enhanced pedestrian crossing treatments. Among those cited were: pedestrian scramble phases, in-pavement lighted crosswalks, signalized intersections, lead pedestrian intervals, raised crosswalks, curb extensions, median refuge islands, automated pedestrian signals, and flashing signs. All of these tools are described in this document.

Santa Monica Walks!

Santa Monica Walks! was founded in 2013 as an arm of Los Angeles Walks, a nonprofit agency actively engaged in making communities more walkable. Though still in its early stages, Santa Monica Walks! gathered community feedback about walking conditions in Santa Monica through surveys at the Santa Monica Festival, National Night Out and local outreach events. A group of dedicated and passionate residents, Santa Monica Walks! helps to raise awareness of walking issues which are often neglected or under-reported. Their efforts during the Pedestrian Action Plan helped to identify locations and corridors for improvement.

Community feedback gathered by Santa Monica Walks!

What do Santa Monicans say Makes Walking Uncomfortable?

Existing Barriers to Safety and Comfort Cited by Residents

- High vehicle traffic volumes
- High vehicle speed
- Inadequate crosswalk markers
- Too few pedestrian refuge islands or medians
- Streets too wide for drivers to see pedestrians
- Corners designed for fast turns-also lengthens crossing distance
- Signals don't provide sufficient pedestrian crossing time
- Presence of multiple transit stops: leads to driver distraction
- Low lighting levels

Lack of street furniture, trees, and buffer from traffic creates a hostile walking environment

Narrow sidewalk design in high-traffic corridors discourages pedestrian activity

High Traffic

Poorly Marked Crossings

Lack of Sidewalks

Heavy vehicle volumes and high speeds were frequently cited as barriers for pedestrians.

Community members spoke passionately about walking at forums throughout the City.

#1 Resolve conflicts between pedestrians, bicyclists and skateboarders by providing better bike facilities, enforcement and education

#2 Improve pedestrian safety with enhanced crossing treatments

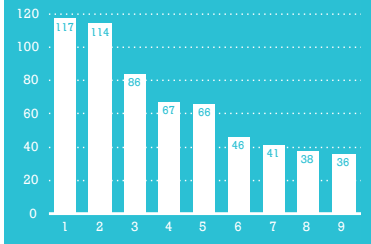
#3 Enforce laws to reduce dangerous driving, i.e. speeding, rolling stops, talking/texting on cell phones

#4 Widen sidewalks, parkways, and/or narrow roadways

#5 Improve pedestrian safety at crossings by adding crossing treatments, such as crosswalks, stop signs and curb ramps

#6 Improve lighting along sidewalks and paths for better visibility and security

#7 Improve the pedestrian environment at freeway crossings with landscaping, wider sidewalks, public art, hand rails, and enhanced crossings



Number of comments for top ideas.

#8 Add more trees and/or ground landscaping along streets and sidewalks for natural beauty, fruit, and habitat

#9 Clean and maintain condition of sidewalks so they are free of litter, debris, cracks, tripping hazards and dog waste

The most popular ideas submitted via the Pedestrian Action Plan website.

BROADCASTING INFORMATION. The City publicized the Pedestrian Action Plan effort in *Seascape* (the City's produced community newsletter), at public events, in meetings, with various boards, and through presentations to commissions and community groups. Comments received through these means mirrored those gathered through public meetings, online venues, and surveys, and have informed the shaping of this plan. A summary of priorities received in these different venues is as follows:

PRACTICES

- Vision Zero: Adopt a Vision Zero program. Find ways to get drivers to slow down
- Pedestrian Coordinator: The City should hire and fund a Pedestrian Coordinator
- Signal Timing and Enhancements: Add scramble crossings and eliminate right turns on red as part of ongoing signal maintenance
- Sidewalk Condition: Continue to maintain, keep clear, and improve the public sidewalk system in respectable condition

PROGRAMS

- Education Programs: Strong support for public education including drivers, pedestrians, and cyclists
- Activities that Promote Walking: Facilitate the creation of programs to support a pedestrian culture, encouraging walking and making it more enjoyable

LOCATION-SPECIFIC PROJECTS

- Improvements are needed to help encourage people to get out of their cars
- Enhance pedestrian visibility with curb extensions
- Street Crossing Enhancements: Provide more crosswalks, synchronized lights, pedestrian ramps, and lighting
- Wayfinding: Informational signage and markers for the Downtown and Beach
- Sidewalk Capacity: Locations where additional sidewalk width is needed
- Amenities: Support and many ideas for amenities that make walking more pleasant

COMMUNITY THEMES

The following four community themes emerged from the community engagement process.

THEME 1: Walking is part of the Sustainable Santa Monica Lifestyle and Enhances Wellbeing

THEME 2: More Pedestrians of all Ages and Abilities and Fewer Collisions

THEME 3: Making the Connections, Removing the Obstacles

THEME 4: Walking: a Shared Priority and a Shared Responsibility

Santa Monicans mostly want to feel safe and comfortable while traversing the City on foot. Priorities for walkway enhancements, crossings and City operations measures are included in this Plan.

SANTA MONICA STREETS EVOLVE WITH THE COMMUNITY

Streets have been a framing component of cities and towns throughout human history, dating back to the Roman Road and beyond. During the early days of the internal combustion engine, American road design increasingly focused on moving cars quickly and efficiently, often to the detriment of pedestrian safety and comfort. Today, walking is becoming more and more popular and there is a growing recognition of the benefits it provides to health and the environment. As more people are walking and riding on Santa Monica streets, we must provide them with a safe and efficient share of streets and intersections.

Santa Monica began its life as a modern city in 1875, before the automobile dominated the design of American cities. It depended on passenger and freight trains to move people and goods from Downtown Los Angeles to this new community by the edge of the ocean. Early photos show crowds of beachgoers alighting from those trains, enjoying the piers, bath houses and other amusements. Once they arrived, pedestrians dominated the beach area and Downtown.

The evolution of Main Street, the hub of the Ocean Park community, illustrates the evolving street usage in Santa Monica over the last 150 years. In the first photo (at right), employees of Lee H. Young Groceries at the corner of Hill and Main are leaning on the hitching posts for customers to park their horses. By 1926, Lee H. Young and the hitching posts were replaced by a brick building, fronted by a wide new boulevard that accommodated the new motor cars. During the 1970s, Main Street's original sidewalks were narrowed and the roadway widened to provide two vehicle lanes in each direction and parking. The most recent photo of Main Street shows a 21st Century transformation that responds to the demand for improved bicycle travel and a more walkable lifestyle as a sustainable alternative to automobile travel. High-visibility green bike lanes were installed in 2014.

Because of its ingrained car culture, Southern California has been slow to embrace the reorganization of its streets to prioritize the pedestrian, and many of today's drivers grew up in an era when the roadway was designed primarily for cars. A well-understood common language of safety for automobile operations in a high-pedestrian locale must become an inherent factor in the discussion of travel. Increased transit and rail options throughout the region are changing the language of driving. As the streets become repopulated with more pedestrians and bicyclists, travelers of all modes are learning to safely and responsibly share the road.

Early streets accommodated pedestrians and horse-drawn carts.

In the 70s and 80s, boulevards took on greater dimensions to accommodate vehicle flow, leaving little space for the pedestrian.

Recent attention has focused on bike lanes and pedestrian features in new streetscapes.

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CHAPTER 2: COMMUNITY THEMES

The Pedestrian Action Plan process engaged hundreds of Santa Monicans in a discussion about walking in their community. This input shapes the Plan by defining major themes and focus areas for future action. Community input is clear: Santa Monicans care deeply about walking in their community with concerns about the quality of walking, safety and the care of others. Santa Monica's walkability in a beautiful setting is a primary reason that people choose to live here. The Pedestrian Action Plan responds to this activity centered lifestyle by identifying the improvements that will support and enhance future walkability for all. The community outreach described in Chapter 1 identified four overarching themes that guide this Plan. They are:

(1) Walking is part of the sustainable Santa Monica lifestyle and enhances wellbeing

(2) More pedestrians of all ages and abilities and fewer collisions

(3) Creating a connected network for walking and removing the obstacles

(4) Roadway safety for all users is a shared priority and a shared responsibility

Each of these themes informs the Plan in a cross-cutting way, and each is described in the following chapter.

If approximately **10%** of **current** drivers shift to other means of travel, including **walking**, Santa Monica can achieve the LUCE goal of **no additional** peak hour afternoon automobile trips.

Residents who live in **car-dependent** communities have an increased risk for **health problems**, such as obesity, diabetes, and social isolation.

Theme 1. Walking is Part of the Sustainable Santa Monica Lifestyle and Enhances Wellbeing

"The one thing that will make Santa Monica more walkable is more stores and services within comfortable walking distance of people. To get more businesses, more customers are needed. Once you have a lot of people walking, everything else will follow: sidewalk enhancement, pedestrian awareness for drivers, etc. If there are stores, restaurants, services, yoga studios a hop away, people will walk."

-Thomas F., Community Survey

Santa Monicans like to walk, and this natural inclination supports goals of a healthy, sustainable lifestyle. Residents perceive that walking raises their quality of life. Time and time again, community members who contributed to the Pedestrian Action Plan spoke passionately about walking as a way of staying healthy, keeping fit, and recharging their batteries. Walkers get a workout while enjoying Santa Monica's exquisite natural scenery, and they save money by driving less.

Many schools, local institutions, and employers have embraced walking as a means to combat obesity with physical activity. Starting the day with walking improves students' readiness to learn and employees' ability to remain focused and energized. It is estimated that 31 percent of Santa Monica elementary and middle schools students walk to school.

Walking just 30 minutes every day can increase cardiovascular health, strengthen bones, reduce excess body fat, and reduce the risk of developing conditions such as heart disease, type 2 diabetes, osteoporosis, and some cancers. Unlike most exercise programs, walking is free, doesn't require any special equipment or training, and is available to everyone.

To walk in your own neighborhood offers social benefits that extend beyond physical health. The informal social interaction that comes with walking helps people develop connections and a sense of belonging, supports civic involvement, and empowers community members with a heightened sense of security in their surroundings. These emotional and intellectual factors reduce isolation and promote wellbeing.

Fewer than half of the Santa Monica residents polled for the Wellbeing Project in 2014 get the recommended amount of daily physical exercise. Only about a third of U.S. adults reach the recommended level of physical activity of 30 minutes five times a week. The National Center for Health Statistics reports that on average, every minute of walking can extend a life by 1.5 to 2 minutes, and walking for 30 minutes, 3 to 5 times per week can reduce the symptoms of depression by 50% .

Theme 2. More Pedestrians of all Ages and Abilities and Fewer Collisions

"Let's get to a place where we don't tolerate any accidents whether vehicles, cyclists, pedestrians, whatever."

-Table comment, Public Workshop

Not only is walking a healthy lifestyle choice for the individual, but choosing to walk instead of driving is a healthy choice for the entire community. Ensuring that walking to nearby destinations is pleasant, comfortable and safe is one of the best ways to support sustainable transportation choices, help neighborhood businesses, and promote the overall sustainability of the Santa Monica community. Short vehicle trips emit almost twice the carbon dioxide per mile compared to longer trips, yet over 40 percent of trips in LA County are shorter than 2 miles. In Santa Monica, over 65 percent of Santa Monicans live within a 5-minute walk of goods, services and jobs, representing a significant opportunity to reduce CO_2 emissions through greater rates of walking.

Walking is enjoyable, and it is good for everyone at all stages of life, whatever the ability or income level. When people walk in Santa Monica, they should be comfortable and safe, regardless of their age, ability, neighborhood, or economic status. This will foster a healthier community for everyone.

The Santa Monica Pier hosts **6,000,000** Walkers Per Year

At different stages of their lives, people have changing needs for safety and comfort while walking. To recognize this, Santa Monica pathways should be designed to serve walkers of all abilities and ages, from 8 to 80 and beyond. Whereas high visibility is critical for children, smooth surfaces and curb ramps become priorities for the elderly and families with strollers. With 5% of Santa Monica residents older than 80 and 8% younger than 9, all pathways should accommodate the needs of all these users, so a child and grandparent can walk together.

Santa Monica is a City that pays attention. When a pedestrian in Santa Monica perishes from a preventable collision, the whole community mourns, and there is a focus on preventing future collisions. In March 2015, the Santa Monica City Council directed action on a Vision Zero policy to eliminate all roadway fatalities. This policy guides many of the safety improvements and facility upgrades envisioned in this Plan.

With a mostly flat topography and year-round temperate climate, Santa Monica streets carry a lot of walkers. According to the 2011-2013 American Community Survey, almost 2,500 Santa Monicans walk to work, representing roughly 5% of all commuters. This is almost double the county, statewide, and national rates. In fact, nine City intersections, mostly located in Downtown, carry more pedestrians than vehicles during the peak hour. This high level of pedestrian activity is something to celebrate and cultivate, and it underscores the need for safe and comfortable pedestrian facilities.

Residents cited Downtown, the Pier, the beach and Main Street as popular walking destinations, and the numbers support it--the Santa Monica Pier alone hosts six million walkers a year. The intersection of Ocean and Colorado Avenues has the greatest number of pedestrians in the City and averages nearly twice as many pedestrians as motorists daily. Wilshire Boulevard, Broadway, and Fourth Street also carry heavy pedestrian volumes, and citywide pedestrian counts rose 20 percent from 2011 to 2013. The arrival of the Expo Light Rail has the potential to transition thousands of car commuters into rail riders, who will walk the City's streets in far greater numbers than today.

In workshops and surveys, participants of all ages and abilities were enthusiastic about educational programs, infrastructure, and encouragement to increase walking. Many Santa Monica residents expressed interest in changing their daily routines to integrate walking if conditions were right. In turn, they noted that pedestrian safety remains a top concern. Conflicts between people walking and driving continue to make pedestrians uneasy, especially at street crossings and at night.

About **70%** of all pedestrian collisions involve a violation by the **driver** of a passenger car.

Despite the City's reputation as a walking environment, 40% of residents stated they are not comfortable walking in the City. This reported discomfort is more than a perception. As part of this planning process, the City completed an in-depth analysis of all injury collisions involving pedestrians between 2001 and 2010, as detailed in Chapter 4. This analysis showed that 965 pedestrian-related collisions occurred, resulting in 995 injuries and 23 deaths (excluding the tragic 2003 Farmers Market incident). An analysis of existing conditions shows that improvements can be made to address the concerns of those that do not feel comfortable walking in Santa Monica.

An analysis of City pedestrian collision rates shows a relatively small number of the city's streets and intersections account for the majority of all collisions. Nine of the City's major travel corridors showed higher collision rates per mile when compared to the City overall. Seven of the nine road segments with the most collisions were major east/west corridors where automobiles tend to move quickly during off-peak hours due to wide roadways and synchronized traffic signals. Downtown has the highest density of pedestrian collisions in the City, and 67 percent of these collisions occurred while pedestrians were in the crosswalk. This suggests that these intersections should be high priorities for safety improvements, as called for in the Pedestrian Action Plan's policies and actions.

Drivers entering Santa Monica must be reminded to be more alert in the City's multi-modal environment because the primary cause of pedestrian-involved collisions analyzed for this Plan is a high rate of driver failure to yield. This Plan includes tools such as educational programs and materials to bring all drivers' attention to the pedestrian heavy city they drive in, increasing awareness and safety. The community and stakeholder engagement process resulted in requests to support heightened visibility of pedestrians through sidewalk improvements, signage, and education. Participants called for greater enforcement of traffic rules, and recommended increased police foot-patrols, and higher penalties for moving violations, with specific suggestions for locations to observe unsafe driving.

Figure 2.1 Health and Sustainability Analysis

Theme 3. Making the Connections, Removing the Obstacles

"People commuting to work often have to cross pedestrian barriers that leisure walkers can avoid. Special consideration should be given to pedestrian barriers such as major intersections, freeway passes, and low light areas that commuters use to access transportation hubs."

-Rebecca R., Community Survey

Citywide pedestrian counts rose **20%** between 2011 and 2013.

When people make choices about walking or driving, they consider factors such as convenience, safety, wellbeing, and the time it will take to get to their destination. To allow people to make the healthy and sustainable choice to walk, the network of pathways must be complete, connecting walkers to their destinations. Santa Monica has many beautiful streets where walking is an enjoyable experience, but there are also gaps and barriers that dissuade people from the journey. These obstacles may be gaps in the infrastructure, a lack of amenities such as lighting or traffic corridors with challenging crossings.

Santa Monica's lovely tree-lined residential streets are crisscrossed with boulevards and avenues that move large volumes of local and regional traffic. As areas of commerce and transit, these corridors are often destinations for neighborhood walkers, but also function as barriers for them. Walkers faced with intimidating conditions, due to high volume or fast traffic and low quality pedestrian infrastructure, may choose to drive instead. Outreach and analysis shows that improving connectivity across traffic corridors, and providing an efficient, high functioning pedestrian grid, is a priority to Santa Monicans on par with maintaining the vehicle network.

Community members expressed considerable concern about their ability to access key destinations by foot during the day or night because of barriers. Residents asked for enhanced connections to destination points, including the three future Expo stations. Respondents overwhelmingly supported overcoming these barrier conditions by enhancing sidewalks, bridges, and pedestrian pathways, improving crosswalks both in general and at specifically identified intersections. Some of the ideas proposed by community members include:

- Pedestrian scramble phases,
- In-pavement lighted crosswalks,
- Leading pedestrian intervals,
- Raised crosswalks,
- Improved nighttime lighting, curb extensions,
- Reduced intersection radii, and
- Eliminating right turns on red.

A lack of sidewalks on Olympic Boulevard severely restricts pedestrian movement through the Bergamot Plan area.

Aesthetics are key to making the Third Street Promenade an enjoyable walking experience.

THE FOLLOWING INTERSECTIONS ARE EXPECTED TO ATTRACT HIGHEST LEVELS OF PEDESTRIAN ACTIVITY AND ARE CRITICAL TO NETWORK CONNECTIVITY:

- Colorado Avenue at Ocean Avenue
- Colorado Avenue at 4th Street
- Lincoln Boulevard at Pico Boulevard
- Lincoln Boulevard at Ocean Park Boulevard
- Wilshire Boulevard at 14th Street
- Wilshire Boulevard at 26th Street
- Santa Monica Boulevard at 20th
- Colorado Avenue at 17th Street
- Olympic Boulevard at 26th Street

The single biggest obstacle to the pedestrian network is the Interstate 10 Freeway which has only nine crossings in the City. During outreach conducted for the Pedestrian Action Plan, current residents expressed frustration that many of the existing freeway crossings lack pedestrian infrastructure such as curb ramps, adequate lighting, and amenities. The freeway crossings will become challenging for more people as pedestrians seek to access the Expo Light Rail line, which closely parallels the freeway.

Additional challenges occur after dark on streets with poor lighting, especially in the shorter days of winter. Current walking routes to bus stops can take people out of their intended direction of travel, and need close attention. Implementation of updated lighting will aid pedestrian safety and convenience.

This Pedestrian Action Plan examines people's travel patterns, existing pedestrian infrastructure, and bus and rail transit access to identify connectivity gaps for immediate resolution. Priorities focus on areas where short-term improvements enhance safety, aesthetics, and provide greater accessibility to the highest number of pedestrians. The analytic methodology is used to determine where to locate improvements to address the City's greatest connectivity challenges as well as to enhance safety for the large volume of pedestrians connecting to transit hubs. Identifying these priority locations based on high usage and/or key infrastructure obstacles helps ensure cost-effective improvements that can measurably improve walking conditions.

Paying attention to aesthetics is also important to making walking enjoyable. To truly remove obstacles and create an optimal pedestrian network, the City will promote urban design that addresses private development, public infrastructure, and landscaping. Streets and sidewalks are public open spaces that should serve everyone with the same high quality as Santa Monica parks and cultural facilities.

Theme 4. Walking: A Shared Priority, A Shared Responsibility

"When you are behind the wheel of a car, you should think about how you are the guardian of every person on the street. Pedestrians should be cautious, but it's the drivers who are sitting behind a ton of steel. What's the rush?"

- Esther L., Public Workshop

At some point during every trip, everyone is a pedestrian, whether walking to school or walking from a parking lot to the front door of a grocery store. A safe pedestrian realm is a universal need and a shared responsibility. Whether walking for recreation or by necessity, Santa Monicans should feel comfortable, seen, and respected in the roads.

Vision Zero Santa Monica requires that individuals living or visiting the community need to take responsibility for their actions and adjust their behavior accordingly, to bring traffic fatalities down to zero.

Community members expressed that the shared sense of civility and responsibility for everyone on the street has eroded in recent years. Santa Monica must be innovative in creating a dialogue of respect and courtesy that recognizes that Santa Monica travelers make their journeys in a variety of ways. A "multilingual" safety strategy must be developed that reaches all road users.

Shared responsibility can begin with a coordinated community response to data showing that more than two-thirds of pedestrian fatalities result from driver error. A strong desire for safety for all users emerged from the community outreach process, and was supported by the Council's 2015 action to embrace Vision Zero policy. The identification of infrastructure gaps, and the City's commitment to prioritizing pedestrian improvements with proven designs to minimize collisions are the first steps to implementing the improvements that solidify an optimal walking network. This process also includes looking at multiple actions to slow the speed of autos as they progress through neighborhood streets and commercial areas.

Community members consistently report that drivers, pedestrians, bicyclists, and skateboarders often disregard the 'rules of the road.' While natural to point to the behavior of others, everyone in Santa Monica needs to evaluate their own behavior and pledge to take responsibility for their actions.

To fully embrace being a Vision Zero community, the City's actions must reinforce regulations, support meaningful enforcement of traffic laws, and change the physical environment. Collision report data and informed operations strategies will help local law enforcement target the major causes of pedestrian-related injury, and will guide City departments who have a role in supporting pedestrians. Consistent statistics will help define priorities by location and type of violation.

Chapter 5 of the Pedestrian Action Plan provides a full implementation strategy for infrastructure, operations, and data standards to ensure the most efficient identification of future problem areas.

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CHAPTER 3: GOALS + POLICIES

Goals and policies translate community input, priorities and shared understanding into aspirational language that can guide future action and decision making. Goals define the future desired conditions and policies identify methods to achieve them.

Using the community themes as an initial framework, the goals and policies in this chapter support the City's vision of creating a safe and healthy pedestrian network. The goals of the Pedestrian Action Plan facilitate policy support for investments in the pedestrian network that will reduce pedestrian-related collisions. The Pedestrian Action Plan proposes that Santa Monica be at the forefront of pedestrian-focused street design, operations and education, with specific improvements. The eight goals are highlighted with supporting policies.

Goals of the Pedestrian Action Plan

1

VISION ZERO. The safety of people walking in Santa Monica is a shared responsibility, so actions target the elimination of collisions.

2

A HEALTHY COMMUNITY. Streets and sidewalks are designed to promote the healthy, active and safe Santa Monica lifestyle.

3

COMMUNITY COMPASSION. Citywide investments foster a sense of community by supporting people of differing abilities and promoting social equity.

4

SUSTAINABILITY AND STEWARDSHIP. More people walk in Santa Monica than ever before, which promotes environmental sustainability and stewardship of our natural resources.

5

WALKING AS THE FIRST CHOICE. Santa Monica makes transportation, land use and building design decisions that make walking a logical first choice transportation option for those who are able.

6

A BARRIER-FREE NETWORK. Santa Monica has a pedestrian network that connects transit, bicycling and shared parking options.

7

PEDESTRIAN AWARENESS AND EDUCATION. The community has a high awareness about safety, the benefits of walking for good health, and the viability of walking in Santa Monica.

8

COORDINATED CITY EFFORTS. City departments work together on activities that affect walking.

Goal 1: Vision Zero. The safety of people walking in Santa Monica is a shared responsibility.

VZ 1- Implement Vision Zero Santa Monica, challenging City staff and community members to eliminate all preventable fatalities and severe injuries from roadway collisions within the next ten years.

VZ 2- Produce a regular public progress report on Vision Zero Santa Monica.

VZ 3- Continually increase the quality of pedestrian-involved collision data through interagency data agreements, and on-going Police Department training on collision reporting and data collection strategies.

VZ 4- Share data with the City's Well-Being Project and other publicly accessible data sharing initiatives.

VZ 5- Continue to review Primary Collision Factor (PCF) data and continue monthly directed enforcement efforts to address the most common PCFs.

VZ 6- Implement the Plan's recommended infrastructure improvements and conduct before and after evaluation of key projects.

VZ 7- Institutionalize pedestrian awareness in all drivers' education programs, including training for professional drivers.

VZ 8- Institutionalize street safety education for children K-12 in partnership with the Santa Monica-Malibu Unified School District.

VZ 9- Adopt guidelines and identify circumstances for the installation of Audible Pedestrian Signals.

VZ 10- Continue to explore designs to increase the probability that drivers will yield the right-of-way in crosswalks.

VZ 11- Provide and seek training on current and best practices of enforcement actions and awareness campaigns that reduce Failure to Yield behavior by drivers.

VZ 12- Discourage adults from cycling on sidewalks through signage and better provision of on-street bicycle facilities; consider policy change to allow school age children to ride on the sidewalk.

Multiple modes interacting safely.

SUPPORTING POLICIES FROM SANTA MONICA'S LAND USE AND CIRCULATION ELEMENT

T7.2 Continue to enhance **street lighting** for pedestrians.

T7.3 Continuously implement **technology** to improve the pedestrian environment, including pursuing the latest innovations.

HOW DOES "VISION ZERO" AFFECT OTHER GOALS AND POLICIES?

GOAL 2 Injury prevention is a key component of health.

GOAL 3 Vision Zero is driven by compassion for our friends, family, and community.

GOAL 4 Pedestrian safety encourages walking and its environmental benefits.

GOAL 5 Making walking the first choice requires a shared commitment to safety.

GOAL 6 For transit, bicycling, and shared parking to be successful, people must be comfortable walking.

GOAL 7 Community awareness supports a safe environmental for all road users.

GOAL 8 Vision Zero is a goal for all City departments.

Goal 2: A Healthy Community. Streets and sidewalks are designed to promote the healthy, active and safe Santa Monica lifestyle.

POLICIES

HC 1- Partner with the Well-Being Project to study and act upon the impacts of street and walking improvements on public health and social wellbeing.

HC 2- Partner with community organizations on active transportation programming and advocacy.

HC 3- Monitor neighborhood walkability, health and equity indicators to identify areas that would benefit from actions in the Pedestrian Action Plan.

HC 4- Adopt a complete streets policy which will solidify Vision Zero and consider a timeline for its successful implementation.

HC 5- Develop street standards to encourage the routine incorporation of pedestrian improvements in all projects.

HC 6- Support initiatives focused on reducing health disparities between different segments of the community through walking and active transportation.

Safe Routes to School increases physical activity for children and young adults and encourages healthy travel behavior down the road.

SUPPORTING POLICIES FROM SANTA MONICA'S LAND USE AND CIRCULATION ELEMENT

T6.1 Create appropriate enhancements to **pedestrian crossings** at key locations across all major boulevards.

T6.2 Explore **shared street designs** in the designated areas.

T6.3 Seek to improve the quality of the designated **recreation corridors**.

T6.4 Use a combination of physical improvements and programs to **promote** walking.

Goal 3: Community Compassion and Equity.

Citywide investments foster a sense of community by supporting people of differing abilities and promoting social equity.

CC 1- Focus capital projects to address community needs in a mix of project locations throughout the City.

CC 2- Use universal design principles in City projects in order to provide a pleasant experience for persons with disabilities and create a comfortable and safe walking environment for people from 8 to 80.

CC 3- Seek input from the Disabilities Commission, Commission for the Senior Community, and other stakeholders on the highest priority locations for improved access, and most desirable design solutions.

CC 4- Encourage partnerships among transit providers, City agencies and community-based organizations to expand the 50+ and Senior Programs, including options focused on walking for transportation and recreation.

CC 5- Provide programming, policy, and project materials in English, Spanish, and other languages as appropriate.

Street design should provide ample access for all people.

CC 6- Hold public design competitions focused on activating under-used spaces or encouraging walking through other creative active transportation programs and fund their implementation.

CC 7- Support Santa Monica's organizations, groups, clubs, and civic associations to participate in temporary urban interventions such as open streets events, Park(ing) Day, and parkway greening.

CC 8- Provide access to vibrant, healthy, walkable places for people in all socio-economic classes.

CC 9- Reinforce the City's community input process, currently the Go System, and better coordinate the City's response to requests.

SUPPORTING POLICIES FROM SANTA MONICA'S LAND USE AND CIRCULATION ELEMENT

LU19.2 Design and operate streets with **all users** in mind including bicyclists, transit users, drivers and pedestrians of all ages and abilities.

Goal 4: Sustainability and Stewardship. More people walk in Santa Monica than ever before, which promotes environmental sustainability and stewardship of our natural resources.

SS 1- Incorporate open space, street trees and permeable or planted areas, and pedestrian capacity and amenities, in street improvement projects as appropriate.

SS 2- Encourage walking by designing quality public spaces with supportive amenities such as benches, public art, and child-friendly areas in new projects.

SS 3- Raise trip reduction goals, objectives, and mandates based on increased availability of public transit stations (including Metro and Big Blue Bus), walking, and biking infrastructure.

SS 4- Programs to encourage walking as an alternative to vehicle trips to reduce greenhouse gas emissions.

Street trees and vegetation enhance the walking environment and promote sustainability.

SUPPORTING POLICIES FROM SANTA MONICA'S LAND USE AND CIRCULATION ELEMENT

LU1.6 Complete Green Streets and Open Spaces. Encourage neighborhood streets to function as **neighborhood gathering places** that promote sociability and human interaction, and feature pedestrian- and bicycle-friendly design, within a rich canopy of street trees and parkway landscaping.

LU2.1 Redirect Growth. Redirect growth away from residential neighborhoods onto **transit corridors**, where new uses are served by convenient transportation networks.

LU2.5 Vehicle Trip Reduction. Achieve vehicle trip reduction through comprehensive strategies that designate land uses, establish development and street design standards, implement sidewalk, bicycle and roadway improvements, expand transit service, manage parking, and strengthen **Transportation Demand Management** programs that support accessibility by transit, bicycle and foot, and discourage vehicle trips at a district-wide level. Monitor progress using tools that integrate land use and transportation factors. Increase bicycle and pedestrian connectivity in transit districts and adjust bus and shuttle services to ensure success of the transit system.

Goal 5: Walking as the First Choice. Santa Monica makes transportation, land use and building design decisions that make walking a logical first choice transportation option for those who are able.

Well-designed pedestrian spaces are comfortable, attractive and safe.

WC 1- Create on-going pedestrian funding in the CIP Process. Prioritize pedestrian project funding in the CIP, using City funding, development agreements and grants to fund new pedestrian facilities either independently or alongside facilities for biking and public transit.

WC 2- Develop a pedestrian priority public benefit category for inclusion in Development Agreements.

WC 3- Expand the mission of No Net New PM Peak Hour Trips through initiatives such as creating high-quality pedestrian environments around Expo stations, encouraging a transportation allowance for pedestrians, and including walking in trip planner programs. Incorporate walking priority in Transit Management Organization services and marketing.

WC 4- In partnership with non-governmental organizations, hold walk audits at least one time per year for the purpose of informing capital project funding.

WC 5- Pursue and support measures that institutionalize walkability within the Municipal Code and other City documents.

WC 6- Update City design guidelines and street standards to include best practices for pedestrian safety and comfort.

WC 7- Foster integrated residential and commercial walking programs.

WC 8- Increase the number of children walking to school regularly by expanding the Safe Routes to School Program.

WC 9- Host community events that promote walking to public and private gathering places such as the Promenade, libraries, etc.

SUPPORTING POLICIES FROM SANTA MONICA'S LAND USE AND CIRCULATION ELEMENT

T6.5 As large industrial blocks are redeveloped with more urban uses, **increase connectivity** through direct and safe pedestrian connections.

T6.6 Ensure that all planning processes, such as neighborhood and specific plans, identify areas where **pedestrian improvements** can be made, such as new connections, increased sidewalk width, improved crosswalks, improved lighting, and new street furniture.

Goal 6: A Barrier-Free Network. Santa Monica has a pedestrian network that connects transit, bicycling and shared parking options.

BN 1- Implement first-last mile walking connections to transit.

BN 2- Support projects that improve pedestrian connectivity, even if they may reduce maximum vehicle flow speed.

BN 3- Address pedestrian connections across the I-10 Freeway to close gaps in the pedestrian network and improve access to transit.

BN 4- Prioritize improved access to Big Blue Bus stops.

BN 5- Sustain efforts to secure funding for projects within the timelines called for in the Plan.

BN 6- Improve pedestrian access to the beach and other major destinations through signs, sidewalk retrofits and other innovations.

BN 7- Improve Safe Routes to School including actions to deploy crossing guards, build projects, and develop programs to connect students walking to school.

BN 8- Foster pedestrian connections within neighborhoods that encourage community interaction and reinforce community belonging.

BN 9- Promote safe passage and continuous connectivity for pedestrians during construction projects by providing ADA compliant temporary pedestrian walkways, if the sidewalk must be closed.

BN 10- Hold competitions, support case studies by students and other organizations, and encourage local groups focused on activating under-used spaces or encouraging walking through other creative active transportation programs and fund their implementation.

BN 11- Link Santa Monica's neighborhoods with comfortable routes to transit.

BN 12- Expand pedestrian facilities throughout Santa Monica where appropriate, retain and improve those that exist and eliminate barriers for those with disabilities.

SUPPORTING POLICIES FROM SANTA MONICA'S LAND USE AND CIRCULATION ELEMENT

T8.1 Consider the use of impact **fees** or development fees for pedestrian improvements.

T8.2 Encourage the development of **Business Improvement Districts** or Community Benefits Districts for Downtown, the transit village and Neighborhood Commercial areas and leverage pedestrian improvement funds through those districts.

T8.3 Facilitate **Crime Prevention through Environmental Design** (CPTED) principles in the maintenance of landscaping and building design standards.

LU8.4 Roadway Management. Prioritize investment in amenities for pedestrian, bicycle and transit movement to facilitate **green connections** and mobility.

Overcrossings provide critical pedestrian connections from Ocean Avenue to the beach.

Goal 7: Pedestrian Awareness and Education.

The community has a high awareness about safety, the benefits of walking for good health, and the viability of walking in Santa Monica.

PE 1- Implement at least one major pedestrian education, and/or encouragement program per year in the community.

PE 2- Include outreach to residents and employees walking as a transportation option in Transportation Demand Management (TDM) programs.

PE 3- Partner with community-based organizations to improve knowledge of pedestrian safety issues.

PE 4- Implement a pedestrian education, and/or program to encourage more students to walk in SMMUSD schools.

PE 5- Utilize technology to provide community members with pedestrian information, updates, travel and routing information, and upcoming events.

PE 6- Encourage, permit, and support organized pedestrian events that support physical activity and spread awareness about pedestrian safety.

SUPPORTING POLICIES FROM SANTA MONICA'S LAND USE AND CIRCULATION ELEMENT

LU7.2 Trip Reduction. Work with the hospitals to create a TDM District and programs to comprehensively address **parking and trip reduction** goals, and to develop convenient connections between the hospitals and the Memorial Park Light Rail Station.

LU8.1 Transportation Demand Management. Require participation in TDM programs for projects above the base to **encourage walking**, biking, and transit, and to reduce vehicle trips. Engage existing development in TDM Districts and programs to encourage reduction of existing vehicle trips.

Public education increases awareness about safety and the benefits of active transportation.

Goal 8: Coordinated City Efforts. City departments work together to improve conditions for walking.

CE 1- Develop shared communications, data collection protocols, and systems so that improvements and programs for pedestrians can be coordinated across departments.

CE 2- Regularly review data on pedestrian patterns, including usage, enforcement and safety, using data that can be shared across departments.

CE 3- Utilize information from interdepartmental data and communications to target enforcement on behaviors that cause collisions.

CE 4- Develop road standards based on green, healthy, active street principles that improve pedestrian visibility and safety through a joint effort of the PW and PCD departments.

CE 5- Provide training for City staff on topics related to design principles for sustainable pedestrian design.

CE 6- Fund and fill a Pedestrian Coordinator position within the Planning and Community Development Department to provide the needed staff resources to implement Vision Zero Santa Monica, and other goals of this Plan.

CE 7- Ensure all departments that review plans minimize the duration of construction impacts and require ADA compliant pedestrian connectivity during construction.

CE 8- Maintain street trees and parkways; abate overgrowth to provide ample space for people walking.

CE 9- Develop projects and programs in collaboration with representatives from the Public Works, Community and Cultural Services, Police, and Planning & Community Development Departments.

CE 10- Adopt a Complete Streets Policy to guide interdepartmental efforts.

CE 11- Strive to ensure each City department understands the importance of improving the pedestrian environment is their responsibility.

CE 12- Incorporate pedestrian improvements in maintenance activities and budgets.

SUPPORTING POLICIES FROM SANTA MONICA'S LAND USE AND CIRCULATION ELEMENT

LU9.1 Performance Measures Tied to LUCE Goals. Establish **performance measures** tied to LUCE goals that address transportation, housing, neighborhood conservation, and a sustainable economy.

LU9.2 Citywide Review. Prepare a regularly published **report** evaluating the performance of the LUCE based on established performance measures. Coordinate the publication with the Sustainable City Report Card.

LU9.3 Adapt to Changing Conditions. Allow for **course corrections** in response to changing conditions. These adaptations could include revisions to LUCE policies and standards, reallocating resources, or "putting on the brakes" when necessary.

LU9.4 Coordinate Capital Improvements. Coordinate the City's **capital improvements** in specified transit-focused areas to integrate with desirable development.

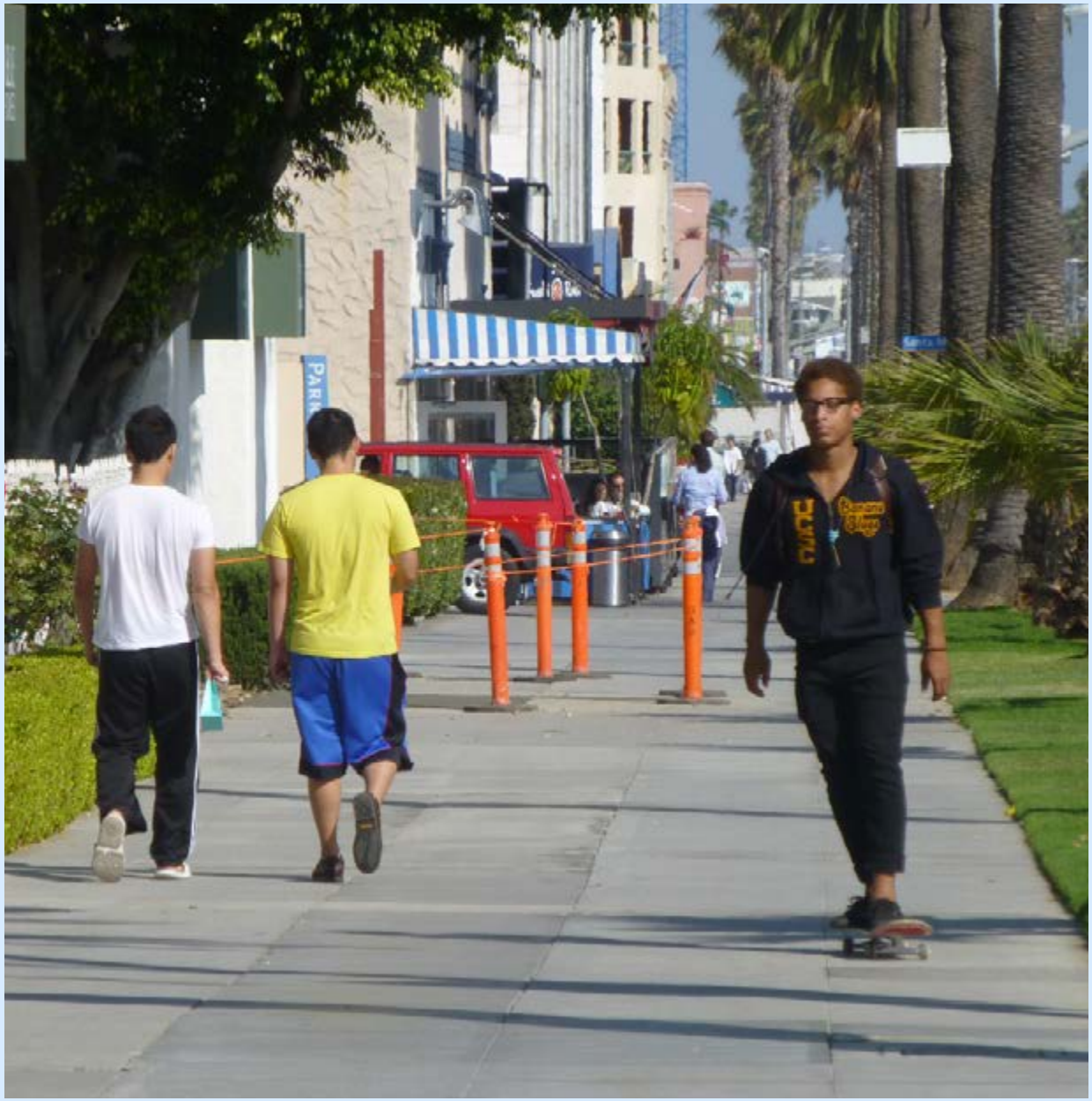
CHAPTER 4: EXISTING + FUTURE CONDITIONS

Community feedback has provided a framework for understanding the Santa Monica walking experience, and community members' experiences and stories inspired these questions: Where will future walking activity be highest? What routes will people walk to Expo Light Rail stations? Where are collisions most frequent? What is the role of driver age in collisions? To what extent are bicyclists involved in reported pedestrian collisions?

As activity, transit, and population patterns evolve, the means to achieve improvements to walkability must also evolve. Community ideas were paired with the results of transit access, sustainability, public health, and safety studies to propose actions that will effectively improve walking in Santa Monica. To achieve the community goal of an easy and safe walking experience requires evaluation of current and anticipated changes.

In this chapter, data from multiple sources are used to answer these and other questions to develop a more complete understanding of the state of walking throughout Santa Monica. This chapter includes:

- **4.1 Walking in Santa Monica** – How many people are walking and where?
- **4.2 Physical Conditions** – What is the current pedestrian environment?
- **4.3 Performance** – How well is the current pedestrian network and infrastructure working?



4.1 Walking in Santa Monica

Several methodologies were employed to assess where people walk – both today and in the future. Pedestrian counts show where people are already active based on counts taken at signalized intersections. The Pedestrian Action Plan compiled detailed land use, transit, and demographic information into a demand analysis that predicts areas where future walking trips will be generated throughout the City. This demand data, coupled with an analysis of the existing infrastructure and qualitative data regarding conditions in Section 4.3, will inform decision makers where investment is needed and help prioritize infrastructure improvements.

Pedestrian Counts and Survey Data

Pedestrian counts are conducted by the City biannually and show where most of the pedestrian travel is occurring throughout the day (see Figure 4.1). The greatest observed pedestrian volumes are in the Downtown, on Main Street, and on commercial areas of the City's major boulevards. High pedestrian volumes mirror the location of key destinations within the City. Many people are walking close to Santa Monica College and Santa Monica High School. Counts show that even the relatively lowest activity locations have significant hourly pedestrian demand. The walking experience at the Santa Monica Pier, beachfront, and Third Street Promenade is popular for residents and tourists alike. Santa Monica's 2013 Community Survey indicates 53% of residents walk daily in Santa Monica, with an additional 23% walking at least a few times a week.

Figure 4.1 Pedestrian Counts at Intersections

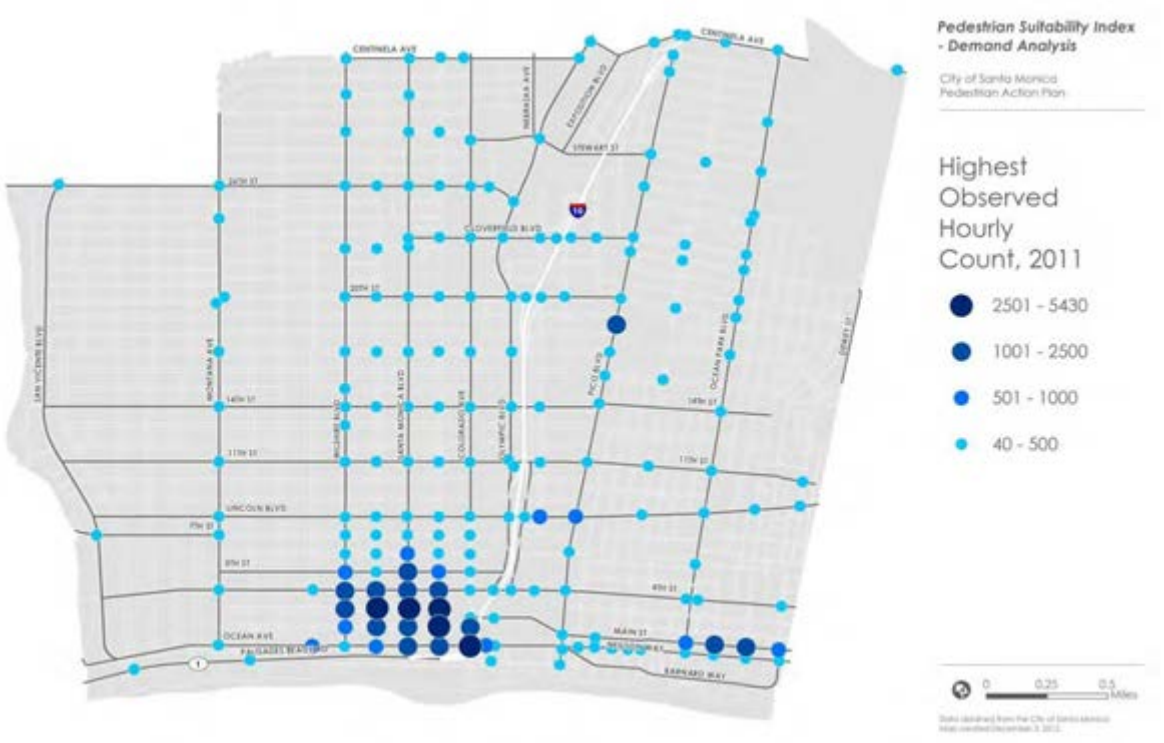


Figure 4.2 Weekday PM and Weekend Peak Hours Pedestrian Counts on Major Corridors

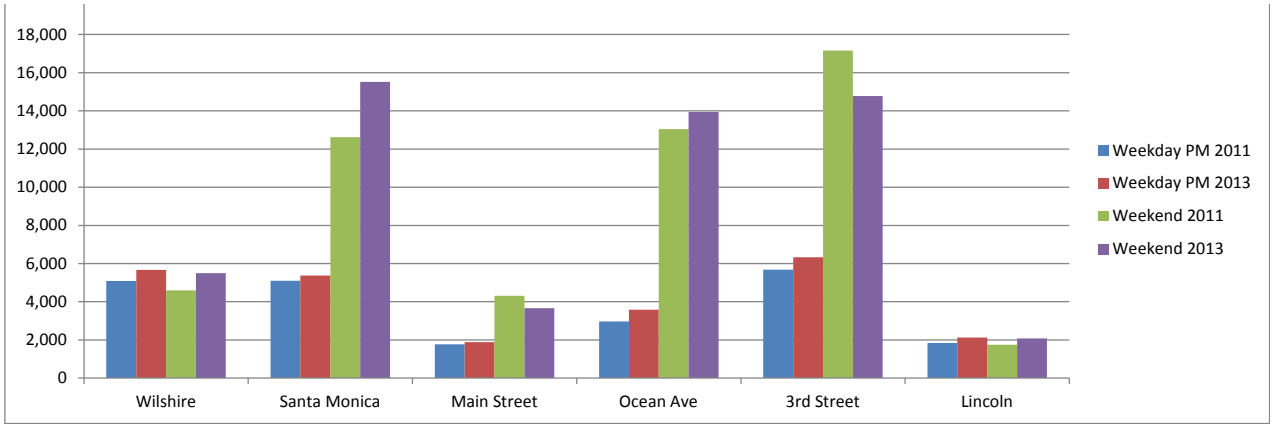


Figure 4.2 depicts peak hour pedestrian counts for several of the City's major travel corridors. The data was gathered during weekday PM and weekend peak hours. Between 2011 and 2013, total pedestrian counts increased 20 percent, and each location experienced an increase in pedestrian traffic. The greatest growth in both absolute and percentage terms is Santa Monica Boulevard which saw a 23 percent increase. Walking to school is also prevalent. During the 2012 Safe Route to School pilot program, four schools were surveyed which showed that collectively about 30 percent of the student population walked to school.

Pedestrian Demand Analysis

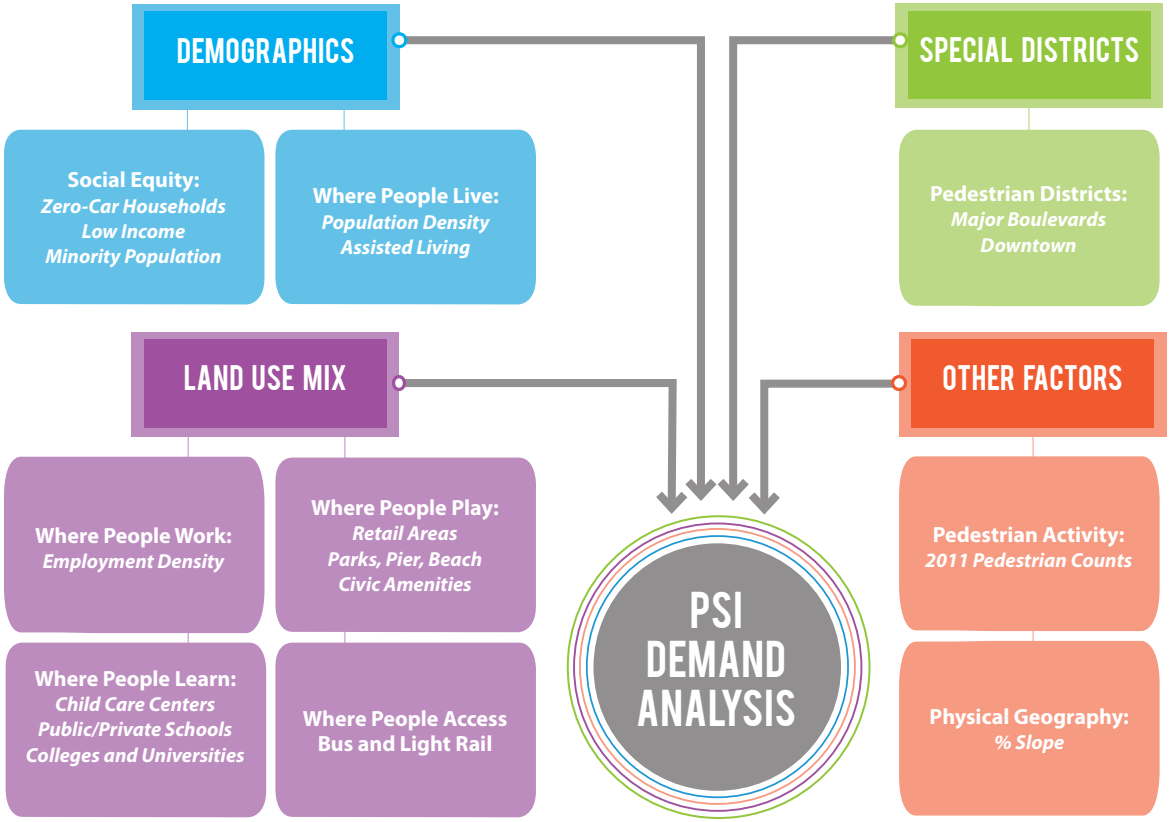
The Pedestrian Action Plan reviewed, mapped, and analyzed factors that would indicate where people walk.

Where people walk is a function of where they live and work, where they are going, and what type of trip they are taking. Overall pedestrian activity levels relate to where people live, work, go to school, shop, spend their free time, access transit, and the availability of personal resources, such as their income. Figure 4.3 illustrates the variables included in the demand analysis.

Figure 4.4 illustrates the locations of future walking demand as a function of land use and transportation features. The map combines previously described pedestrian demand factors into a weighted "heat" map to define expected high demand and improvement areas.

Approximately 18 percent of the city (1.5 square miles) is identified as having high estimated demand (shown in red). High demand areas represent a confluence in places where people live and work, key destinations, and locations with planned light rail. Moderate demand is seen in between high demand areas, representing pedestrian movement between, to, and from destinations.

Figure 4.3 Pedestrian Suitability Index Demand Analysis Inputs



While many factors affect walking, the single greatest impact will be from the arrival of Expo Light Rail. In areas where walking was already prevalent, Expo riders will add to pedestrian numbers. In areas like Bergamot and Memorial Park stations, Expo Light Rail will introduce a strong increase in demand for walking and pedestrian accommodations. Meeting new and increased demand is needed to promote walking as a sustainable activity as well as for safety.

As the number of people walking in the city increases, prioritizing improvements should start with the areas where people most want to walk. Improvements and pedestrian enhancements in these areas will impact a greater number of people and the better people feel about walking in these locations, the more likely they are able to choose walking as part of their daily routines.

Figure 4.4 Areas of High Expected Pedestrian Demand

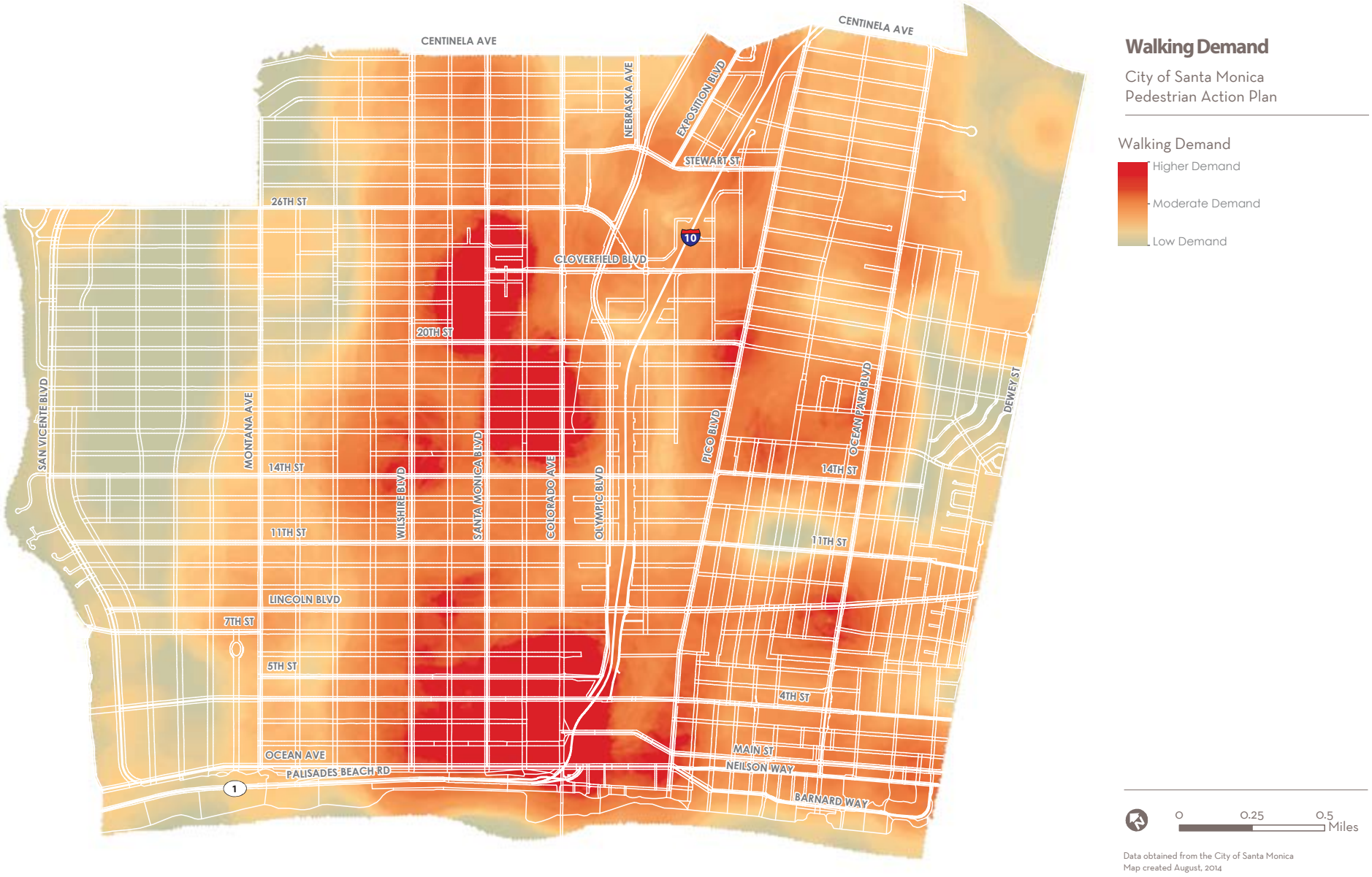
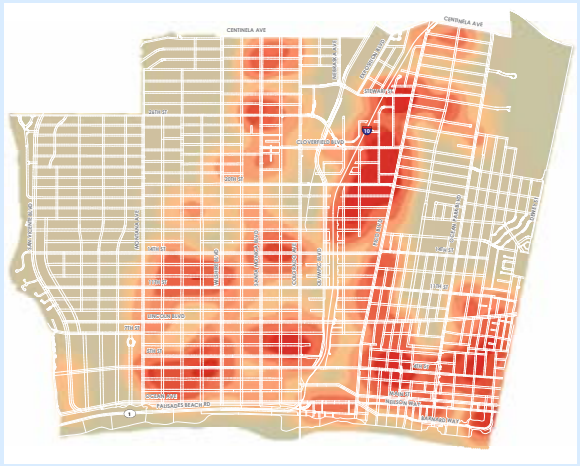


Figure 4.5
Population Density and Assisted Living Facilities



POPULATION AND HOUSING

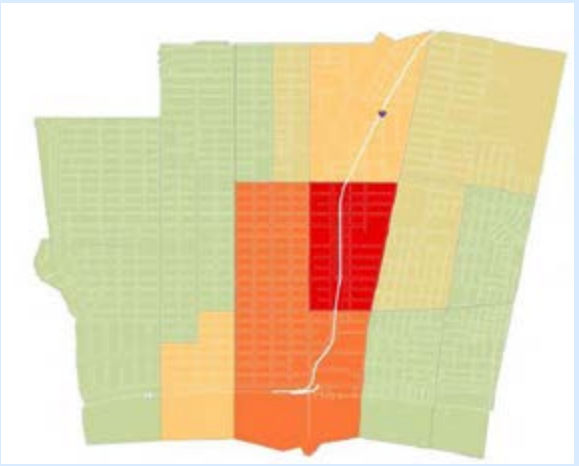
Demand for walking increases near where people live, and greater density can intensify that demand. Residential concentrations were determined using 2012 US Census block level population data with Santa Monica's average population density (15.66 people per acre) as a baseline. Areas that exceeded the baseline were identified. The greatest population density can be found in the Pico, Ocean Park, Downtown, Mid-City, and Wilmont neighborhoods. In these districts, we can expect to find greater numbers of people walking.

Figure 4.6
Bus Ridership and Planned LRT Stations

TRANSIT ACCESS

Transit stops generate localized walking trips as well as pathways to and from neighborhoods, schools, and activity centers. Santa Monica has existing major transit stops along Ocean Avenue and Wilshire, Santa Monica, Pico, and Lincoln Boulevards. Improving walkways to bus stops and light rail stations encourages transit use, connects city destinations, and improves health, traffic congestion, and greenhouse gas emissions.

Figure 4.7
Social Equity



EQUITY

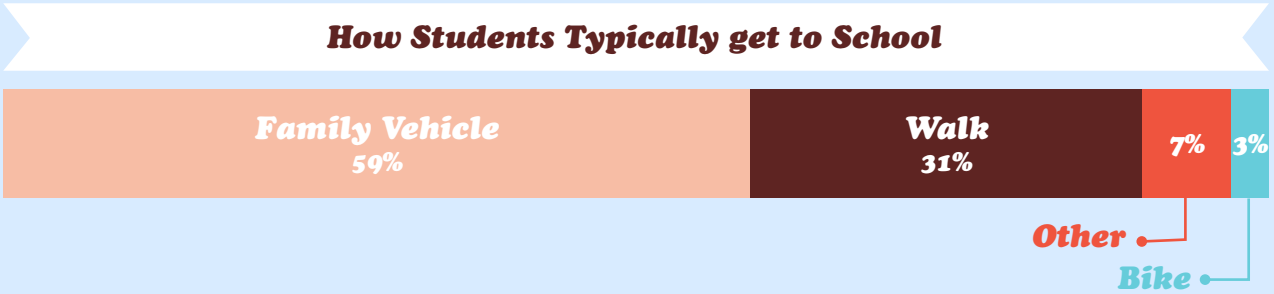
Households without cars, renter households, non-white and low-income households walk more on average. Social equity scores were generated by weighting these criteria equally. Results show the highest social equity scores in the Pico and Mid City neighborhoods, with a higher score representing greater social equity disparities. Santa Monica recognizes the need to prioritize pedestrian-oriented investment in sectors of the community where walking may be more critical and in neighborhoods where it will make the most difference to people.

Safe Routes to School

Residents felt strongly that students should be encouraged to walk or bike to school, and that they should feel safe doing so. Santa Monica's neighborhood-based schools, where most students attend the school closest to their home, gives most of the school population the opportunity to walk to school. In 2012, two middle schools and two elementary schools took part in a 'Safe Routes to School' program. It was determined that thirty percent of student enrollment within those four schools walked to school (see Figure 4.8). This is significantly higher than the 13 percent who walked nationally in 2009. By enhancing the network of streets that provide pathways to school, the City would improve neighborhood and school walkability and reduce vehicle trips on sensitive residential streets.

According to research published in the Journal of the American Planning Association in 2006, a 5 percent increase in neighborhood walkability is associated with a 6 percent reduction in vehicle miles traveled. Figure 4.8 shows the relationship between schools and walking in the city. The demand analysis identifies schools and the high walking demand areas surrounding each school site. (Figure 4.9) Improving the walking conditions and crossings in these higher demand areas would encourage families to walk to school, supporting goals for student health and reduced vehicle trips.

Figure 4.8 Student Counts, 2012



Source: Hand Tally Counts at Will Rogers Learning Community, Roosevelt Elementary School, John Adams Middle School, and Lincoln Middle School (September 2012)

Figure 4.9 Proximity to Schools

4.2 Physical Conditions

Pedestrian Physical Conditions

Santa Monica is fortunate to have a relatively consistent street and alley system that is advantageous to walking because it supports many easily navigated paths to destinations. The complementing alley network also significantly reduces the number of driveways a pedestrian must cross. Grid systems are extremely helpful for supporting transit and enabling the layering of networks that serve people walking, biking, and driving. The phyiscal presence of conditions that contribute or detract from comfortably using sidewalks or crosswalks was quantified through a Pedestrian Suitability Index supply analysis. Figure 4.4 describes the multiple inputs. And the maps in Figures 4.13 and 4.17 illustrate sidewalk and crossing suitability findings.

The Santa Monica grid pattern breaks down when it comes up against the I-10, since only a limited number of streets cross the freeway. Streets immediately north and south of Olympic Boulevard do not follow the fine-grain block pattern found elsewhere in the city, with large blocks and deadend streets in the Bergamot and Memorial Park areas. The barriers caused by the I-10 Freeway and the combination of Pacific Coast Highway adjacent to Palisades Bluffs are depicted in Figure 4.10. Overlaid with busy streets with higher speed limits, an image of locations where it is difficult to walk emerges.

Figure 4.10 Conditions that Deter Walking

TOP 10 BARRIERS THAT LIMIT PEDESTRIAN SAFETY AND COMFORT

- High vehicle traffic volumes
- High vehicle traffic speed
- Inadequate crosswalk marks
- Limited use of raised medians or pedestrian refuge islands
- Universal design limitations
- Wide turning radius corners
- General signal features
- Presence of multiple transit stops
- Dedicated bus lanes
- Low lighting levels

Source: Safetrec, 2010

Barriers in the City of Santa Monica

HEAVY TRAFFIC. Boulevards and streets with more than three lanes accommodate high levels of faster moving vehicle traffic that reduce pedestrian comfort. Large intersections with multiple through and turning movements create longer crossing distances, minimum pedestrian crossing timing, and conflicts with turning cars. At unsignalized intersections, the resulting flow of cars on boulevards provides only limited gaps in traffic for pedestrians to cross comfortably and an atmosphere where drivers feel pressured to maintain traffic flow, rather than yield to pedestrians at crossings.

SIDEWALK WIDTH AND BUFFERS. Sidewalks with utility equipment and ill-placed street furniture can make modestly-sized sidewalks difficult to use. Narrow sidewalks make passing another person or walking side-by-side difficult. A lack of street trees, planting strips or parking lanes bring pedestrians physically closer to moving cars. All of these conditions deter walking.

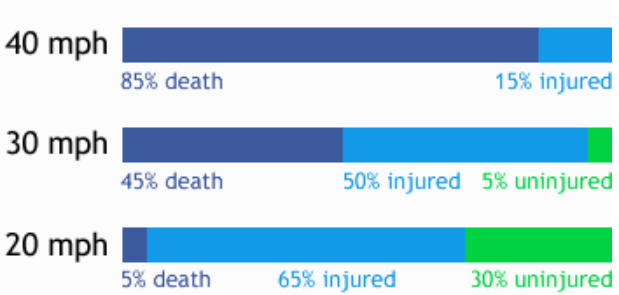
CROSSING TREATMENTS. Pedestrians often cross busy roadways outside of signalized intersections because of the long distances between crossings, particularly on commercial corridors such as Pico Boulevard, Colorado Avenue, Ocean Avenue and Olympic Boulevard. These crossings often require pedestrians to navigate several lanes of fast-moving traffic, typically with no refuge at the halfway point. Some stand-alone Santa Monica crosswalks installed at high pedestrian activity locations across 4-6 lanes, such as those along Wilshire and Santa Monica Boulevards, do not always provide comfortable crossing. High visibility crosswalks provide a clear indication to drivers that they should expect pedestrians, and also remind pedestrians that they are in a potential conflict zone. Studying opportunities for upgrading crossings with appropriate design guidance could improve crossing behavior and motor vehicle compliance.

TURNING RADII. Many of Santa Monica's major roadways have corners with a relatively large radius. Large turning radius corners result in increased vehicle speed, increased crossing distances, and extended time/distance exposure for pedestrians—factors associated with increased pedestrian injury. Urban environments typically use turning radii of 15 feet. Although larger turn radii make it easier for trucks and buses to turn, they also facilitate high speed turns by drivers in personal vehicles, and increase crossing distances and time exposure for pedestrians.

DEDICATED BUS LANES. The existence of traffic lanes dedicated to buses increases the predictability of bus service, leading to better service. Frequently the bus lanes are placed directly against the curb. A buffer in the form of on-street parking, planting strips or parkways, street trees and additional sidewalk width can counter the potential concerns about these facilities.

LIGHTING. Lighting at crosswalks and intersections is adequate throughout the city (as is required by State regulations). However, many community members expressed dissatisfaction with lighting along sidewalks. Poor lighting increases fears about personal safety and discourages pedestrian activity whereas quality lighting and appropriate placement can increase the comfort and safety of the pedestrian while improving the ambiance of the street. Major segments without pedestrian lighting are found at all I-10 underpasses and overpasses; Downtown; Wilshire, Santa Monica, and Ocean Park Boulevards; and Colorado Avenue; around SAMOHI; and the area around Woodlawn Cemetery.

Figure 4.11 Pedestrian Injuries at Impact Speeds



The relationship between pedestrian injury severity and motor vehicle impact speeds. Source: Federal Highway Administration

HIGH SPEED. Throughout the city, the posted vehicle speed is generally 25-35 mph. But 2013 surveys of speeds on major streets revealed that the prevailing speed is higher than the posted speed in many locations including parts of San Vicente Boulevard, Montana Avenue, Wilshire Boulevard, Santa Monica Boulevard, Ocean Park Boulevard, Ocean Avenue, Nielson Way, 4th Street, Lincoln Boulevard, 17th Street, and 20th Street. Community members often ask for strategies that reduce motor vehicle speeds, as they contribute to unpleasant walking conditions. In addition to regular enforcement of the speed limit, design strategies that reduce speeds may make streets more efficient for all roadway users and decrease both the probability and severity of collisions as higher speeds have been documented to result in greater likelihood of pedestrian fatalities and severe injuries (Figure 4.11).

Supply Analysis

Section 4.1 described the suitability of anticipated demand for pedestrian facilities. The Pedestrian Action Plan process also provided an analysis that provides a comprehensive snapshot of the quality and location of the existing pedestrian infrastructure. The infrastructure analysis evaluated sidewalk and crossing suitability. Figure 4.12 illustrates the multiple variables that went into each analysis.

The combined analysis of demand and supply provides an understanding of where it will be a challenge to accommodate rising pedestrian activity as people seek to connect places where they will live, work and play through walking and transit use.

Physical Analysis

Sidewalks

Sidewalk width, buffers between pedestrians and traffic such as parked cars or parkways, posted speed limit, presence of lighting and truck/transit routes are combined to identify the street segments where people might be discouraged from walking, shown in red on Figure 4.13.

While sidewalks of 12 feet wide exist on many commercial streets, these are also many of the locations with the highest anticipated demand. Comparitvely wide sidewalks are insufficient in these areas. The analysis indicates narrower sidewalks are sufficient in most residential heighborhoods when clearance is maintained.

Approximately 80 of 261 miles in the network, 31 percent, represent potential areas that may warrant sidewalk improvements such as increased pedestrian space that is sufficient for accommodating heavy use or, increasing the separation between pedestrians and adjacent traffic. Most of the remaining roadways without sidewalks are located in the evolving industrial area in the eastern part of the City, and on heavily vehicle-traveled streets such as Olympic Boulevard. These gaps may require pedestrians to walk out of their way or walk in the street, deterring walking and creating safety concerns. Completing the sidewalk network and widening high demand sidewalks will likely create a safer and more convenient, and thus more enjoyable, walking environment.

The suitability score is shown on the map as lines representing sidewalk locations on either side of a street and dots at intersections. Suitability includes the quality features described on the previous pages. They range from red to green, with orange representing locations where the suitability of the sidewalk is lowest and green is highest.

Figure 4.12 Pedestrian Suitability Index Supply Analysis Inputs

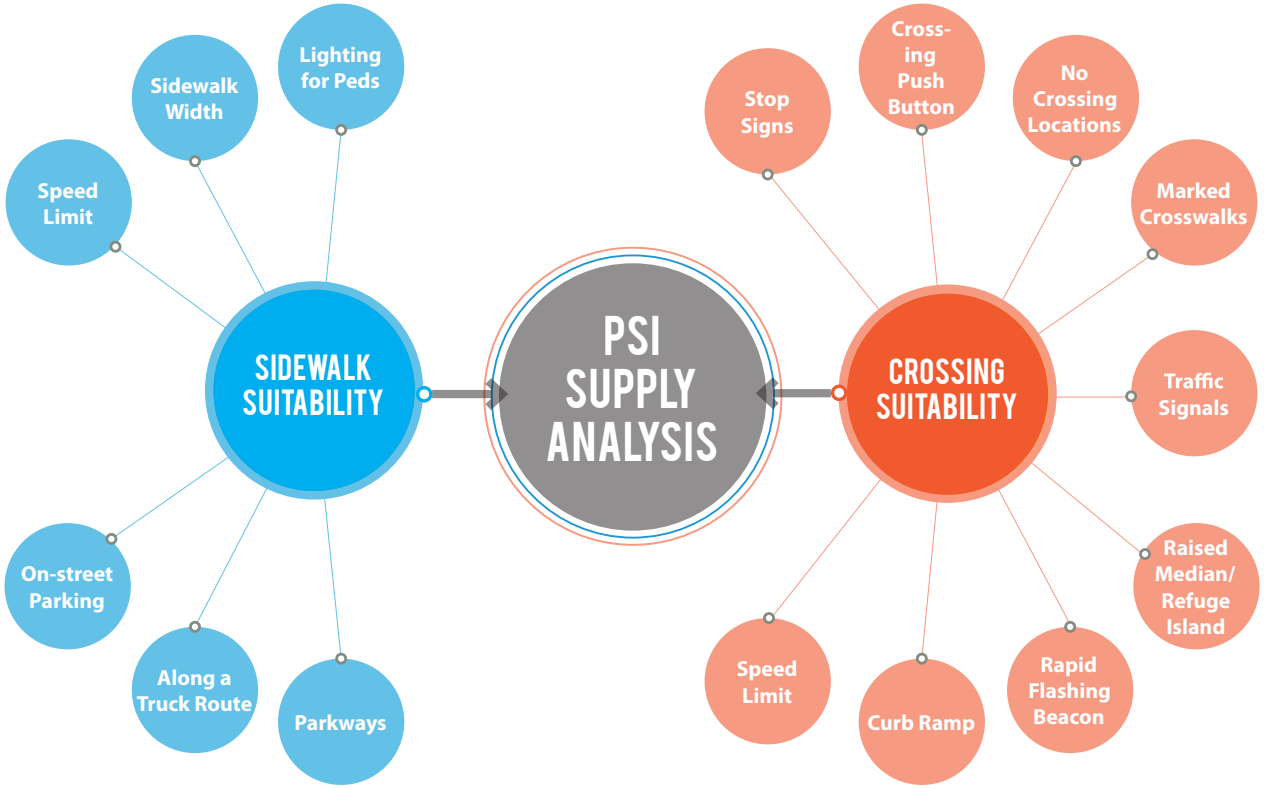


Figure 4.13 Sidewalk Suitability

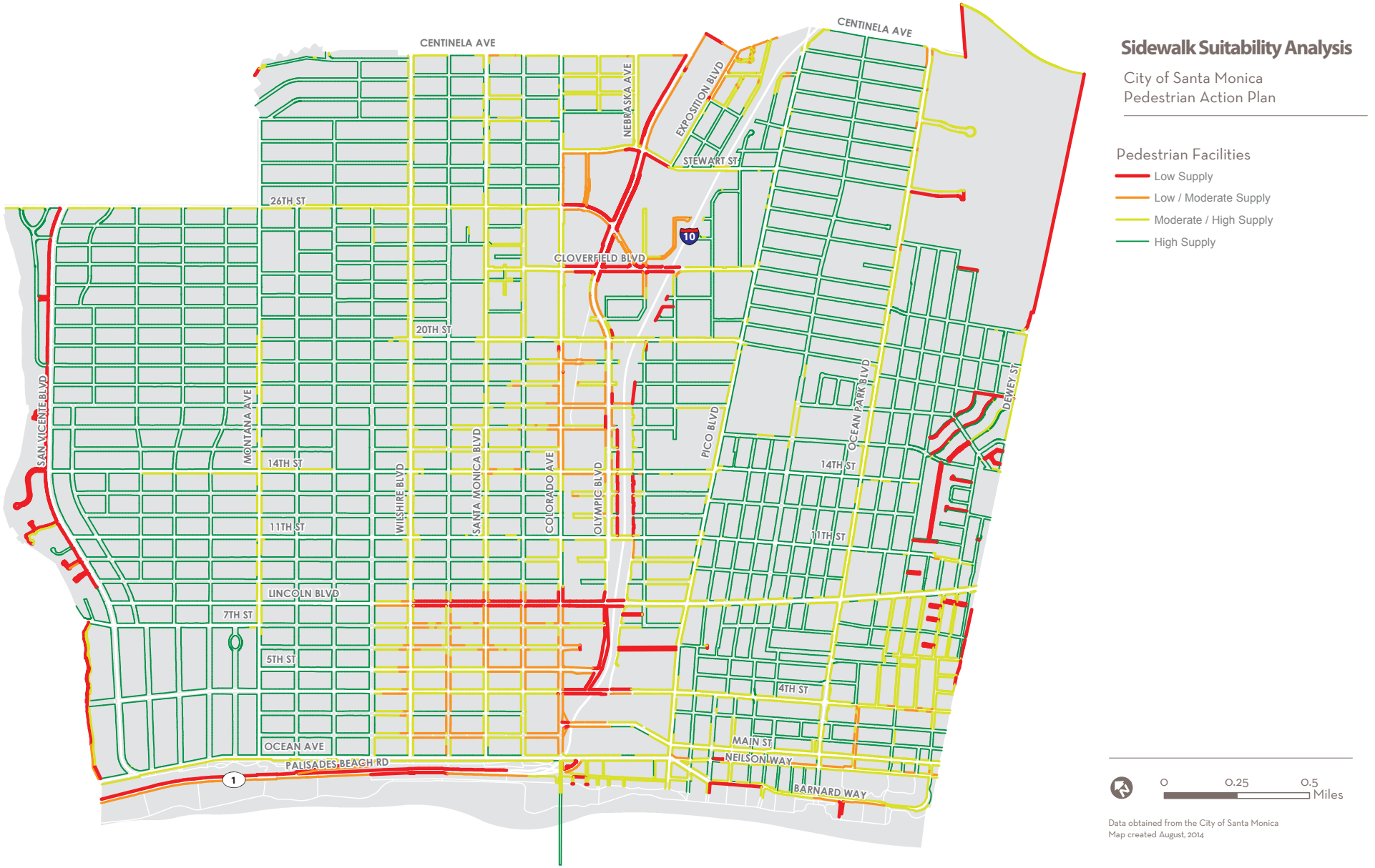
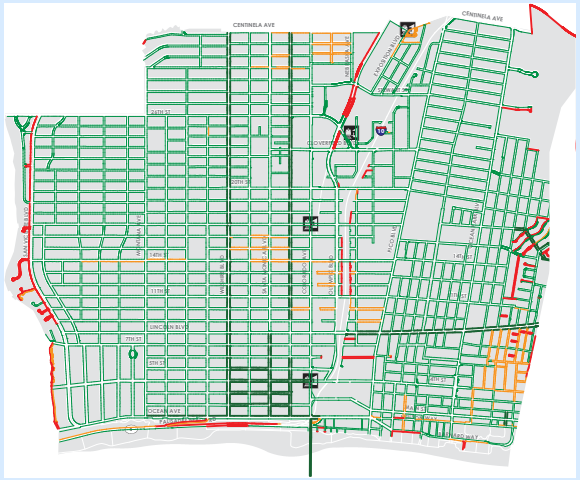


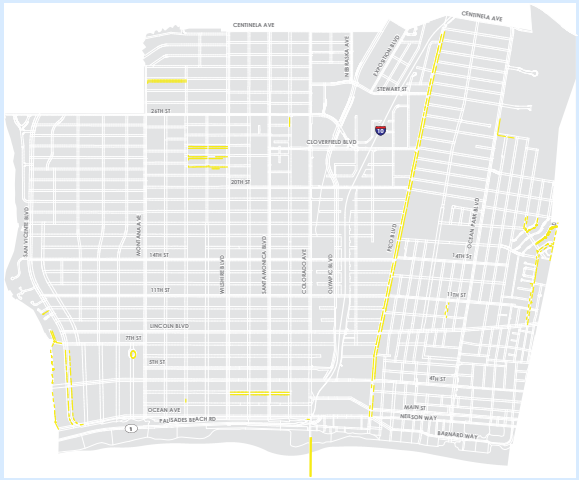
Figure 4.14 Sidewalk Width



SIDEWALK WIDTH

Santa Monica is fortunate to have sidewalks adjacent to 96 percent of the City's streets. Sidewalk width is an important indicator of a sidewalk's readiness to accommodate high volumes of foot traffic. In most places, sidewalks of 5-12 feet in width are needed to accommodate two people walking side by side easily, but in areas with high demand this width is not suitable. Downtown, Bergamot Village and the planned Expo stations represent some of the highest anticipated pedestrian demand and a sidewalk segment less than 12 feet wide will not accommodate such heavy traffic comfortably (shown as heavy green lines in Figure 4.14).

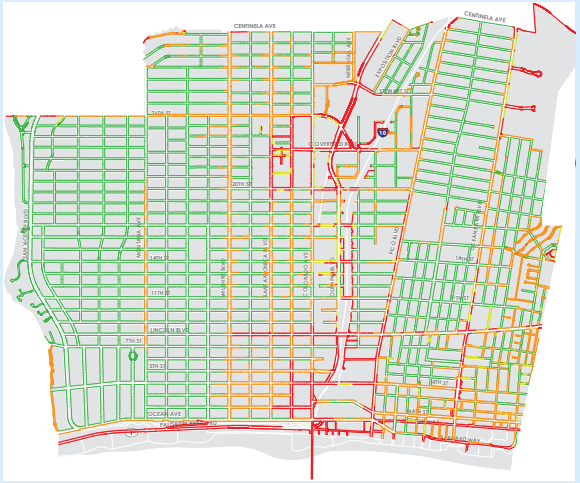
Figure 4.15 Sidewalk Lighting



LIGHTING

Minimum standards for intersection lighting over crosswalks are provided, however, many community members expressed dissatisfaction with lighting along sidewalks. Poor lighting increases fears about personal safety and discourages pedestrian activity. Low lighting in busy pedestrian districts like Downtown also seem out of character with these inviting destinations. Pedestrian lighting has been installed as part of a few specific capital projects, corridor improvements, or assessment districts, as indicated by the yellow lines in Figure 4.15.

Figure 4.16 Sidewalk Buffer



SIDEWALK BUFFER

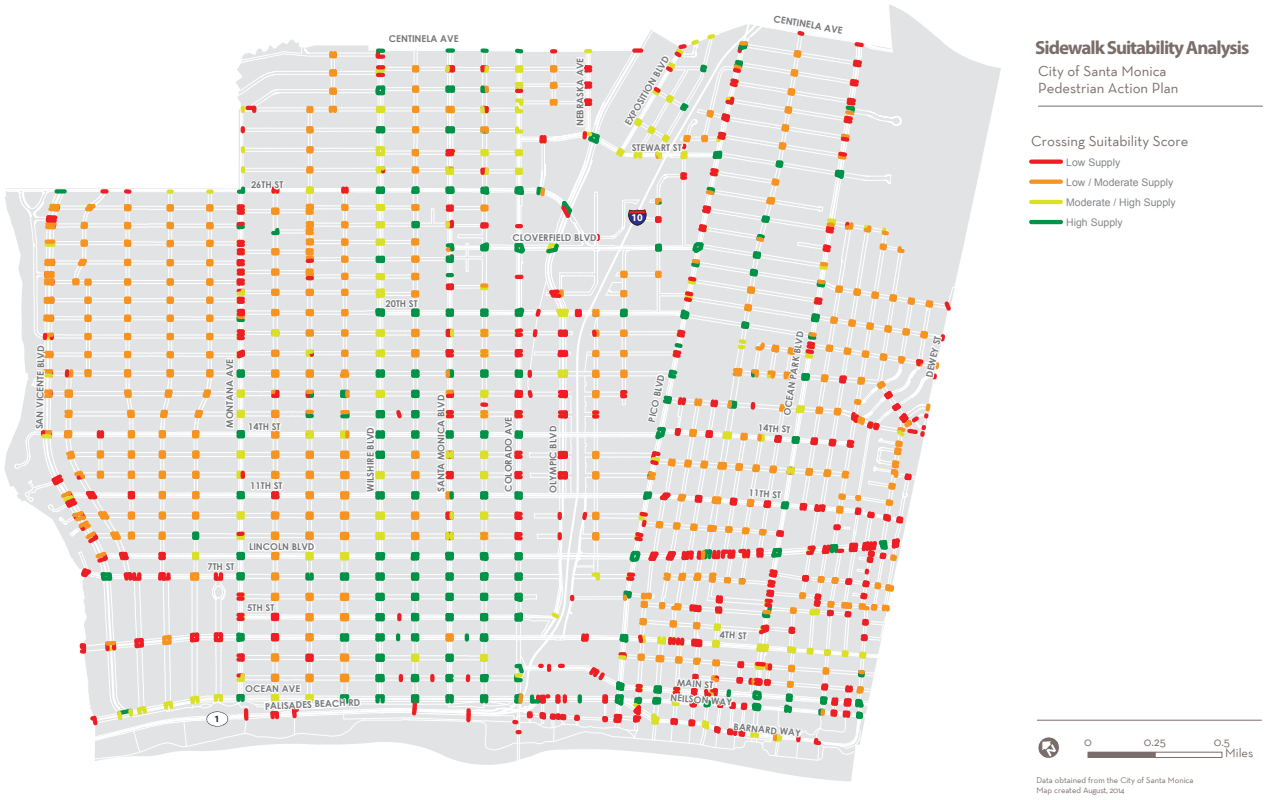
Buffers represent a key safety feature and greatly contribute to the quality of the pedestrian environment by separating walkers from moving traffic. Buffers can be parked cars, planting strips, or other safety features. About 63 percent of the City has both a buffer and on street parking, the best condition for pedestrians. About 13 percent of the City has neither. In Figure 4.16, green lines indicate the sidewalks with sufficient buffers, while the red lines indicate the sidewalks with the least sufficient buffers.

Crossings

The pedestrian crossing suitability analysis accumulates the presence of street crossings features such as access ramps, traffic control, cross street speed limits and other variables. This index identifies the visible presence of crossing features without assessing the perception of safety. The crossing suitability analysis shows in red and orange in Figure 4.17 where crossings are located that could benefit from additional features. These intersections rank lowest citywide, and represent gaps in the pedestrian network. Many of these locations are clustered at unsignalized crossings of large boulevards such as Lincoln, where high traffic volumes pose a significant barrier, separating the sides of the boulevard. This crossing suitability can be conbined with the performance analysis in Section 4.3 to frame a more complete picture of pedestrian conditions.

Approximately 4.5 percent of intersections (46 of 1,007) in the city lack curb ramps. These intersections should be prioritized for upgrades to improve access for people with disabilities, parents with strollers, and other users.

Figure 4.17 Crossing Suitability

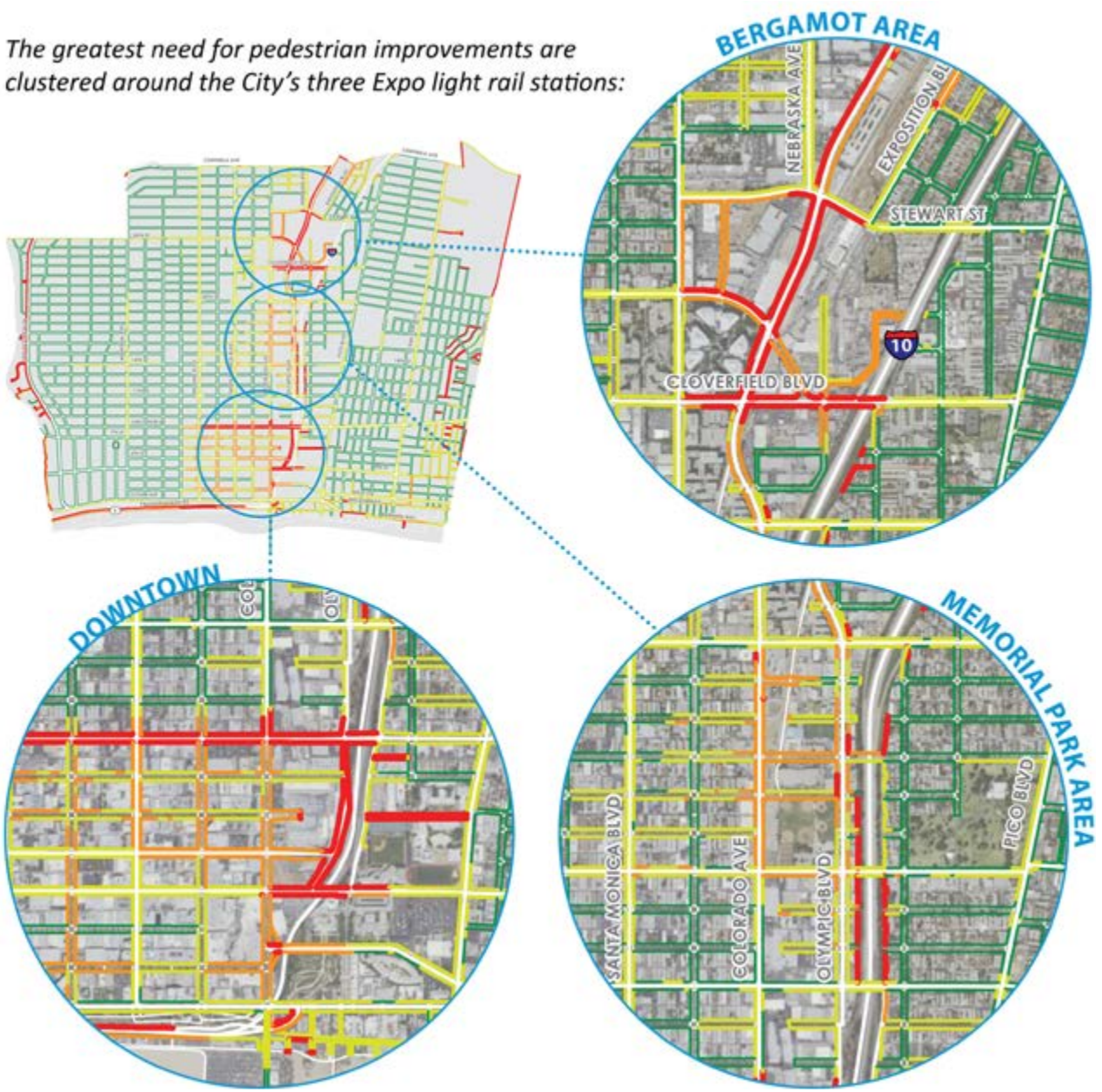


Combined Demand and Supply

Combining supply and demand data shows where locations with the greatest needs exist. Suitability Index demand analysis Figure 4.4 describes the multiple inputs. This identifies where improvements can be focused to connect neighborhoods, schools, and activity centers to major transit stops and future Expo stations. Each of the three planned Expo stations have locations of high demand and low supply, indicating the need for infrastructure enhancement, namely wider sidewalks to improve walking conditions and facilitate adequate transit access.

Pedestrian routes like those that are in high demand but have a low supply are a focus for City investment in this Plan. On the other hand, green lines represent areas of the city where the existing infrastructure is suitable to meet the current and future demand since not as many people are walking (see Figure 4.18). These areas are primarily in the City's single family residential neighborhoods.

Figure 4.18 Supply and Demand Modeling for the Pedestrian Action Plan



Wellbeing

Being able to walk safely and comfortably to jobs, school, shopping areas, medical care, and transit centers is an important contributor to enhanced wellbeing. It is especially so for households that don't own cars and rely on walking, biking or public transit for mobility. In addition to fostering the economic opportunities necessary for individual wellbeing, walkability increases access to enrichment programs and activities that can encourage a sense of community – another dimension of wellbeing.

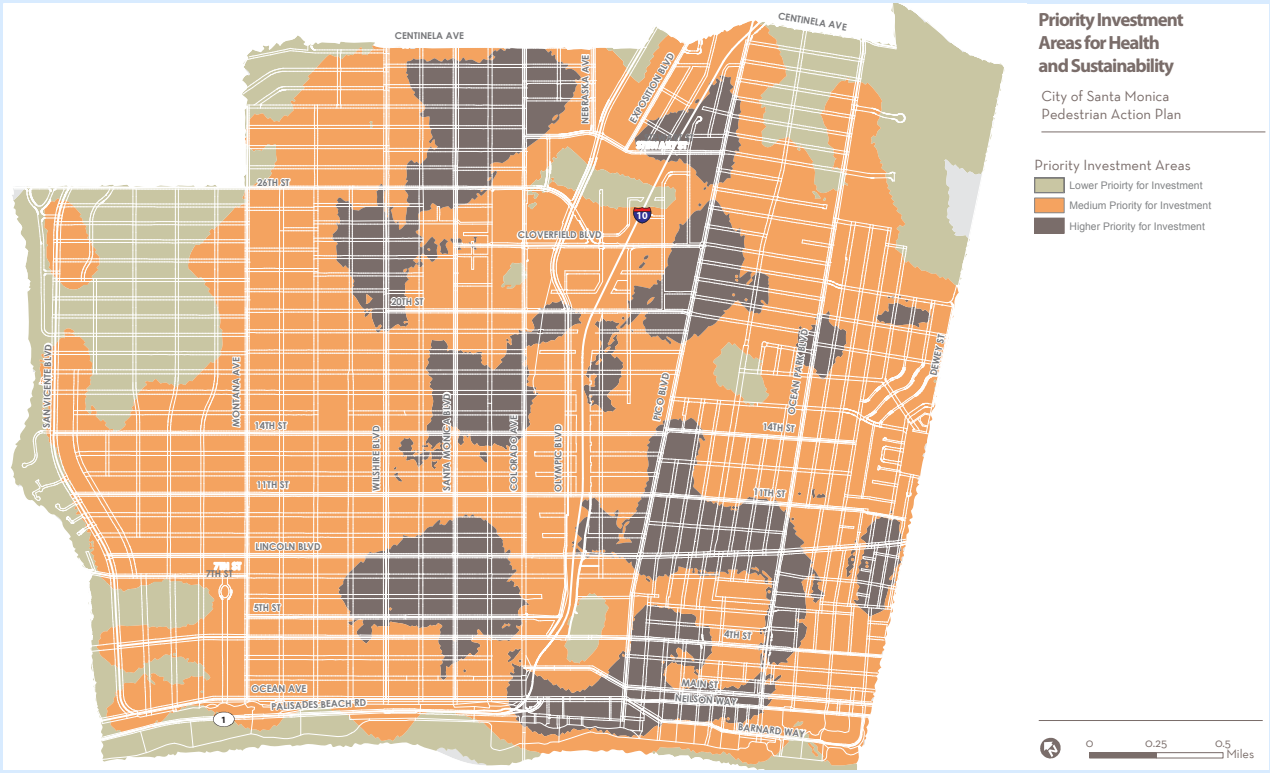
The Pedestrian Action Plan analyses identify locations where programs or infrastructure should be targeted to accommodate predicted volumes of pedestrians, to address potential safety issues, and to facilitate walking as a means of active transportation to get to school or work, or to the bus and light rail systems. In recognition that walking may be more critical to health, social equity, sustainability and overall wellbeing in certain sectors of the community, a Community Health and Sustainability (CHS) Index was created for the Plan to help prioritize pedestrian-oriented investments through this alternative lens.

Community Health and Sustainability Index

The CHS Index was developed to examine the relationship between various health, sustainability, and equity topics – including social and economic factors, vulnerable populations, mortality, morbidity, the physical environment, pollution, and crime. The Index is a place-based model, ranking and scoring these different variables for neighborhoods across the City based on current conditions. The CHS Index assigns a proportional weight to each topic or feature and then combines them to produce an overall index. The result is a composite index map which highlights where investment in pedestrian infrastructure would have the greatest impact for certain sectors of the community. The CHS Index is comprised of five evenly-weighted features as follows:

- Vulnerable populations: Groups that are more susceptible to disease and chronic health problems, including younger residents (under 18 years of age), older adults (65 years and older) and non-White populations.
- Socio-economic conditions: Including income level, poverty level, vehicle ownership, and housing cost.
- Health outcomes: The Index data includes occurrences of diabetes, heart disease, and asthma [mortality (deaths) and morbidity (illness)].
- Physical environment: Access to parks and grocery stores, pollution exposure, built environment features (tree-lined streets, diverse land uses, connected streets), and overcrowded housing.
- Crime: Violent crimes rates and presence of street lighting since lighting is considered to be a means of preventing crime.

Figure 4.19 Priority Investment Areas for Health and Sustainability



The results of the CHS analysis are shown in the Priority Investment Areas for Health and Sustainability Map (Figure 4.19). Community health, environmental sustainability, and social equity are important values for the City of Santa Monica and the intent of this analysis is to reflect those values in the City's pedestrian planning and decision-making process. The areas shown in dark brown are locations where investments in pedestrian facilities would have the greatest health and sustainability benefits. The CHS Index's higher priority investment areas are spread across the City; Wilshire Boulevard between 20th Street and 26th Street, the neighborhood east of Stewart Street and the neighborhood at the eastern edge of the City between Santa Monica Boulevard and Colorado Avenue, portions of Pico and Lincoln Boulevards, the area along Ocean Avenue south of Colorado Avenue, and the area bound by Wilshire Boulevard, Colorado Avenue, Lincoln Boulevard, and 5th Street are all highlighted by this Index.

The Wellbeing Project

The Wellbeing Project is a public initiative that uses the science of wellbeing to better understand the community by looking beyond traditional performance measures or economic indicators. Instead, it uses a new method to gain an understanding of how all of these factors interact and affect residents' quality of life. The Wellbeing Index findings support the Pedestrian Action Plan goals and policies that guide increased investments in pedestrian programs and infrastructure improvements that will have a positive impact on individual and community wellbeing. The Wellbeing Index demonstrates that engagement in healthy behaviors such as physical activity, healthy eating, etc. varies geographically as indicated in Figure 4.20.

The City's Wellbeing Project and its Wellbeing Index presents an unprecedented level of data-driven knowledge comprised of City administrative data merged with survey and social media information to capture a more holistic view of the wellbeing environment. Whereas 79 percent of the Santa Monicans surveyed for the Pedestrian Action Plan stated that they walk on a regular basis, the Wellbeing Index revealed a surprising lack of healthy activity. Despite enviable year-round weather and wide availability of local parks, recreational facilities and bike paths/lanes – not to mention a world-renowned state beach – more than half of Santa Monica residents (52 percent) said they do not engage in daily physical activity of some type (see Figure 4.21).

The Wellbeing Index also measured indices that reflect individuals' sense of community, such as feeling able to trust and rely on neighbors. Talking to neighbors is the first step and can be enhanced by walking more often. The Wellbeing Index also found that neighborhood relationships are weaker than the national average (see Figure 4.22).

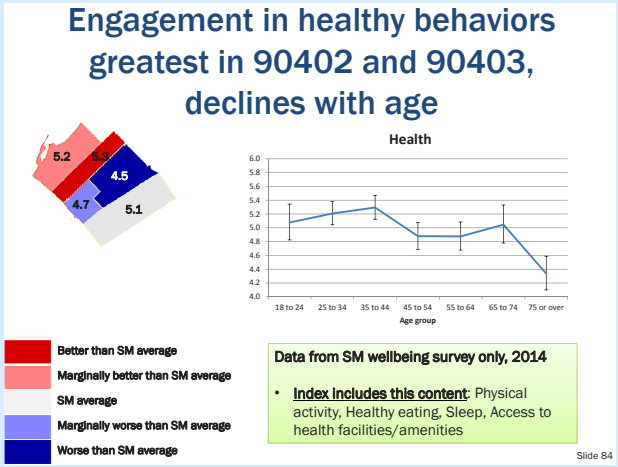


Figure 4.20 Wellbeing Index: Healthy Behaviors

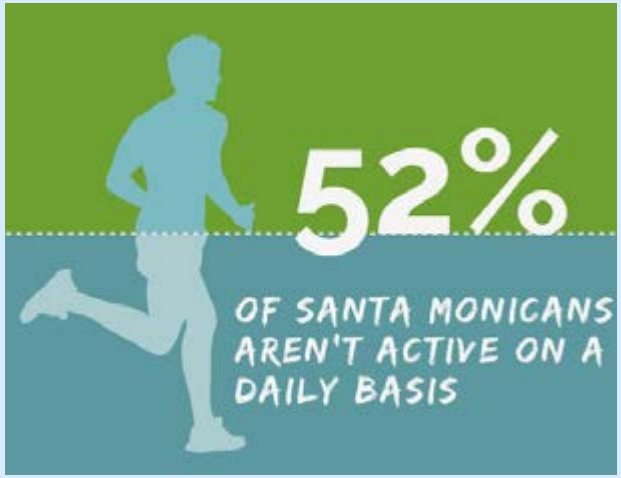


Figure 4.21 Wellbeing Index: Daily Physical Activity

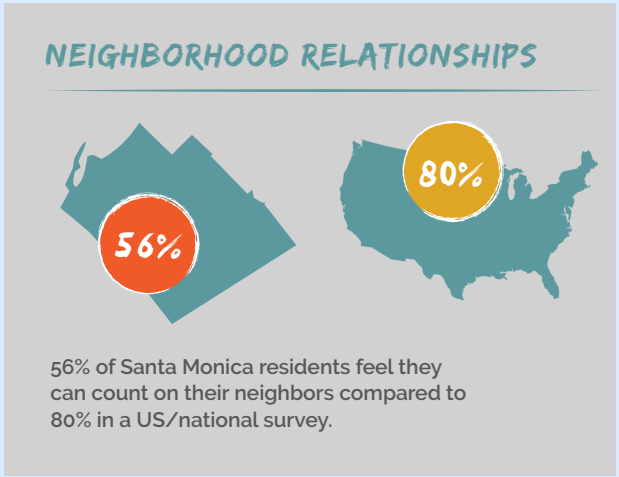


Figure 4.22 Wellbeing Index: Relationships

ABOUT THE COLLISION DATA

The Santa Monica Police Department responds to traffic incident calls and completes collision reports. The Statewide Integrated Traffic Records System (SWITRS) is a statewide clearing house of all collision reports collected. For this report, SWITRS data from 2001-2009 was supplemented with local collision reports from Santa Monica Police for 2008-2012.

4.3 Performance

Residents identified issues that warrant further study within the context of health, demographic trends, and local, state, and national safety. In this chapter, data from multiple sources are used in order to develop a more robust understanding of how it feels to walk throughout Santa Monica. This broad range of data allows for effective prioritization of investments to improve health and safety, transit access, and sustainability for people traveling on foot.

Clearly marked crosswalks increase pedestrian visibility.

Safety Study

Historic collision data tell a story about the patterns and possible causes of collisions in Santa Monica. A long view of many years can reveal patterns that may not appear when the sample sizes are smaller and over shorter timeframes. When it becomes clear that the patterns reflect underlying behaviors or conditions that can be minimized, action can be targeted to remedy or mitigate conditions.

Documented crash records from 2001 to 2012 reveal 966 reported pedestrian-related collisions, nearly 100 each year. Collision reports provide a valuable source of data, but we can assume that this number underestimates the actual total, due to collisions that go unreported. This trend contrasts to the rest of California, where, despite an increase in pedestrian activity, the number of pedestrian injuries declined [Strategic Highway Safety Plan (SHSP), 2012; Federal Highway Administration (FHWA, 2009)].

More recent reports from the Santa Monica Police Department concur that collision frequency, geographic distribution and pedestrian behaviors has been consistent over time with:

- A relatively small proportion of the intersections accounting for the majority of collisions; and
- Most pedestrians walking legally in the right of way before they are hit by a vehicle.

The remainder of this section examines the variables that factor into pedestrian crashes to identify countermeasures that will have the greatest beneficial impact on safety for the City of Santa Monica.

Those Affected by Collisions

All Santa Monicans Are Affected

When a person is killed or injured, it affects families and friends, employers, emergency responders, and drivers.

Seniors, Children and People with Disabilities

Although all Santa Monicans are affected, some sub-groups are disproportionately represented in the collision data. Seniors and young children, as a whole, are more susceptible to fatal and severe injury collisions, both because of the higher likelihood that they will be walking rather than driving, and because they are physically vulnerable.

Promoting safe streets for people of all ages is a key priority. Figure 4.23 illustrates the percentage of collisions that resulted in severe injury or death by age group.

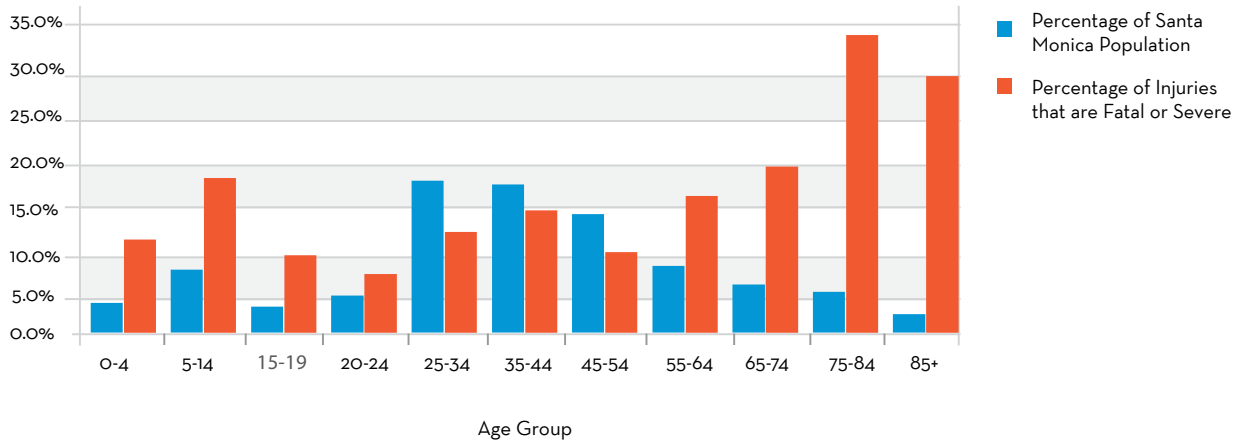
What Happens Before Collisions and Why Are They Happening?

Primary Causes of Collisions

Determining the cause of a collision between a car and a pedestrian is often complicated. When possible, Police reports rely on understanding the Primary Collision Factor which describes the type of vehicle code violation that caused the crash. Associated collision factors are also identified if additional environmental conditions or behavioral activities contributed to the crash. It is not always possible to understand 'why' the vehicle code violation occurred. Key findings are:

- Approximately 70 percent of all pedestrian collisions involve a violation on the part of the driver of a passenger car. This pattern persists across intersections with traffic signals and stop sign controls.

Figure 4.23 Percentage of Collisions Resulting in Death or Severe Injury by Age Group



SOLVING THE PROBLEM OF HEAD-ON COLLISIONS

Because half of the collisions in Santa Monica involve a driver striking a pedestrian while driving straight, head-on strategies that slow traffic speeds and increase drivers' ability to scan the entire street width are necessary to give vehicles more distance to stop when they see a pedestrian in the road.

DATA ON COLLISIONS AND PERCEPTIONS

The Mindmixer online conversation proved to be an excellent source of augmenting collision data with perceptions and experiences of people responding. One theme that emerged was the improved perception of comfort for walkers when they do not have to share the sidewalk with bicyclists and skateboarders. Collision data does not report collisions with bicyclists and skateboarders to be a major safety issue in terms of reported crashes; however, this in no way detracts from residents' experiences. The Pedestrian Action Plan actions focus on education for all transportation system users and supports the implementation of the Bike Action Plan as a way to help people riding bicycles feel safe in the street.

A PATH TO PREVENTION

Collision patterns help identify trends and focus prevention efforts. For example, school children and older adults are more likely to be severely injured if they are involved in a collision. Targeting safety campaigns and educational efforts to these age groups can reduce their risk of being involved in a collision at all.

- In collisions where a driver is at fault, it is 10 times more likely the collision is the consequence of the driver's failure to yield to a pedestrian legally in a crosswalk, than any other reason.
- While community members regarded driver distraction as a main cause of failing to yield, this relatively new cause of collisions is not widely reported as a primary or associated collision factor
- Pedestrian violation of the traffic code accounts for 27 percent of all collisions involving a pedestrian, and while this percentage is significant, driver behavior appears clearly to be a greater problem, with the behavior of all road users needing improvement.

Why Collisions Occur: Pedestrian Actions

The majority of collisions are not the result of pedestrian code violations. Overall, 67 percent of the pedestrians involved in collisions were in a crosswalk, with another 14 percent crossing outside of a crosswalk, 11 percent in the road and 8 percent not in the road, such as on sidewalks or driveways (see Figure 4.24).

Typically when pedestrians are at fault in collisions involving vehicles, the collisions are the result of crossing outside of a crosswalk. Rather than backtracking or traveling out of direction, some people will attempt to cross the street outside of a marked crosswalk or intersection. More frequent enhanced crossings may address this portion of pedestrian-caused collisions.

While pedestrians' actions are not a primary cause of accidents, pedestrians practicing proactive safety may minimize the likelihood of being in a collision.

Table 4.1 Distribution of common primary collision factors (PCF) in pedestrian involved collisions (Source: SWITRS 2001-2010; PCF missing for 154 collisions; PCFs accounting for less than 2% of collisions excluded

MOTOR VEHICLE AT FAULT (RESPONSIBLE FOR 70% OF COLLISIONS)	%	PEDESTRIAN AT FAULT (RESPONSIBLE FOR 28% OF COLLISIONS)	%
Failure to Yield Right of Way at Crosswalk	50%	Pedestrian Violation	27%
Unsafe starting or backing	5%	Failure to Yield Right of Way to Automobile	2%
Unsafe turning movement	3%		
Unsafe speed	3%		
Driving under the influence of alcohol or drugs	2%		
Violation of traffic signals or signs	2%		

Figure 4.24 Reported Pedestrian Action by Location (Source: 2001-2010 SWITRS, due to CHP definitions, some crosswalks are more than 50' from the intersection as defined by the curb lines)

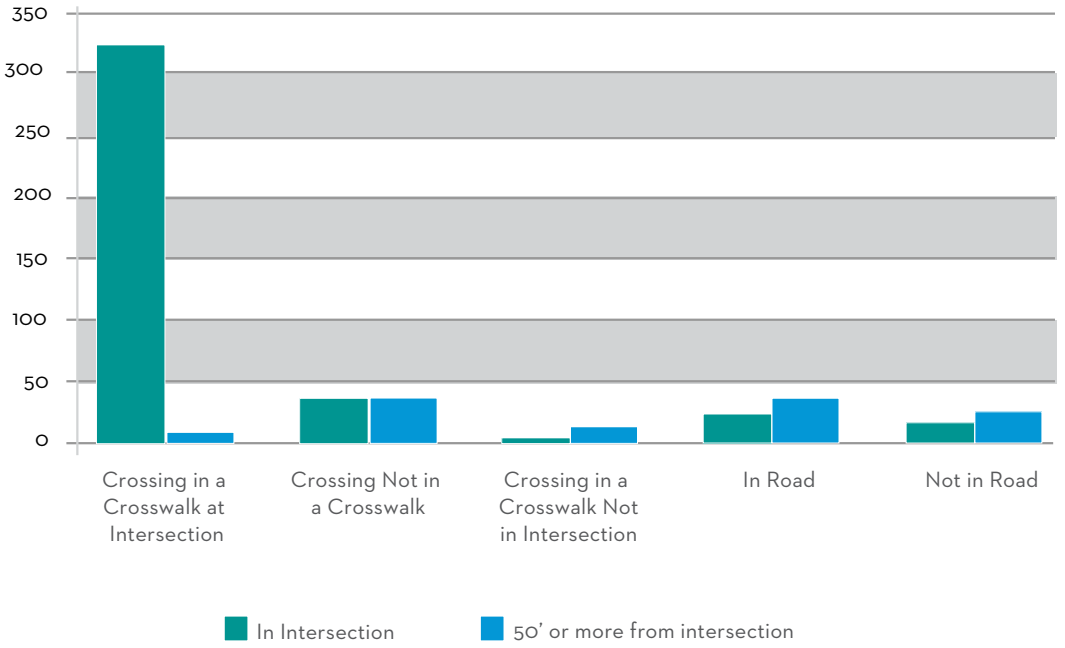


Table 4.2 Motorist Action Before Pedestrian Collision (Source: 2001-2010 SWITRS)

	SIGNALIZED INTERSECTIONS	INTERSECTIONS WHERE ONLY ONE STREET HAS STOP SIGNS
Proceeding Straight	27%	64%
Making Left Turn	40%	6%
Making Right Turn	23%	6%
Backing Up	4%	8%
Other	6%	—

BREATHING ROOM

When a driver can see a pedestrian from further away, they have more time to decide how to respond, take action, and stop. Strategies to increase pedestrian visibility, reduce driver distraction, shorten pedestrian exposure time, and minimize the conflict points will give drivers more breathing room.

Why Collisions Occur: Motorist Actions

The most common driver action before a collision with a pedestrian, without regard to type of traffic control, is proceeding straight (51 percent), followed by making a left turn (22 percent) or making a right turn (20 percent). Backing a vehicle was cited as the issue in approximately 6 percent of collisions.

Driver actions related to collisions are different at signalized intersections and two way stops, as shown in Table 4.2.

SIGNALIZED INTERSECTIONS. Approximately half of reported crashes in Santa Monica are occurring at signalized intersections. Left turns at signalized intersections can be difficult because the support between the windshield and the side window partially blocks driver's visibility, creating a 'blind spot', and these turns require a driver to attend to multiple potential collision threats simultaneously, including avoiding pedestrians, oncoming traffic and motor vehicles coming from behind.

Collisions of through-moving vehicles with pedestrians straight ahead at traffic signals may be explained by drivers entering the intersection before pedestrians have completed crossing the street, or by pedestrians beginning to cross before drivers have cleared.

UNSIGNALIZED INTERSECTIONS. At unsignalized intersections, 64% of the drivers involved in collisions with pedestrians are proceeding straight before striking the pedestrian. This pattern is more difficult to explain. A driver's failure to stop in time to avoid a pedestrian in the crosswalk might result from misjudging the time it takes to stop, inattention, or poor visibility. It is important to consider what strategies would improve drivers' ability to see pedestrians and to reduce the amount of time pedestrians are in the street, for example, constructing bulb-outs to reduce crossing distance.

Day of Week, Time of Day

Proportionately, more collisions take place on weekdays as compared to weekends, with 80 percent of collisions occurring Monday through Friday and 20 percent between Saturday and Sunday. This pattern is consistent with statewide observations, and is considered the result of higher pedestrian and vehicle volumes during the week.

The vast majority of collisions take place between the hours of 7:00AM and 7:00PM. Generally increasing throughout the day, 35 percent of all collisions are accounted for during the PM peak hours of 3:00pm to 7:00pm. There are noticeable spikes in incidents during both morning peak hours and evening peak hours when people are arriving at work or leaving for the evening (see Figure 4.25).

Lighting

Lighting quality was a frequent topic of discussion throughout the public process. Many people cited dark sidewalks and intersections, especially over the freeway, as detractors to walking in Santa Monica. Although Santa Monica pedestrian count data are not available by time of day, a number of studies have shown a substantial increase in collision rates compared to activity during the hours of twilight and darkness (Safeties, 2011). An increase in pedestrian-involved collisions in October, November, and December is likely due to fewer daylight hours, and to some degree, to collisions where no street lighting was available (see Figure 4.26).

Figure 4.25 Pedestrian collisions by time of day (Source: 2001-2010 SWITRS, CHP)

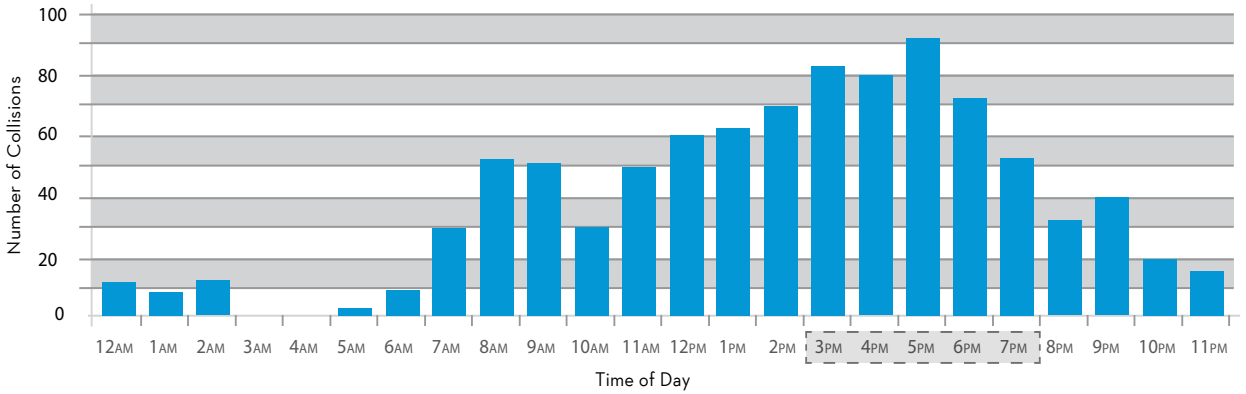
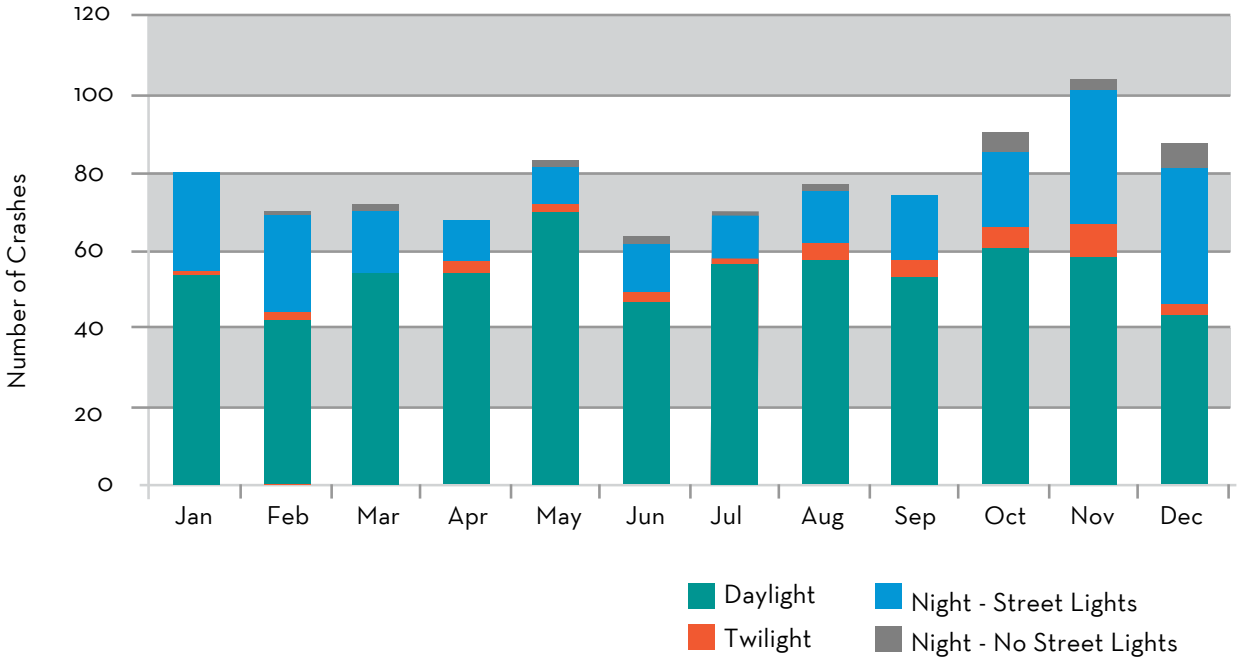


Figure 4.26 Pedestrian Collisions by month and lighting conditions (Source: 2001-2010 SWITRS, CHP)



Where do Collisions Occur?

Collisions are happening citywide (see Figure 4.27), with a very high proportion of collisions taking place on boulevards and avenues. These streets have certain elements in common, including high vehicle and pedestrian traffic, multiple lanes, speed limits between 25-35 mph, and large radius corners that support fast vehicle turning movements while providing less queuing room or refuge space for pedestrians. Crossings were frequently discussed during the public outreach portion of the plan. Santa Monicans identified specific locations suffering from poor visibility, speeding vehicles, motorists failing to yield and/or signal phasing issues.

Boulevard and Street Corridors

Nine corridors experienced higher collision rates than in the city overall, including Santa Monica, Wilshire, and Ocean Park Boulevards, which have high vehicle volumes and multiple lanes in both directions, which make crossing difficult. They are identified because a high density of collisions occurs over multiple blocks, as opposed to on an isolated intersection. Most of these streets serve regional traffic, so diversion is not a practical possibility. However, focusing on mitigating the volumes by managing traffic speeds and improving pedestrian visibility will keep the rates from increasing as more people start walking for transportation or other purposes.

Intersections

As expected, collisions mostly occur at intersections. City data shows that a very high percentage of all collisions took place at a relatively small percentage of intersections, with 80 percent of the collisions occurring at 200 of the city's more than 1,000 intersections. Of those collisions occurring at intersections, 56 percent are signalized and 29 percent are at two-way stop controlled intersections. As of 2015, Santa Monica has 177 total signalized intersections.

A detailed analysis of the ten highest collision intersections over the past 10 years demonstrated an average of 4.4 collisions per year for those intersections compared to the citywide average of 1.0 per intersection. These ten locations account for 6 percent of the reported collisions (see page 61).

Figure 4.27 Pedestrian Collisions (frequency) from 2001-2010 (Source: 2001-2010 SWITRS)

Figure 4.28 Behaviors that Impact Pedestrian Safety

MOTORIST BEHAVIORS

Because of the weight and speed of a vehicle, motorist behavior represents the greatest threat to pedestrians. Although pedestrian-friendly areas, such as the Third Street Promenade, neighborhood commercial areas and residential districts exist, much of the major roadway network in Santa Monica has been designed and operated to prioritize motorized traffic. Road design and operations can negatively compound these frequently seen behaviors:

- **Failure to yield.** Most of Santa Monica's collisions are caused by the driver failing to yield the right of way to a pedestrian who is in the crosswalk legally.
- **High Speeds.** Motorists were observed traveling in between intersections at high speeds in an apparent attempt to progress through traffic signals.
- **Encroachment.** It is common to see motorists stopping past stop or yield bars or within crosswalks at traffic signals.

BICYCLIST BEHAVIORS

Conflicts on sidewalks. It is not uncommon to see people riding bicycles queuing on the sidewalk corner to cross major streets. There is much public support for reducing conflict on sidewalks. Enforcing requirements that bicyclists ride on the street is commonly heard in Santa Monica and is a concern expressed by community members. A review of crash records does not indicate a documented history of law enforcement responding to collisions between pedestrians and bicyclists. The Santa Monica Pedestrian Action Plan and the Bicycle Action Plan work together to support separate facilities for walking, driving, and biking.

PEDESTRIAN BEHAVIORS

Despite some community observations, pedestrian violation of the traffic code is cited by law enforcement for 28% of all pedestrian involved collisions. There are some pedestrian behaviors that decrease their safety, making them more vulnerable to collisions.

- **Leaving the curb during the flashing "don't walk" signal.** At many Downtown locations, rows of pedestrians queue up waiting for the walk phase. Some people wanting to cross do not reach the curb until the flashing hand starts, but often still proceed into the crosswalk. Also, pedestrians can be seen running during the countdown phase to avoid waiting another cycle, and not reaching the opposite curb before the conflicting vehicle phase.
- **Walking in road or crossing outside of crosswalk.** These behaviors are more common when there is a long distance between signalized or otherwise enhanced crosswalks, or when popular land uses are located away from a convenient intersection.

DRIVING AND WALKING UNDER THE INFLUENCE

While alcohol is not listed as a contributing factor in most collision reports, when alcohol is involved the chance of serious injury is generally higher. Education-based programs have been shown to be successful at reducing walking and driving under the influence (National Highway Traffic Safety Administration, 2009).

Use of Alcohol by the Driver cited as a Factor in:

5% of Collisions

23% of Fatal Collisions

Use of Alcohol by the Pedestrian cited as a Factor in:

8% of collisions

41% of fatal collisions

58% of the collisions where the driver is under the influence result in severe injury or fatality

DISTRACTED DRIVING AND WALKING

The available data indicates that distracted driving plays a role in more reported crashes than does distracted walking. Distracted driving includes a range of behaviors that limit a driver's ability to pay attention to the road, such as using mobile devices, eating or arguing with a passenger. Distracted driving accounted for just under 20 percent of the reported fatal collisions.

Distracted Driving cited as a factor in:

7% of collisions

19% of fatal collisions

Pedestrian Distraction cited as a factor in:

2% of collisions

0% of fatal collisions

HIGH PRIORITY LOCATIONS

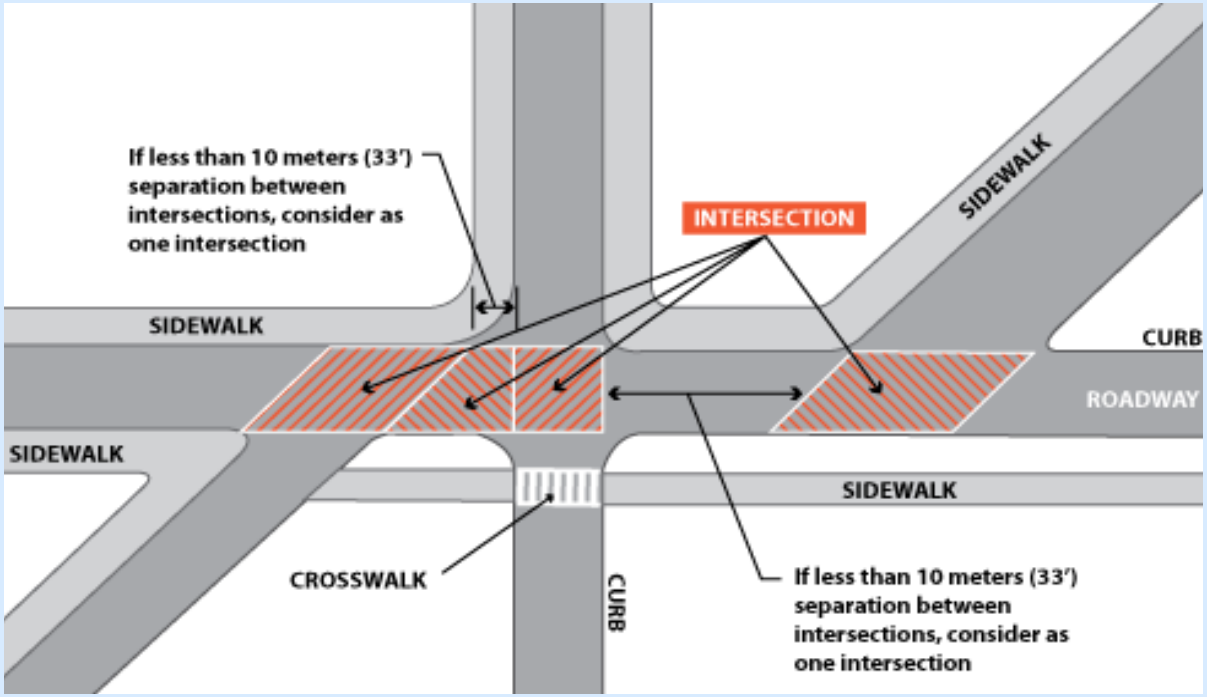
- Santa Monica Blvd. from Ocean Ave. to Lincoln Blvd.
- Wilshire Blvd. from Ocean Ave. to 26th St.
- Ocean Park Blvd. from 17th St. to 31st St.
- Broadway from Ocean Ave. to Lincoln Blvd.
- Pico Blvd. from 17th St. to Cloverfield Blvd.

MOST COLLISIONS OCCUR ON STREETS WITH:

- High volumes of pedestrians and vehicles
- Multiple lanes
- 25-35 mph speeds
- Large radius corners

WHAT IS AN INTERSECTION?

Intersections have a very narrow definition in the SWITRS database, not including crosswalks, but rather the area within the crosswalk defined by the curb lines. For the purpose of this analysis, in order to include all intersection-related collisions and those happening in crosswalks, a radius of 50' from the center of the intersection was used.



HIGH COLLISION INTERSECTIONS

- Ocean Avenue at Colorado Avenue
- Pico Boulevard at Stewart Street/28th Street
- Pico Boulevard at Neilson Way/Ocean Avenue
- Montana Avenue at 4th Street
- Montana Avenue at 7th Street
- Arizona Avenue at 4th Street
- Arizona Avenue at 17th Street
- Cloverfield Boulevard at Broadway
- Pico Boulevard at 33rd Street
- Yale Street at Wilshire Boulevard

About **50%** of reported pedestrian crashes occurred at signalized crosswalks.

Midblock

Approximately 20 percent of collisions occur in Santa Monica further than 50 feet from an intersection. The fatality rate doubles from 10 percent to 20 percent for collisions that occur between 50 and 100 feet from the intersection.

Downtown

The Downtown District is the central business core, bordered by Ocean Avenue, Wilshire Boulevard, Lincoln Boulevard, and the I-10 Freeway. It is a popular destination for residents and visitors, with attractive offices, retail, restaurants, and residential uses. Already a multimodal district, it is served by numerous parking structures, Big Blue Bus and Metro bus service, and the terminus Expo station with operation beginning in May 2016. A total of 204 injury collisions took place in this core area from 2001 through 2010, accounting for just over 20 percent of all such collisions in the City during that time.

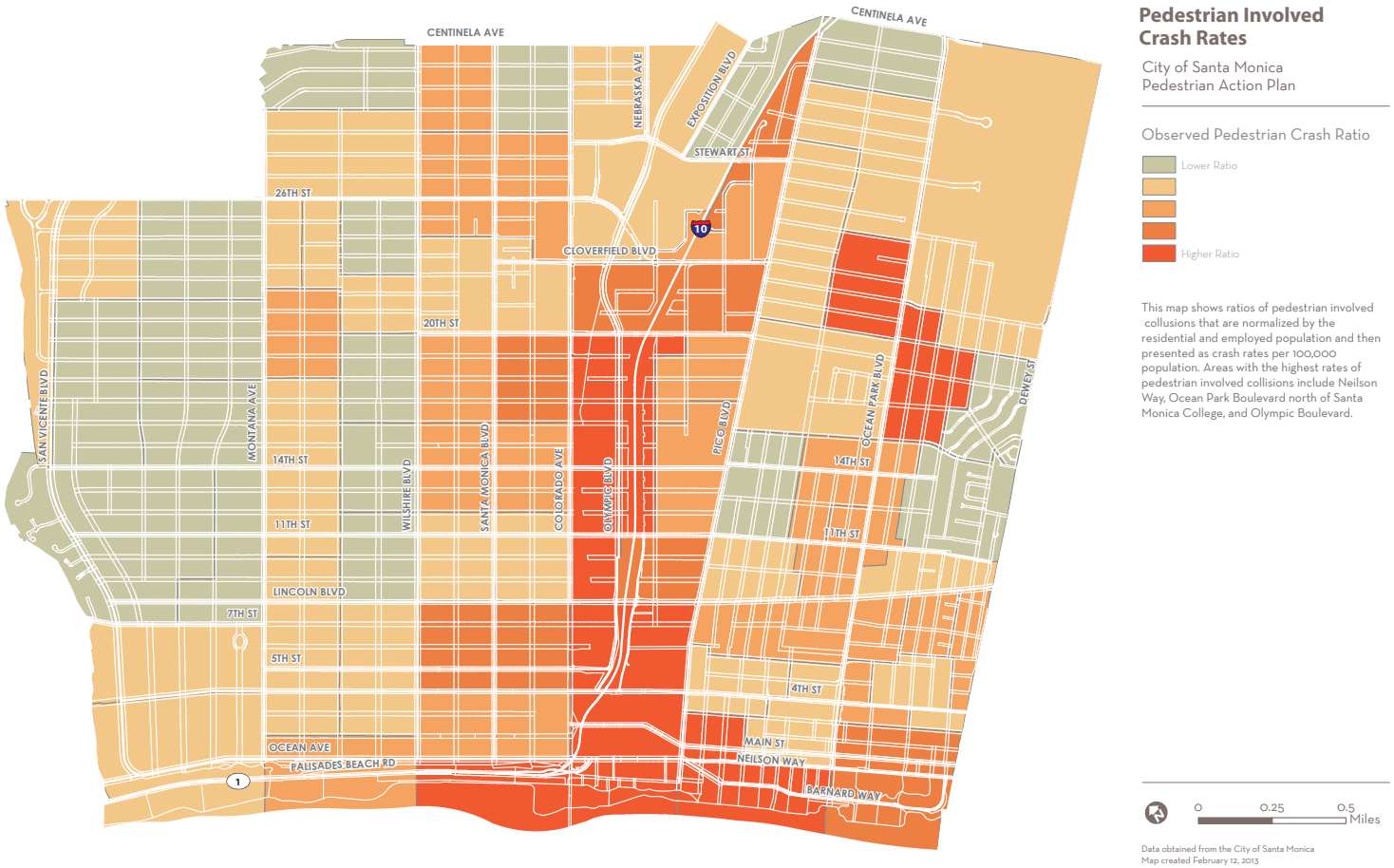
Considering the significant concentration of pedestrian collisions occurring in the Downtown area, on a collisions per square mile basis, this Plan sets a high priority for addressing pedestrian safety in the Downtown.

NEXT STEPS

The collision reports bear out the community comments that drivers are largely at fault for pedestrian-involved collisions. Immediate actions that increase yielding behavior and increase awareness of pedestrian activity and vulnerability will make walking safer and more comfortable. The Actions Chapter outlines practicies, programs, and projects that will support this plan's adopted policies. Potential design strategies to respond to community requests for improved crossings will include increasing visibility of pedestrians, separating conflicting movements through signal modifications, and/or enhanced crossing treatments.

Increasing both the visibility of pedestrians and motorist compliance with yielding to pedestrians will be a key outcome of implementing strategies recommended through this plan. Strategies will balance the management of vehicle flow with the need to provide safe and frequent crossings. In some places, vehicle flow will be a tradeoff for safety. The resulting safer environment for all street users will translate into people feeling more comfortable walking in Santa Monica, creating greater access to local destinations and recreation.

Figure 4.29 Reported Collisions per 100,000 Residents (Source: 2001-2010 SWITRS)

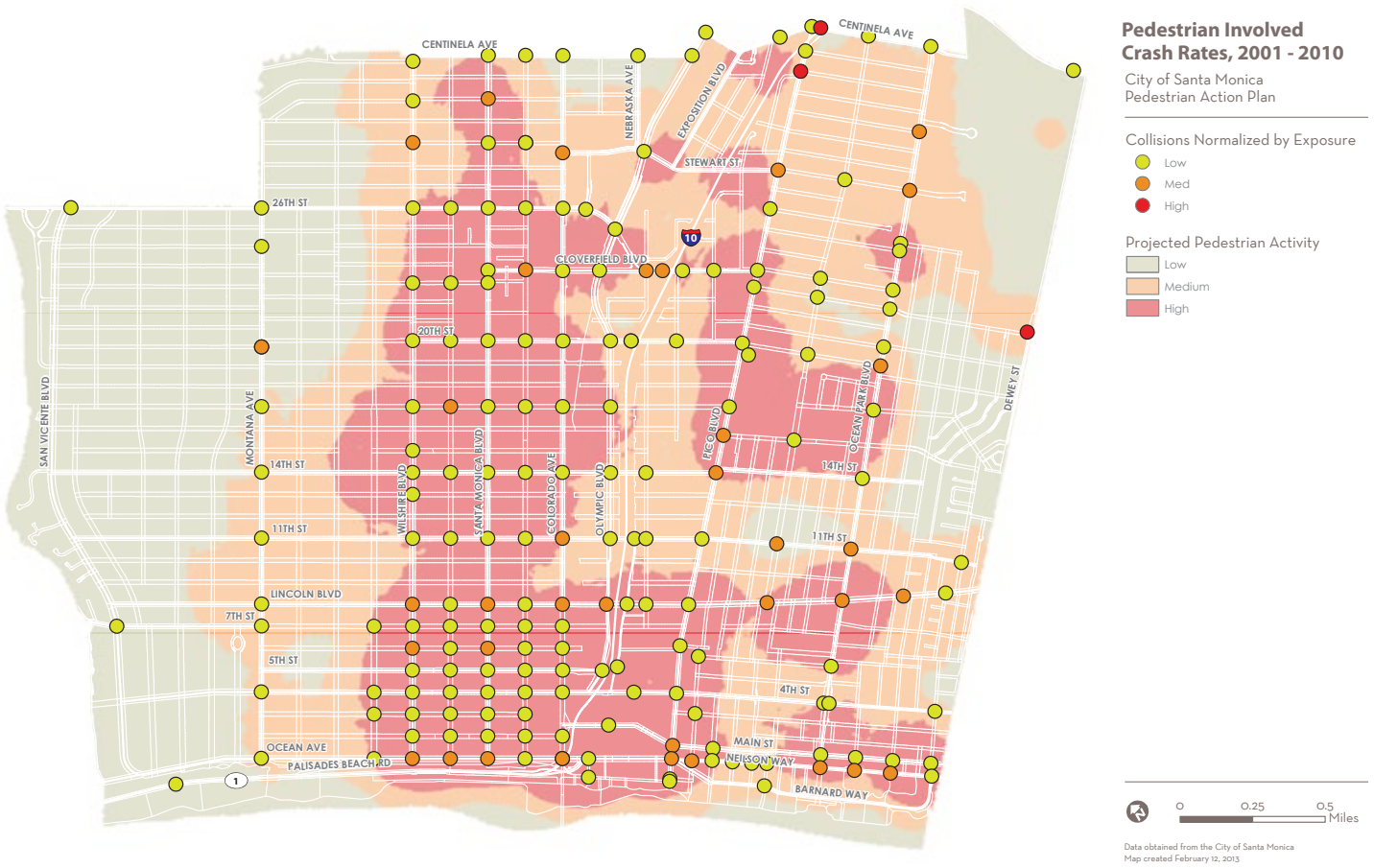


RELATIVE EXPOSURE TO COLLISIONS BY POPULATION

It is useful to look at roadway crashes in relation to the activity generated by nearby land uses.

Figure 4.29 shows the density of crashes across the city, as crashes per 100,000 residents. Areas with the highest rates of pedestrian-involved collisions normalized by residential population are shown in red. Based on the number of people living along these corridors, Neilson Way, Ocean Avenue, Ocean Park Boulevard east of Santa Monica College, and Olympic Boulevard experience more collisions than would be expected if collisions were distributed evenly according to population density.

Figure 4.30 Reported collisions normalized by observed pedestrian activity (Source: 2001-2010 SWITRS)



RELATIVE EXPOSURE TO COLLISIONS BY PEDESTRIAN ACTIVITY

The City conducts biannual traffic counts that include the number of pedestrians and bicyclists crossing at intersections. Reported collisions are nomalized by observed activity in the intersection circles, underlaid with projected future demand, as described in Figure 4.30. The orange and red describes intersections where the collision rates are higher than expected relative to the pedestrian counts. These intersections where collision rates are disproportionately high should be considered as priority locations for early action.

Figure 4.31 Santa Monica System Daily Activities, 2014

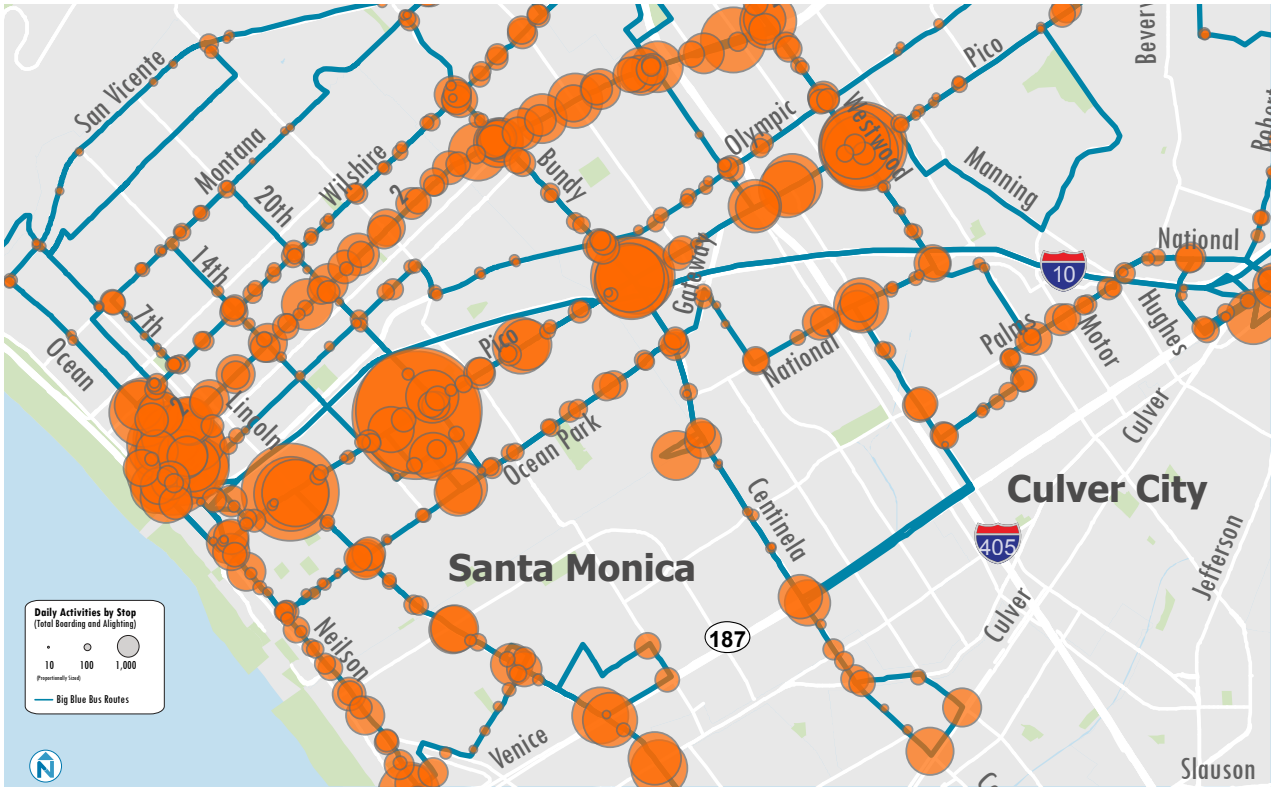
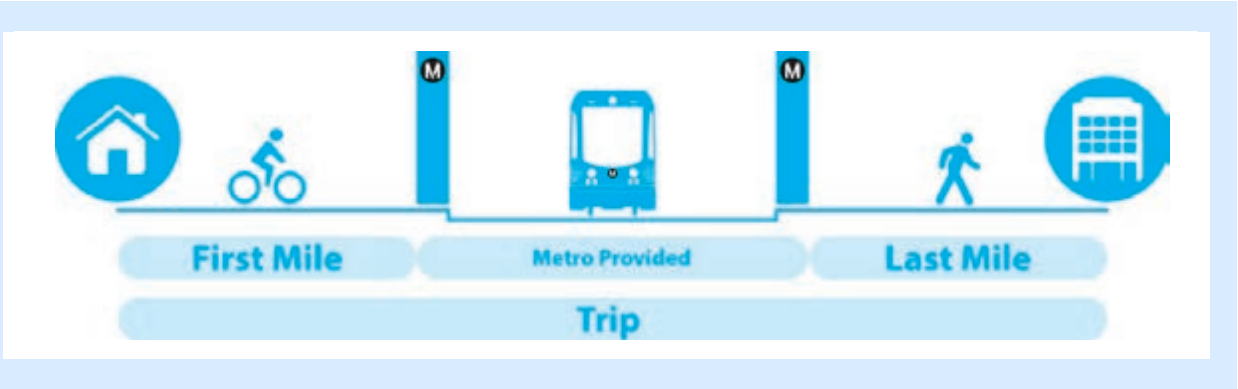


Figure 4.32 Other Means of Transportation Before and After a Transit Trip



4.4 Transit Access

The success of transit in the City is largely dependent on pedestrian access since every transit user becomes a pedestrian at some point in their journey. Whereas some people are dependent on transit for mobility, others make the decision to take transit if it does not require extra effort when compared to driving, and if it's convenient, pleasant and intuitive. The pedestrian demand analysis prepared for this Plan included demand due to access to transit.

First Mile-Last Mile

One of the main objectives of this Action Plan is to identify locations for improved facilities or physical changes which connect neighborhoods, schools, and activity centers to transit stops and stations. Individuals may utilize a number of transport modes to reach their destination because they typically do not begin their trip right at a stop but rather up to a mile away; they may walk, drive, ride a bicycle, take a train, take a bus, or combine a number of modes.

Getting to and from transit stops is an extension of the transit trip. The faster, easier and more enjoyable it is to get to and from transit, the greater the mobility for people who depend on transit for transportation, and the more likely commuters and others will choose to take transit rather than driving a car. People are generally willing to walk up to 15 minutes. A variety of factors can impact the time it takes to walk a particular route, and

Transit stop areas are critical components of the pedestrian network.

subsequently impact the distance people are willing to walk. The overall strategy is to make walking easier within the walksheds surrounding key transit stops and stations to effectively encourage users to walk further. This may be accomplished by decreasing wait times for pedestrians at crossings, increasing sidewalk capacity, creating short cuts to further reduce travel times, or making the walk more interesting. A walkshed analysis helps identify the routes that are most likely to be traveled to transit and evaluates each pathway's performance in terms of safety, aesthetics, and accessibility.

FIRST AND LAST MILE

Public transportation agencies typically provide bus and rail type services that may frame the core of an individual's trip, but users must complete the first and last portion on their own. All Metro riders must contend with the first-last mile challenge, and the easier it is to access the system, the more likely people are to use it (Metro, 2014).

Figure 4.33 Metro's First Mile-Last Mile Analysis Process

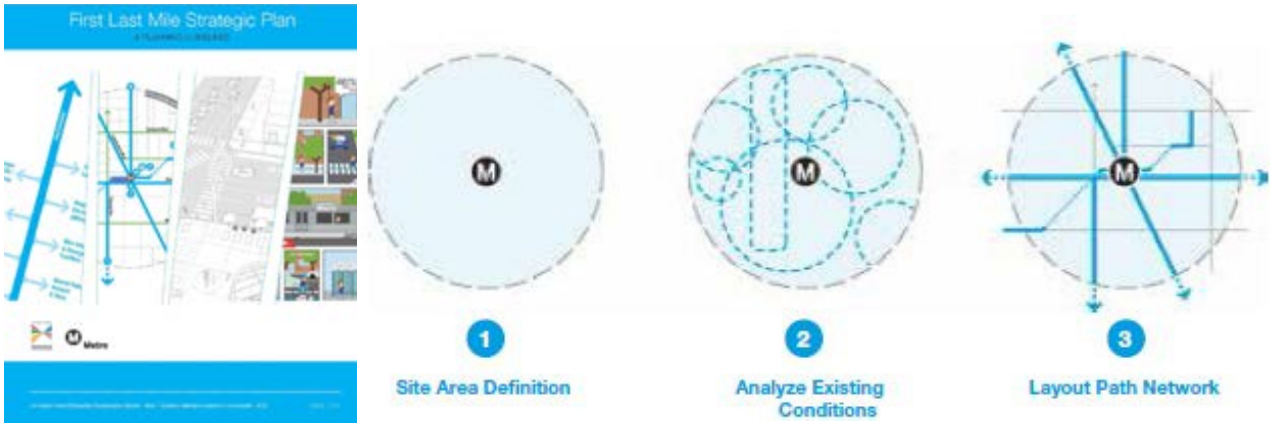
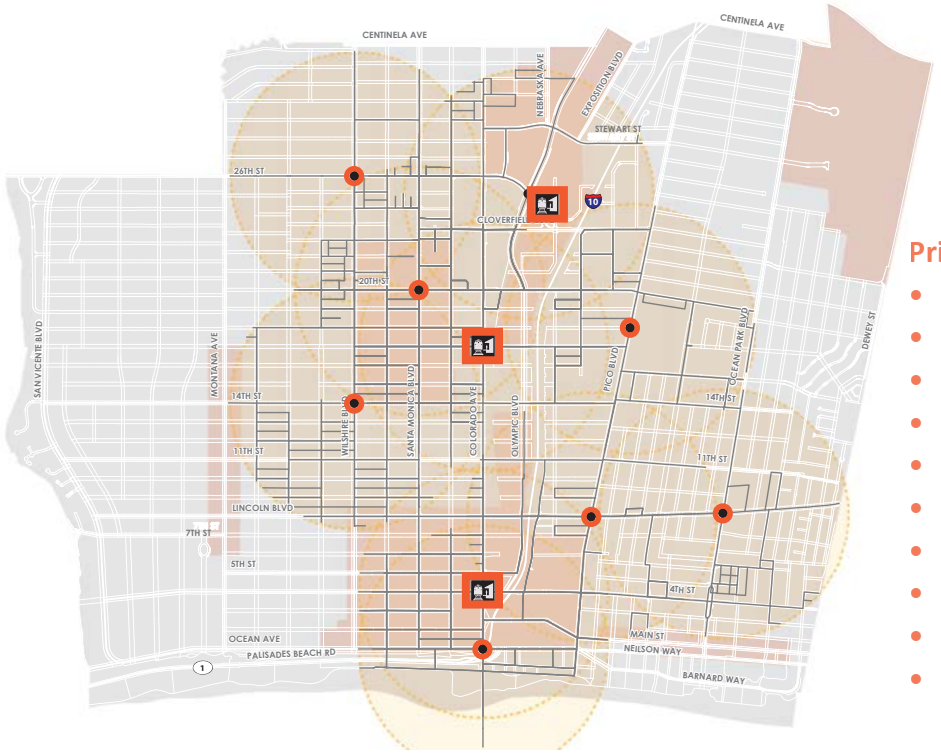


Figure 4.34 Path Network Map



Priority Transit Stops:

- Colorado at Ocean
- Colorado at 4th
- Lincoln at Pico
- Lincoln at Ocean Park
- Wilshire at 14th
- Wilshire at 26th
- Santa Monica at 20th
- Colorado at 17th
- Olympic at 26th
- Pico at 18th

Transit First-Last Mile Walkshed Analyses

For this Action Plan, the City prepared a walkshed analysis of 10 key transit stops and stations. The intersections selected for study represent a diverse cross section of locations throughout the City, including all 3 Expo line light rail stations and intersections that host bus stops with high levels of ridership (greater than 200 weekday boardings). All locations have a combination of proximity to high density residential areas and high employment areas.

This analysis is generally based on the method outlined in the Los Angeles County Metropolitan Transportation Authority's (Metro) First-Last Mile Strategic Plan & Planning Guidelines, 2014. The three primary steps outlined as part of the methodology include:

- Defining key transit stops and their walksheds
- Analyzing existing conditions, and
- Identification and qualitative evaluation of the pedestrian pathways

The concentration of high ridership locations is highest in Downtown and on 4th Street, Colorado Avenue, Lincoln Boulevard, Pico Boulevard, Ocean Avenue, Santa Monica Boulevard, and Wilshire Boulevard. Figure 4.34 identifies the ten high ridership locations, named according to their closest intersection, selected for the walkshed analyses. These locations serve important destinations and activity centers in the city, including Santa Monica College, Santa Monica Pier, Downtown District, Providence Saint John's Health Center, and Santa Monica-UCLA Medical Center.

Walkshed Analysis of Key Transit Stops

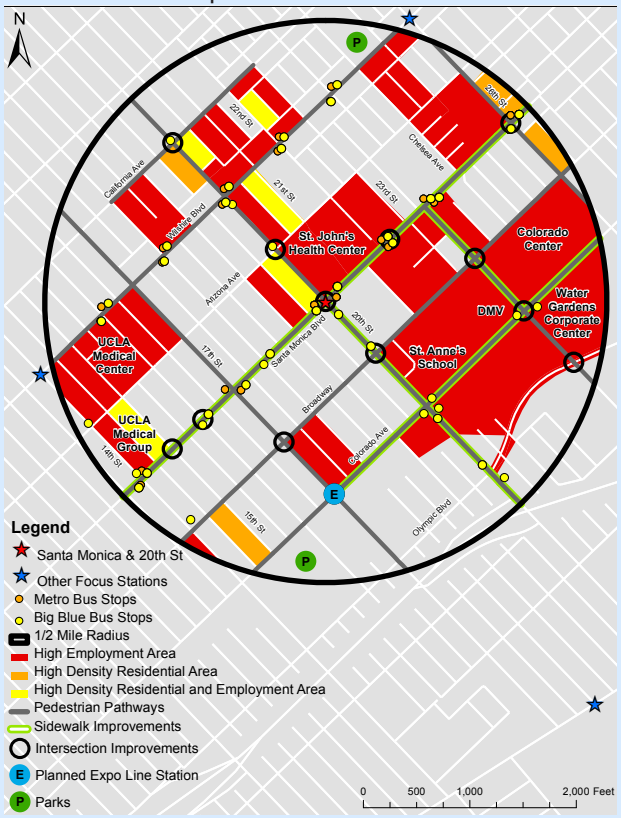
The walkshed analysis identified key land uses that can be accessed from major transit stops. A parcel level GIS analysis evaluated the overall degree of pedestrian connectivity in the focus areas. The analysis included mapping, compiling, and overlaying various layers of bus-stop specific data with land use, population and employment characteristics. The major destinations, concentrated residential and employment areas and transit routes provided in the focus area are shown in Figure 4.35 from the walkshed analysis performed on the transit stop at 20th Street and Santa Monica Boulevard. For more recommended improvements, for other priority stations, see Appendix C.

A review of pedestrian pathways was conducted to identify opportunities and constraints from a pedestrian perspective, consistent with the Metro First Mile-Last Mile Strategic Plan guidelines. Identification of constraints and opportunities within the transit walkshed is important since the walkshed – or access shed – is defined by the distance people travel in a set duration of time. Although the typical access shed is defined by a half-mile radial circle centered on the transit stop based on average walking speed, site specific conditions can compromise the actual access shed. Inadequate sidewalks, hazardous street crossings, and poor lighting are some of the obstacles pedestrians face that can make the walk to transit take longer. As such, the City's streets and related infrastructure are critical to supporting transit.

The walkshed analyses identify improvements at specific locations within the access sheds that will address safety, aesthetics, and accessibility to ensure that Santa Monica is an attractive and compelling place to walk to transit.

The Colorado Esplanade project will improve transit users' experience by providing high quality pedestrian environment along the access between the Downtown Expo Station, the Pier, and other Downtown locations. Personal safety, comfort and reduced travel times will help encourage more people to use transit.

Figure 4.35 Santa Monica Boulevard and 20th Street Recommended Improvements



Looking south along 20th Street.

4.5 Analysis Summary

Santa Monica's walking future depends on investing in places with reported collision history, high pedestrian activity, and with the potential to reduce health and wealth disparities. Solutions need to address patterns unique to Santa Monica as described in this chapter.

Walkers in Santa Monica: Pedestrians traverse all corners of Santa Monica. The most pedestrians are observed Downtown, on Main Street and in the commercial areas of the City's boulevards.

Physical Conditions: The City generally has an easy-to-navigate grid street pattern but breakdowns occur in this pattern, especially near Olympic Drive and the Santa Monica Freeway, leading to barriers for pedestrians. Other physical conditions create barriers in the form of high auto speeds, design of street elements, presence of lighting, among others. Sidewalks exist in many but not all locations. Locations have been identified where improvements to sidewalks and crosswalks would be most appropriate based on the physical conditions present.

Performance: Overall, the pedestrian network and physical infrastructure are working well. Safety concerns occur at a relatively few number of locations where proportionally more collisions occur.

By combining anticipated pedestrian demand, the suitability of the physical environment and how well the community's needs are being served, including sustainability, health, and safety, actions begin to merge. A combination of practices, programs and built projects can bolster forces already in play in Santa Monica.

Where are the Top Opportunities to Improve Safety?

1. Prioritize actions that protect pedestrians and reduce pedestrian/vehicle conflicts.

Due to their weight and speed, motor vehicles pose the most significant threat to pedestrians. A holistic approach to policy implementation, project and program development, and business practices that result in a culture of prioritizing pedestrian safety will provide great safety benefits. Understanding that pedestrian safety issues are preventable means the City continues to strive to provide safer and more comfortable pedestrian facilities.

2. Focus the project actions on enhancing crossings on High Collision Corridors and Intersections.

This plan describes current high collision locations. However change over time is inevitable. Regular monitoring of high collision locations and interim improvements that reduce collision frequency may result in a need to be flexible in future funding pursuits. In general, a practice of selecting locations with reported collisions and community concerns will result in a program of cost effective improvements.

3. Connect the community with each other and transit.

The Action Plan can leverage other policy documents and the upcoming Expo line to support the Santa Monica healthy and active lifestyle by creating projects and programs that connect all community members to valued community assets, and make it easier for all to access existing and future high-quality transit.

CHAPTER 5: ACTIONS

The actions recommended in this chapter honor the City's commitment to safe and enjoyable walking. They fall into three sections: Practices, Programs, and Projects. Practices are those day-to-day approaches to street management that affect the quality of walking. Most recommended practices can be integrated into City Departmental work programs in a relatively short time period. Programs encourage and celebrate walking, and related recommendations build on existing efforts. Projects are physical improvements for walking comfort and safety, and are the most expensive as they require changes to the public right-of-way. Some physical projects can be implemented quickly, others will take many years to build. Nonetheless, the City should use all opportunities to implement physical changes to improve walking through partnerships, resources, grants or other opportunities. Taken together, the actions identified include practices, programs and construction projects and other initiatives that promote a walkable Santa Monica.

These actions will result in permanently shifting priorities so that public right-of-way decisions prioritize walking and pedestrian safety, ultimately achieving Vision Zero. The research, analysis, and community engagement documented in the pages of this Plan form the basis for the Actions presented in this chapter.

5.1 Practices

"Practices" are the daily work habits, policies, and priorities executed through various City departments. These practices affect the City's ability to make Santa Monica a better place for pedestrians. The practices described in this section aim to expand the focus of everyday City business to prioritize implementing plan recommendations.

Addressing everyday practices maximizes the efficiency of the Plan's recommendations, utilizing small procedural changes. For example, prioritizing the inclusion of pedestrian issues in capital project scoping and grant applications, as well as in data collection and collision reports, supports effective implementation of community goals.

Practice 1. Speed Reduction Strategies

RECOMMENDED IMMEDIATE ACTION

Slower vehicle speeds reduce the number of severe and fatal collisions. The severity of a pedestrian's injuries is directly related to the speed the vehicle was traveling, the faster the speed, the more severe the injury. Approximately 5% of pedestrians would die when struck by a vehicle going 20mph (miles per hour), 40% at 30 mph and 80% at 40mph. When vehicles are traveling at 50mph, the fatality rate is nearly 100%.

Santa Monica's boulevards and primary streets will continue to serve high volumes of traffic, yet the City has limited flexibility to adjust speed limits based on traffic and engineering management. For safety purposes, California Basic Speed Law under the California Vehicle Code prohibits a person from driving a vehicle at a speed greater than is reasonable or prudent given the conditions, and in no case shall they drive at a speed that endangers the safety of others. Statutory speed limits establish a limit above which it is illegal to drive, and these are set by collecting observations of driver behavior to determine the speed at which 85 percent of vehicles are moving. *Prima facie*, or presumable, speed limits are established through Council action and enforceable only when it can be determined that the driver exceeded the prima facie limit and created unsafe conditions. The City, through the speed survey process, may entertain slowing streets citywide by taking advantage of the *prima facie* process of documenting conditions in the interest of reducing vehicle operating costs, air pollution, and road crashes. Doing so would allow for continued high traffic volumes with reduced probability and severity of collisions.

Practice 2. Prioritize Pedestrians in the Project and Program Development Process, Supported by Pedestrian Coordinator

RECOMMENDED IMMEDIATE ACTION

City staff spends a great deal of time exploring ways to meet the needs of the community. When it comes to infrastructure, there are many more worthy project ideas than available funding. Difficult trade-off decisions are made when weighing a project's priority for funding; hiring a pedestrian coordinator would help support the prioritization of pedestrians.

Funding priorities are set based on the consequences—both advantageous and disadvantageous—of all options. Ranking pedestrian benefits higher for funding priorities would fundamentally shift the City's selection outcomes

The Promenade offers a comfortable and attractive pedestrian experience.

"Ranking pedestrian benefits at the top of funding priorities would fundamentally shift the City's selection outcomes to implement the Plan's recommendations."

to implement the Plan's recommendations. This shift in priorities would prioritize CIP investments that offer improvements consistent with the Vision Zero and No Net New Trips concepts. This would allow for more funds to be allocated towards planning, design, and construction of pedestrian connections that improve the pedestrian environment. It would also influence the choice of applications submitted to Metro's Call for Projects and other First Mile-Last Mile funding sources. The Pedestrian Action Plan aids this process by creating a data-rich analysis of project priorities. A component of this practice would be regular use of the Transit Walkshed Analysis (Ch. 4), and in applications to funding sources that prioritize transit access (Ch. 6).

Practice 3. Use a Project Charter Memorandum to Document Decisions

RECOMMENDED IMMEDIATE ACTION

Clear direction on project outcomes can help projects to consistently utilize best practices for pedestrian safety and convenience. A "Project Charter Memo" is a useful tool that is completed by the project manager to document key decisions and milestones for a project. A charter system would improve communications among City staff during project development and design with the goal of ensuring that pedestrian amenities are built into the project. The practice would also mean that planning, operations, and enforcement staff consider the project's effect on all modes of travel.

Practice 4. Improve Data Collection

The Planning and Community Development Department and the Police Department continually upgrade their data collection, storage and management systems as more powerful software is introduced every five to seven years. In order to make the process most efficient in terms of both cost and operation, coordinated efforts to synchronize upgrades and technology will become increasingly important. Local collision reports are already collected digitally in the field. As the statewide collision reports are digitized, both local and statewide data may become more quickly available. In the short term, in order to make collision analysis more meaningful locally, the number of fields entered into the local police database should increase. Joint annual workshops for PCD and SMPD staff should focus on reducing key data gaps, including: primary and associated collision factor determination; demographic information; street naming conventions; and any other newly or previously identified barriers to understanding collision patterns. As a regular practice, the SMPD Problem Solving team would then be able to develop enforcement and operational details and messages that are directly tied to their analysis of the primary factors causing pedestrian collisions.

Creating additional connections between Downtown Santa Monica and the beach is an important component of Pedestrian Action Plan recommendations.

Practice 5. Maintain a Focus on Improvements for More Vulnerable Populations

Geographic areas where students, seniors, people with disabilities, and low income residents live and frequent should receive priority treatment for pedestrian improvements because of increased dependence on walking to meet daily needs. Higher priority areas may evolve over time, so data should be periodically updated to track these vulnerable populations. Areas that are expected to continue to be prominent include: areas adjacent to Wilshire Boulevard between 20th and 26th Streets, east of Bergamot station, along portions of Pico Boulevard, and the eastern section of Downtown bound by Wilshire Boulevard, Colorado Avenue, Lincoln Boulevard, and 5th Street. It is recommended that the City conduct a study to identify locations that may be particularly difficult for people with disabilities.

Practice 6. Continue to provide an Effective Management System for Resident Concerns

Easy reporting methods combined with quick responses to resident concerns about sidewalk and crossing conditions will continue to reduce trip and fall and other risk management concerns. The current City 'Go System' is effective and should evolve with technological innovations. It should also be amended to provide a means of prioritizing the completion of projects and connections that are identified as important by the public. Developing a warrant system to evaluate the need for improvements, based on the Pedestrian Action Plan Toolkit and compliance with state laws, and an accompanying prioritization system for expensive improvements, would be beneficial.

Pedestrians crossing 26th Street at Broadway.

Practice 7. Improve Pedestrian Facilities Through the Permitting Process and Day-to-Day Activities

Applicants proposing property development can be required to design projects that consciously create better pedestrian conditions. Municipal code standards for driveway location, building design, sidewalk width, and pedestrian-oriented lighting that supports pedestrian travel should be continously reviewed and updated to incorporate professional best practices.

The City process for installing pedestrian improvements and public amenities in the public right-of-way, such as parklets and bus stop seating, should be as straightforward and easy to navigate as possible. It should also be easy to make alterations to installations by allowing staff to identify corrections to public realm deficiencies and make enhancements to the pedestrian environment once identified. One example would be to identify and alter sidewalk furniture to maximize sidewalk width. Care should be taken in placement of sidewalk utilities and street furniture so as to not obstruct existing available pedestrian pathways.

In addition, temporary traffic control requirements need to be stricter, to help provide a continuous and uninterrupted path of travel for pedestrians of all ages and abilities including those with visual, cognitive, and mobility impairments. The City should require enhanced temporary traffic control in support of pedestrians, especially disadvantaged and vulnerable populations.

Practice 8. Performance Monitoring

The City has regularly monitored plan implementation progress in recent years. This Plan includes performance measures that will be used to monitor achievement of Plan goals through annual reporting. A more active pedestrian count program will measure citywide walking levels and will collect data on seasonal and time of day variation, and other dynamics of pedestrian travel. The City counts will help City staff understand the impacts of project and program activity. Performance monitoring metrics are described in Chapter 6.

Practice 9. Expand Use of Innovative Traffic Signal and Street Operations Strategies

The regular practice of setting and adjusting traffic signal cycles presents an opportunity for significant pedestrian realm enhancement. Phasing and hardware strategies should further separate conflicting pedestrian and vehicle movements. Actions can include:

- Split phasing: requiring autos approaching the intersection from opposite directions to take turns crossing the intersection, such as allowing only North bound traffic followed by South bound traffic.
- Protective left turns: allowing left turns during green arrows only.
- Flashing yellow arrow permissive left turns.
- Pedestrian 'walk' phase: timing traffic signals to automatically allow pedestrians to cross should be the default, except when there may be circumstances that make it inappropriate.

Decreasing walking speeds to 2.8-3.0 feet per second, from a more traditional 3.5 feet per second, in the following locations would also ensure more comfortable crossing:

- The Hospital area
- Areas within 1/2 mile of senior activity and residential centers
- Downtown

Community members often described the traffic signal walking phase, defined as the combined time of the 'walk' and 'flashing red' indicators for pedestrians, as providing insufficient time to cross major streets. Reconsidering this timing to give pedestrians more time is a simple but meaningful way of increasing pedestrian priority. Separating signal phases through pedestrian 'scrambles' also allows people to walk across the street while not competing with vehicles in areas with the greatest pedestrian demand.

Where necessary, the following mechanism should be used to provide the most up to date safety measures:

- Lead Pedestrian Intervals
- Right turn overlaps
- Time of day adjustments
- Consistent and predictable signal and striping methods, including additional local guidance on striping crosswalks on each leg of an intersection.
- Continue practice of participating in Federal Highway Administration (FHWA) 'Experimentation' process to try using traffic control devices in ways otherwise not approved.
- Explore new materials and pavement treatments for quicker and cost effective interim installation of curb extensions, median refuge islands, and curb radius reductions.

Crossings at Santa Monica Boulevard near the hospital.

Vehicle waits to complete turn while pedestrians cross.

5.2 Programs

Programs provide the encouragement, outreach, education, and human touch to encourage walking in Santa Monica. Programs are important to reduce social and perceptual barriers to walking, and encourage more people to walk occasionally or regularly. Examples include the Safe Routes to School Program and Open Streets events. This category also includes "Vision Zero Santa Monica" which is a program to institutionalize the community's priorities for safety for all roadway users. Programs are citywide, involving both public and private partners.

Programs described in this section build on the existing network and also introduce new efforts. More than sixty encouragement and educational program ideas were suggested by community members during the public input process.

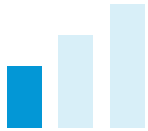
This Plan's programs use many of the community suggestions and are designed to reach residents, visitors, and employees across the city to encourage more people to walk more often and to encourage drivers to be more vigilant about pedestrian safety.

Residents requested additional enforcement of laws enacted for pedestrian safety. Crash data evaluated in this Plan indicates that pedestrian compliance with the California Vehicle Code is high, and that failure of drivers to yield pedestrian right of way is frequently identified as a primary collision factor. Therefore, the recommended safety programs focus on strengthening motorist compliance with vehicle laws related to crosswalks and yielding to pedestrians. Recommendations are balanced with education for all road users to share the streets of Santa Monica.

For the program components, community partnerships are needed to increase participation and create a culture where walking is a preferred means to access schools, transit, and places of business. Table 5.1 identifies potential partners. As programs progress, these organizations may be interested in supporting efforts, either by publicizing opportunities to their constituencies or by more active involvement to create and deliver programs.

For each program, anticipated funding availability guides implementation steps. First steps are identified as Baseline, a more intensive effort is characterized as Moderate, and High Effort items are the most resource intensive.

Cyclists riding at LA's CicLAvia in 2013.



BASELINE

MODERATE

HIGH EFFORT

Program 1. Vision Zero Santa Monica Administered by Pedestrian Coordinator

RECOMMENDED IMMEDIATE ACTION

Vision Zero envisions zero fatalities and severe injuries of any roadway users. This Plan proposes a Vision Zero program to achieve safety for everyone on the street. Components of the Vision Zero program include prioritizing and organizing community safety goals, and facilitating the systematic implementation of current and future actions that support walkability for people of all ages and abilities. A full-time Pedestrian Coordinator would manage the program to ensure that pedestrian needs remain a focus of city operations and public infrastructure investment, acting as a resource to City staff and community members. With a heightened awareness of actions to improve the safety and comfort of pedestrians, Vision Zero would inform the Capital Improvement Program, ongoing maintenance, and activities to provide access. Multiple City departments, including the City Manager's Office, Public Works, Planning and Community Development, and the Police Department have already begun Vision Zero inspired efforts to lower speed limits, redesign streets, implement meaningful behavior change campaigns, and enhance data-driven traffic enforcement. Vision Zero Santa Monica would better coordinate them for efficiency, mutual support, and accountability.

The Pedestrian Coordinator would be the point person for gathering, sharing and publicizing data and monitoring the results of actions in this Plan. Under Vision Zero, the safety of all people on the streets would have a raised profile in the community. In addition, the Pedestrian Coordinator would host departmental trainings related to new practices in pedestrian planning and design, facilitate opportunities for collaboration, be responsible for pedestrian-related policy and implementation, and advocate for top quality solutions for people of all abilities.

Table 5.1. Potential Community Groups Partners

Partners	
Boys and Girls Club	Santa Monica Family YMCA
Business Improvement Districts (Pico, Main, Montana)	Santa Monica-Malibu PTSA Council
Buy Local Santa Monica	Santa Monica-Malibu Unified School District
Chamber of Commerce	Santa Monica Pier Corporation
CicLAvia	Santa Monica Spoke
Downtown Santa Monica, Inc.	Santa Monica Travel and Tourism
Neighborhood Associations	Santa Monica UCLA Medical Center
Police Activities League	Santa Monica Walks
Religious Organizations	Santa Monica/Westside YWCA
Samohi Solar Alliance Student Club	Providence St. John's Health Center
Santa Monica College	Wise and Healthy Aging

BASELINE. Create and fill a Pedestrian Coordinator position with specific responsibility to facilitate inter-departmental pedestrian initiatives and work with the community and stakeholders.

MODERATE. Dedicate specific budget for programs to be implemented in each Department. Prioritize and codify pedestrian concerns in the planning and design process.

HIGH EFFORT. Dedicate funding for capital improvements.

Education and encouragement programs are designed for children, adults and families alike.

Program 2. Pedestrian Safety Campaigns

RECOMMENDED IMMEDIATE ACTION

Periodic road safety campaigns such as "Watch the Road" and "It's Up to Us" programs have provided service announcements highlighting ways each different road user can take responsibility for street safety. These campaigns should be deployed regularly to promote an attitude of roadway safety and awareness. A next step could be the evaluation and expansion of the campaign to broaden awareness of pedestrian safety through programs that target more specific populations like transit users and tourists.

BASELINE. Continue the "Ten Ways to drive, Bike and Walk More Safely" effort that is the foundation of "Watch the Road" and "It's Up to Us."

MODERATE. Evaluate and expand the existing campaign to reach a wider audience.

HIGH EFFORT. Consider expanding the campaign to include additional components, including messaging in private and public spaces, media efforts, community and school outreach.

"Santa Monica loves educational programs. Such a campaign is desperately needed for pedestrians."
-Mindmixer participant

Additional Pedestrian Safety Campaign efforts could include:

"WELCOME ABOARD" EXPO. To expand the reach and use of Expo Light Rail, a multi-media "How to use Expo" campaign that can teach people how to use the train and access the stations safely. These efforts will expand on the national 'Operation Lifesaver' program that has been effective in reducing collisions involving people and vehicles on rail tracks. The programs would distribute information on how to follow traffic laws to reach stations in all modes, what to expect at Expo stops, and reasons for not running for the train. Transit-specific encouragement and safety outreach material for Santa Monica residents are included. As funding sources are identified, the program could include online and personal travel assistance for walking to stations and connecting to other Metro and Big Blue Bus services. The campaign can also promote the light rail system through discounts to neighboring businesses, Internet content competitions, or social media.

FOLLOW THE RULES PROGRAM. Motorist failure to yield to pedestrians is the main cause of pedestrian injuries and fatalities, but other road users also need to observe laws that govern City streets. Community members also cited concerns about public compliance with laws during the development of this plan. Streets need to balance the needs of many types of users – walkers, drivers, bikers, and transit-users. This also includes sidewalks, which are part of our street network, and the intersections and driveways where pedestrians cross. A "Follow the Rules Campaign" and Enforcement Program would provide education that targets all users and disseminates key information, to build awareness. This is closely linked with Vision Zero Santa Monica in the communication of respect and care among all roadway users to ensure they safely share the road.

Locally relevant pedestrian-related laws and issues can be incorporated into "Watch the Road" and "It's Up to Us" campaigns, while still providing a multi-media campaign geared toward safe behavior of drivers, bicyclists, and pedestrians. The campaign's effectiveness will require complementary enforcement that targets the behaviors

"Be Safe, Be Seen"

IN 2012, THE SANTA MONICA POLICE DEPARTMENT CONDUCTED A SAFETY CAMPAIGN THAT REACHED THOUSANDS OF RESIDENTS AND VISITORS. THE CAMPAIGN INCLUDED:

- Producing "Be Safe, Be Seen" pedestrian awareness advisory video and Public Service Announcement,
- Hosting 11 Neighborhood Watch meetings,
- Conducting 16 crime prevention presentations, at 6 schools, and
- Staffing 10 community events, reaching thousands of visitors and residents.

that cause the most serious and frequent collisions. The program should comprehensively evaluate prior street safety communications, including response to the existing campaigns, and develop dynamic messaging and an on-going implementation program to be integrated into SMPD annual programs and other City communications outlets. New outreach material should be developed to specifically address Failure to Yield, pedestrian alcohol involvement, and midblock collisions.

VISITOR SAFETY CAMPAIGN. Travelers from every continent visit Santa Monica. Some may have difficulty navigating the roadway due to language barriers, while others from countries like Britain and Japan are challenged by the need to reverse their usual orientation to road directions. A pedestrian safety campaign geared toward visitors, including considerations of the unique needs of international visitors, would include fun and effective messages about how to safely enjoy Santa Monica destinations on foot or by car. This campaign would be coordinated with the "Rules of the Road" program, to provide clear and helpful information that fosters awareness on the road. Walking and bicycling safety tips would be distributed through the Convention and Visitors Bureau, Downtown Ambassadors, and hotels, and training about communicating pedestrian safety with visitors would be provided to Santa Monica hospitality industry workers. The program would develop and distribute symbolic, highly graphic messages specifically targeting tourists.

Clearly marked crosswalks encourage pedestrians to cross at destignated locations.

Program 3. Safe Routes to School (SRTS)

RECOMMENDED IMMEDIATE ACTION

Safe Routes to School (SRTS) is a program designed to create safe, convenient and fun opportunities for students to bicycle and walk to and from school. SRTS is a multi-faceted program that includes encouragement, physical improvements around school sites, student and parent education, and enforcement of school-zone rules. SRTS can decrease the prevalence of childhood obesity, help students arrive at school alert and ready to learn, and teach crucial rules of the road that provide life-long safety skills. Active transportation to neighborhood schools also reduces traffic congestion and cut-through traffic on residential streets. Physical improvements for SRTS have been included in the projects section later in this chapter.

Bike It!-Walk It! is a SRTS event started by the Santa Monica High School Solar Alliance student club to encourage students to bike, walk or take transit to Santa Monica's public K-12 schools. It is held in the fall and spring of each year, with support from the school and PTA, with significant student participation.

On-going program support promotes continued coordination among the Santa Monica-Malibu Unified School District, and Parent Teacher Associations which will help expand safety and skills programs to all public schools within five years with more emphasis on the walking and street-smart education component in addition to biking. Safe Routes to Schools will also aid the City to implement infrastructure alterations in the public right of way to support walking and biking. A systematic evaluation of streets within a quarter mile of the city's K-12 schools would help prioritize improvements.

In 2015, the City established a part-time coordinator position allowing ongoing parent education, youth promotion of walking and biking, and media and outreach campaigns that improve pedestrian safety in all school neighborhoods for children and adults alike. An expanded program would add walking safety assemblies, walking field trips and instruction provided at schools and at CREST after school programs.

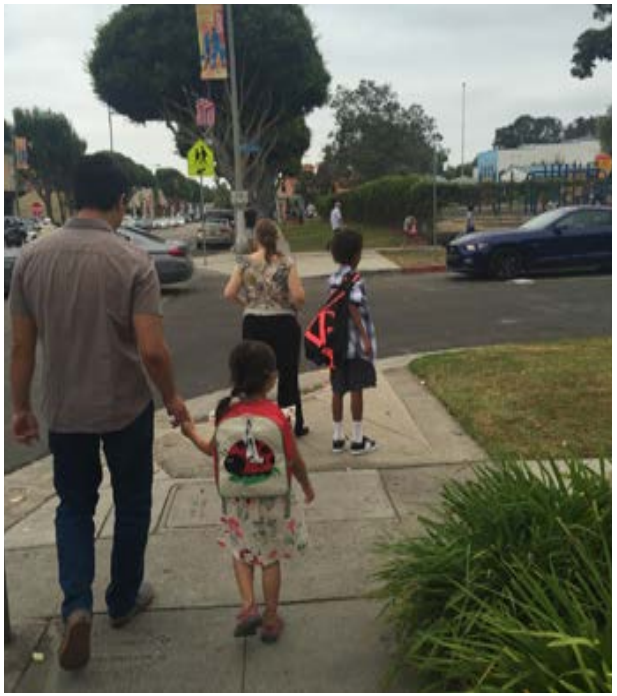
BASELINE. Continue Bike It!-Walk It!-Bus It! Days, back to school resource materials, and lower-cost changes to the public right of way such as signs and street markings.

MODERATE. Conduct SRTS bike and pedestrian safety class at all CREST after-school and summer programs; develop media outreach program in partnership with SMMUSD; develop parent education materials and outreach.

HIGH EFFORT. Integrate SRTS bike and pedestrian safety classes in SMMUSD curriculum and teach annually at each school, including safety assemblies or other walking events. Identify appropriate SRTS related capital projects through community outreach.

SAFE ROUTES TO SCHOOL

Safe Routes to School programs are geared towards teaching kids about the "rules of the road" and encouraging them to take active transportation to school. The program's approach is based upon the five E's: Engineering, Education, Encouragement, Enforcement, and Evaluation. Teaching kids proper safety helps children gain independence and stay healthy.



Parents are encouraged to walk students to school.

Program 4. Pedestrian Wayfinding, Routing, Signs and Maps

RECOMMENDED IMMEDIATE ACTION

Wayfinding includes helpful signage, design elements, and maps to allow easy navigation to specific places. With the upcoming arrival of Expo Light Rail, wayfinding is particularly important so light rail travelers can get their bearings and reach their destinations.

The pedestrian wayfinding program will center initially around station areas and commuter/visitor destinations using already-secured grant funding. It will include elements such as maps, consistently designed signage, and other markers integrated with street elements such as light and street sign poles, bus stop signs and maps, bike share kiosks, etc.

A more extensive program might include expansion of the program citywide, using maps that highlight destinations and attractions of public importance. Publishing the collection online would allow organizations or individuals to distribute the information to their groups.

Estimated cost range for this immediate action ranges from a minimum of $500,000 for Expo sign expansion, plus $20,000 to $50,000 for map collection.

BASELINE. Implement funded projects.

MODERATE. Expand Expo-oriented wayfinding to include locations up to two miles from stations.

HIGH EFFORT. Implement a community-wide system linking pedestrians to destinations such as parks, schools, and commercial areas.

Sample wayfinding map or brochure that would help visitors easily navigate through Downtown.

Additional efforts may include:

MOST BEAUTIFUL ROUTING. Point-to-point mapping technologies have become an invaluable transportation tool, but oftentimes the shortest route may not be the most pleasant. With Santa Monica's unique attributes and large tourist population, routing information that allows users to plan a walk based on beauty could prove popular and help encourage more people to walk. The City could host a contest to identify the most beautiful places for display on print and online walking maps. The City would need to fund the development and maintenance of this routing application, or collaborate with software developers.

Beautiful pedestrian route to Downtown through Tongva Park.

Walking along tree-lined path in Palisades Park.

WALK WITH A DOC – A WALKING PROGRAM SUCCESS

The "Walk With a Doc" Program was created in 2005 by Dr. David Sabgir, a Westerville Ohio cardiologist, as a way to improve the health and well-being of his patients. The program has been expanded with the mission to encourage healthy physical activity in people of all ages, and reverse the consequences of a sedentary lifestyle. The program includes volunteer physicians who commit to meeting with community members for walking events by posting dates and locations of events and allowing members to sign up for an event that is convenient for them. While participants move at their own pace, they have the opportunity to chat with local physicians and fellow community members. The activities do not require any special gear and is available to anyone. The program continues to expand and today boasts over 90 participating physicians in four countries. Locally, there are physicians volunteering for the program in Los Angeles, Thousand Oaks, Redondo Beach, Malibu, Culver City, Glendale, and Long Beach.

Once identified, participating physicians can begin sharing program information with their patients. Word of mouth coupled with a marketing campaign ensures community participation and program success.

Program 5. Safe Routes for Seniors

RECOMMENDED IMMEDIATE ACTION

A new program providing active opportunities for seniors will foster healthy aging and longer years of independent living. The Safe Routes for Seniors program will look sensitively at the needs of the wide array of Santa Monica seniors. It will develop tools and services to help them find ways to meet their transportation needs through trips that include walking and transit, both by bus or light rail. Developing programs that include group walks geared towards seniors will also encourage social bonding. The program will include key awareness topics such as education for drivers to pay particular attention to senior pedestrians and specific improvements such as modifying crossing time in areas that experience a larger number of seniors walking. Feedback received from the program will inform physical changes that address needs of walkers who are also seniors.

BASELINE. Post existing walking route maps online and distribute in print to senior programs.

MODERATE. Provide fiscal support for local advocacy organizations to host regular tours.

HIGH EFFORT: Assign Safe Routes for Seniors program to Pedestrian Coordinator to develop and deliver a program that addresses safety, transit, and encouragement needs of seniors, including regularly developing and promoting walking routes.

Program 6. Walk Like a Local

Santa Monica has an employer-based TDM program that works closely with larger employers to reduce employee commute trips and recently adopted a program for newly-constructed residential dwellings. This program would serve thousands of existing Santa Monica residents, and complement the new regulations. A new Residential Transportation Demand Management (Residential TDM) program would encourage residents to consider walking as a viable alternative to personal automobile use for trips such as going to work, to the market, or other local destinations. A Residential TDM program will depend more heavily on outreach programs and incentives due to the nature and diversity of residential trip-making.

The Residential TDM program will provide residents with free, customizable transportation resource kits as well as free events and incentives. The program includes specially-created materials for residents to learn about transportation options. Free events will help residents try walking, biking, or transit. Useful incentives, such as tote bags, transit passes and discounts, cart rentals, and short-term storage might spark enthusiasm for the initiative and remove barriers to walking while shopping.

BASELINE. Include walking as an option in materials distributed to residents.

MODERATE. Target specialized outreach or friendly competitions to residents encouraging them to walk to destinations close to their homes. Provide shopping carts and other incentives to encourage walking.

HIGH EFFORT. Provide personalized travel outreach to new and existing residents providing guidance and trip planning for destinations accessible through walking.

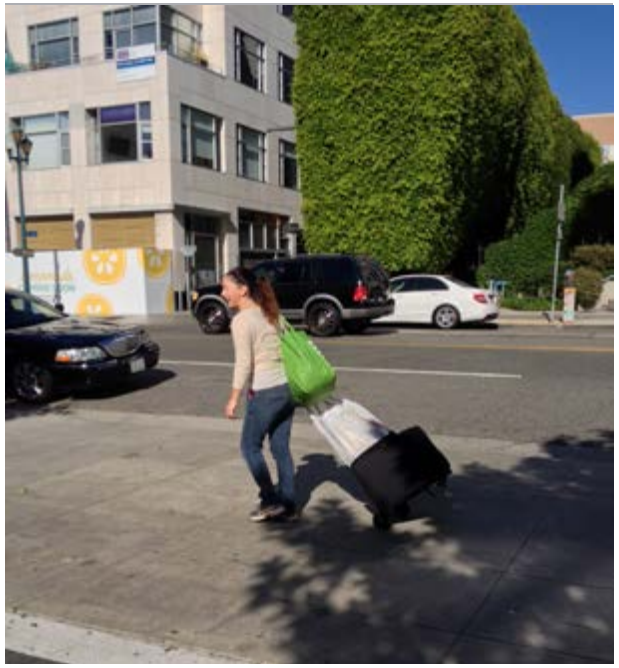
WHY TRANSPORTATION DEMAND MANAGEMENT (TDM) FOR RESIDENTS?

Residential TDM programs are effective because they can offer a personalized touch to participants. Programs can feature high levels of interaction between community members and outreach staff. The residents' ability to choose which transportation resources are included in their free kit means they only receive information that appeals to their needs and interests. The Portland SmartTrips model consistently posts high performance marks: double the estimated public engagement rates (15-28 percent versus the 8 percent engagement goal), 10 percent reduction in participants' vehicle miles traveled (VMT), and a 14 percent increase in participants' usage of active transportation.

Additional efforts may include:

WALK LOCAL PROGRAM. Tap into and expand the Buy Local concept by creating a Walk Local Program to help people walk and shop, by providing carrier bags, cart rental, safe short-term storage or other amenities to remove barriers to walking while shopping. The City should encourage Buy Local and local merchants to promote walking ideas and incentives. Program coordinators could create a library of items that can be loaned to residents to make walking easier, including carts. The program could leverage customer reward programs to incentivize walking to local businesses.

SUSTAINABILITY PROGRAM. Walking is the most sustainable form of transportation. Every time walking replaces a potential vehicle trip, the City moves closer to its climate change goals and target of No Net New PM Peak Hour Vehicle Trips. Providing transportation allowances for pedestrians, incorporating a walking mode in trip planners, and other services, would further this goal. The City can feature the importance of walking to Santa Monica's sustainability identity and the region when publishing City-sponsored publications like Seascape. The messages should be a part of community events including National Night Out, Santa Monica Festival, and Bike it! Walk it! days. Other elements would include public meetings to discuss the findings of Pedestrian Plan report card, incorporating walking into citywide sustainability metrics, and developing an educational piece that describes how walking supports sustainability for local partners. Pursuing grant funding opportunities that link Greenhouse Gas reduction to walking would also be critical.



Walking with parcels is easier with a wheeled cart.

Walking is the most sustainable form of travel.

Cyclists riding at LA's CicLAvia event in 2013.

ECONOMIC BENEFITS OF CICLAVIA

Think LA's CicLAvia event is all fun and games? Think again.

The June 2013 event netted an estimated $52,000 windfall for 129 businesses along the route that were part of a UCLA study on the event's effects. The conservative nature of the estimate means the actual economic benefits are likely even higher. UCLA's Lewis Center advises businesses along the route to embrace the concept and engage with participants.

Their analysis includes a list of recommendations for maximizing the benefits of street closure events such as moving wares closer to participants, if possible, by using a booth, music, and event-specific signage.

Program 7. Open Streets

"Open Streets" events limit motor vehicle access for part of a day so people can walk, bicycle, gather, relax, and participate in activities on car-free City streets. Events can span a few blocks or several miles of residential and commercial streets, creating a route that connects parks and local destinations without the noise and stress of motor vehicles. Open Streets events promote health by creating a safe and attractive space for physical activity and social gathering. Open Streets events also create new experiences and perspectives about the street that can build community excitement about walking and complete streets.

An Open Streets event is already planned for 2016 using Metro grant funds for the Downtown/Main Street area to the 4th Street/Downtown light rail station. The event will celebrate the Expo Line opening and promote First-Mile/Last-Mile walking and biking connections. Additional events could be planned for Main Street, Montana Avenue or Pico Boulevard in coordination with pedestrian and bicycle advocates and local business organizations.

BASELINE. Implement Metro funded Open Streets event to commemorate Expo Light Rail service in Santa Monica.

MODERATE. Host an Open Streets event on Main Street or Montana Avenue, limiting motor vehicle cross street traffic to select locations. Partner with CicLAvia to include a Santa Monica route in its annual programmed schedule, or produce annual event.

HIGH EFFORT. Program an annual Open Streets event in conjunction with the Group Walking Events (Program 10).

People fill the street at the 2015 Main Street Summer SOULstice event.

Program 8. Work Zone Pedestrian Safety

Since construction projects can range from a few days to possibly years in length, considering pedestrian safety in work zones is critical. Current construction accommodations for pedestrians are not consistent and often vary by project. Providing safe alternative paths is a legal requirement that demands careful consideration of local conditions to determine the best design. Depending on the circumstances, this could include rerouting pedestrians to cross at the nearest intersection or crosswalk, constructing a temporary walkway, or even determining that construction can be accommodated without use of the public right-of-way for the benefit of pedestrians in the project's vicinity. Construction plans should utilize best practices, field reviews where necessary, collaboration during plan review, and inspection of construction requirements to ensure safe high-quality pedestrian routes.

BASELINE. Provide applicants and city staff with best practices for providing pedestrian traffic control during construction. Enhance travel routes to ease navigation for people with disabilities.

MODERATE. Create new practices and reviews to ensure pedestrians are accommodated with the least amount of disruption of regular pathways.

HIGH EFFORT. Establish regulations that limit impacts on pedestrians including restricting the amount of time sidewalks are not available for use. Regularly and proactively enforce the maintenance of construction related traffic control.

Program 9. "Walk Downtown"

Downtown Santa Monica is a lively place, but pedestrian congestion during peak times can be frustrating to drivers, prompting consideration of this new program. Waiting to make a turn across streams of pedestrians is common, and some drivers may lose patience and take risks that result in collisions. During non-peak periods, drivers may also speed or drive distracted and threaten pedestrians. A Downtown-specific program to address the issue of safe driving in this high-intensity pedestrian environment can help build awareness and reduce behaviors that can lead to collisions. Downtown is identified as the focus for the program since the number of people walking and number of collisions in the area is high and pedestrian volumes will climb even higher when the Expo Line begins operation. The Walk Downtown Program will include regular review of reported collisions and concerns about specific locations, including mid-block crossings on 2nd and 4th Streets. The "Walk Downtown" campaign will promote the "park once" concept, the importance of pedestrians to the local economy, and the benefits of honoring the Downtown as a key pedestrian space. The program would include downloadable and printable walking maps and self-guided tour booklets.

BASELINE. Develop visitor-friendly messages for inclusion in existing materials.

MODERATE. Develop pedestrian safety print and poster campaign that connects Expo and Downtown Commercial patronage; review pedestrian collision data specific to Downtown and target implementation of pilot programs.

HIGH EFFORT. Coordinate encouragement, safety and enforcement efforts with promotional activities; provide self-guided tour booklets and maps.

Pedestrian safety is an important objective of the Downtown Community Plan.

Program 10. Group Walking Events

This is a newly suggested program to encourage walking and promote the health and wellness of the community. Organized group walkabouts held on lunch breaks, weekends or evenings can encourage walking for physical activity while connecting Santa Monica residents with popular destinations such as the beach, local historic resources, or hidden treasures, such as street side art or gardens. A number of organizations already incorporate group walks within their programming. Helping organizations, such as the Santa Monica Conservancy and Walk with a Doc, to promote their work and recognizing their successes can help attract more people to these events.

BASELINE. Create new walking maps to popular Santa Monica destinations or featuring Santa Monica themes.

MODERATE. Host and promote a yearly walking challenge, encouraging neighborhood, school, and other groups to collectively walk and log miles. The group with the most miles could be recognized by Council or through other promotions.

HIGH EFFORT. Provide fiscal support for local advocacy organizations to host regular walking tours. Create promotional materials and tracking mechanism for Walking Challenge to enhance interest.

Program 11. Activate Streets

This is a new program intended to formalize and enhance the City policy of activating streets through place-making. Streets can become more interesting by introducing art, seating, trees and other amenities that improve the walking experience. Street amenities that favor walkers send an important message about Santa Monica's commitment to high quality places. A program to permit public use of the street right-of-way, similar to the existing program for outdoor dining, would create opportunities to develop community gathering spots and points of interest on a temporary or permanent basis. This may range from allowing community groups to use parking spaces for special events that activate sidewalk activity, such as the annual "Park(ing) Day," to semi-permanent parklets that replace parking spaces or red curb areas with seating or other amenities with appropriate design precautions. Larger plazas might be installed on vacated streets. The City might promote temporary installations using days significant to Santa Monica's history or to celebrate achievements.

BASELINE. Encourage property owners to activate building frontage zones with pedestrian-scale art, and encourage it in City policy. (Specific and Area Plans.)

MODERATE. Develop a program to enable temporary use of the public right-of-way for community gatherings like Park(ing) day or parklets within city guidelines and criteria.

HIGH EFFORT. Initiate implementation of semi-permanent community gathering spots such as parklets or plazas with street furniture, including early implementation at appropriate locations within the Downtown, Main Street, Montana, Nebraska Avenue within the Bergamot Area Plan areas, Ocean Park Boulevard business district at 17th Street, Downtown and in close proximity to the Expo stations. Consideration for regularly-scheduled or permanent street closure treatments may focus on street ends, at locations where closing the street can improve its legibility, and in areas where pedestrian activity affects motor vehicle operations.

Parking spaces are replaced with a parklet, which creates an interesting activation of the streetscape. Source: SM Spoke

Additional efforts could include:

TRAFFIC SIGNAL CONTROL BOX ARTWORK. A new program is proposed to beautify traffic signal control boxes, which contain the computer systems that operate traffic signals. They are a prominent part of the pedestrian zone, but are not particularly attractive streetscape elements. Partnering with artists or neighborhood groups to turn them into elements that beautify the pedestrian environment would promote neighborhood character and also demonstrate that pedestrian-level improvements are a City priority. This program could beautify a set number of boxes per year through contests or partnerships with local artists or schools such as the program to add visual interest to Lincoln Boulevard south of the Santa Monica Freeway. Although the initiative would attract the interest of all travelers, the boxes' "human scale" could particularly resonate with walkers. Creating walking routes or contests to visit all the boxes could further promote the idea of their accessibility to pedestrians.

Example of utility box art: Pot Dot Series by Lisa Hoffman; Oakland, CA.

Beach path provides high visibility pedestrian crossings.

Vegetation should not obstruct pedestrian travel ways.

Program 12. Public Right-of-Way Pedestrian Improvement Program

To maintain and enhance the public rights-of-way, the City undertakes pavement striping, sidewalk maintenance, vegetation abatement, traffic signals, and street lighting through operational budgets and capital improvement programming. Many of these operations are administered by the Department of Public Works. With more proactive and systematic planning, regular operations can significantly improve conditions for pedestrians with minimal additional cost. An on-going complementary annual fund should be created to deliver pedestrian improvements consistently by either incorporating them into existing projects or defining new ones. As a standard practice, staff can consider the high demand or high collision areas identified in this plan to receive special pedestrian treatments such as painted medians, yield lines, or leading pedestrian signal intervals as part of maintenance efforts.

Existing programs can be slightly adjusted to better maintain pedestrian travelways and achieve objectives established within City plans. For example, regular paving restriping efforts could add new pedestrian-friendly crossing treatments and overgrown vegetation obstructing sidewalks could be more proactively mitigated by City crews within the limits of existing City code.

A regular program would include evaluating existing City projects and efforts to incorporate pedestrian improvements when changes are identified through the course of work, funding will have already been identified and not await a CIP funding cycle to address a community need for thoses that work.

BASELINE. Enhanced program coordination among City departments in effort to incorporate pedestrian enhancement into existing programs, and ensure unobstructed pedestrian travel ways.

MODERATE. Formalize existing programs using the project charter concept.

HIGH EFFORT. Target specific street segments each year (see below) or make program investments in additional efforts.

Additional efforts could include:

TRAFFIC SIGNAL AND INTERSECTION MODIFICATION PROGRAM. The City should prioritize ten street segments each year with an annual budget of $50,000 to implement relatively low-cost, high-value changes. Prioritization could include focusing on street segments with high collision rates. Current five-year data can determine the potential for quick action and low-cost improvements. Tools can include combinations of hardware and phasing improvements that standardize the operations and appearance of traffic signals. Solutions should minimize the potential for roadway users' conflicting movements including left turn protection, scramble phasing, and leading pedestrian intervals. (Refer also to the Pedestrian Action Plan Toolkit at the end of this document for additional strategies.)

PAVEMENT STRIPING PROGRAM. The City should consider systematically painting advance stop and yield bars, as well as green bike boxes, in front of crosswalks. This configuration discourages vehicle encroachment into the crosswalk as vehicles wait at traffic signals and stop signs. Advance stop bars should be systematically

installed at the end of alleys. As a result, street and alley crossings will be more comfortable for walkers.

EXPAND MARKED CROSSWALK PROGRAM. Wherever possible, City traffic engineers should install marked crosswalks and other appropriate facilities where warranted based on pedestrian demand. As intersections are re-striped, engineers should consider increasing the distance between crosswalks and stop/yield bars to reduce pedestrian uncertainty about whether drivers are planning to stop for them in the crosswalk, and to reduce potential for multiple threat collisions.

CURB EXTENSION AND REFUGE ISLAND PROGRAM. Curb extensions and median refuge islands shorten the time that the pedestrian is in direct potential conflict with traffic. They can serve as effective countermeasures to avoid pedestrian collisions. A program with a $300,000 annual budget for new curb extensions and refuge islands could install between two and four projects per year, although the exact number of installations would be based on specific design specifications. Curb extensions can also be designed to incorporate storm water management features. Curb extensions and medians could be temporarily installed with pavement markings before designs are finalized and projects are fully funded.

Streets should be accessible to everyone, regardless of physical ability.

SIDEWALK GAP PROGRAM. A program that prioritizes completing the few remaining gaps in the existing sidewalk infrastructure is recommended to provide complete access citywide. Gaps longer than 250 feet should be considered for the regular Capital Improvements Program.

Program 13: Pedestrian Scale Lighting

Residents have expressed concern that it feels unsafe to walk after dark in parts of the city due to a lack of sidewalk lighting. Although intersections are well-lit and feature safety lighting at crosswalks, there are long dark blocks between intersections sometimes made darker with heavy tree canopy. The stretches of unlit areas create insecurity about walking alone. Pedestrian-scale lighting is needed to increase nighttime walking activity and promote transit use.

BASELINE: Apply for funding for pedestrian lighting, focusing on areas closest to transit stops.

MODERATE: Incorporate pedestrian lighting into City projects.

HIGH EFFORT: Systematically evaluate and prioritize streets that would benefit from lighting; regularly fund projects.

PEDESTRIAN ACTION PLAN TOOLKIT

The Pedestrian Design Toolkit is intended to assist the City of Santa Monica in the selection and design of pedestrian facilities. The toolkit provides a collection of proven and potential pedestrian countermeasures and design treatments to prevent collisions and further the transportation safety goals in the Santa Monica Pedestrian Action Plan. The guidance provided here also serve as a tool for creatively developing capital and land development bringing this Plan's goals to life.

5.3 Projects

Projects encompass building something new. Practices and programs shift the overall environment and perceptions of walking while projects install physical improvements to make walking in a particular place better. Some projects already have funding to implement them, some projects have been identified through other plans or programs, and others are ideas that will take more than a decade to materialize. The common theme is that all projects will make Santa Monica a better place to walk. The projects proposed in this Plan are based on extensive analysis, taking into consideration: anticipated walking patterns, adequacy of walking facilities, safety considerations, vulnerable populations and community feedback.

CONCEPT DEVELOPMENT AND DESIGN

Final design of all street changes will be informed by site-specific surveys, civil engineering and land use considerations, and transportation conditions.

The project descriptions included in this plan are based on current transportation patterns, nearby land uses, City experience with different interventions, and best practices. Data available at the time of project development will be analyzed to confirm or substitute appropriate design elements. All projects will be subject to applicable environmental review consistent with the California Environmental Quality Act (CEQA).

Project actions build on best practices already in place in Santa Monica, including regular pavement maintenance, responses to GO System concerns, and a capital improvement program (CIP) that provides funding for street repaving as well as other improvements. All activities to repair and upgrade street infrastructure are opportunities to inject greater consideration for pedestrians.

Prior to project implementation, factors such as volumes of pedestrians and vehicles, adjacent land uses, transit service and regulatory requirements such as compliance with the California Environmental Quality Act (CEQA) and the California Manual of Uniform Traffic Control Devices (MUTCD) will be evaluated, with the use of the National Association of City Transportation Official (NACTO) Urban Street Design Guidelines.

Median crossing increases pedestrian safety.

As explained throughout this plan, national and international research in urban areas has shown that physical changes to the roadway can slow traffic near intersections, reminding drivers to yield to pedestrians and reducing the number and severity of injuries from crashes. Roadway changes can improve driver visibility of pedestrians as well as pedestrian awareness of traffic. Median crossings and lighted crosswalks are already installed in select locations around Santa Monica. The installations have provided City staff with opportunities to test the treatments' effectiveness and propose design augmentations. The actions in this section would bring physical changes to the public right of way at high priority locations providing the greatest pedestrian safety, transit access and health benefits.

The planning process identified dozens of intersection and corridor locations for improvement and more will likely be identified over time. The longer term infrastructure projects are equally important steps for enhancing Santa Monica's pedestrian environment. They are presented in a phased strategy that spreads the significant investment required to achieve the full program over time.

The Projects

The projects proposed for 5 year, 10 year, and 15 year implementation are described in Tables 5.2, 5.3, and 5.4. Projects proposed for 5, 10, and 15 year implementation are depicted in Figure 5.1. Projects underway or previously identified in other City policy documents that substantially contribute to the walking environment are also included.

As of 2015, the following projects in the 5-year plan already have funding secured:

EDISON LANGUAGE ACADEMY SRTS

This project includes the area bordered by 22nd Street, Pico Boulevard, 30th Street and the Santa Monica Freeway. It will improve site access to this elementary school located in the Pico Neighborhood while implementing the eastern portion of the Michigan Avenue Neighborhood Greenway (ManGO) plan. This Safe Routes to School project was funded by the State of California.

17TH STREET IMPROVEMENTS FOR PEDESTRIAN ACCESS AND LIGHTING

This project includes lighting and curb extensions on 17th Street between Wilshire and Pico Boulevards, improving access to the Expo Light Rail station at 17th Street. The City will provide a local match to supplement this Metro grant awarded through its Call for Projects.

Location specific enhancements are recommended in three time horizons:

5 year, 10 year and 15 year

5 YEAR IMPLEMENTATION PROJECTS

5

Projects identified in this initial time period have either been funded by grants such as Metro's Call for Projects or Caltrans' Active Transportation Program. Projects not yet funded will be pursued through the City's Capital Improvement Program should additional grant funds not be available.

10 YEAR IMPLEMENTATION PROJECTS

10

These projects require funding and design work that is not anticipated to be completed within the next five years. Funding will be pursued through multiple grant opportunities and the City's Capital Improvement Program.

15 YEAR IMPLEMENTATION PROJECTS

15

These projects are anticipated to take the longest amount of time to implement, requiring substantial funding, planning, design, and coordination.

Figure 5.1 Proposed Projects: 5, 10, and 15 Year Map

Citywide Projects

City of Santa Monica
Pedestrian Action Plan

Project Priority

- Five Year
- Ten Year
- Fifteen Year

Project Type

- Corridor
- Intersection
- School area improvement
- Metro Station

Note:
Extents of lighting, wayfinding, curb ramp, bike corral, signal modification, lead pedestrian interval and school projects are not mapped.

0 0.25 0.5 Miles

Data obtained from the City of Santa Monica
Map created December, 2015

Table 5.2 Proposed Projects: 5 Year Table

Category	Location and Extents	Project Description	Cost Estimate*
Bergamot	Nebraska Street, Stewart to Centinela Avenues	Install four curb extensions, crosswalks, painted medians, 2 rapid rectangular flashing beacons, curb ramps at all corners; update signage and striping.	$351,000
	Olympic Boulevard, 26th to Stewart Streets	Sidewalks (approx 1,100 LF) on north side of street; add access ramps; grind and replace one lane line; removing and replacing curb and gutter (per Bergamot Area Plan).	$1,062,000
Boulevard	Lincoln Boulevard, Interstate 10 to Dewey Street	Upgrade with components such as median islands, rapid rectangular flashing beacons, curb extensions and marked crosswalks (LinC plan in progress)	TBD-LinC plan pending
Downtown	4th Street/Interstate 10	Facilitate pedestrian crossing at 4th Street at 10 Freeway on/off ramp with sidewalk extension along the eastern side of 4th Street, pedestrian railing, fencing ,and lighting along the 4th Street bridge with trees on non-bridge sidewalk. (Santa Monica grant applicaton)	$2,020,000
	Downtown, 2nd Street and 4th Street, Wilshire Boulevard to Colorado Avenue; 3rd Street at Wilshire Boulevard	Add pedestrian scrambles to 11 intersections allowing pedestrian crossing in all directions at the same time, and allowing autos to cross street and turn without presence of pedestrians.	$200,000
Expo	Half mile radius from each Expo station	Develop and implement wayfinding program for pedestrians, cyclists and transit riders for first last mile connections; static and dynamic signs integrated into traditional signs. (Santa Monica grant application)	$600,000
	Pico Neighborhood, in the vicinity of 17th Street/Michigan Avenue	Siting and installation of pedestrian-oriented lighting within Community Development Block Grant (CDBG) eligible neighborhoods, to 80-100 new light fixtures. (Santa Monica grant application)	$795,000
	Stewart Street, Colorado Avenue to Pico Boulevard	Improve access to Expo with pedestrian scaled lighting and directional access ramps	$2,059,000

*Total Costs of projects from previously adopted plans or submitted grant applications are escalated at a rate of 3% per year

Table 5.2 Proposed Projects: 5 Year Table (Continued)

Category	Location and Extents	Project Description	Cost Estimate*
Freeway	17th Street, Interstate 10	Safety and pedestrian usability enhancements for overcrossing, including lighting	$801,000
Main Street	Main Street, Pico Boulevard to Marine Street	Install up to two parklets along Main Street between Pico Boulevard and Marine Street as a Pilot project.	$80,000
Memorial Park	17th Street, Wilshire to Pico Boulevards	Streetscape project connecting Expo Station to north and south towards Santa Monica College, including pedestrian-scale lighting, and curb extensions. (Santa Monica grant application)	$2,200,000
Oceanfront	Santa Monica Pier, West of Colorado Avenue	Replacement Pier bridge to priortize pedestrian access, designed to accommodate high volumes of pedestrians (Cost from Santa Monica grant application)	$25,520,000
Safe Routes	Edison Language Academy, Area Bordered by 22nd Street to 30th Street/Pico Boulevard to Freeway	Edison Language Academy Safe Routes to School (eastern MANGo) including crosswalk striping, curb extensions/dual curb ramps, wayfinding, shared lane markings. (Santa Monica grant application)	$415,000
	Schools, surrounding Public K-12 schools	Upgrade signs and striping to enhance safety adding curb extensions, flashing beacons and crosswalks at four schools. (Santa Monica grant application)	$970,000
	Pine Street, 14th Street	Add curb extensions at all 3 legs	$154,000
	California Avenue, 14th Street, 15th Street, 16th Street	Add curb extensions and crosswalks at all 4 legs	$634,000
Citywide	Multiple	Install curb ramps at 50 locations.	$1,760,000
		Total Pedestrian Action Plan 5 Year Project Costs	**$39,621,000**

*Total Costs of projects from previously adopted plans or submitted grant applications are escalated at a rate of 3% per year

Figure 5.2 Examples of Treatments in Santa Monica

Table 5.3 Proposed Projects: 10 Year Table

Category	Location and Extents	Project Description	Cost Estimate*
Bergamot	Olympic Boulevard, 26th Street to Stewart Street, Berkeley Street	2 signalized midblock crosswalks through median island, as per Bergamot Area Plan, with curb extensions; future signalized intersection with new street at Berkeley	$3,413,000
	Olympic Boulevard, Stewart Street to Centinela Avenue	Sidewalks (approx 2,800 LF) on north side of street; add access ramps; grind and replace one lane line; removing and replacing curb and gutter (Bergamot Area Plan cost estimate)	$1,728,000
	Olympic Boulevard, Cloverfield Boulevard	Add curb extensions- consider reduction of lanes as follows: westbound Olympic remove right turn lane and install curb extension; southbound Cloverfield remove 1 left turn lane; NB Cloverfield remove 1 left turn lane and install curb extension. Signal modification and extension of median island	$747,000
	Olympic Boulevard/Nebraska Avenue, Stewart Street	Reconfigure intersection with improvements to include combination of median island on Stewart Street, new curb ramps, moving limit line on Stewart Street northward to Nebraska Avenue (per Bergamot Area Plan)	$923,000
	Olympic Boulevard, 26th Street	Reduce crossing distance and increase pedestrian separation from traffic by installing 2 median islands, 2 curb extensions, 2 radius reductions; leading pedestrian interval and new crosswalk markings	$787,000
Boulevard	Cloverfield Boulevard, Broadway	Signal modifications including a left turn protected phase on Broadway and Leading Pedestrian Intervals on all approaches.	$428,000
	Ocean Park Boulevard, 28th Street-31st Street	Curb extensions at 29th and 30th on north side	$205,000
	Pico Boulevard, 17th-Cloverfield Boulevard	10 curb extensions along corridor, 3 median islands, new crosswalks,2 RRFBs and textured crosswalk at 22nd, leading pedestrian intervals and new pavement markings	$912,000
	Pico Boulevard, 29th Street	Add new crosswalk	$338,000
	Pico Boulevard, 33rd Street	Relocate EB transit stop (on south side) to far side of intersection	$35,000
	San Vicente Boulevard, 4th Street	Curb extension and Rapid Rectangular Flashing Beacons	$229,000
	Santa Monica Boulevard, Yale to Berkeley Streets	Add left turn protected signal phases and necessary equipment	$880,000

*Total Costs of projects from previously adopted plans or submitted grant applications are escalated at a rate of 3% per year

Table 5.3 Proposed Projects: 10 Year Table (Continued)

Category	Location and Extents	Project Description	Cost Estimate*
Boulevard (continued)	Wilshire Boulevard, 9th to Franklin Streets	Curb extensions, crosswalks and yield lines at 15 unsignalized intersections with median islands, consider Rapid Rectangular Flashing Beacons (RRFB) at select locations	$3,735,000
Citywide	Multiple	Install 20 Bike Corrals in the access zone, particularly in the Downtown or areas where demand for sidewalk space exceeds capacity	$171,000
Downtown	Broadway, Ocean Avenue to Lincoln Boulevard	Add Curb extensions at 2nd, 4th, 5th, 6th and 7th Streets with special placement and design to allow bus operations to continue	$1,474,000
	Downtown, Downtown Community Plan Area	Install pedestrian scaled lighting in phases throughout Downtown	$12,320,000
	Downtown, Downtown Community Plan Area	Modify signals or turn restrictions with Overlapping right-turn signalization when left-turn phasing present- eliminating left turns to reduce pedestrian-auto conflicts at ten select intersections	$4,400,000
	Downtown, Downtown Community Plan Area	Implement lead pedestrian signalization at ten select locations, locations to be considered include near community facilities, senior facilities, locations with a crash history	$26,000
	3rd Street Promenade at Arizona Avenue and Wilshire Boulevard	Design and install improvements similar to transit mall	$600,000
	Lincoln Boulevard, Wilshire Boulevard to Interstate 10	Streetscape project which may include pedestrian lighting, crossing improvements, pedestrian amenities	$9,979,000
	Ocean Avenue, Wilshire Boulvard to Broadway	Curb extensions and lead pedestrian intervals	$845,000
	Wilshire Boulevard, 4th to 7th Streets	Implement protected left turns at 4th-7th Streets, curb extensions and lead pedestrian intervals	$1,197,000
	Colorado Avenue, 6th to 7th Streets	Add curb extensions at 6th and 7th Streets	$211,000
Expo	Broadway, 16th Street	Evaluate and implement crossing enhancements	$25,000
	Cloverfield Boulevard, Colorado Avenue to Delaware Avenue	Pedestrian scaled lighting, curb radius reduction and shorter crossings where feasible, directional access ramps and pedestrian interest features; at freeway upgrade pedestrian ramps, add high visibility crosswalks and pedestrian signals south of on-ramp to create a neighborhood connection	$1,315,000

*Total Costs of projects from previously adopted plans or submitted grant applications are escalated at a rate of 3% per year

Table 5.3 Proposed Projects: 10 Year Table (Continued)

Category	Location and Extents	Project Description	Cost Estimate*
Freeway	14th Street, Interstate 10 (Olympic to Michigan)	Pedestrian lighting, landscaping, decorative fencing, directional ramps	$2,950,000
	20th Street, Interstate 10	Facilitate pedestrian crossing of freeway on and/or off ramp with curb extensions, lighting, and aesthetic amenities	$1,505,000
	Lincoln Boulevard, Interstate 10	Improvements may include: truncated median with nose on Lincoln Boulevard south approach with straightened crosswalk, reconfigured curb radii,lead pedestrian intervals, repositioned pedestrian push buttons, pedestrian lighting, landscaping, decorative fencing, directional ramps	$2,336,000
Greenway	Michigan Avenue Neighborhood Greenway, Beach to Bergamot Arts Center	Construct MANGo improvements such as mini-parks, landscaped traffic circles and other traffic calming devices, pedestrian-scaled lighting, and new and enhanced pathways from beach to Lincoln Boulevard, 14th Street to 20th Street and Bergamot Connector (per ManGO Plan)	$1,990,000
Hospital	Arizona Avenue, 16th Street, 17th Street	Curb extensions and directional ramps	$422,000
	Arizona Avenue, 20th to 23rd Streets	High visibility crosswalks and traffic operational improvements	$34,000
Main Street	Main Street , Hollister Avenue	Add high visibility crosswalks and yield markings; relocate transit stop at the community garden to a location south of Hollister, install two median islands and ADA access ramps	$209,000
Memorial Park	Colorado Avenue, 9th to 19th Streets	Add curb extensions across at all intersections to help cross parallel to Colorado Avenue, should there be additional crosswalks across Colorado Avenue, add curb extensions (Santa Monica grant application)	$1,433,000
	Expo Bike/Ped Path Extension, 11th to 17th Streets	12' setback (should redevelopment occur) along the south side of Colorado Avenue, widening the sidewalk from 10' to 22', to accommodate a multi-use pathway/bikeway that connects the Expo Bike Path to 11th Street	Private Cost through Developer Agreement
Montana	Montana Avenue, 4th to 7th Streets	Curb extensions at Montana Avenue and 4th Street, and Montana Avenue at 7th Street, with consideration of turn lanes and storm drains. Study possible removal of NB left turn lanes at both intersections.	$845,000

*Total Costs of projects from previously adopted plans or submitted grant applications are escalated at a rate of 3% per year

Table 5.3 Proposed Projects: 10 Year Table (Continued)

Category	Location and Extents	Project Description	Cost Estimate*
Neighborhood	Hill Street, 2nd Street	Remove curb ramp and metal railing at SE corner and replace with curb extensions and ADA-compliant curb ramp.	$52,000
	Hill Street, 3rd Street	Remove curb ramp and metal railing at NE corner and replace with curb extension and new curb ramp.	$52,000
Oceanfront	Pico Boulevard, Neilson Way/ Ocean Avenue	Remove northbound Neilson right turn slip lane, and close the southbound Ocean/Barnard entrance. Maintain the southbound Bike access on Ocean South of Pico and increase open space.	$311,000
	Beach Path, North City Limits to Santa Monica Pier	Parallel path for pedestrians adjacent to bicycle path north of the Pier and improvements to Ocean Front Walk north of the pier including paving, seating, and lighting; safe places for people to cross the beach path, including landing areas on both the sand and non-sand sides of the path (Cost from Santa Monica grant application)	$5,517,000
Safe Routes	Montana Avenue, 9th Street	Curb extension on northeast corner with flashing beacons. Explore signal warrants	$75,000
	Ocean Park Boulevard, 16th to 23rd Streets	16th Street: Prohibit left turns onto Ocean Park; 17th Street: implement no right-turn on red restrictions; also includes 11 curb extensions; replacement of left turn lanes at 16th and 18th Streets with refuge medians, 3 RRFBs, 3 bus stop relocations and high visibility crosswalk pavement markings at 6 intersections	$1,005,000
	Olympic Drive South, Avenida Mazatlan to 7th Court	Multi Use Path to connect the Civic Center Area to the Michigan Avenue Greenway, serving Samohi by reconfiguring existing parkway between Avenida Mazatlan and 4th Street, constructing a multi-use path with lighting adjacent to sidewalk on southside of Olympic east of 4th Street	$932,000
	Pearl Street, 14th Street, 16th Street, 17th Street	Add curb extensions at 14th and 16th Streets, bi-directional curb ramps at 17th Street; consider community based redesign of Pearl Street to reduce parking, vehicle and pedestrian conflicts	$440,000
	Public K-12 Schools, Citywide	New tree wells, permeable paving in dirt parkways heavily used by pedestrians, potential benches and trash receptacles at 8 locations at perimeter of all public K-12 schools	$1,751,000
	Washington Avenue, 14th Street, 15th Street	Add curb extensions and crosswalks on all legs of 14th Street and 15th Street	$427,000
		Total Pedestrian Action Plan 10 Year Project Cost	**$60,209,000**

*Total Costs of projects from previously adopted plans or submitted grant applications are escalated at a rate of 3% per year

Table 5.4 Proposed Projects: 15 Year Table

Category	Location and Extents	Project Description	Cost Estimate*
Airport	Airport Avenue, 23rd Street to Donald Douglas Loop South	Provide continuous sidewalk on north side of street	$545,000
Bergamot	Nebraska Avenue, Stewart Street to Centinela Avenue	Design and construct shared and flexible street including medians, curb extensions and traffic channelization (per Bergamot Area Plan)	$5,682,000
	Berkeley Street, Nebraska to Pennsylvania Avenues	Design and construct shared street to provide pedestrian path of travel with landscaping, decorative paving, gateway/entry design treatment, vehicle speed reduction elements, wayfinding, and pedestrian amenities such as lighting, street furniture, and wayfinding (per Bergamot Area Plan)	$1,868,000
	Nebraska Avenue, Stewart to 26th Streets	Future extension of Nebraska Avenue to be achieved through negotiation with property owners/ developers (per Bergamot Area Plan)	" Private Cost through Developer Agreement "
	Stewart, Colorado to Nebraska Avenues	Traffic Signal, wider curb extension and marked crosswalks at Pennsylvania Avenue; mid-block crosswalk with median island (per Bergamot Area Plan)	$1,231,000
Boulevard	Neilson Way, Ocean Park Boulevard to Pacific Street	Detailed assessment of opportunities to provide adequate sidewalk, will require some combination of property acquisition, private property setbacks, turn restrictions, reallocation of right-of-way, negotiated with property owners	" Private Cost through Developer Agreement "
	Ocean Avenue, Colorado Avenue to Pico Boulevard	Integrated streetscape projects with pedestrian oriented lights, sidewalk enhancements, 2 curb extensions at the midblock pedestrian crossing (Ocean Ave between Olympic and Pacific Terrace) and wayfinding project to include: not interfering with proposed buffer bike lane as recommended in Bike Action Plan (257 feet of new bike lane on west side of Ocean Ave, Vicente Terrace to Pico Boulevard; painting of existing bikeways, approximately 3,543 feet), reduction of 1 curb radius on NW corner of Moomat Ahiko Way and 1 curb extension on SW corner of Seaside Terrace	$8,776,000
	Pico Boulevard, 28th Street	One curb extension on the SE Corner (remove RT pocket) and one curb extension on the NE corner.	$133,000
	Santa Monica Boulevard, Lincoln Boulevard to 20th Street	Streetscape project to include curb extensions, crosswalks, advance stop lines, directional ramps, pedestrian oriented lights, interim improvements may include prioritizing pedestrian crossings at alleys, marking crosswalks, and traffic signal adjustments at 20th Street	$19,722,000

*Total Costs of projects from previously adopted plans or submitted grant applications are escalated at a rate of 3% per year

Table 5.4 Proposed Projects: 15 Year Table (Continued)

Category	Location and Extents	Project Description	Cost Estimate*
Boulevard (continued)	Santa Monica Boulevard, 20th Street to Centinela Avenue	Streetscape project to include 7 landscaped median islands (one on each block separating the rear end of the right turn lanes, 32 curb extensions, 2 crosswalks, 2 advance stop lines, directional ramps, pedestrian oriented lights	$19,907,000
	Wilshire Boulevard, 26th Street	Install 1 curb extension on SW corner and 4 bidirectional ADA ramps. Does not include corners that would result in loss of right turn lane. Without limiting operations, narrow western most driveway on the northeast corner facing Wilshire by 5 feet, and add 1 "Autos Only" sign encouraging trucks to enter easternmost driveway and exit northernmost driveway after refueling	$74,000
	Wilshire Boulevard, Yale Street	Replace 3 diagonal ramps on SW, SE and NW corners, and 4 curb extensions on all four corners of the intersection	$218,000
Downtown	South of Colorado Avenue, Ocean Avenue to Lincoln Boulevard	Create additional connections across the freeway between Ocean Avenue and Lincoln Boulevard including coordination with Expo Station and Sears sites (Downtown Community Plan).	" Private Cost through Developer Agreement "
	Wilshire Boulevard, Ocean Avenue to Lincoln Boulevard	Add 4 curb extensions at 8 intersections along Wilshire Boulevard	$1,735,000
Expo	Exposition Boulevard, Centinela Avenue	Widen 2,000 feet of sidewalk- 500 feet on each approach to the intersection	$658,000
Greenway	24th Street, La Mesa Drive to Broadway	The 24th Street Neighborhood Greenway will improve the walking and biking environment with traffic calming, placemaking, and enhanced landscaping (per Bike Action Plan)	$174,000
	6th Street, Pico Boulevard to Dewey Street	6th Street Neighborhood Greenway will improve the walking and biking environment with traffic calming, placemaking, and enhanced landscaping and pedestrian/bike bridge at 7th Street over Santa Monica Freeway (per Bike Action Plan)	$9,274,000
	Ashland Avenue, Beach to Clover Park	Ashland Avenue Neighborhood Greenway will improve the walking and biking environment with traffic calming, placemaking, and enhanced landscaping (Bike Action Plan cost estimate)	$145,000
	Washington Avenue, Ocean Avenue to Stanford Street including Berkeley Street	Washington Ave Neighborhood Greenway will improve the walking and biking environment with traffic calming, placemaking, and enhanced landscaping (per Bike Action Plan)	$580,000

*Total Costs of projects from previously adopted plans or submitted grant applications are escalated at a rate of 3% per year

Table 5.4 Proposed Projects: 15 Year Table (Continued)

Category	Location and Extents	Project Description	Cost Estimate*
Main Street	Main Street, Pico Boulevard to Marine Street	4 curb extensions at all 12 pedestrian crossing intersections (48 total), minimizing parking loss	$2,907,000
Montana Avenue	Montana Avenue, 7th Street to 17th Street	Evaluate and implement pedestrian safety and placemaking elements	$12,329,000
Neighborhood	26th Street, Santa Monica Boulevard to Olympic Boulevard	Provide accessible sidewalk on east side of street	$1,336,000
		Total Pedestrian Action Plan 15 Year Project Cost	**$87,294,000**

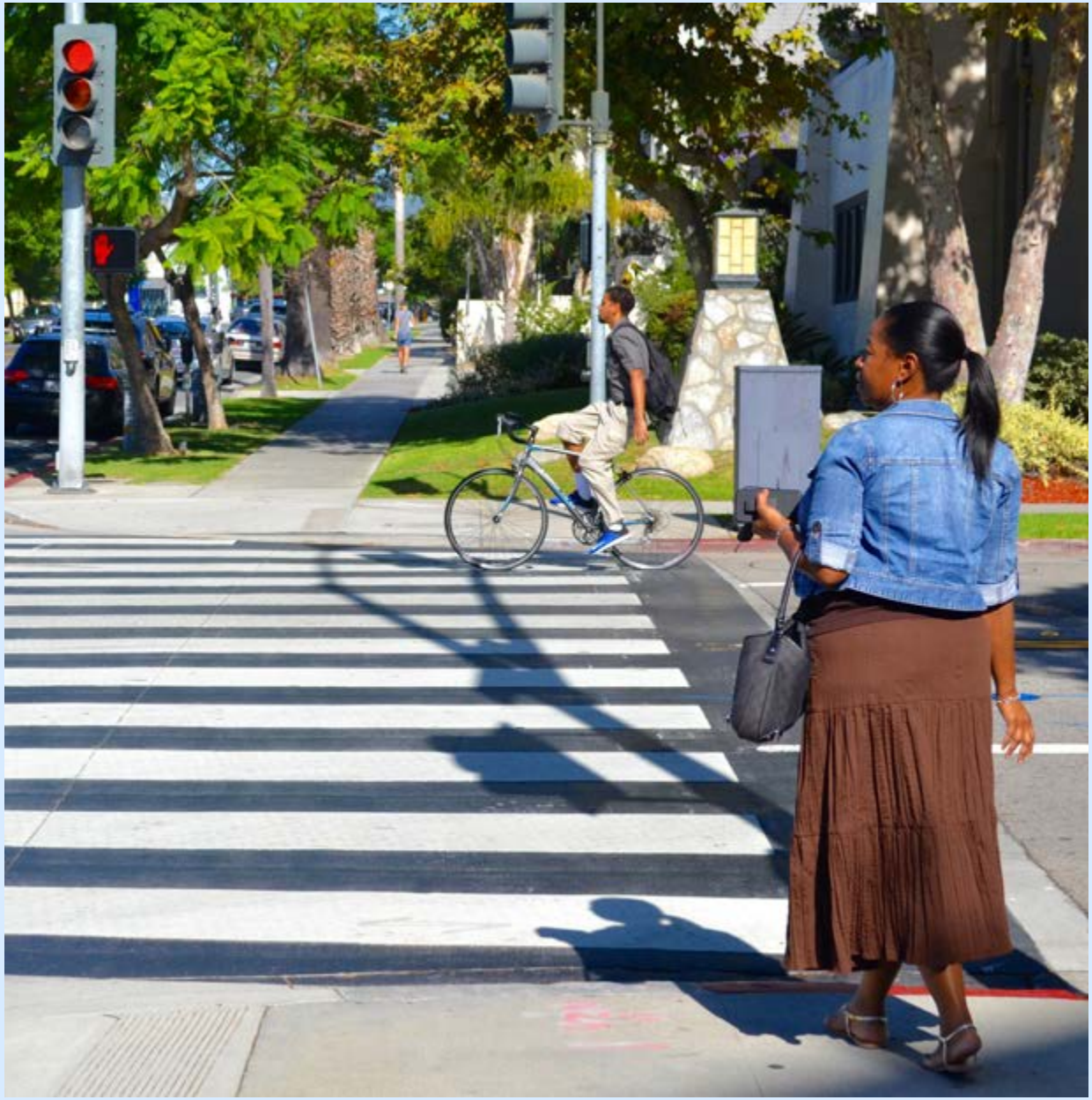
*Total Costs of projects from previously adopted plans or submitted grant applications are escalated at a rate of 3% per year

CHAPTER 6: MONITORING + FUNDING

Measuring and monitoring the achievement of desired outcomes is at the core of the City's Sustainability Plan, Land Use and Circulation Element, Bergamot Area Plan, and Bicycle Action Plan. Similarly, performance measures for the Pedestrian Action Plan will gauge how well we are doing in implementing the Plan, and to what extent that is making walking safer and more comfortable citywide. This monitoring will document the effectiveness of executed practices, programs and projects, pointing future funding applications toward the most effective strategies.

Community participation will be crucial in creating shared priorities and responsibilities for the implementation and monitoring of this Plan. Community groups know the city intimately and provide unique and specific feedback. When local organizations are continuously involved in implementation, they gain institutional knowledge that carries on from year to year to support long-term projects, programs, and policy sustainability. On-going community feedback and partnerships are part of active plan monitoring and implementation.

Public right-of-way improvements can be funded through a variety of grants and non-city funding. The Pedestrian Action Plan provides the required approved concepts and construction estimates that make Santa Monica projects competitive for outside funding.



6.1 Monitoring and Evaluation

Tracking progress over time allows for periodic assessment of what's going well and what needs improvement. The performance measure categories include the following broad topic areas:

PEDESTRIAN SAFETY. Crash data trends provide crucial objective information about trends and pathways, though they do not provide a subjective interpretation of what may or may not feel "safe" to a pedestrian. The crash data used for performance measures are traffic-related, and will be used to support implementation of the Vision Zero Policy.

PEDESTRIAN ACTIVITY. How many people walk and how often they walk can be measured by surveys, counts, transit boarding data, and other methods. The U.S. Census American Community Survey and local surveys can reveal if walking trips have increased as a fraction of all travel. Counts measure the number of pedestrians in specific locations, and changing activity levels over time.

PEDESTRIAN PERCEPTIONS AND THE BUILT ENVIRONMENT. Subjective data and opinions reflect how people of all ages rate walking in terms of connectivity, ease of use, safety, comfort, enjoyment and other factors. This data is typically collected by local or regional transportation agencies through surveys, outreach events and other communication venues. It is balanced with data about progress in project and program delivery, and will help focus on the Council directive to make walking comfortable for those aged 8 to 80.

IMPLEMENTATION. The number of projects completed and programs executed is a measure of plan implementation progress. Data about progress in projects and program delivery can be collected through annual staff updates.

Indicators

The Pedestrian Action Plan's performance measures, listed in Table 6-1, are based on the following principles:

- The measure relates to the goals of the Pedestrian Action Plan and can be supported by data
- Data can be collected from existing or planned resources
- Data are consistently available over time to enable tracking over time
- The results are clear, meaningful and concise

Identified trends and targets create a means by which the City can benchmark the performance of the Plan.

In addition to monitoring based on these indicators, the City will pursue funding for supplemental monitoring measures. The City will report regularly on the progress of plan implementation and the status of performance measures as a way to inform decisions on investments and resource allocation. The resident survey and data collected and shared by other organizations already serve as useful data sources. In addition, an expanded program will include a stand-alone biannual resident and visitor survey focused on transportation.

Report Card

A biannual pedestrian report card for the Pedestrian Action Plan will be published using key qualitative and quantitative data to illustrate changes in walking use, safety levels, and facility quality to direct or redirect efforts to support Plan goals based on the indicators in Table 6-1. Similar to the Sustainable Santa Monica Report Card, the Pedestrian Report Card would monitor the City's efforts and publicize results. The three key measures to track in this report card are:

1. Vision Zero Progress as measured by number of pedestrian fatalities and severe injuries;
2. Mode share is the percent of all trips made by walking as measured through regularly collected transportation survey. Mode target is 25 percent of all household trips will be made by walking, to be potentially amended after the completion of the anticipated Strategic Mobility Plan and travel survey;
3. Capital impovements as measured by number of constructed transportation operations and capital improvement projects that support the pedestrian infrastructure, described on a citywide map.

Table 6.1 Pedestrian Report Card Indicators

Indicator	Trend	Data Source	Partner Organization	Frequency	Level of Reporting Effort
VISION ZERO					
Number of pedestrian fatalities and severe injury collisions	Decrease	SMPD crash data	SMPD	Annual	Low
Number of traffic-related pedestrian collisions per 1000 population counts	Decrease	SMPD crash data	SMPD	Annual	Low
Change in vehicle speeds on high priority pedestrian corridors	Reduction in 85th percentile vehicle speeds	Speed Survey	SMPD	Every 5 Years	Medium
Number of School Site Access Improvements	Increase	Capital Improvement Project Reporting	Public Works	Biannual	Low
Number of K-12 students participating in Safe Routes to School Activities	Increase	School tallies, enrollment records in specialized classes	SMMUSD	Annual	Medium
MODE SHARE					
Walk Trips as % of Work Trips	Increase	American Community Survey; local household survey; Travel Diary Survey	NA	Every five years in response to ACS update; biannual household survey)	Low
Walk Trips as % of All Trips	Increase	National Household Travel Survey; Local Household Survey	NA	Biannual	High
Number of pedestrians in selected count locations	Increase	Traffic movement counts are conducted biannually	NA	Biannual	Medium
Number of students walking and bicycling to school on Bike it Walk it Day	Increase	Bike it, Walk it Day surveys	SMMUSD	Annual	Medium
% of Santa Monica employees reporting that they are walking to work	Increase	Transportation Demand Management employer survey responses	TMA	Annual	Low

Table 6.1 Pedestrian Report Card indicators (Continued)

Indicator	Trend	Data Source	Partner Organization	Frequency	Level of Reporting Effort
CAPITAL IMPROVEMENTS					
Number of pedestrian-oriented enhancement projects (wayfinding, lighting, parklets, etc.)	Increase	Capital Improvement Project Tracking	Public Works	Biannual	Low
Miles of sidewalk network completed	Increase	Capital Improvement Project Tracking	Public Works	Annual	Low
Juried Walkable Communities Score	Improve score	Walkable Communities Application	Public Works	Every five years	Medium

6.2 Funding and Resources

Resources For Implementation

The funding climate for transportation investments regularly changes at the federal, state, regional, and local level. Many available funding sources are competitive, and the Pedestrian Action Plan's focus on community safety, sustainability, health, equity, and data-driven decision-making is anticipated to make Santa Monica's projects attractive for outside funding.

The City commits to funding the 5 Year Action Plan and its monitoring through a variety of traditional and innovative federal, state, regional, and local sources, in partnership with community based organizations. The City will continue to seek funding for the 10 and 15 year projects in the future. Appendix C describes in greater detail the potential federal, state, regional, local, and private or non-profit funding sources.

Design Resources for Funding Applications

Appendix A includes detailed project descriptions for projects that are near term candidates for funding:

- Main Street at Hollister Avenue
- Ocean Park Boulevard between 17th and 23rd Streets
- Pico Boulevard between 17th Street and Cloverfield Boulevard
- Wilshire Boulevard between 9th and Franklin Streets
- Olympic Boulevard from Cloverfield Boulevard to Centinela Avenue

Multiple Funding Sources

Expenditures related to pedestrians currently come from many different pots of money, and will continue to do so. Different funds are available from different places for items such as relatively large one-time expenditures of building infrastructure, one-time funds for promotional activities targeted to different audiences, on-going maintenance of facilities, and the staff to oversee the work. Just as there are different departments and work groups throughout the City, an array of local, county, regional, federal and philanthropic entities have an interest in improving walking and do so by funding projects through competition and negotiation.

Outside Funding Sources

The City of Santa Monica has a track-record of successfully pursuing and receiving funds that are competitively allocated. These funds include federal and state funds, distributed directly from the federal or state departments, but many are allocated to the state or regional entities for competitive allocation and administration to communities. Some funding has a growing history, such as for Safe Routes to School. Resources are frequently reallocated at the federal level and the process for the distribution of many funds changes every few years.

Most grants only fund physical improvements that make a change to the pedestrian environment and the complicated requirements associated with the funds make them feasible for only the most expensive improvements. Some resources are available for enforcement, education and outreach. The funds for pedestrian improvements are typically very competitive. Historically grouped with bicycle funding, pedestrian funding or funding for 'active transportation modes' is typically a relatively small portion of transportation funding available.

Dependence on Local Funds

Local funds are used by multiple departments to fund: the maintenance and improvement of facilities; education, safety, encouragement and enforcement efforts, and; the staff to build facilities, maintain existing infrastructure, administer grants, staff crosswalks near schools, police streets, and coordinate work efforts.

Use of local funds allows for consistency of availability with routine elements incorporated into department's maintenance and staff operating budgets. Increases in facilities and increased dedication to maintenance crucial to the pedestrian experience, necessitates changes to operating budgets. Local funds are also allocated through the City's Capital Improvement Program (CIP); this budgeting is also competitive as the community's needs and desires outpace available funding.

The Funding Landscape

The full array of funding resources are documented in Appendix C. This describes the federal, state and regional allocation of competitive applications. It also goes into more detail about funds that are collected and the returned to Santa Monica to be spent for purposes specified in the original authorization for the collection of these funds. Local resources available to pedestrian investments such as the Transportation Impact Fee, Measure V funds and negotiated Development Agreement funds are also discussed.

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APPENDIX A

PROJECT DESIGN EXAMPLES

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Appendix A. Project Design Examples

This appendix includes detailed project descriptions for projects that are near-term candidates for funding:

- Pico Boulevard between 17th Street and Cloverfield Boulevard
- Ocean Park Boulevard between 16th and 23rd Streets
- Main Street at Hollister Avenue
- Olympic Boulevard from Cloverfield Boulevard to Centinela Avenue
- Wilshire Boulevard between 9th and Franklin Streets

The project area, the intersection, and walkway improvements recommended, and planning level cost estimates are provided for each project example to assist with implementation.

Planning level design concepts incorporate consideration of collision patterns, access to transit, and pedestrian demand. Additionally the recommendations have included consideration of intersection geometry, traffic volumes and turning movement patterns. The intent of the project samples is that they inform and support future grant applications. The project descriptions included in these plans are based on current transportation patterns, nearby land uses, City experience with different interventions, and best practices.

Final design of all street changes will be informed by site-specific surveys, civil engineering and land use considerations, and transportation conditions. Data available at the time of project development will be analyzed to confirm or substitute appropriate design elements. All projects will be subject to applicable environmental review consistent with the California Environmental Quality Act (CEQA).

Prior to project implementation, factors such as volumes of pedestrians and vehicles, adjacent land uses, transit service and regulatory requirements will be re-evaluated. Consistency with the California Manual of Uniform Traffic Control Devices (MUTCD) will be evaluated, with the use of the National Association of City Transportation Official (NACTO) Urban Street Design Guidelines. Pending design and transportation engineering analyses, refined concepts and budget estimates will be created based on the types and quantities of countermeasures employed.

USING THIS DOCUMENT

Intersection number

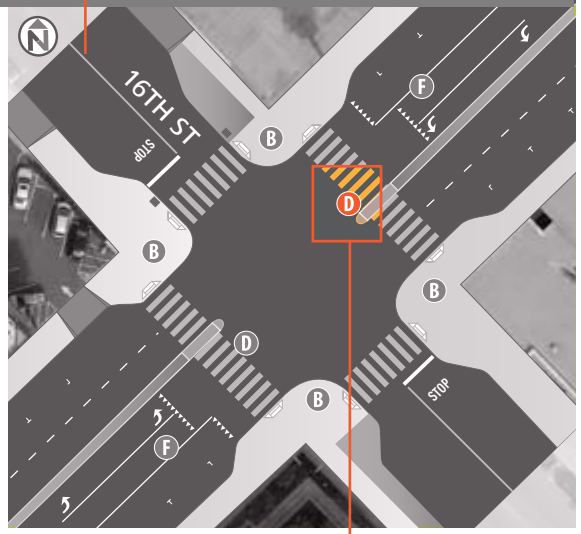
Cross streets

Treatment description

Treatment overview

2 WILSHIRE BOULEVARD AT 16TH STREET

This treatment proposes new curb extensions to reduce pedestrian crossing times on Wilshire Boulevard. New crosswalk markings will be required on Wilshire Boulevard. This treatment requires the relocation of two storm drains on the north and east corners of Wilshire Boulevard. Similar conditions exist at 9th, 10th, and 18th Street.



PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	0	4
B	Curb Extension (Corners)	4	4
D	Rectangular Rapid Flash Beacon	2	2
F	Advanced Yield Marking	2	2
2	16th St at Wilshire Blvd	$230,500	

Improvement line item

Number of new units to be constructed

Total units after construction (including existing)

Investment icon

Construction cost for treatment

PICO BOULEVARD FROM 17TH TO CLOVERFIELD

SM-C73

DESCRIPTION

Pico Boulevard is a major boulevard that serves as a regional transportation corridor. It consists of four lanes of traffic, traversing commercial, residential and mixed-use neighborhoods. Santa Monica College is an important destination and transit hub for the city, making pedestrian connections vitally important. These intersections are served by five bus routes, each operated by Big Blue Bus, including Route 6, Route 7, Route 7 (Rapid), Route 11 and Route 44 (Sunset Ride). The highest number of pedestrian collisions has occurred at 17th Street and 20th Street. Most collisions are preceded by turning vehicles. Three collisions have occurred between 19th Street and 22nd Street between year 2000 and year 2010. Five intersection investments are proposed near Santa Monica College over a ten-year period. The Health and Sustainability Analysis rated this location as high on the Priority Investment Areas index to improve health and income disparities.

DESTINATIONS SERVED

- Santa Monica College
- Virginia Avenue Park
- Santa Monica Swim Center
- John Adams Middle School
- Grant Elementary School
- Will Rogers Learning Community

STREET TYPE: BOULEVARD

SPEED LIMIT: 35 MPH

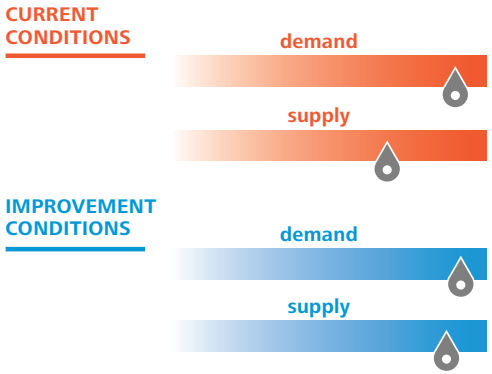
TRAFFIC VOLUMES: 36,000 ADT †

† Source: KSS Fuels, 2012.

COST ESTIMATE SUMMARY

	INVESTMENT	COST
1	17th St at Pico Blvd	$55,000
2	19th St at Pico Blvd	$83,000
3	21st St at Pico Blvd	$45,000
4	22nd St at Pico Blvd	$199,500
5	Cloverfield Blvd at Pico Blvd	$136,500
	Sub-total	$519,000
	Escalation costs	$394,000
	Total cost for project SM-C73	**$913,000**

PEDESTRIAN SUITABILITY INDEX



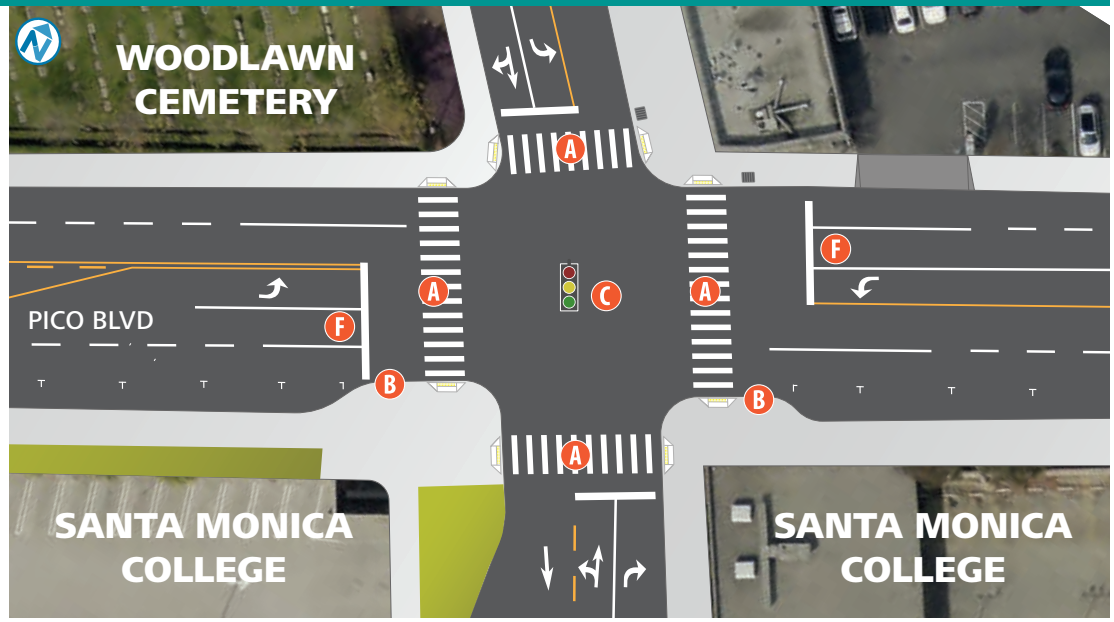
The Pedestrian Suitability Index compares the demand for walking with the quality of available walkways and intersections

1 PICO BOULEVARD AT 17TH STREET

Two curb extensions crossing Pico Boulevard on the south and east corners are suggested to reduce the crossing distance for pedestrians. Treatments include striped crosswalks, ADA-compliant curb ramps and a leading pedestrian interval. Advanced stop markings are also included. No parking removal is required, and no storm drains need to be relocated.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	4	4
B	Curb Extension (Corners)	2	2
C	Leading Pedestrian Interval	1	1
F	Advanced Stop Marking	2	2
1	Cost for 17th St at Pico Blvd	$55,000	

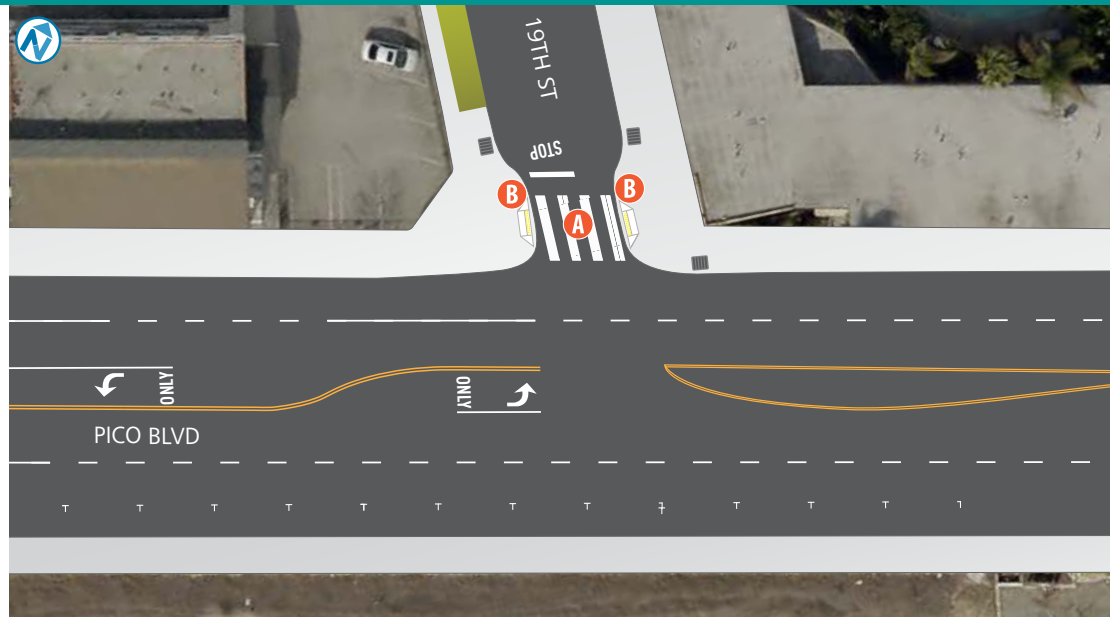


2 PICO BOULEVARD AT 19TH STREET

Curb extensions for 19th Street at Pico Boulevard are suggested to reduce the crossing distance for pedestrians and make pedestrians more visible to cars turning onto 19th from Pico Boulevard. Treatments include a striped crosswalk and ADA-compliant curb ramps. Two storm drains on 19th street must be relocated.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	1	1
B	Curb Extension (Corners)	1	2
2	Cost for 19th St at Pico Blvd	$83,000	



3 PICO BOULEVARD AT 21ST STREET

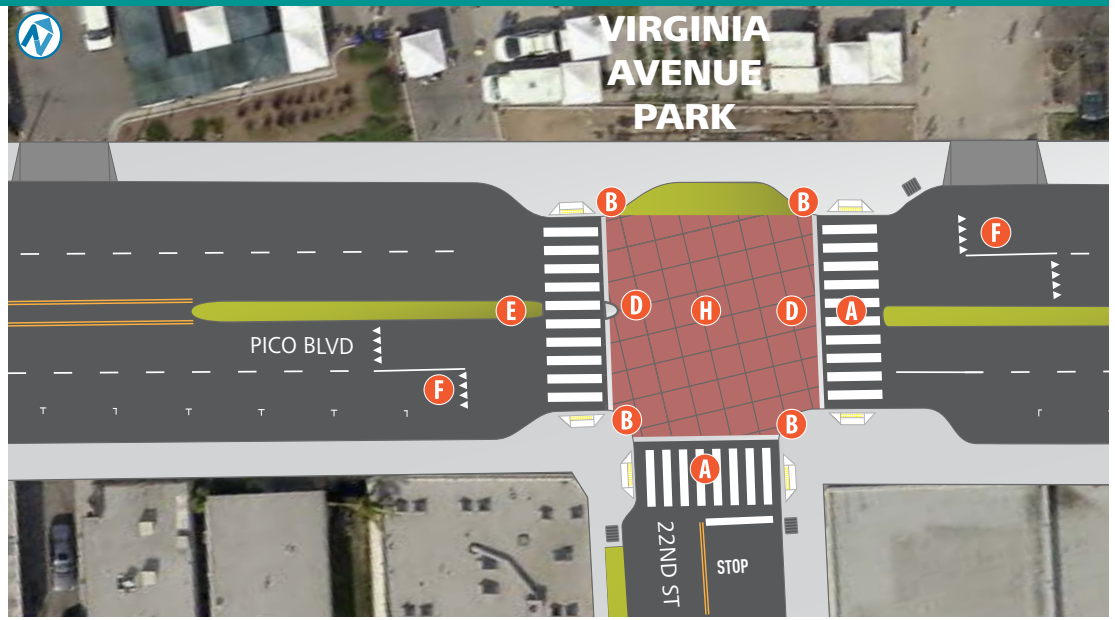
Curb extensions for the north and south sides of 21st Street at Pico Boulevard are suggested to reduce the crossing distance for pedestrians and make pedestrians more visible to cars turning onto 21st from Pico Boulevard. Treatments include a striped crosswalk and ADA-compliant curb ramps. One storm drain must be relocated on the north side of 21st Street.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	2	2
B	Curb Extension (Corners)	3	3
3	Cost for 21st St at Pico Blvd	$45,000	

4 PICO BOULEVARD AT 22ND STREET

This treatment includes curb extensions at all corners and a colored, textured pavement at the intersection. Removing one parking space from the north side of the intersection would improve pedestrian visibility. Two storm drains must be relocated with the installation of curb ramps—one on the south corner of 22nd Street and another on the north side of Pico Boulevard.



PLAN IMPROVEMENTS

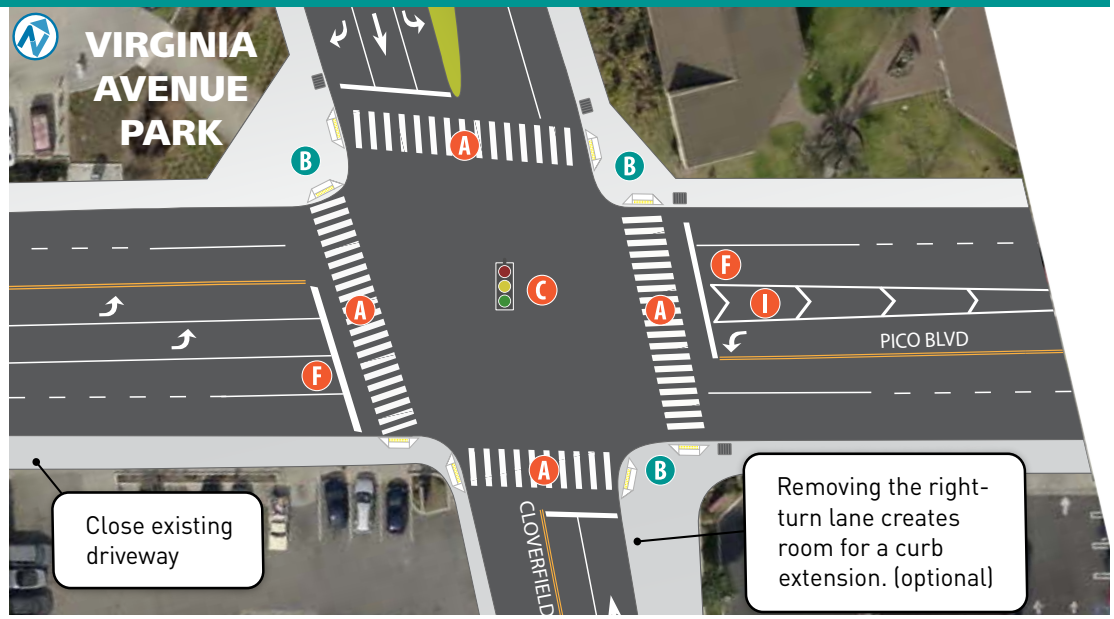
	FEATURE	NEW	TOTAL
A	Crosswalk Marking	2	3
B	Curb Extension (Corners)	4	4
D	Rectangular Rapid Flash Beacon	2	2
E	Median Refuge Island	1	1
F	Advanced Yield Marking	2	2
H	Textured Intersection	1	1
4	Cost for 22nd St at Pico Blvd	$199,500	

5 PICO BOULEVARD AT CLOVERFIELD BOULEVARD

The intersection of Cloverfield Boulevard at Pico Boulevard is large with many lanes of traffic and long crossing distances for pedestrians. The treatments include curb extensions and a leading pedestrian interval. Removing the right-turn lane on northbound Cloverfield Boulevard is an option that would give room for a curb extension at the north corner.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	4	4
B	Curb Radius Reduction	3	3
C	Leading Pedestrian Interval	1	1
F	Advanced Stop Marking	2	2
I	Center Median	1	1
5	Cost for Cloverfield Blvd at Pico Blvd	$136,500	



OCEAN PARK BOULEVARD FROM 16TH TO 23RD

DESCRIPTION

Ocean Park Boulevard provides an east-west connection through the Sunset Park neighborhood. This section of Ocean Park Boulevard consists of a single travel lane and a bicycle lane in each direction. The project consists of six intersections located near John Adams Middle School, recreational facilities, and within close proximity to several residential and employment areas. The intersections are served by four bus routes, each operated by Big Blue bus, including Route 6, Route 8, Route 41, and Route 44. This segment has a high number of left-turn collisions at 17th Street and through vehicle collisions at 18th Street. The Health and Sustainability Analysis rated these locations as moderate on the Priority Investment Areas index to improve health and income disparities.

In addition to the intersection investments detailed here, no-right-turn-on-red restrictions can be implemented at Ocean Park Boulevard and 17th Street to reduce conflicts with pedestrians.

DESTINATIONS SERVED

- Fairview Branch Library
- Will Rogers Learning Community
- Neighborhood commercial area
- John Adams Middle School
- Santa Monica College
- Grant Elementary School

STREET TYPE: BIKEWAY & AVENUE-SECONDARY

SPEED LIMIT: 35 MPH

TRAFFIC VOLUMES: 20,000 ADT †

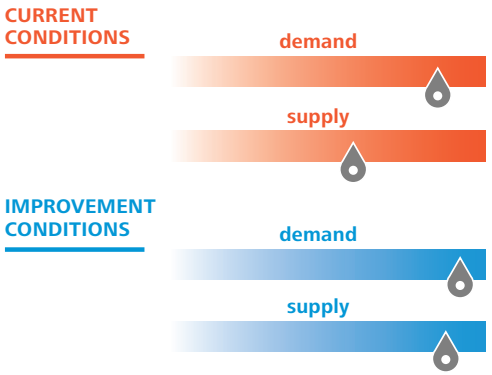
† Source: Santa Monica Speed Survey, 2013.

COST ESTIMATE SUMMARY

	INVESTMENT	COST
1	16th St at Ocean Park Blvd	$114,500
2	18th St at Ocean Park Blvd	$65,000
3	20th St at Ocean Park Blvd	$91,500
4	21st St at Ocean Park Blvd	$87,500
5	22nd St at Ocean Park Blvd	$42,500
6	23rd St at Ocean Park Blvd	$21,500
	Sub-total	$422,500
	Other costs ‡	$579,500
	Total cost for project SR-16	**$1,002,000**

‡ Includes escalation and 17th Street treatment

PEDESTRIAN SUITABILITY INDEX



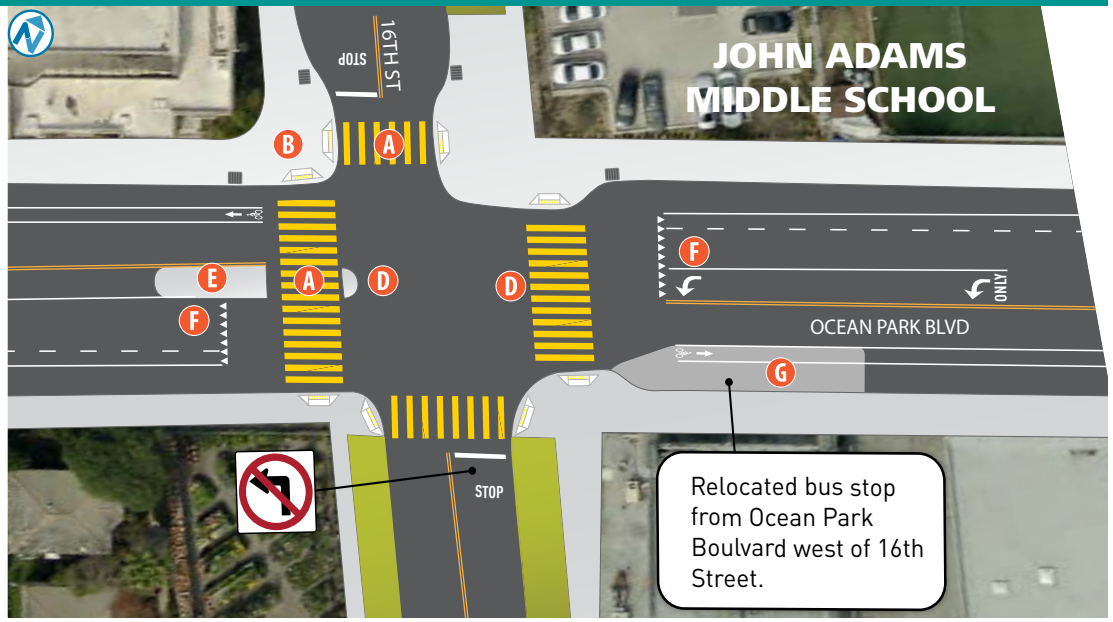
The Pedestrian Suitability Index compares the demand for walking with the quality of available walkways and intersections

1 OCEAN PARK BOULEVARD AT 16TH STREET

Interventions include curb extensions, high-visibility yellow crosswalks, rectangular rapid flash beacons and a median refuge island to make pedestrian crossing of Ocean Park Boulevard easier. Eastbound left-turning vehicles will make turns from the through-lane onto 16th Street. Vehicles will be prohibited from making left turns onto Ocean Park Boulevard from 16th Street. This treatment requires the relocation of one storm drain.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	2	4
B	Curb Extension (Corners)	1	2
D	Rectangular Rapid Flash Beacon	2	2
E	Median Refuge Island	1	1
F	Advanced Yield Marking	1	2
G	Bus Stop with Bus Pad	1	1
1	Cost for 16th St at Ocean Park Blvd	$114,500	

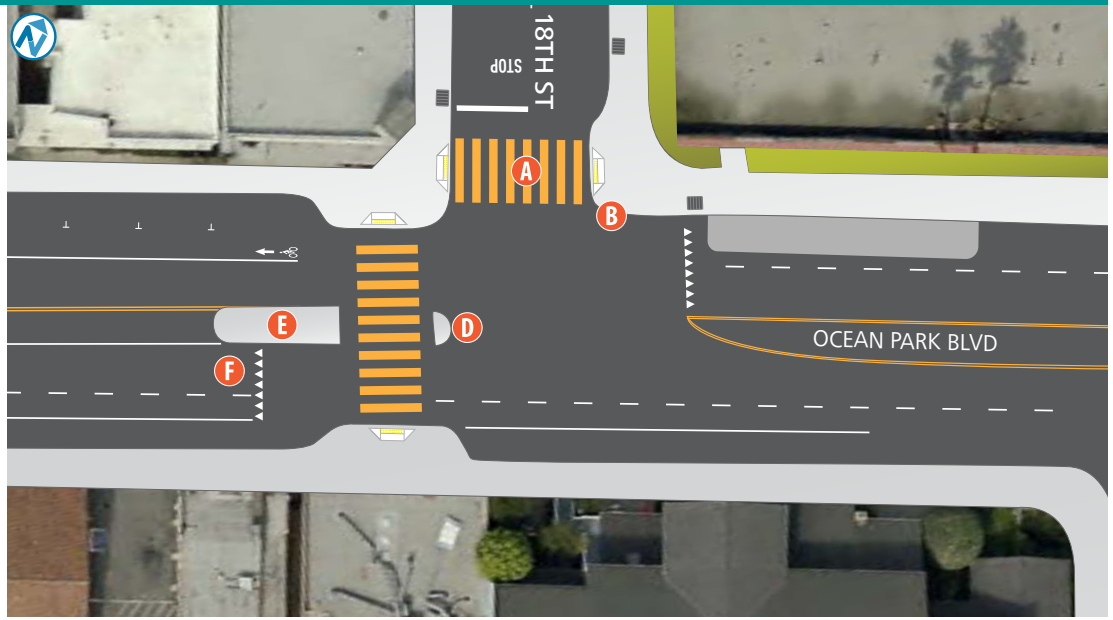


2 OCEAN PARK BOULEVARD AT 18TH STREET

Interventions include curb extensions, high-visibility crosswalks, rectangular rapid flash beacons and a median refuge island to make pedestrian crossing of Ocean Park Boulevard easier. Eastbound left-turning vehicles will make turns from the through-lane onto 18th or they could be prohibited. This treatment does not require relocating storm drains.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	1	2
B	Curb Extension (Corners)	1	3
D	Rectangular Rapid Flash Beacon	1	1
E	Median Refuge Island	1	1
F	Advanced Yield Marking	1	1
2	Cost for 18th St at Ocean Park Blvd	$65,000	

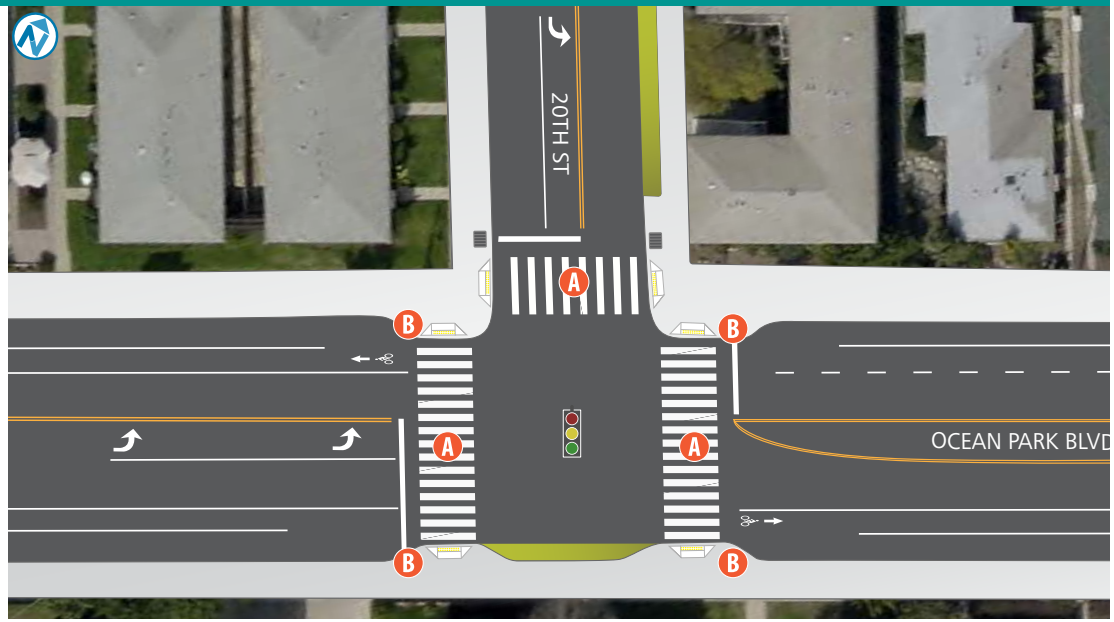


3 OCEAN PARK BOULEVARD AT 20TH STREET

The interventions at the signalized intersection at 20th Street include curb extensions and more visible and well-marked crosswalks that improve pedestrian crossing of Ocean Park Boulevard. This also includes a leading pedestrian interval to improve the visibility of pedestrians crossing the street. One parking space will be removed from the west corner of Ocean Park Boulevard. No storm drains need to be relocated.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	3	3
B	Curb Extension (Corners)	4	4
C	Leading Pedestrian Interval	1	1
3	Cost for 20th St at Ocean Park Blvd	$91,500	

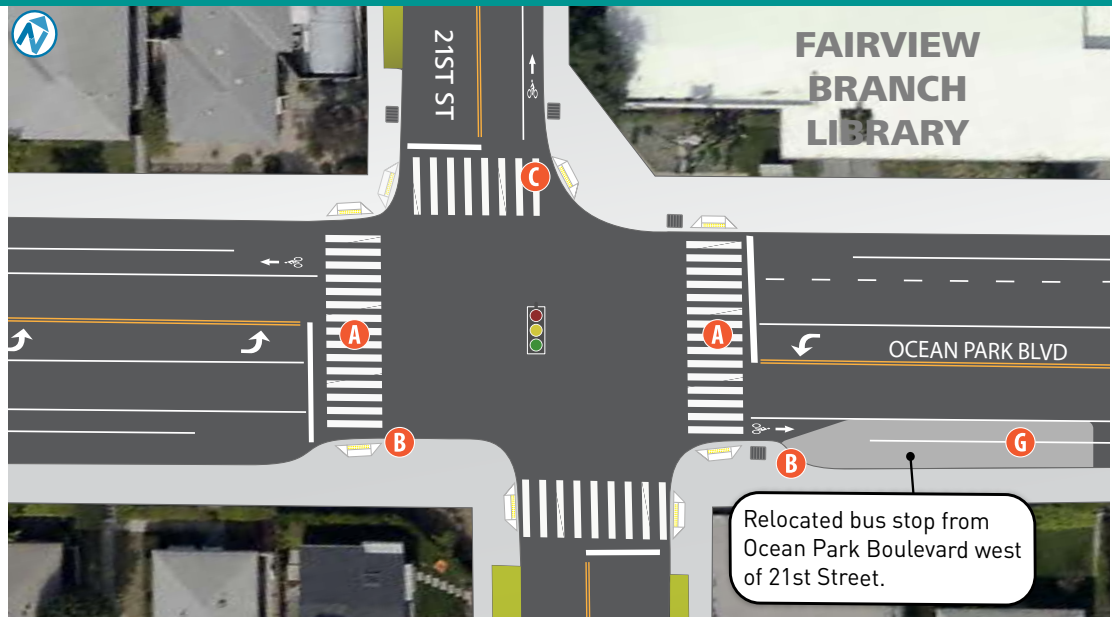


4 OCEAN PARK BOULEVARD AT 21ST STREET

The interventions at the signalized intersection at 21st Street are curb extensions on the southern side of Ocean Park Boulevard and well-marked crosswalks that improve comfort of pedestrians crossing Ocean Park Boulevard. The storm drain at the east corner of Ocean Park Boulevard must be relocated with this treatment. Relocation of the eastbound bus stop on Ocean Park Boulevard from the southwest corner to southeast corner will improve pedesterian visibility.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	2	4
B	Curb Extension (Corners)	2	2
G	Bus Stop with Bus Pad	0	1
4	Cost for 21st St at Ocean Park Blvd	$87,500	



5 OCEAN PARK BOULEVARD AT 22ND STREET

The main focus of the intervention at 22nd Street are curb extensions and more visible and well-marked crosswalks that will improve pedestrian crossing of 22nd Street. No storm drains need to be relocated.

PLAN IMPROVEMENTS

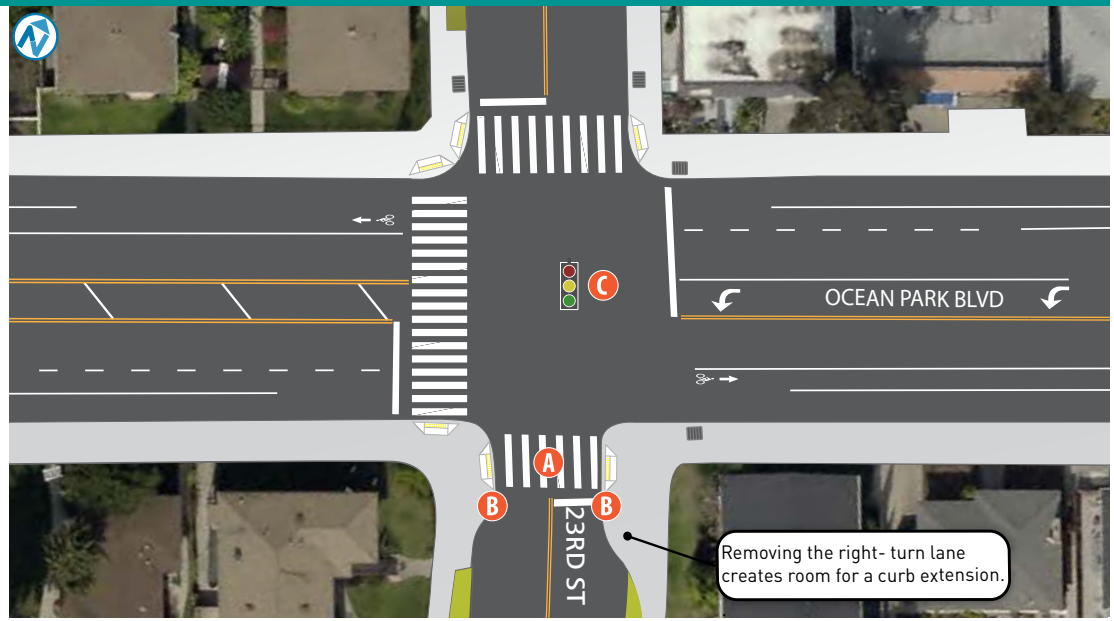
	FEATURE	NEW	TOTAL
A	Crosswalk Marking	1	1
B	Curb Extension (Corners)	2	2
5	Cost for 22nd St at Ocean Park Blvd	$42,500	

6 OCEAN PARK BOULEVARD AT 23RD STREET

The main focus of intervention at 23rd Street are curb extensions and well marked crosswalks that will improve comfort for pedestrians crossing Ocean Park Boulevard. The curb extension on the southeastcorner of Ocean Park Boulevard requires removal of the 23rd Street northbound right-turn pocket. A leading pedestrian interval is also proposed. No storm drains need to be relocated.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	1	3
B	Curb Extension (Corners)	2	2
C	Leading Pedestrian Interval	1	1
6	Cost for 23rd St at Ocean Park Blvd	$21,500	

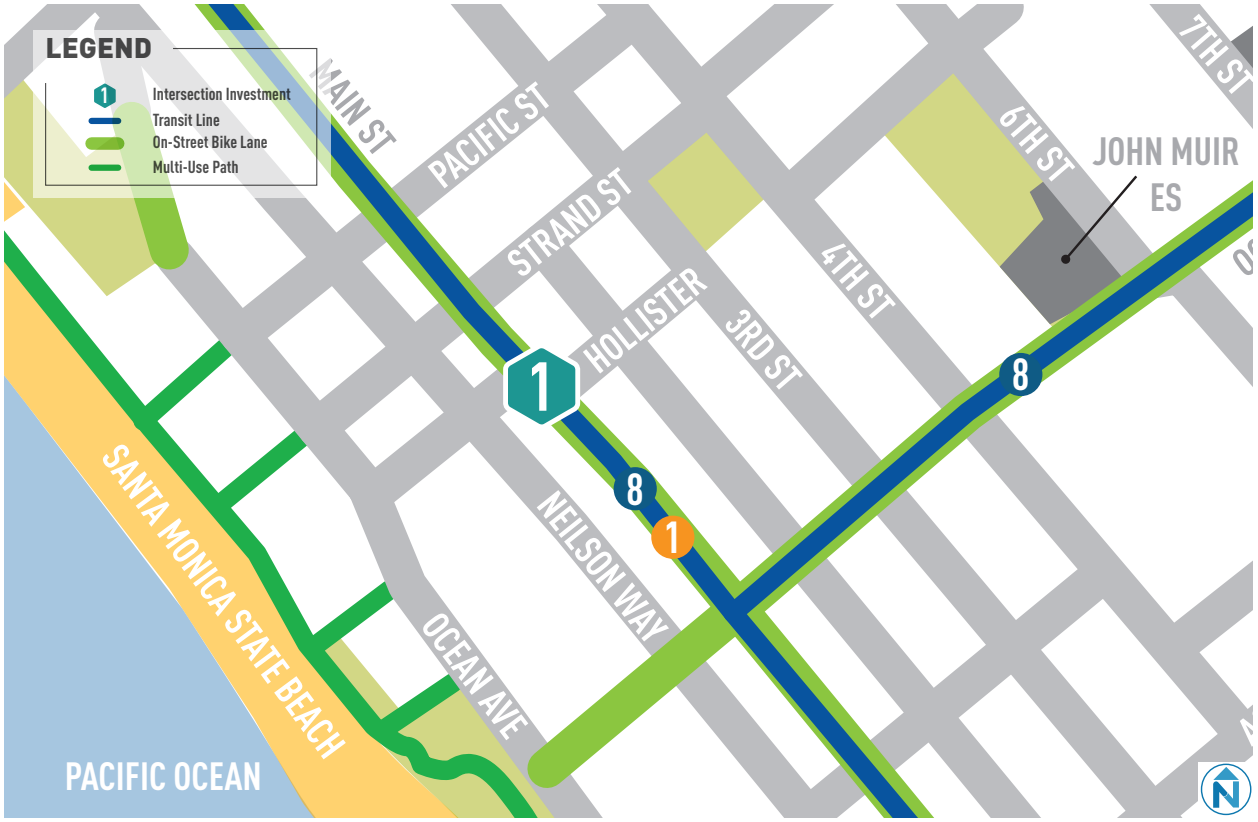


MAIN STREET AT HOLLISTER AVENUE

SM-23

DESCRIPTION

Main Street at Hollister Avenue is located within the Main Street Commercial District. This intersection is located only two blocks from Santa Monica State Beach, near the Edgmar Center for the Arts and is surrounded by residential and commercial employment centers. This intersection is served by two Big Blue Bus routes; Route 1 and Route 8. Most pedestrian collisions involve a through-vehicle at this intersection. The Health and Sustainability Analysis rated this location as high on the Priority Investment Areas index to improve health and income disparities.



DESTINATIONS SERVED

- Main Street Business District
- Santa Monica Community Gardens
- Edgmar Center for the Arts
- Santa Monica State Beach
- Barnard Way Linear Park

STREET TYPE: BIKEWAY COMMERCIAL-NEIGHBORHOOD

SPEED LIMIT: 25 MPH

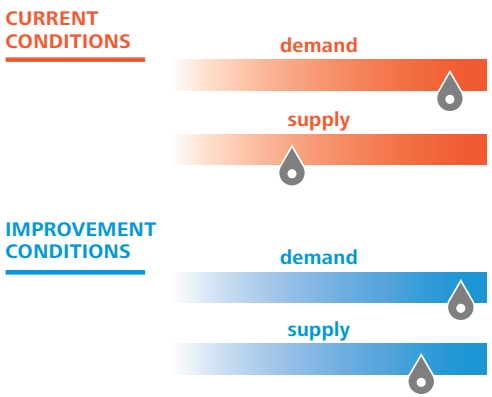
TRAFFIC VOLUMES: 19,000 ADT †

† Source: KSS Fuels, 2012.

COST ESTIMATE SUMMARY

INVESTMENT	COST
1 Hollister Ave at Main St	$122,500
Escalation costs	$87,000
Total cost for project SM-23	$209,500

PEDESTRIAN SUITABILITY INDEX



1 MAIN STREET AT HOLLISTER AVENUE

SM-23

The main intervention at this intersection is the installation of two pedestrian refuge islands to the north and south of Hollister Avenue. These islands reduce crossing distance and exposure levels for pedestrians while slowing vehicle traffic due to the narrowing of the roadway. Vehicle speed reduction can improve a driver's ability to yield to pedestrians. The improvement also includes moving the southbound bus stop to the far end of the intersection and the removal of two parking spaces from the intersection, increasing visibility for pedestrians in the crosswalk. One non-functioning curb cut located in front of the proposed bus stop will be removed with the relocation.

PLAN IMPROVEMENTS

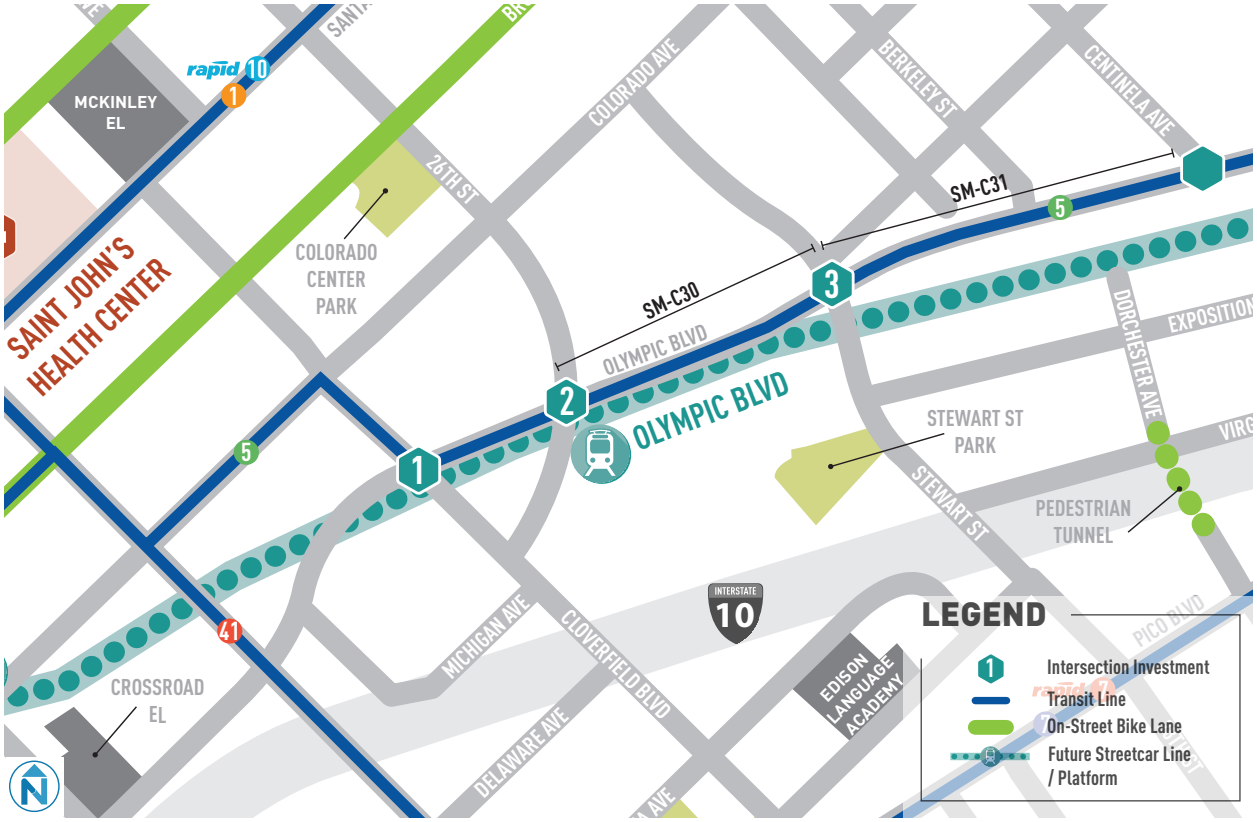
	FEATURE	NEW	TOTAL
A	Crosswalk Marking	2	3
E	Median Refuge Island	2	2
F	Advanced Stop Marking	0	4
G	Bus Stop with Bus Pad	1	2
J	Bicycle Markings	3	3
1	Cost for Hollister Ave at Main St	$209,500	

OLYMPIC BOULEVARD FROM CLOVERFIELD TO CENTINELA SM-C30 SM-C31

DESCRIPTION

This portion of Olympic Boulevard is located along the nearly complete Expo light rail line that connects downtown Santa Monica with downtown Los Angeles. The Olympic Boulevard area is home to many employers, including media, technology, biomedical and light industrial firms. Olympic Boulevard is served by Bus Route 5 operated by Big Blue Bus. The Health and Sustainability Analysis rated these locations as moderate on the Priority Investment Areas index to improve health and income disparities. The Pedestrian Action Plan's Pedestrian Suitability Index rates pedestrian demand higher than the existing infrastructure supply. Demand is expected to grow with the opening of light rail and increasing area employment.

Two sidewalk projects on the north side of Olympic Boulevard are not illustrated in the example, Projects SM-C30 and SM-SC31. Project SM-C30 extends from 26th Street to Stewart Street along Olympic Boulevard. Project SM-C31 extends from Stewart Street to Centinela Street along Olympic Boulevard.



DESTINATIONS SERVED

- Stewart Street Park
- 26th Street/ Bergamot Expo Station
- Bergamot Arts Center
- Crossroads Elementary School
- New Roads High School

STREET TYPE: PARKWAY

SPEED LIMIT: 40 MPH

TRAFFIC VOLUMES: 32,000 ADT †

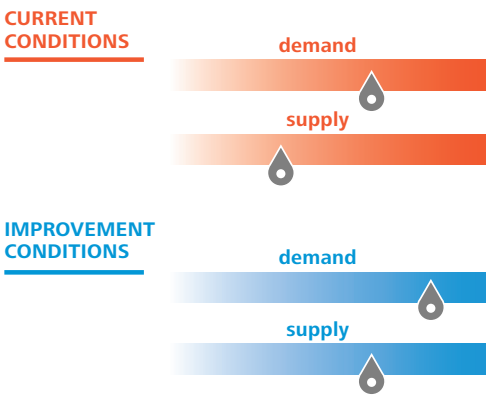
† Source: KSS Fuels, 2012.

COST ESTIMATE SUMMARY

INVESTMENT		COST
1	Cloverfield Blvd at Olympic Blvd	$134,500
2	26th St at Olympic Blvd	$102,000
3	Stewart St at Olympic Blvd	$111,500
	Total for project SM-18 *	$707,000
	Total for project NEW-02 *	$787,000
	Total for project SM-C36 *	$923,000
	Total for project SM-C30 *	$594,000
	Total for project SM-C31 *	$647,000
	Total cost for cut sheet projects *	**$3,658,000**

* Includes escalation costs.

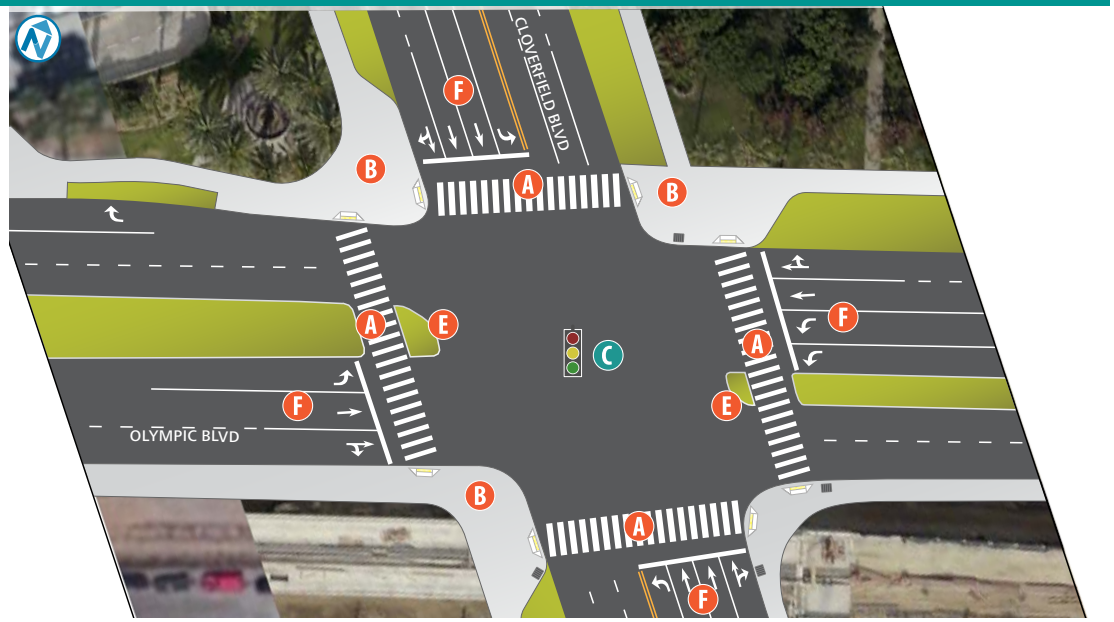
PEDESTRIAN SUITABILITY INDEX



1 OLYMPIC BOULEVARD AT CLOVERFIELD BOULEVARD

SM-18

The main intervention is the installation of three curb extensions at the northern, southern and western corners. To accomplish this, right-turn lanes will be removed from west- and eastbound Olympic Boulevard. One left-turn lane will also be removed from north- and southbound Cloverfield Boulevard. Two storm drains must be relocated with this treatment– one at the north corner of Olympic and one at the south corner of Cloverfield.



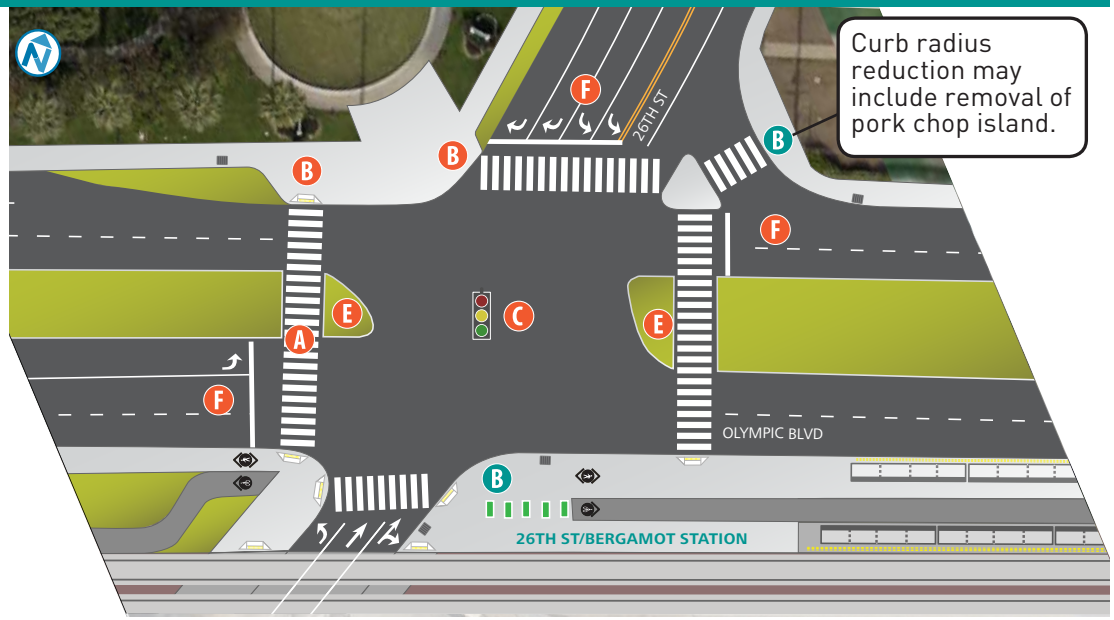
PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	4	4
B	Curb Extension (Corners)	3	3
C	Signal Modification	1	1
E	Median Refuge Island	2	2
F	Advanced Stop Marking	4	4
1	Cost for Cloverfield Blvd at Olympic Blvd	$134,500	

2 OLYMPIC BOULEVARD AT 26TH STREET

NEW02

This treatment calls for a realignment of the crosswalks, installation of two median refuge islands and a full corner curb extension at the west corner to make access to the 26th/ Bergamot Expo Station more comfortable for pedestrians. A leading pedestrian interval, advanced stop markings and curb radius reductions at the north and east corners will also improve pedestrian visibility. No storm drains require relocation.



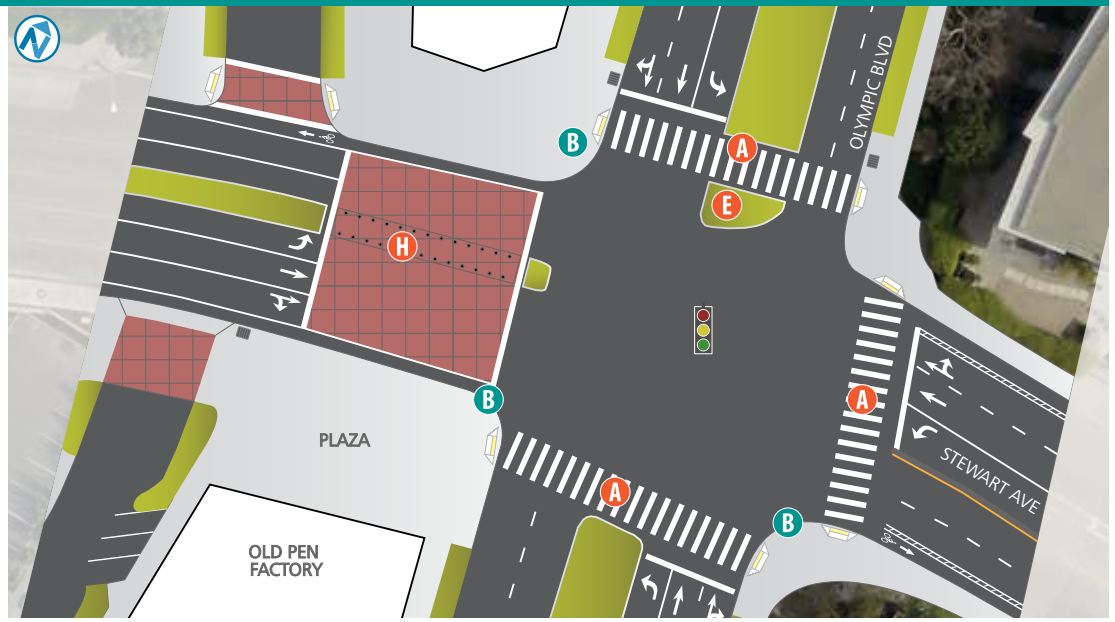
PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	1	4
B	Curb Extension (Corners)	1	1
B	Curb Radius Reduction	2	2
C	Leading Pedestrian Interval	1	1
E	Median Refuge Island	2	2
F	Advanced Stop Marking	3	3
2	Cost for 26th St at Olympic Blvd	$102,000	

3 OLYMPIC BOULEVARD AT STEWART STREET

SM-36

A major redesign of the northern leg of the intersection complements the shared-street design of Nebraska Avenue and includes curb radius reductions on the east side of Olympic Boulevard and south side of Stewart Avenue, a center median, bike lanes along Stewart Street and a wide, textured crosswalk connecting to a new sidewalk plaza.



PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	3	3
B	Curb Radius Reduction	3	3
E	Median Refuge Island	1	1
H	Textured Intersection	1	1
3	Cost for Stewart St at Olympic Blvd	$111,500	

Looking east along Olympic Blvd. where Olympic Blvd. intersects with Cloverfield Blvd. and 26th St.

Looking north along Stewart Ave. where Stewart Ave. intersects with Olympic Blvd.

WILSHIRE BOULEVARD FROM 9TH TO FRANKLIN

SM-C80

DESCRIPTION

Wilshire Boulevard is a regional boulevard that extends from downtown Santa Monica to downtown Los Angeles and is lined with retail and professional services. Wilshire Boulevard is served by Bus Route 2 operated by Big Blue Bus and Metro Rapid. While pedestrian improvements—including median islands and dual curb ramps at unsignalized intersections—were installed in 2001, more investment in crossing enhancements is appropriate given walking patterns. Changes generally include curb extensions at unsignalized intersections with median islands. The Health and Sustainability Analysis rated several of these locations as moderate-to-high on the Priority Investment Areas index to improve health and income disparities.

STREET TYPE: BOULEVARD

SPEED LIMIT: 30 MPH

TRAFFIC VOLUMES: 31,000 ADT †

† Source: KSS Fuels, 2012.

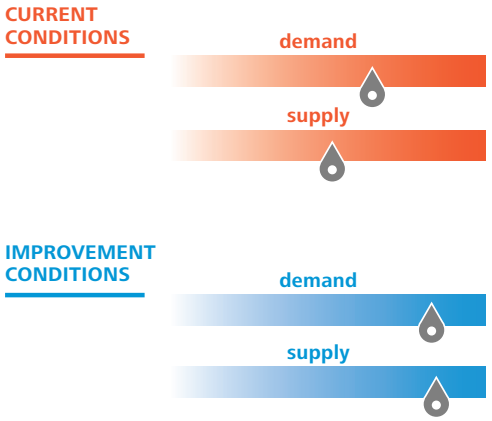
COST ESTIMATE SUMMARY

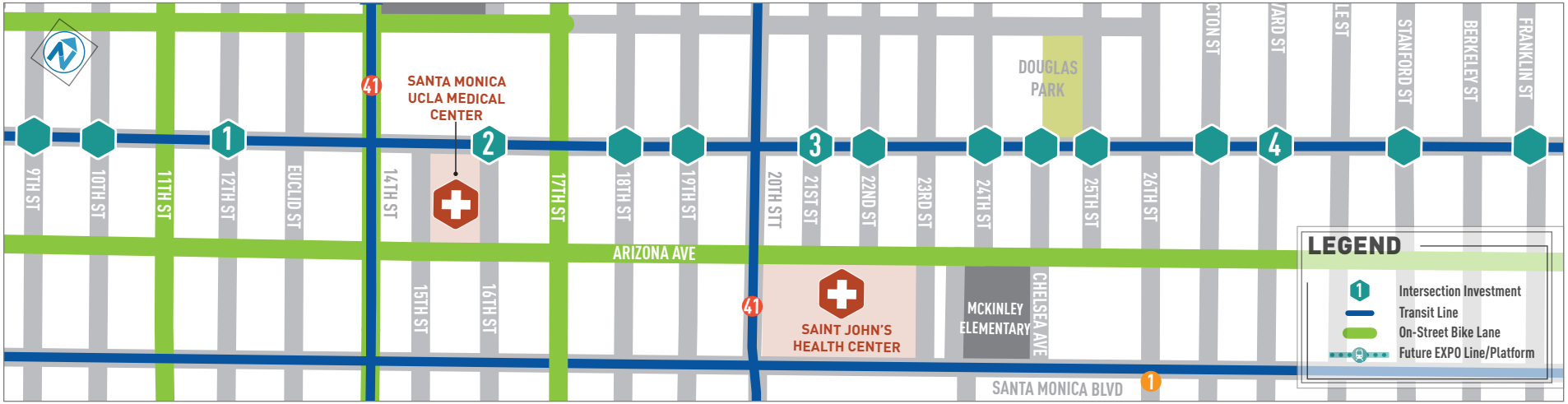
INVESTMENT		COST
1	12th St at Wilshire Blvd	$131,000
2	16th St at Wilshire Blvd	$230,500
3	21st St at Wilshire Blvd	$231,000
4	Harvard St at Wilshire Blvd	$91,000
	Sub-total	$683,500
	Other intersection treatments	$1,439,500
	Total escalation	$1,613,000
	Total cost for project SM-C80	**$3,736,000**

DESTINATIONS SERVED

- Santa Monica UCLA Medical Center
- Providence St. John's Health Center
- Wilshire Blvd Business District
- McKinley Elementary School
- Lincoln Middle School

PEDESTRIAN SUITABILITY INDEX



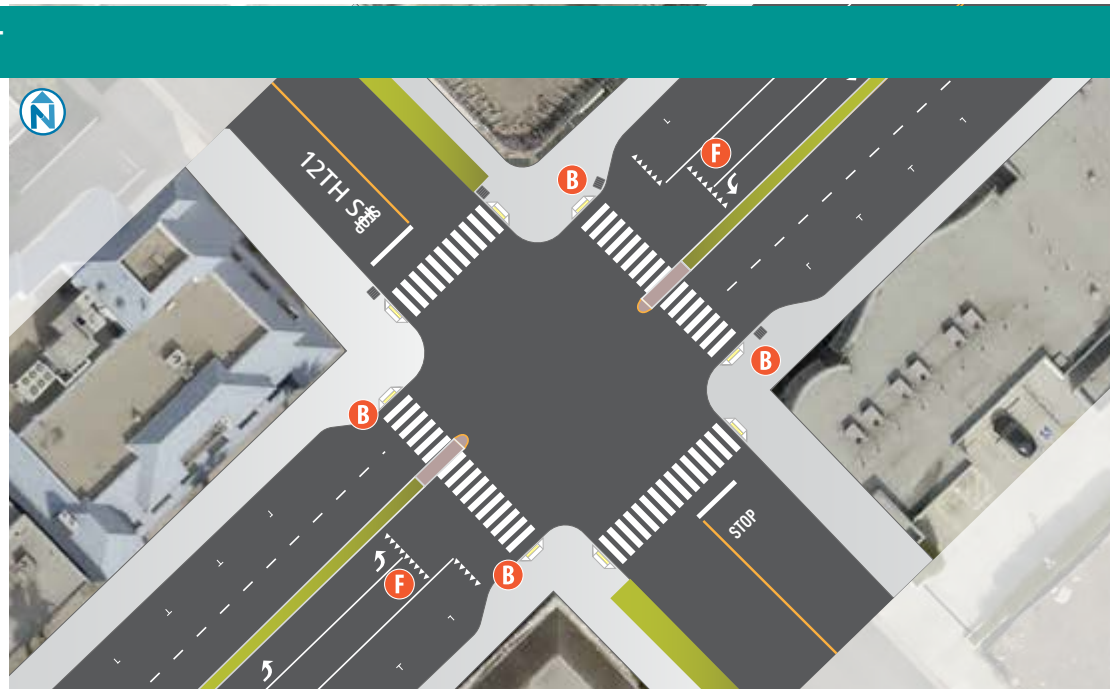


1 WILSHIRE BOULEVARD AT 12TH STREET

This treatment proposes new curb extensions to reduce pedestrian crossing times on Wilshire Boulevard. New crosswalk markings will be required on Wilshire Boulevard. The relocation of two storm drains on the north and east corners of Wilshire Boulevard are required. Similar conditions exist at 9th, 10th, and 18th Street.

PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	0	4
B	Curb Extension (Corners)	4	4
F	Advanced Yield Marking	2	2
1	Cost for 12th St at Wilshire Blvd	$131,000	

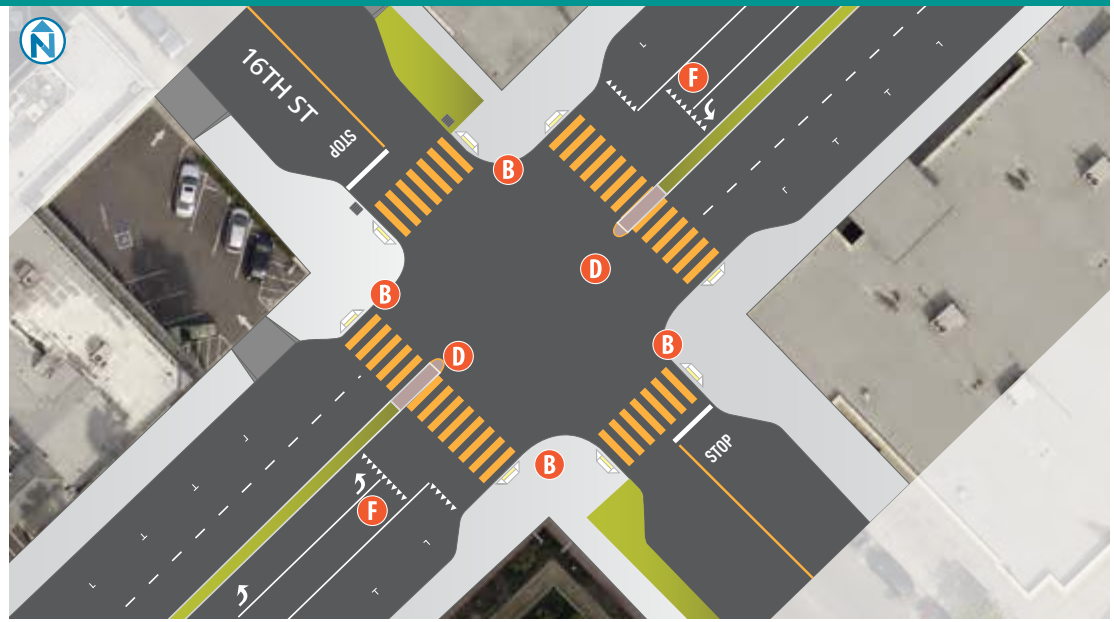


2 WILSHIRE BOULEVARD AT 16TH STREET

The main intervention is the installation of curb extensions at all corners and the addition of a rectangular rapid flash beacon. Additional landscaping improvements to the median and sidewalk will also enhance the pedestrian experience. Two storm drains at the north and east corners of Wilshire Boulevard must be relocated. This location is differentiated due to the main entrance of Santa Monica UCLA Medical Center on 16th Street.

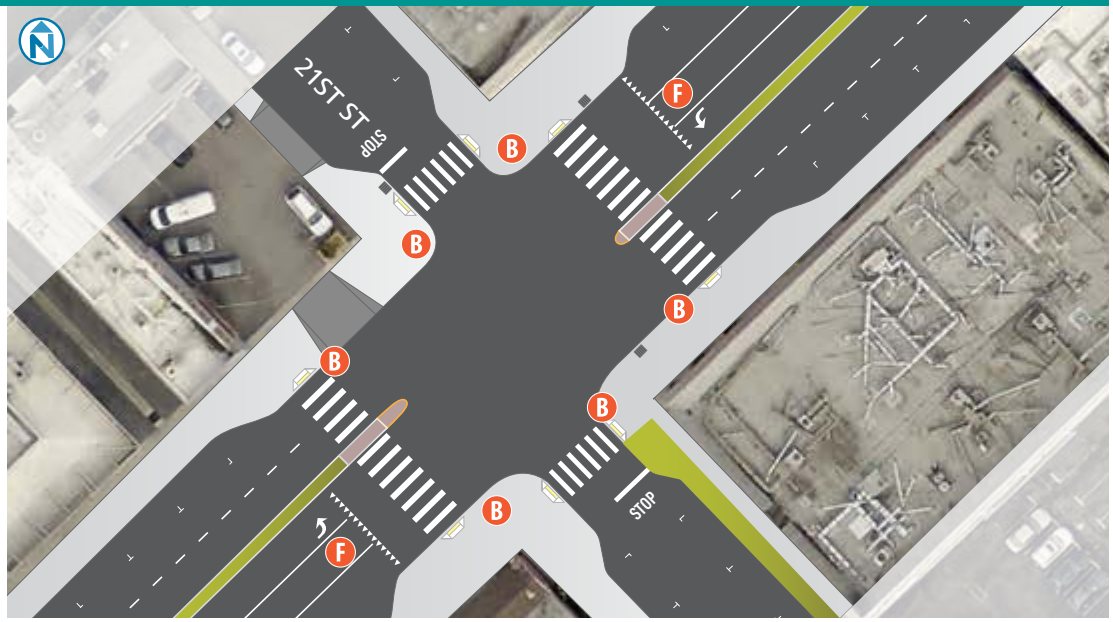
PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	0	4
B	Curb Extension (Corners)	4	4
D	Rectangular Rapid Flash Beacon	2	2
F	Advanced Yield Marking	2	2
2	Cost for 16th St at Wilshire Blvd	$230,500	



3 WILSHIRE BOULEVARD AT 21ST STREET

The main intervention is the installation of curb extensions at all four corners. Landscaping improvements will also be installed. All three storm drains must be relocated with this treatment. Franklin Street and Harvard Street are the only other unsignalized intersections with offset north-south streets.

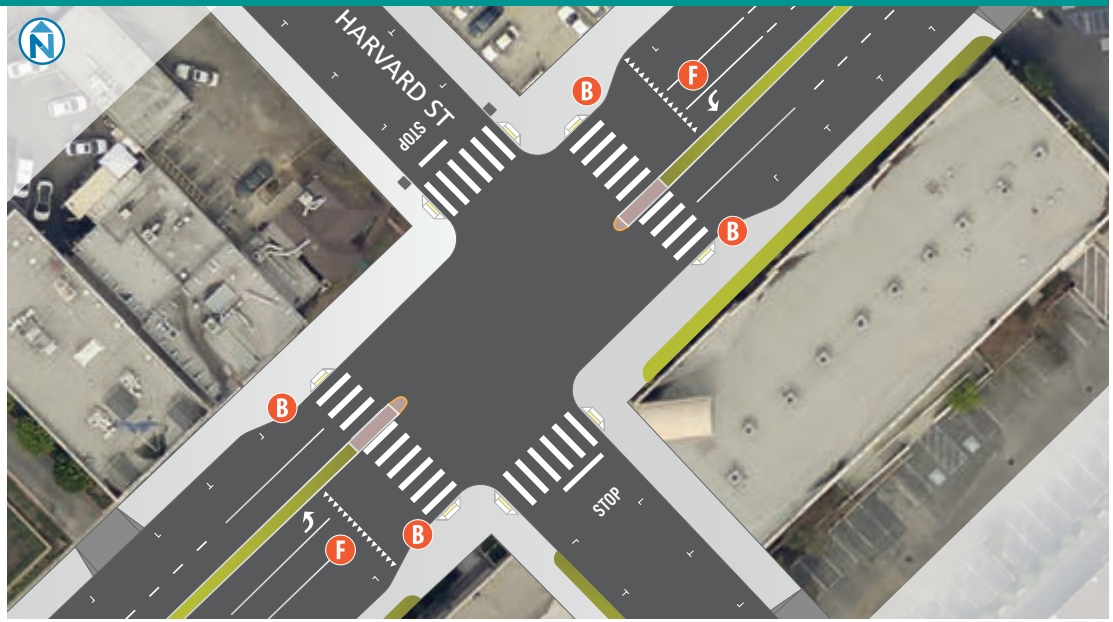


PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	0	4
B	Curb Extension (Corners)	4	4
F	Advanced Yield Marking	2	2
3	Cost for 21st St at Wilshire Blvd	$231,000	

4 WILSHIRE BOULEVARD AT HARVARD STREET

The primary intervention will be the installation of four curb extensions to improve pedestrian crossing of Wilshire Boulevard. Two crosswalk markings will also be required on Wilshire Boulevard. Two parking spaces will be removed—from the north and south corners of Wilshire Boulevard to accommodate the curb extensions . No storm drains need to be relocated.



PLAN IMPROVEMENTS

	FEATURE	NEW	TOTAL
A	Crosswalk Marking	0	4
B	Curb Extension (Corners)	4	4
F	Advanced Yield Marking	2	2
4	Cost for Harvard St at Wilshire Blvd	$91,000	

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APPENDIX B
FUNDING

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Appendix B. Potential Pedestrian Action Plan Funding Sources

This appendix describes potential funding sources for implementation of the Santa Monica Pedestrian Action Plan. Most of the Federal, State and regional programs as administered by Metropolitan Planning Organization (MPOs) described in this section are competitive, and require the completion of extensive applications with clear documentation of the project need, costs and benefits. Additionally, they often require a match of locally provided funds or staff time.

Funding strategies and the role that different funds have to implement the Pedestrian Action Plan are discussed in Chapter 6.

Federal Funding Sources Distributed at the State or Regional Level

The federal government funds transportation projects and programs in part through taxes and fees related to use of the transportation system. Historically known as a Highway Fund, it is the largest federal source of pedestrian and bicycle facility funding and is also allocated to other modes. As of Fall 2015, the current authorization, called MAP-21 (Moving Ahead for Progress in the 21st Century) is set to expire before the end of 2015, and the long term strategy for reauthorization is not clear. This section describes programs funded by MAP-21.

1 TRANSPORTATION ALTERNATIVES PROGRAM

MAP-21 divides Transportation Alternatives Program (TAP) funding between statewide and local agencies for allocation to transportation projects that support active transportation. In California, half of TAP funding is administered on the local level, through Metro, and the other half is administered by Caltrans.

In response to MAP-21, the state of California consolidated its Safe Routes to School (SRTS) program, the Bicycle Transportation Account (BTA), the state Recreational Trails Program (RTP), and the Environmental Enhancement and Mitigation Program (EEMP) into a single account: the Active Transportation Program (ATP). In the past, Santa Monica has received funding for pedestrian and bike connections to transit, personalized travel planning, an overcrossing replacement, and SRTS from these programs. As of 2015, two calls for ATP applications have been completed, with funding allocations by the California Transportation Commission.

Eligible Projects/Programs: New sidewalks, pedestrian signals, traffic calming features, crossing enhancements, Safe Routes to School (infrastructure and non-infrastructure projects).

2 CONGESTION MITIGATION AND AIR QUALITY (CMAQ) IMPROVEMENT PROGRAM

MAP-21 also supports CMAQ, which funds transportation projects to reduce ozone and carbon monoxide pollution and meet national ambient area air quality standards (NAAQS) in Clean Air Act non-attainment areas. These projects must be geared towards walking primarily for transportation rather than recreation and must be included in a plan developed by the State. Non-construction projects such as printed materials related to pedestrian safety are eligible for CMAQ funds.

Eligible Projects/Programs: Infrastructure programs such as new sidewalk or path creation and ADA compliance. Programs such as TDM programs or Safe Routes to School.

3 SURFACE TRANSPORTATION PROGRAM (STP)

The California Regional Surface Transportation Program is federally funded. It supports a wide variety of transportation improvements including pedestrian projects. A variety of entities including MPOs, transit agencies, cities, counties, non-profit organizations, special districts and Caltrans may access these funds either directly or indirectly through an eligible sponsor or project administrator.

Eligible Projects/Programs: Transportation Demand Management Programs (TDM), pedestrian walkways on any public road, capital and operational costs of traffic control.

4 STATE HIGHWAY OPERATIONS & PROTECTION PROGRAM

The State Highway Operations and Protection Program (SHOPP) is a Caltrans administered program with the purpose of maintaining and preserving the investment in the State Highway System and supporting infrastructure. Projects typically fall into the following categories: collision reduction, major damage restoration, bridge preservation, roadway preservation, roadside preservation, mobility enhancement and preservation of other transportation facilities related to the state highway system. SHOPP funds can be used to construct bicycle and pedestrian projects, including curb ramps, overcrossings, bike paths, sidewalks, and signal upgrades to meet ADA requirements. Jurisdictions work with Caltrans' districts to have projects placed on the SHOPP list.

Eligible Projects/Programs: The funds could be used to upgrade pedestrian facilities. Los Angeles and Long Beach used funds to upgrade their facilities in the 2014 cycle.

5 HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

The Highway Safety Improvement Program was established in 2005, to reduce serious injuries and fatalities on all public roads through infrastructure improvements. Eligible pedestrian infrastructure improvements include crosswalks, signals, and signage. HSIP adds non-infrastructure funding options, since states can spend up to 10% of HSIP funds on these programs once they meet all railway-highway crossing and infrastructure needs. States are required to submit a written request to the FHWA Division Administrator, stating the non-infrastructure funds' intended purpose. This requirement complicates states' ability to use these funds in this way.

Eligible Projects/Programs: Crosswalks, signals, signage, etc. See above for non-infrastructure options. All projects should show a high safety benefit to cost ratio.

CALIFORNIA OFFICE OF TRAFFIC SAFETY (OTS) GRANT PROGRAM

The City has used OTS funding to provide targeted enforcement activities and educational programs for bicycle skills training.

State Funding Sources

6 ENVIRONMENTAL ENHANCEMENT AND MITIGATION PROGRAM (EEMP)

The same legislation that created the Active Transportation Program amended the Environmental Enhancement and Mitigation Program (EEMP). The EEMP awards grants to local, state and federal agencies and to nonprofit organizations for projects that directly or indirectly relate to the environmental impact of existing transportation facilities or the construction of a new transportation facility. The Environmental Enhancement and Mitigation Program encourages projects that produce multiple benefits which reduce greenhouse gas emissions, increase water use efficiency, reduce risks from climate change impacts, and demonstrate collaboration with local, state and community entities.

Eligible Projects/Programs: Those that directly mitigate a related transportation facility with an adverse environmental impact such as new sidewalks, pedestrian signals, traffic calming features, and crossing enhancements.

7 CALIFORNIA OFFICE OF TRAFFIC SAFETY (OTS) GRANT PROGRAM

The Office of Traffic Safety's mission is to obtain and effectively administer traffic safety grant funds to reduce deaths, injuries and economic losses resulting from traffic related collisions. Each October through November, OTS mails Requests for Concept Papers to more than 3,000 eligible agencies outlining the opportunity to participate in the program and the requirements to compete for available funds. Pedestrian safety is one of eight earmarked priority areas for funding. Enforcement and education programs and the development and distribution of materials to improve safety are all eligible under this program. Successful applications are often submitted by local police departments.

Eligible Projects/Programs: Pedestrian safety, older driver programming, impaired or distracted driver programming, police traffic services, including DUI checkpoints.

8 TRANSPORTATION DEVELOPMENT ACT ARTICLE III (SB 821)

The Transportation Development Act (TDA) Article III (SB 821) uses monies collected from the state gasoline tax to provide grants through Regional Transportation Planning agencies to fund transportation improvements. The Los Angeles County Metropolitan Transportation Authority (Metro) is responsible for allocating this money on a per capita basis to cities within Los Angeles County with a focus on active transportation and public transit development. These cities have the option to either draw down the funds or to place them on reserve. Local allocations of TDA funds are administered by the City with State oversight.

Eligible Projects/Programs: Supportive activities of pedestrian projects that are eligible including engineering expenses, right-of-way acquisition, construction and acquisition, construction and reconstruction, retrofitting existing pedestrian facilities, and installing pedestrian facilities such as benches, drinking fountains, rest rooms, and showers.

9 ENVIRONMENTAL JUSTICE (EJ) GRANTS

The Environmental Justice (EJ) grant programs are used to bring together transportation and land use activities to help foster sustainable communities. Public and stakeholder participation are emphasized with these grants.

ENVIRONMENTAL JUSTICE GRANT PROGRAM

This program promotes the involvement of low-income and minority communities, and Native American tribal governments in the planning for transportation projects. EJ grants have a clear focus on transportation and community development issues to prevent or mitigate disproportionate, negative impacts while improving mobility, access, safety, and opportunities for affordable housing and economic development. The planning for the Michigan Avenue Neighborhood Greenway (MANGo) was funded by an EJ grant.

Eligible Projects/Programs: Plans and studies, including safe, innovative and complete pedestrian/bicycle/transit linkage studies, are eligible projects through these grants.

10 COMMUNITY BASED TRANSPORTATION PLANNING (CBTP) GRANT PROGRAM

The Community Based Transportation Planning (CBTP) grant program promotes transportation and land use planning projects that encourage community involvement and partnership. These grants include community and key stakeholder input, collaboration, and consensus building through an active public engagement process. CBTP grants support livable and sustainable community concepts with a transportation or mobility objective to promote community identity and quality of life.

Eligible Projects/Programs: Pedestrian planning projects, stakeholder engagement, infrastructure construction or streetscape plans/conceptual design guidelines to address inequalities and improve transportation options, connections, safety, or other factors, SRTS.

Regional Funding Sources

11 LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (METRO) CALL FOR PROJECTS (CFP)

Metro is responsible for preparing the LA County Transportation Improvement Program (TIP), which allocates discretionary funds to improve all modes of surface transportation. The Call for Projects is a competitive process that distributes discretionary capital transportation funds to regionally significant projects every other year depending on funding availability. Metro's staff, Technical Advisory Committee (TAC) and Board of Directors all have input on the selection of projects for the TIP. Some pedestrian projects in this Plan may also benefit bicyclists. In these cases the City should consider applying for funding within the Bikeway Improvements modal category. Wherever possible, Pedestrian Action Plan projects should be included as part of larger arterial improvement projects and submitted under the Regional Surface Transportation Improvements category.

CALL FOR PROJECTS

Metro's Call for Projects has been a significant source of funding for transportation capital improvements. Of the eight categories from which projects are funded, three categories fund pedestrian related improvements: Pedestrian improvements, Bicycle improvements, and Transportation Demand Management.

Eligible Projects/Programs: Multiple categories, including Regional Surface Transportation Improvement, Transportation Demand Management, Bicycle and Pedestrian Improvements with emphasis on regional benefits and transit.

12 PROPOSITION C

Proposition C is a voter enacted (1990) one-half cent sales tax for public transit purposes and is administered by Metro. These funds can be leveraged by bonding for capital projects. Twenty percent of the revenue generated is allocated for the Local Return Fund, which is distributed to cities on a per capita basis exclusively for public transit purposes. These funds are intended to exclusively benefit public transit. Santa Monica received almost $1.3 million in local returns during fiscal year 2013. Local return funds are administered by the City with Metro oversight.

Eligible Projects/Programs: Congestion Management programs Transportation Demand Management (TDM), ADA-compliant street improvements in relation to public transit facilities (i.e.- curb cuts, boarding/alighting concrete pads), Pavement Management System Projects.

13 MEASURE R

Los Angeles County's Measure R is another voter-enacted one-half cent sales tax that provides funding for a variety of transportation improvements. For fiscal years 2010-2039, fifteen percent of this 30-year sales tax will be allocated to Local Return through which local governments may fund projects at their discretion. The Local Return can be used to fund improvements such as pedestrian infrastructure and streetscape enhancements. The balance of Measure R funds administered by Metro enables transit and highway infrastructure construction into the Expo Light Rail line. Measure R local funds currently are used by Big Blue Bus.

Eligible Projects/Programs: The original ballot measure leaves the local return provisions open to interpretation, but includes "left turn signals…pedestrian improvements; streetscapes; signal synchronization" among other categories.

14 AB2766 AIR QUALITY MANAGEMENT DISTRICT (AQMD)

Since 1991, the AB2766 Subvention Program has provided a funding source for cities and counties to meet requirements of Federal and State Clean Air Acts and for implementation of motor vehicle measures in the AQMD Air Quality Management Plan (AQMP). AQMD administers funds which may be used for pedestrian projects, such as bus shelters, information access equipment, traffic calming, commute trip reduction and incentive programs, multi-use paths, and education programs. Santa Monica is part of the South Coast Air Quality Management District.

Eligible Projects/Programs: The program has funded a number of employer-based trip reduction programs (TDM programs) in the past. While there is not a pedestrian-specific project category, these projects may fall under TDM or Miscellaneous Projects.

Local Funding Sources

15 MEASURE V

Since 2006, Measure V generates property tax revenue to be used solely for the purpose of implementing urban runoff water quality improvements in the City in accordance with the City's Watershed Management Plan adopted in 2006. Funding from Measure V allows for the construction and installation of needed devices to capture and treat stormwater and dry weather runoff pollution from within Santa Monica's boundaries, and to divert stormwater runoff to open areas and allow it to percolate naturally into the soil. This can include projects like curb extensions and pedestrian islands that have a green infrastructure component. The Santa Monica Public Works Department implements the program. The City Manager, City Council, and a citizens' oversight committee approve eligible projects and provide oversight.

Eligible Projects/Programs: Bioswales and other physical infrastructure devices that capture water runoff.

16 TRANSPORTATION IMPACT FEE

Santa Monica's City Council adopted the Transportation Impact Fee (TIF) ordinance in February 2013. The TIF helps fund new transportation projects that contribute toward the City's goal of no net new PM peak vehicle trips. This developer impact fee follows the land use planning legacies created by the Land Use & Circulation Element (LUCE) General Plan by generating funds to support walking, bicycle, and transit infrastructure. TIF impact fees may be used for physical improvements that reduce new vehicle trips pursuant to an adopted nexus study.

Eligible Projects/Programs: Capital projects that reduce vehicle trips consistent with the nexus study, such as new pedestrian connections to transit.

17 DEVELOPMENT AGREEMENT (DA) FEES

Development Agreements are negotiated agreements between a City and a private entity seeking vested development approvals. Payments or the construction of facilities are often negotiated and may include pedestrian improvements. In the past, sidewalk widening, transit station upgrades, wayfinding, lighting and crossing enhancements have been negotiated.

Eligible Projects/Programs: Santa Monica has flexibility regarding pedestrian improvements in the project area often informed by adopted plans and policies.

18 MELLO-ROOS COMMUNITY FACILITIES ACT

The Mello-Roos Community Facilities Act allows for special assessment or benefit districts to be created and special taxes assigned to fund infrastructure and other improvements in an area. These improvements can include pedestrian facilities, and other infrastructure such as that required for utilities. These special taxes must be approved by two-thirds of the voters in a proposed district, unless the local agency is a school or community college district. The City of Davis, California has used the funds to create a pedestrian and bicycle overcrossing.

Eligible Projects/Programs: Intersection spot improvements, sidewalk projects.

19 SPECIAL TAXING AUTHORITIES

Seventeen counties have approved local ballot measures that permit the collecting of additional local sales taxes for transportation purposes. The City of Santa Monica could develop a Transportation Demand Management (TDM) tax or special assessment to fund improvements and programs for non-motorized transportation, through a vote of citizens.

Eligible Projects/Programs: If new ballot measures are approved, Santa Monica would have flexibility in choosing which projects and/or programs to fund.

Private, Non-Profit, and Other Funding Sources

20 ROBERT WOOD JOHNSON FOUNDATION (RWJF)

RWJF provides grants for programs that promote active and healthy living through its Call for Proposals process. Public agencies may apply for these funds and many bicycle and pedestrian improvement programs may be eligible.

Eligible Projects/Programs: The project may fund pedestrian counts, among other programs. The University of San Diego, School of Medicine, used funds to study active living and childhood obesity prevention.

21 KAISER PERMANENTE SOUTHERN CALIFORNIA REGION GRANTS PROGRAM

Kaiser Permanente provides event sponsorship and grants to local nonprofit health and human service organizations that address cardiovascular disease, mental/behavioral health, obesity and diabetes in vulnerable populations. The City of Santa Monica is eligible to apply for funding for wellness-focused walking initiatives such as a senior walking program. Partnerships with nonprofit or educational institutions would increase the application's viability.

Eligible Projects/Programs: Education or encouragement programs focused on disease prevention and active living, such as walk to school programs.

City of
Santa Monica®

APPENDIX C

FIRST MILE-LAST MILE:
PEDESTRIAN ACCESS TO BUS AND LIGHT RAIL

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Appendix C. First Mile-Last Mile: Pedestrian Access to Bus and Light Rail

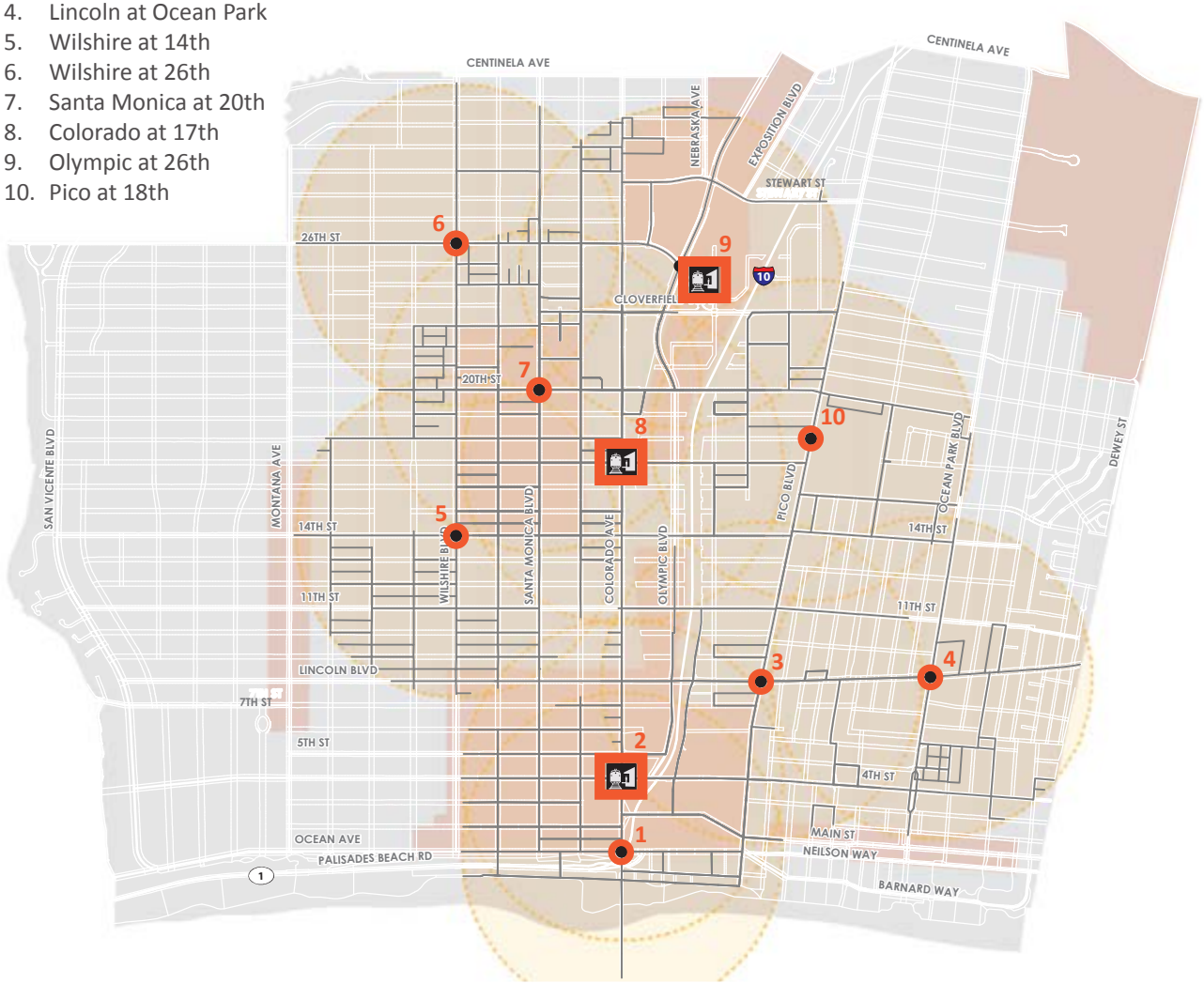
The success of transit in Santa Monica is largely dependent on pedestrian access since every transit user becomes a pedestrian at some point in their journey. Some people are dependent on transit for mobility; others choose to take transit if it's convenient, pleasant and intuitive. The faster, easier and more enjoyable it is to get to and from transit, the greater the mobility for people who depend on transit for transportation, and the more likely individuals will choose to take transit rather than driving a car.

One of the main objectives of the Pedestrian Action Plan is to identify locations for improved facilities or physical changes which connect neighborhoods, schools, and activity centers to transit stops/stations. Public transportation agencies typically provide bus and rail services that may include the longest part of an individual's trip, but users must complete the first and last portion on their own. The Los Angeles County Metropolitan Transportation Authority's (Metro) 2011 user survey revealed that the majority of users access transit stops/stations by active forms of transportation which effectively makes transit stops/stations a critical component of the pedestrian network.

For the Pedestrian Action Plan, the City prepared a walkshed analysis of 10 transit stops/stations, based on the methodology from Metro's First-Last Mile Strategic Plan & Planning Guidelines, adopted in 2014. The analysis identifies key opportunities and constraints from a pedestrian perspective that will address safety, aesthetics, and accessibility to ensure that Santa Monica is an attractive and compelling place to walk to transit.

1 Introduction

1. Colorado at Ocean
2. Colorado at 4th
3. Lincoln at Pico
4. Lincoln at Ocean Park
5. Wilshire at 14th
6. Wilshire at 26th
7. Santa Monica at 20th
8. Colorado at 17th
9. Olympic at 26th
10. Pico at 18th



Locations of Ten Key Transit Stops/Stations.

2 Methodology

The methodology for this walkshed analysis is consistent with the 2014 Los Angeles County Metropolitan Transportation Authority's (Metro) First Last Mile Strategic Plan and Planning Guidelines. That document serves as a transit planning resource tool developed to aide local agencies within Los Angeles County to improve first mile-last mile connections to transit. Using the methodology outlined by Metro's First Mile Last Mile Strategic Plan ensures that the city's assessment and approach are consistent with regional planning efforts. The three steps conducted for the walkshed analysis include:

- Site Area Definition
- Existing Conditions Analysis
- Pedestrian Pathways and Potential Improvements

Step 1: Site Area Definition

The major transit intersection selection process was completed using data obtained from the City of Santa Monica, Big Blue Bus (BBB), Metro, the Southern California Association of Governments (SCAG), and US Census Bureau.

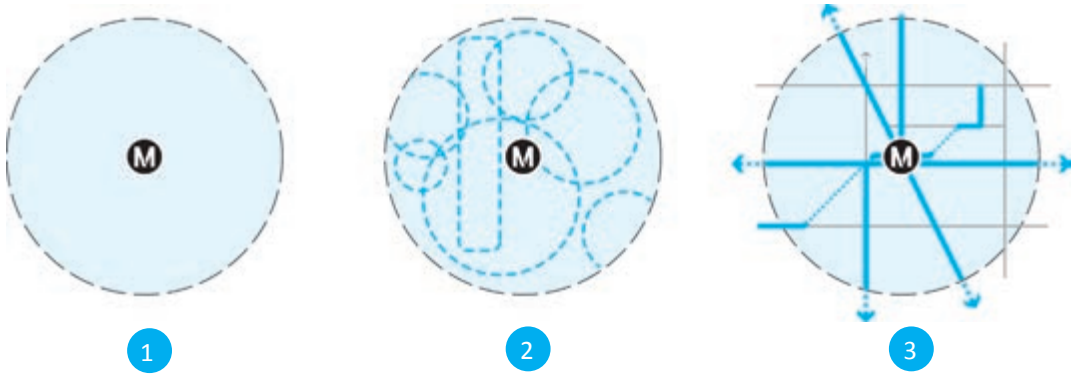
Several characteristics contributed to determining the major stations/stops, including:

- Stations/stops with high levels of bus ridership (greater than 200 weekday boardings)
- Proximity to high density residential areas and high employment areas
- Locations within city districts and activity center overlay zones

Based on the methodology described above, a total of ten stations/stops were selected. In Santa Monica most stations/stops are located at major intersections therefore the term 'stations/stops' and 'intersection' are used interchangeably. The 10 study intersections represent a diverse cross-section of locations throughout the city. The ten study stations selected for assessment include:

1. Colorado Avenue at Ocean Avenue
2. Colorado Avenue at 4th Street
3. Lincoln Boulevard at Pico Boulevard
4. Lincoln Boulevard at Ocean Park Boulevard
5. Wilshire Boulevard at 14th Street
6. Wilshire Boulevard at 26th Street
7. Santa Monica Boulevard at 20th Street
8. Colorado Avenue at 17th Street
9. Olympic Boulevard at 26th Street
10. Pico Boulevard at 18th Street

A special emphasis was placed on planning for the future and including existing areas of high usage. All three future Exposition Line Light Rail Stations are represented in the analysis, as well as existing intersections that experience high transit ridership on a daily basis. Many of these locations serve important employment and activity centers within the city, including Santa Monica College, Santa Monica Pier, Downtown Santa Monica, Providence St. John's Health Center, and Santa Monica-UCLA Medical Center.



Key transit stops were assessed by overlaying land use, population and employment areas to determine pathways for access within 1/2 mile of the stop.

Step 2: Analyze Existing Conditions

Each of the ten study intersections were evaluated, documenting existing conditions and assessing pedestrian needs near transit stops. A parcel-level geographic information system (GIS) analysis evaluated the degree of overall pedestrian connectivity in the focus area. The analysis included mapping, compiling, and overlaying various layers of site specific data that together highlight conditions within half mile of the intersection, and regional planning context and adjacent bus-stop area improvements. Analysis included consideration of:

- Transit – Current and proposed bus routes, bus stops, peak and off-off peak headways, boardings and alightings, and nearby proposed light rail stations and alignments.
- Land Use – Existing land uses.
- Population – Population density based on 2010 US Census population information. Higher density areas are defined as areas with greater than 47 persons per acre. This threshold was derived by determining the average residential density in Santa Monica (16 persons/acre) and identify census blocks with three times the City's average population density (47 persons/acre).
- Employment – Employment density data was obtained from the City of Santa Monica and spatially joined with the 2010 US Census blocks for geographic consistency. Higher employment areas are defined as areas with greater than 30 employees per acre.
- This geographic based information was used to identify major destinations and trip generators for the Pathway Analysis.

Step 3: Pathways and Potential Improvements

Based on the information from Step 2, Pathways were identified for each focus area. Pathways are defined as pedestrian routes that extend out from the bus-stop and link to adjacent and nearby destinations within a one-half mile radius of the stop. These routes take into consideration the analysis conducted through the Pedestrian Action Plan specific Pedestrian Suitability Index which includes existing street network, sidewalk conditions, lighting, existing/future bike network and surrounding land uses. In keeping with the methodology outlined in Metro's First Last Mile Strategic Plan Planning Guidelines, 2014, site visits and evaluations were conducted at each station/stop. The composite walkshed analysis qualitatively evaluates each pathway's adequacy in terms of safety, aesthetics, and accessibility. To better represent and provide a comparison between the stations/stops, the following scoring system was used:

- "Good" – Elements of a station/stop defined as "good" means that the existing pedestrian condition meets or exceeds the needs of pedestrians based on current (and in the case of the planned Exposition light rail stations future) pedestrian volumes, travel patterns, and connectivity.
- "Minimal, may need work" – An "minimal, may need work" evaluation is defined as a pathway that serves the basic needs of pedestrians, but may have some shortcomings in terms of its capacity to accommodate existing and future pedestrian volumes, proximity to adjacent automobile traffic, or connectivity across multiple blocks.
- "None/Few" – A "none/few" designation is defined as a pathway that is in need of improvement to meet current pedestrian needs, either because of the complete absence of a pathway or the current condition (including width, pavement condition, etc.) does not meet the needs of pedestrians currently utilizing the pathway.

Because Santa Monica strives to be an attractive and compelling place to walk, locations that are described as adequate or less in this analysis may also be prioritized.

Information for the station summaries includes:

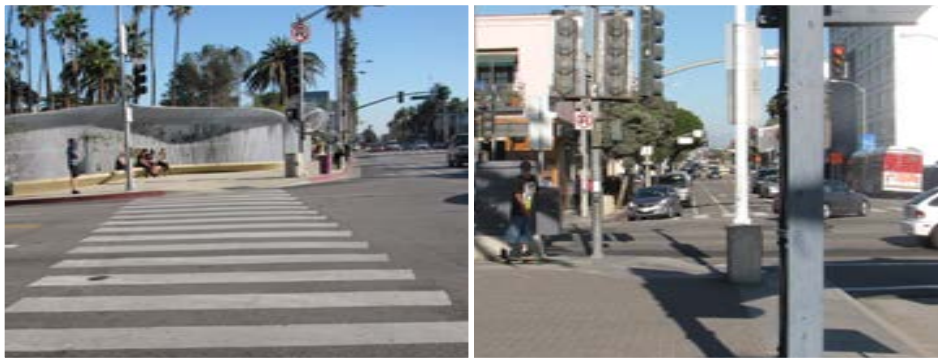
- Pedestrian Pathways – Identification of pedestrian pathways based on existing street network, key destinations, and feeder transit services, etc.
- Opportunities and Constraints – A qualitative discussion of opportunities and constraints observed along pedestrian pathways to/from bus or light rail stations/stops and major population and employment areas. Evaluation criteria included safety (presence of lighting, pedestrian buffers, pedestrian signage, and low traffic speeds); aesthetics (sense of place, landscaping, and pedestrian amenities); and Accessibility (high quality sidewalks, clear, safe crossings, transit transfer options, and presence of curb ramps).
- Potential Improvements – Identification of where improvements can be made to make the connections between transit and major destinations better for pedestrians.

3 Opportunities and Constraints + Action Plans

1. Colorado Avenue at Ocean Avenue

Colorado Avenue at Ocean Avenue is located within the City's Downtown District, immediately adjacent to the Santa Monica Pier. This focus intersection is located within close proximity to Third Street Promenade, Santa Monica Place, and the Civic Center. This intersection is served by seven bus routes operated by Big Blue Bus and LA Metro. Big Blue Bus routes include Route 1, Route 7, Route 7 Rapid, Route 8, and Route 10. Metro buses that serve this intersection include Route 20, Route 33, 733 Rapid, and Route 534.

Looking at the Southwest corner of Colorado Ave. and Ocean Ave. (left); Looking South along Ocean Ave. (right)



Looking at the Southeast corner of Colorado Ave. and Ocean Ave. (left); Looking East along Colorado Ave. (right)

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective.

Table 1-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 1-1 Colorado Avenue at Ocean Avenue Station Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Ocean Av (n/o Colorado Av)	Minimal	Minimal	Minimal	None/Few	Minimal	Good	Minimal	Good	Minimal	Minimal
Ocean Av (s/o Colorado Av)	Minimal	Minimal	Minimal	None/Few	Minimal	Minimal	Minimal	Good	Minimal	Minimal
Colorado Av (w/o 4th St)	Minimal	Minimal	Minimal	None/Few	Minimal	None/Few	Minimal	Good	None/Few	Minimal
Colorado Av (e/o 4th St)	None/Few	None/Few	Minimal	None/Few	None/Few	None/Few	Minimal	Good	Minimal	Minimal
4th St (n/o Colorado Av)	Minimal	None/Few	Minimal	None/Few	None/Few	None/Few	Minimal	Good	Good	Minimal
4th St (s/o Colorado Av)	None/Few	None/Few	Minimal	None/Few	None/Few	None/Few	Minimal	Good	Minimal	Minimal
Broadway	Minimal	Good	Good	None/Few	Good	Good	Minimal	Good	Good	Minimal
Santa Monica Bl	Minimal	Good	Minimal	None/Few	Good	Good	Minimal	Good	Good	Minimal
Arizona Av	None/Few	Minimal	Good	None/Few	None/Few	None/Few	Minimal	Good	None/Few	Minimal
Main St	None/Few	Minimal	Minimal	None/Few	Good	Minimal	Minimal	Minimal	Minimal	Minimal
Pico Bl	Good	Minimal	None/Few	None/Few	Minimal	None/Few	Minimal	Good	Minimal	Minimal

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area.* A map is provided in Figure 1-2.

Comfort

Provide additional pedestrian scale lighting throughout area.

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- Colorado Avenue from Main Street to 7th Street
- 4th Street from Colorado Avenue to Pico Boulevard
- Ocean Avenue from Colorado Avenue to Pico Boulevard

Aesthetics

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Colorado Avenue from Main Street to 7th Street
- 4th Street from Colorado Avenue to Pico Boulevard
- Pico Boulevard

Accessibility

Enhance crosswalks by providing high visibility crosswalks at:

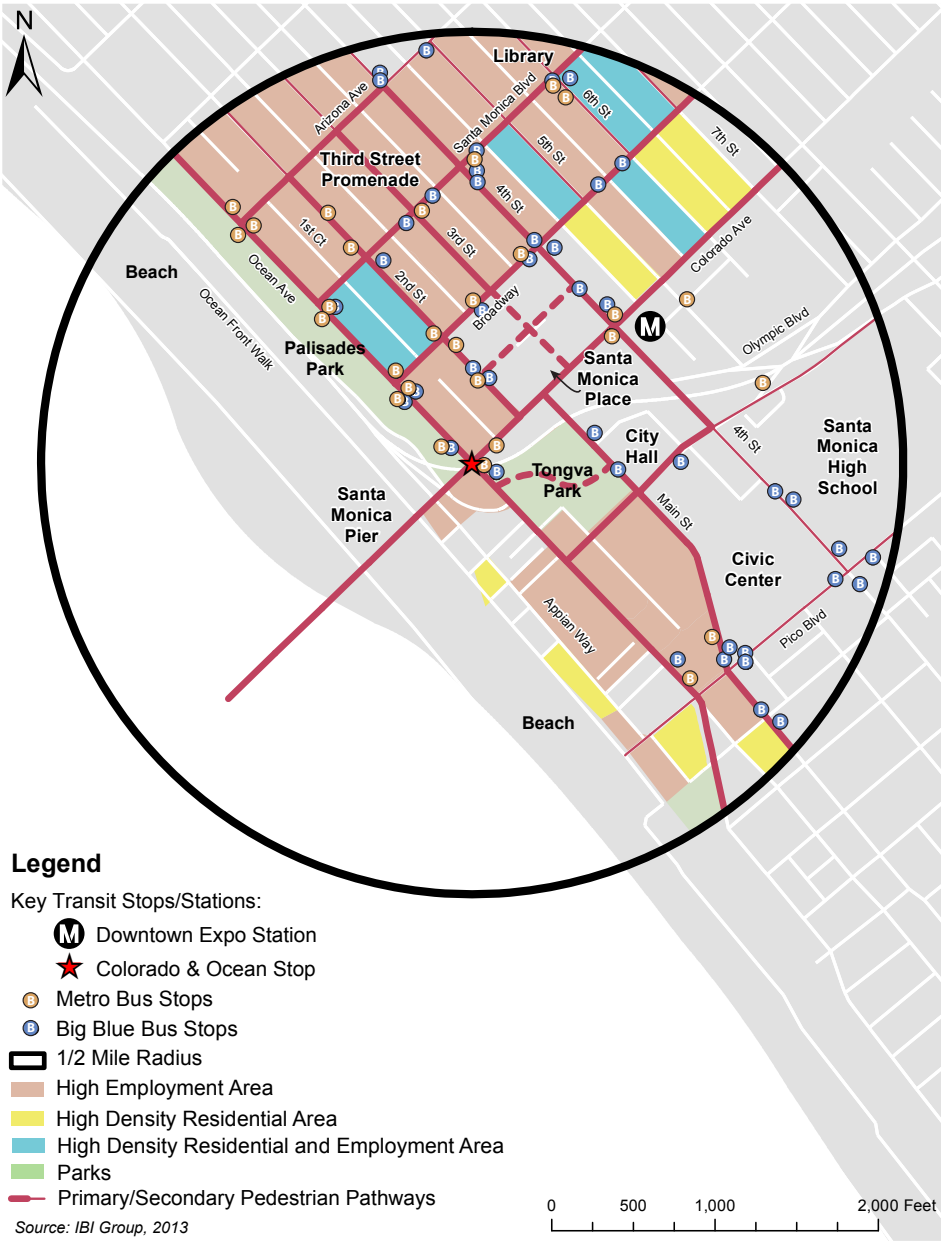
- Ocean Avenue at Colorado Avenue and Pico Boulevard
- Santa Monica Boulevard at 2nd Street and 4th Street
- Broadway at 4th Street

Provide wider sidewalks for pedestrian movement along:

- 4th Street from Olympic Boulevard to Pico Boulevard
- Ocean Avenue from Colorado Avenue to Pico Boulevard

* Due to close proximity to Colorado Avenue at 4th Street, recommendations overlap.

Figure 1-2 Colorado Avenue at Ocean Avenue



2. Colorado Avenue at 4th Street

Colorado Avenue at 4th Street is located within Downtown Santa Monica and is the future location for one of the three future stop for Metro Exposition Line light rail. This focus intersection is located adjacent to regional commercial and employment centers, including Santa Monica Place and the Civic Center. This intersection is served by six bus routes, operated by Big Blue Bus and Metro. Big Blue Bus routes that serve this intersection include Route 2, Route 3, Route 3 (Rapid), Route 4, and Route 9. Metro routes that serve this focus area include Route 534.

Looking Northeast along Colorado Ave. (left); Looking at the intersection of Colorado Ave. and 4th Str. from the Southwest corner (right)

Looking South along 4th St. (left); Looking at the intersection of Colorado Ave. and 4th St. from the Southwest corner (right)

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective.

Table 2-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 2-1 Colorado Avenue at 4th Street Station Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Colorado Av (w/o 4th St)										
Colorado Av (e/o 4th St)										
4th St (n/o Colorado Av)										
4th St (s/o Colorado Av)										
Broadway										
Santa Monica Bl										
Arizona Av										
Ocean Av										
Main St										
Pico Bl										
Lincoln Bl										
Michigan Av										

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area. A map is provided in Figure 2-2.

Comfort

Provide additional pedestrian scale lighting throughout area.

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- Colorado Avenue from Main Street to 7th Street
- 4th Street from Broadway to Pico Boulevard
- Ocean Avenue from Broadway to Pico Boulevard

Aesthetics

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Colorado Avenue from Main Street to 7th Street
- 4th Street from Broadway to Pico Boulevard
- Pico Boulevard

Accessibility

Enhance crosswalks by providing high visibility crosswalks at:

- Ocean Avenue at Colorado Avenue and Pico Boulevard
- Santa Monica Boulevard at 2nd Street and 4th Street
- Broadway at 4th Street
- Olympic Boulevard east of 4th Street

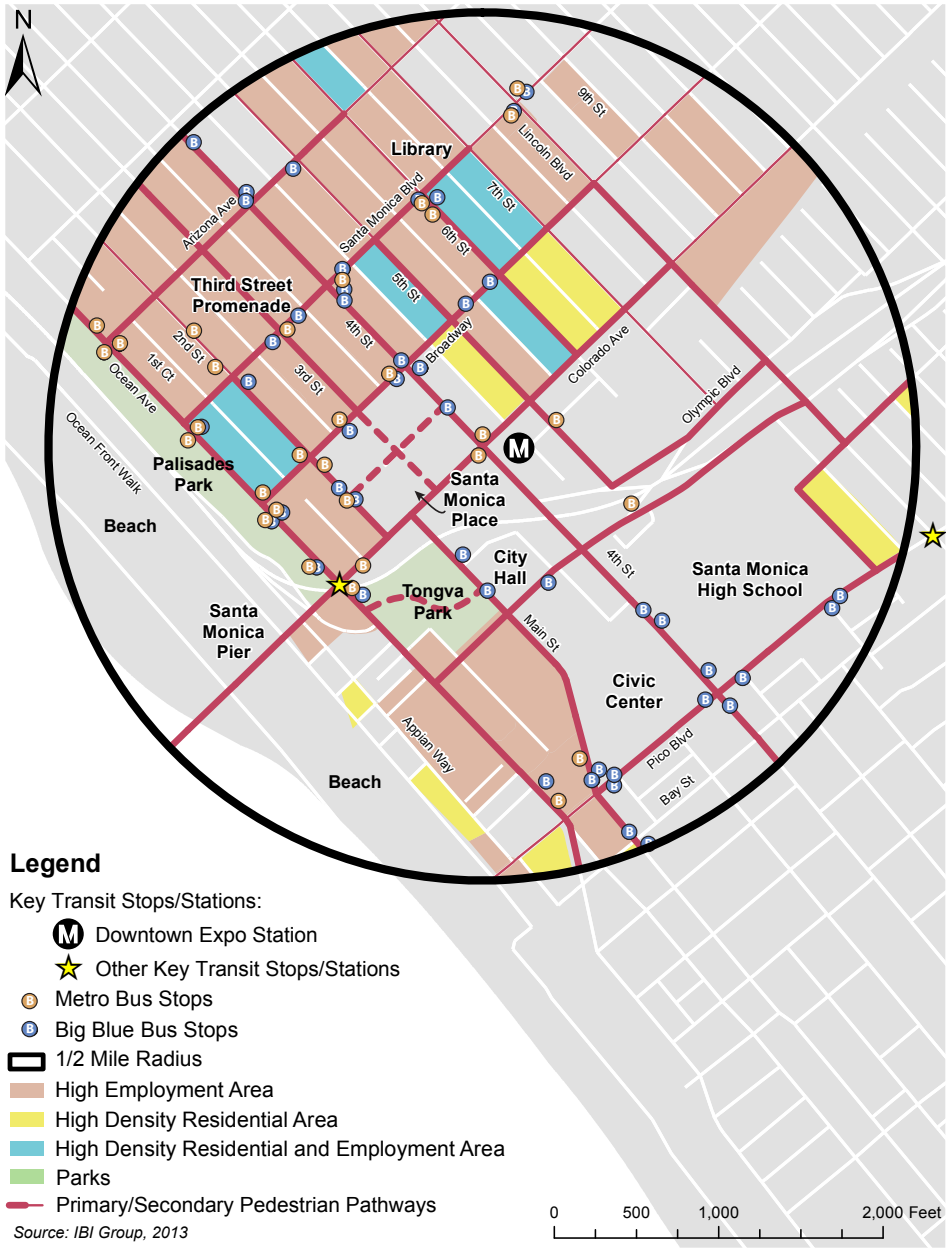
Provide wider sidewalks for pedestrian movement along:

- 4th Street from Broadway to Pico Boulevard
- Ocean Avenue from Colorado Avenue to Pico Boulevard

Provide additional pedestrian crossing signage to create more awareness to motor vehicles at:

- Colorado Avenue east of 4th Street
- 4th Street south of Colorado Avenue
- Colorado Avenue at 5th Court and 5th Street

Figure 2-2 Colorado Avenue at 4th Street



3. Lincoln Boulevard at Pico Boulevard

Lincoln Boulevard at Pico Boulevard is located approximately one mile from the City's Downtown. This focus intersection is located within close proximity to Downtown Santa Monica, Santa Monica High School, and several high density residential areas and high employment areas. This intersection is served by four bus routes, each operated by Big Blue Bus, including Route 3, Route 3 (Rapid), Route 7, and Route 7 (Rapid). Three other Big Blue Bus Routes and five Metro Routes serve this focus area as well. It is a major bus transfer point.

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective. Table 3-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 3-1 Lincoln Boulevard at Pico Boulevard Station Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Lincoln Bl (n/o Pico Bl)										
Lincoln Bl (s/o Pico Bl)										
Pico Bl (w/o Lincoln Bl)										
Pico Bl (e/o Lincon Bl)										
Colorado Av										
4th St (n/o Pico Bl)										
4th St (s/o Pico Bl)										
Michigan Av										
Strand St										

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area. A map is provided in Figure 3-2. This focus area overlaps with other projects that are on-going in Santa Monica, including the Santa Monica High School Safe Routes to School (SRTS) program and the Michigan Avenue Neighbohood Greenway (MANGo) Final Concept Plan adopted February 11, 2014.

Safety

Provide additional pedestrian scale lighting along:

- Olympic Avenue and Strand Street

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- Lincoln Boulevard south of Pico Boulevard
- Olympic Avenue
- 4th Street north of Pico Boulevard

Provide pedestrian signage to create awareness and safety along:

- Lincoln Boulevard
- Pico Boulevard
- 4th Street north and south of Pico Boulevard

Looking at the intersection of Lincoln Blvd. and Pico Blvd. from the Southwest (left); Looking East along Pico Blvd. (right)

Aesthetics

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Lincoln Boulevard, Pico Boulevard, Colorado Avenue
- 4th Street north of Pico Boulevard

Provide pedestrian amenities where applicable (benches, rest areas, trash receptacles, etc.) on:

- Lincoln Boulevard
- 4th Street north of Pico Boulevard
- Michigan Avenue and Strand Street

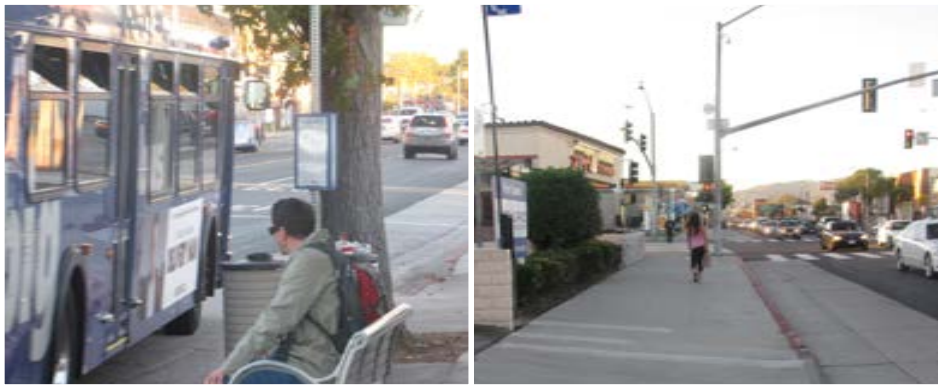
Accessibility

Enhance crosswalks by providing high visibility crosswalks at:

- Lincoln Boulevard at Colorado Avenue, I-10 Freeway Ramps, and Michigan Avenue
- Michigan Avenue
- Pico Boulevard east of Lincoln Boulevard

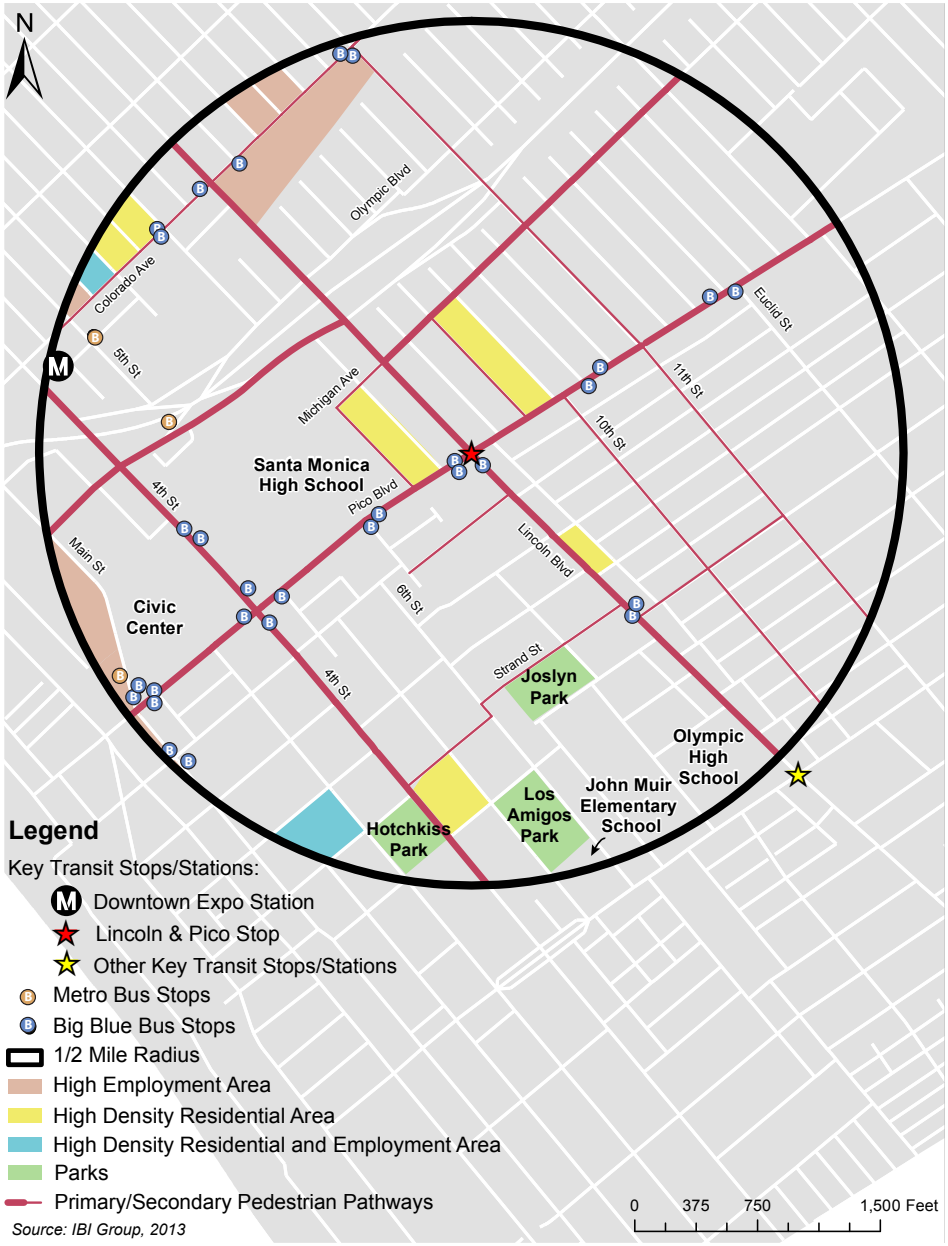
Provide wider sidewalks for pedestrian movement along:

- Lincoln Boulevard south of Pico Boulevard
- Pico Boulevard
- 4th Street south of Pico Boulevard



Looking East along Pico Blvd. (left); Looking North along Lincoln Blvd. (right)

Figure 3-2 Lincoln Boulevard at Pico Boulevard



Source: IBI Group, 2013

4. Lincoln Boulevard at Ocean Park Boulevard

Lincoln Boulevard at Ocean Park Boulevard is located approximately 1.5 miles from the City's downtown. The focus area's close proximity to several high density residential areas and high employment areas make it a prime location for infrastructure investments that will improve a person's ability to walk to transit stops and local destinations safely, directly, and comfortably.

Looking South along Lincoln Blvd. (left); Looking North along Lincoln Blvd. (right)

Looking South along Lincoln Blvd. (left); Looking South along Lincoln Blvd. (right)

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective.

Table 4-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 4-1 Lincoln Boulevard at Ocean Park Boulevard Station Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Lincoln Bl (n/o Ocean Park Bl)	Minimal	None/Few	None/Few	None/Few	None/Few	None/Few	Minimal	None/Few	Minimal	Minimal
Lincoln Bl (s/o Ocean Park Bl)	Minimal	None/Few	None/Few	None/Few	None/Few	None/Few	Minimal	None/Few	Minimal	Minimal
Ocean Park Bl (w/o Lincoln Bl)	Minimal	Minimal	Minimal	None/Few	None/Few	Minimal	Minimal	Minimal	Minimal	Good
Ocean Park Bl (e/o Lincoln Bl)	Minimal	Minimal	None/Few	None/Few	None/Few	None/Few	Minimal	Minimal	Minimal	Minimal
Strand St	None/Few	Minimal	Good	None/Few	Minimal	None/Few	Minimal	Minimal	None/Few	Minimal
6th St	Minimal	Minimal	Good	None/Few	Minimal	None/Few	Minimal	Minimal	None/Few	Minimal
11th St	None/Few	Good	Minimal	None/Few	Minimal	None/Few	None/Few	None/Few	Minimal	Minimal

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area. A map is provided in Figure 4-2.

Safety

Provide additional pedestrian scale lighting along:

- Strand Street
- 11th Street
- Lincoln Boulevard
- Ocean Park Boulevard

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- Lincoln Boulevard

Aesthetics

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Lincoln Boulevard
- Ocean Park Boulevard east of Lincoln Boulevard

Provide pedestrian amenities where applicable (benches, rest areas, trash receptacles, etc.) along:

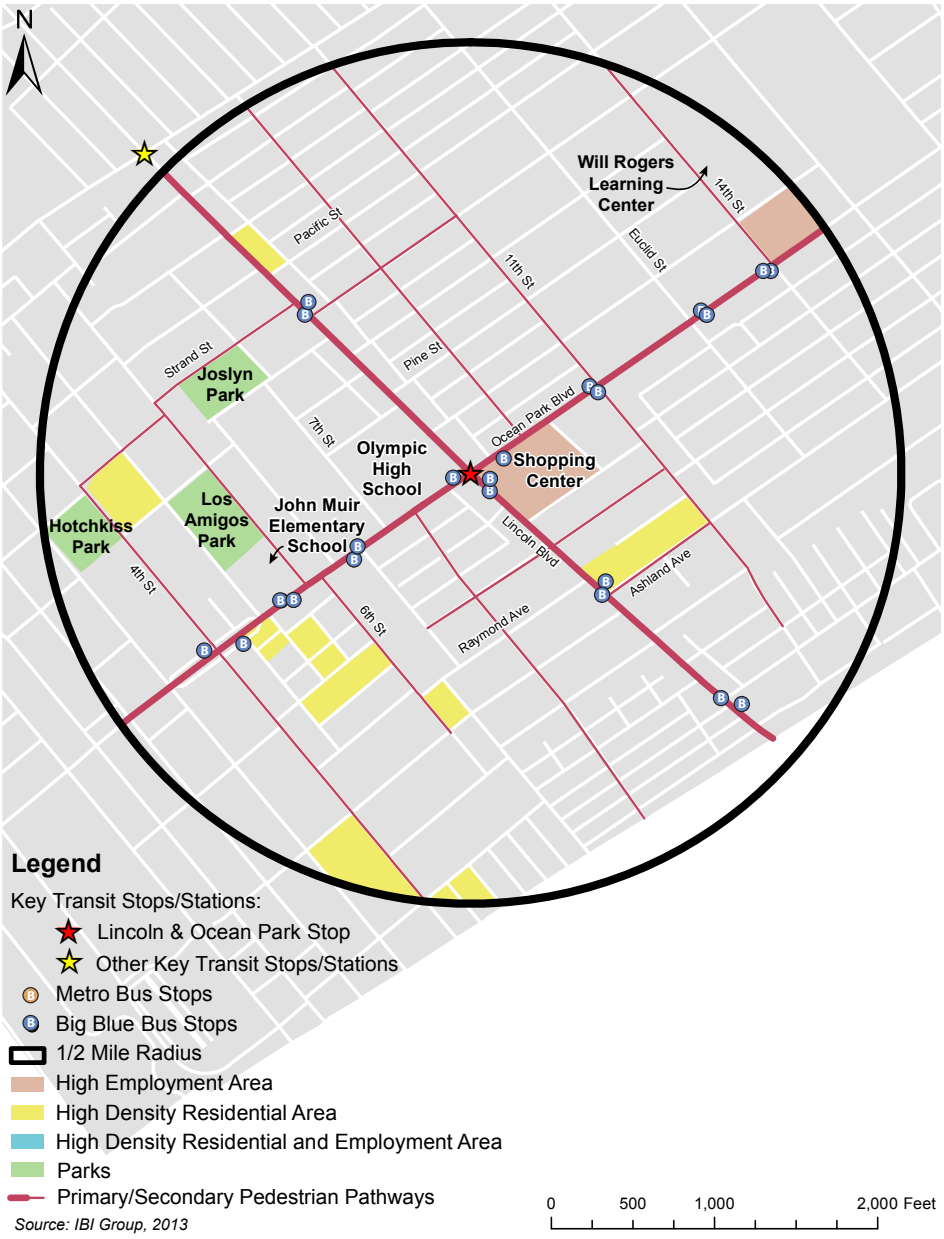
- Ocean Park Boulevard east of Lincoln Boulevard, Lincoln Boulevard, Strand Street, 6th Street, and 11th Street

Accessibility

Enhance crosswalks by providing high visibility crosswalks on:

- Ocean Park Boulevard

Figure 4-2 Lincoln Boulevard at Ocean Park Boulevard



Source: IBI Group, 2013

5. Wilshire Boulevard at 14th Street

Wilshire Boulevard at 14th Street is located approximately 1.1 miles from the City's downtown. This focus intersection is located near the Santa Monica – UCLA Medical Center, Lincoln Middle School, and higher density residential and employment areas. This intersection is served by ten bus routes operated by Big Blue Bus and LA Metro. The Big Blue Bus routes include Route 1, Route 2, Route 3, Route 10 (Rapid), and Route 41 (Crosstown Ride). The LA Metro routes include Route 4, Route 20, Route 704, Route 720, and Route 920.

Looking East along Wilshire Blvd. (left); Looking East along 14 Wilshire Blvd. (right)

Looking West along Wilshire Blvd. (left); Looking at the intersection of Wilshire Blvd. and 14th St. from the Southwest corner (right)

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective.

Table 5-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 5-1 Wilshire Boulevard at 14th Street Station Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Wilshire Blvd (w/o 14th St)										
Wilshire Blvd (e/o 14th St)										
14th St (n/o Wilshire Blvd)										
14th St (s/o Wilshire Blvd)										
17th St										
11th St										
Santa Monica Blvd										
Broadway										
California Av										

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area. A map is provided in Figure 5-2.

Safety

Provide additional pedestrian scale lighting throughout area.

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- Wilshire Boulevard, Santa Monica Boulevard and Broadway

Aesthetics

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Wilshire Boulevard
- Santa Monica Boulevard
- Broadway

Provide pedestrian amenities where applicable (benches, rest areas, trash receptacles, etc) along:

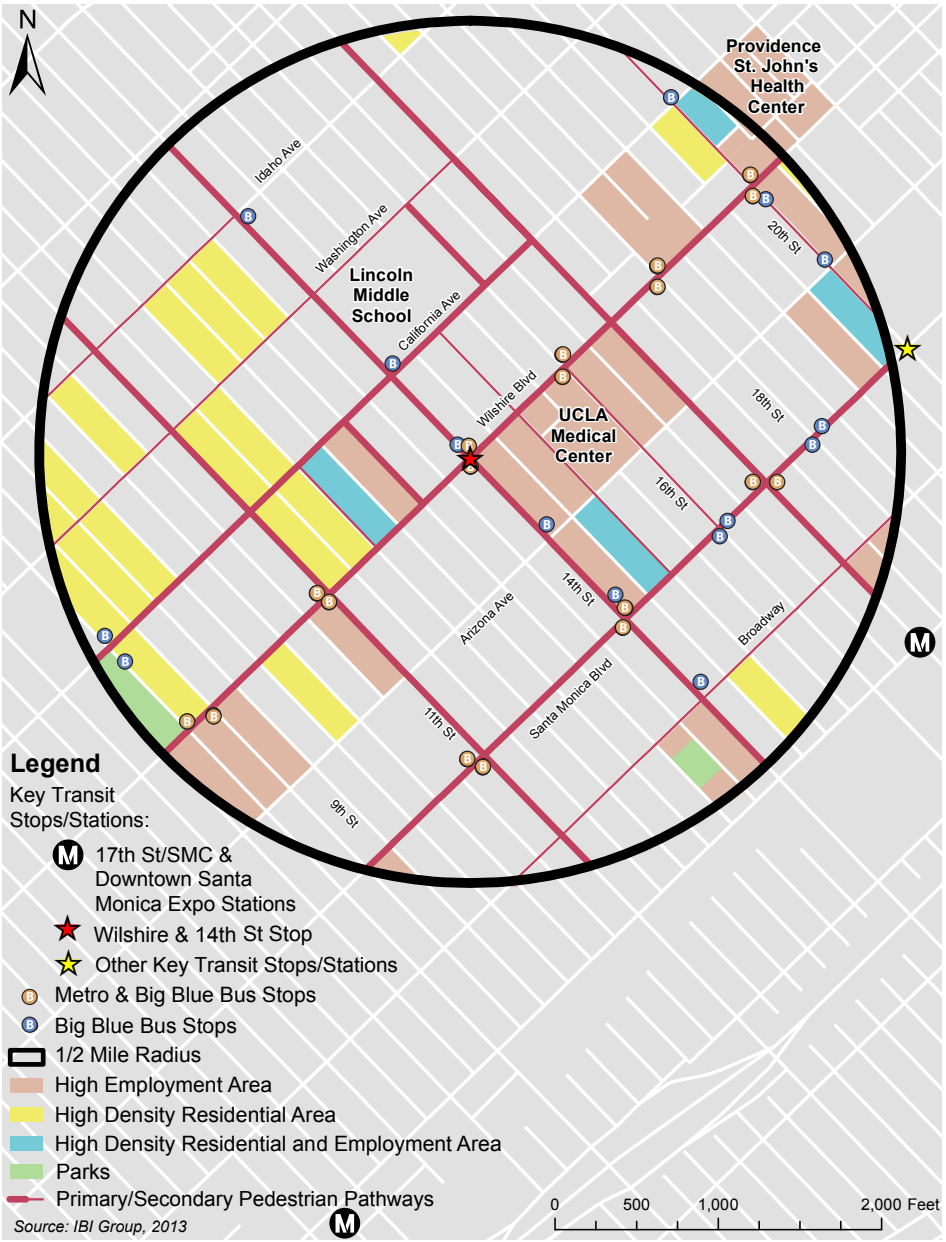
- 14th Street, Idaho Avenue, Washington Avenue, California Avenue, Santa Monica Boulevard, Broadway, 11th Street, 17th Street, and 20th Street

Accessibility

Enhance crosswalks by providing high visibility crosswalks at:

- 14th Street at Broadway, Arizona Avenue, California Avenue, Washington Avenue, and Idaho Avenue
- Santa Monica Boulevard at 16th Street and 18th Street
- At major crossings along Idaho Avenue, Washington Avenue, and California Avenue

Figure 5-2 Wilshire Boulevard at 14th Street



6. Wilshire Boulevard at 26th Street

Wilshire Boulevard at 26th Street is located approximately 2 miles from the City's downtown. This focus intersection is located adjacent to mixed use boulevard and residential uses, with higher density residential and employment areas located to the south. Key destinations within 1/2 mile include Providence St. John's Health Center, Colorado Center, and Douglas Park. This intersection is served by four bus routes, operated by Big Blue Bus and Metro. Big Blue Bus routes that serve this intersection include Route 2. Metro routes that serve this focus area include Routes 20, 720, and 920.

Looking East along Wilshire Blvd. (left); Looking West along Wilshire Blvd. (right)

Looking West along Wilshire Blvd. (left); Looking East along Wilshire Blvd. (right)

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective.

Table 6-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 6-1 Wilshire Boulevard at 26th Street Station Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Wilshire Bl (w/o 26th St)	Minimal	Minimal	Minimal	None/Few	Minimal	None/Few	Minimal	Good	None/Few	Minimal
Wilshire Bl (e/o 26th St)	Minimal	Minimal	Minimal	None/Few	Minimal	Minimal	Minimal	Good	Minimal	Minimal
26th St (n/o Wilshire Bl)	None/Few	Minimal	None/Few	None/Few	Minimal	None/Few	Minimal	None/Few	None/Few	Good
26th St (s/o Wilshire Bl)	None/Few	Minimal	Minimal	None/Few	Minimal	None/Few	Minimal	Minimal	None/Few	Minimal
20th St	None/Few	Minimal	Minimal	None/Few	Minimal	None/Few	Minimal	Minimal	Minimal	Minimal
Yale St	None/Few	Minimal	Good	None/Few	Minimal	None/Few	Minimal	Minimal	None/Few	Minimal
Santa Monica Bl	Minimal	Minimal	Minimal	None/Few	None/Few	Minimal	Minimal	None/Few	Minimal	Minimal
Broadway	Minimal	Minimal	Good	None/Few	None/Few	None/Few	Minimal	Minimal	None/Few	Minimal
Arizona Av	None/Few	Minimal	Good	None/Few	Minimal	None/Few	Minimal	None/Few	None/Few	Minimal
California Av	None/Few	Minimal	Good	None/Few	Minimal	None/Few	Minimal	Minimal	None/Few	Minimal

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area. A map is provided in Figure 6-2.

Safety

Provide additional pedestrian scale lighting along:

- 26th Street, 20th Street, and Yale Street, Chelsea Avenue, Arizona Avenue

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- 26th Street, Wilshire Boulevard, Santa Monica Boulevard, Broadway

Aesthetics

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Wilshire Boulevard, 26th Street, Yale Street, Santa Monica Boulevard, Broadway

Provide pedestrian amenities where applicable (benches, rest areas, trash receptacles, etc.) along:

- 26th Street, 20th Street, Yale Street, Santa Monica Boulevard, Broadway

Accessibility

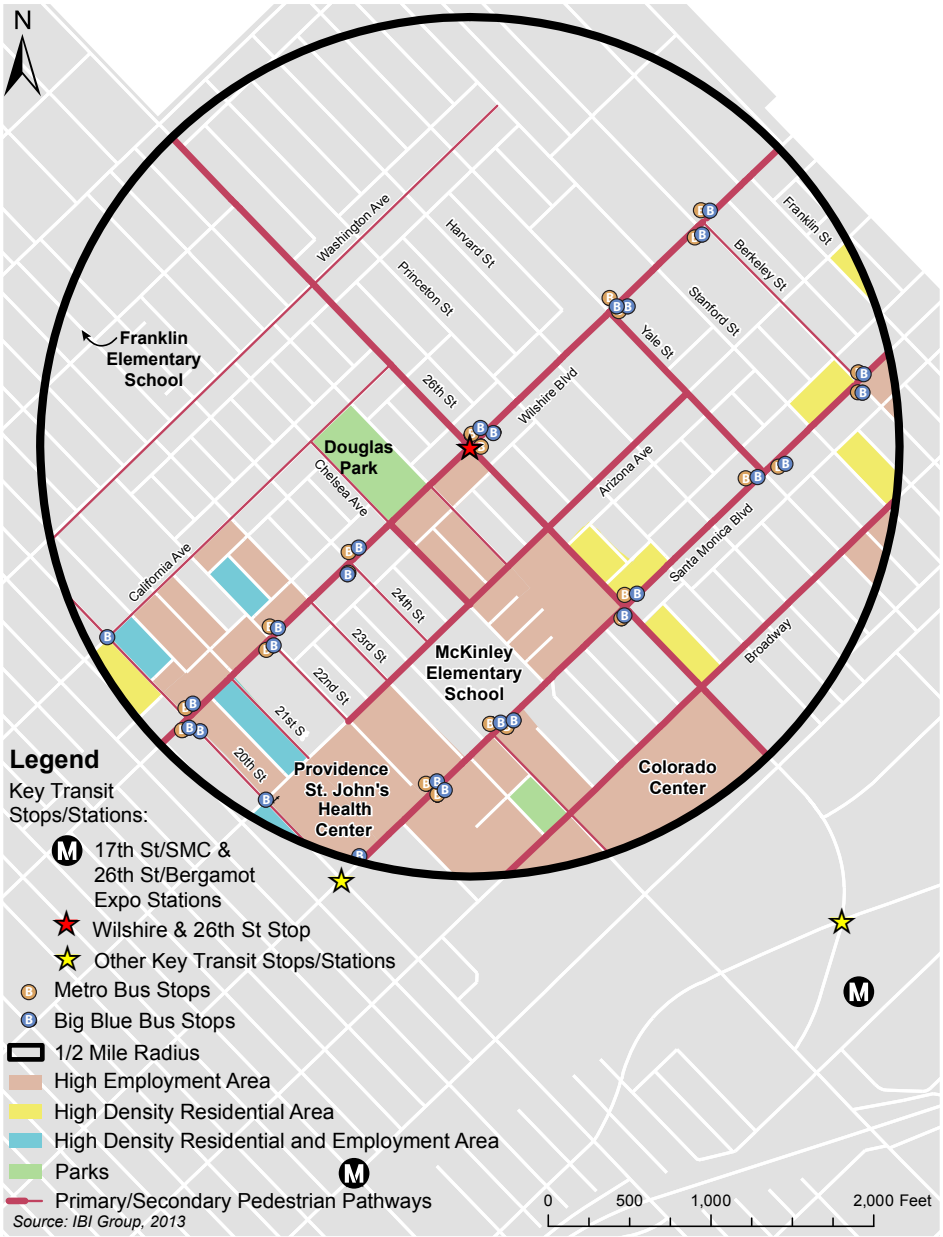
Enhance crosswalks by providing high visibility crosswalks at:

- Stop-controlled crossings along Wilshire Boulevard and California Avenue

Provide wider sidewalks for pedestrian movement and queuing along:

- 26th Street north of Wilshire Boulevard

Figure 6-2 Wilshire Boulevard at 26th Street



7. Santa Monica Boulevard at 20th Street

Santa Monica Boulevard at 20th Street is located approximately 1.5 miles from the City's downtown. This focus intersection is located adjacent to Providence St. John's Health Center, and is surrounded by higher density employment centers. This intersection is served by six bus routes, operated by Big Blue Bus and Metro. Big Blue Bus routes that serve this intersection include Route 1, Route 10, Route 11, and Crosstown Ride. Metro routes that serve this focus area include Route 4 and Route 704.

Looking South along 20th St. (left); Looking East along Santa Monica Blvd. (right)

Looking West along Santa Monica Blvd. (left); Looking at the Southwest corner of Santa Monica Blvd. and 20th St. (right)

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective.

Table 7-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 7-1 Santa Monica Boulevard at 20th Station Street Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Santa Monica Bl (w/o 20th St)										
Santa Monica Bl (e/o 20th St)										
20th St (n/o Santa Monica Bl)										
20th St (s/o Santa Monica Bl)										
California Av										
Wilshire Bl										
Broadway										
Colorado Av										
17th St										
Cloverfield Bl										
Arizona Av										

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area. A map is provided in Figure 7-2.

Safety

Provide additional pedestrian scale lighting along:

- 20th Street, California Avenue, Colorado Avenue, 17th Street, and Cloverfield Boulevard

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- Santa Monica Boulevard
- Broadway
- 20th Street south of Santa Monica Boulevard
- Colorado Avenue

Provide pedestrian signage along:

- 20th Street, California Avenue, Colorado Avenue, Cloverfield Boulevard

Aesthetics

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Santa Monica Boulevard, Wilshire Boulevard, Broadway, Colorado Avenue, 17th Street

Provide pedestrian amenities where applicable (benches, rest areas, trash receptacles, etc.) along:

- 20th Street, Wilshire Boulevard, California Avenue, Broadway, Colorado Avenue, 17th Street, Cloverfield Boulevard, and 26th Street

Accessibility

Enhance crosswalks by providing high visibility crosswalks at:

- Stop-controlled intersections along California Avenue

Figure 7-2 Santa Monica Boulevard at 20th Street

8. Colorado Avenue at 17th Street

Colorado Avenue at 17th Street is located approximately 1.3 miles from the City's downtown. This focus intersection is a future stop for the Metro Exposition Line light rail and is close to several high density residential areas and high employment areas. This intersection is served by eight bus routes operated by Big Blue Bus and LA Metro. The Big Blue Bus routes include Route 1, Route 5, Route 10 (Rapid), Route 11, and Route 41 (Crosstown Ride). The LA Metro routes include Route 4 and Route 704. Metro Route 534 also runs through the focus area, but there are no stops near Colorado Avenue at 17th Street.

Looking East along Colorado Ave. (left); Southwest corner of Colorado Ave. and 17th St. (right)

Looking South along Colorado Ave. (left); Looking South along 17th St. (right)

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective.

Table 8-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 8-1 Colorado Avenue at 17th Street Station Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Colorado Av (w/o 17th St)										
Colorado Av (e/o 17th St)										
17th St (n/o Colorado Av)										
17th St (s/o Colorado Av)										
Santa Monica Bl										
Broadway										
Michigan Av										
Delaware Av										
14th St										
20th St										
Cloverfield Bl										
Olympic Bl (w/o 20th St)										

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area. A map is provided in Figure 8-2.

Safety

Provide additional pedestrian scale lighting throughout area.

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- Colorado Avenue and 20th Street

Provide pedestrian signage along:

- Colorado Avenue, 14th Street, 17th Street, 20th Street, Santa Monica Boulevard, Broadway, and Michigan Avenue.

Aesthetics

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Colorado Avenue, Santa Monica Boulevard, Broadway

Provide pedestrian amenities where applicable (benches, rest areas, trash receptacles, etc.) along:

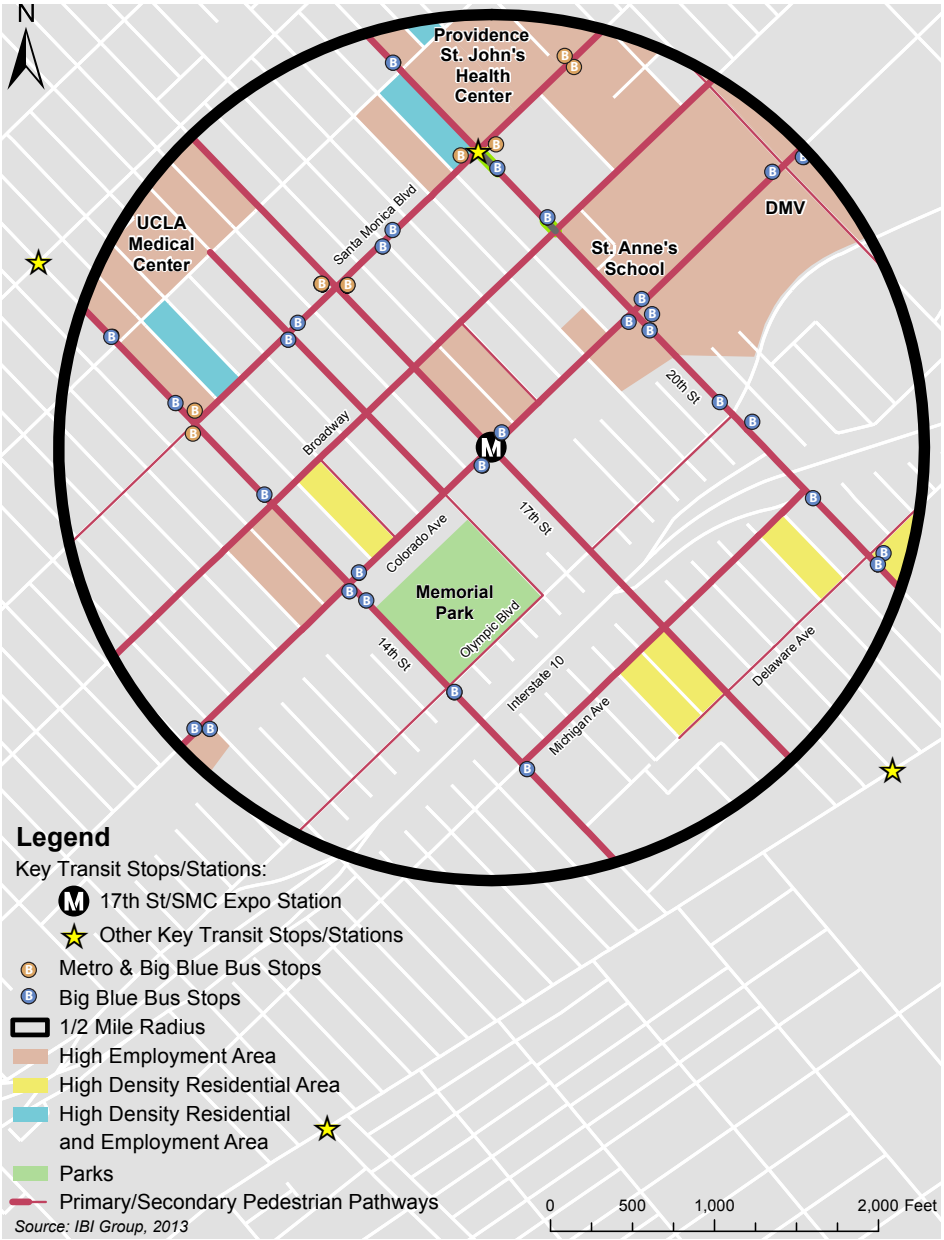
- All pedestrian pathways within this focus area

Accessibility

Enhance crosswalks by providing high visibility crosswalks along:

- Colorado Avenue, Olympic Boulevard, Santa Monica Boulevard, and 17th Street

Figure 8-2 Colorado Avenue at 17th Street



9. Olympic Boulevard at 26th Street

Olympic Boulevard at 26th Street is located approximately 1.5 miles from the City's downtown. This focus intersection is located adjacent to the planned Bergamot/26th St Exposition Line Station and is adjacent to Bergamot Station, Santa Monica Museum of Art, and the Water Garden Corporate Center. This intersection is served by one bus route operated by Big Blue Bus (Route 5), with connections to four other Big Blue Bus routes and three LA Metro Routes within the half-mile radius.

Looking West along Olympic Blvd. (left); Looking South along 26th St. (right)

Looking at the intersection of Olympic Blvd. and 26th St. from the Southwest corner (left); Looking at the Northwest corner of Olympic Blvd. and 26th St. (right)

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective.

Table 9-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 9-1 Olympic Boulevard at 26th Street Station Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Olympic Bl (w/o 26th St)										
Olympic Bl (e/o 26th St)										
26th St (n/o Olympic Bl)										
26th St (s/o Olympic Bl)										
Santa Monica Bl										
Broadway										
Delaware Av										
20th St										
Cloverfield Bl (n/o Olympic Bl)										
Cloverfield Bl (s/o Olympic Bl)										
Stewart St										
Nebraska Av										
Colorado Av (e/o 20th St)										
Michigan Av (e/o 20th St)										

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area. A map is provided in Figure 9-2.

Safety

Complete pedestrian sidewalks along Pennsylvania Avenue and Olympic Boulevard, and widen existing on Olympic Boulevard.

Provide additional pedestrian scale lighting along:

- Olympic Boulevard, Stewart Street, Michigan Avenue, Cloverfield Boulevard (north of I-10), and Colorado Avenue

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- Olympic Boulevard
- 26th Street north of Colorado Avenue
- 20th Street (north of I-10)
- Cloverfield Boulevard

Aesthetics

Complete Nebraska Avenue Streetsacape (See Bergamot Area Plan)

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Santa Monica Boulevard, Broadway, and 20th Street (north of I-10)

Provide pedestrian amenities where applicable (benches, rest areas, trash receptacles, etc.) and pedestrian signage along:

- All pedestrian pathways identified within this focus area

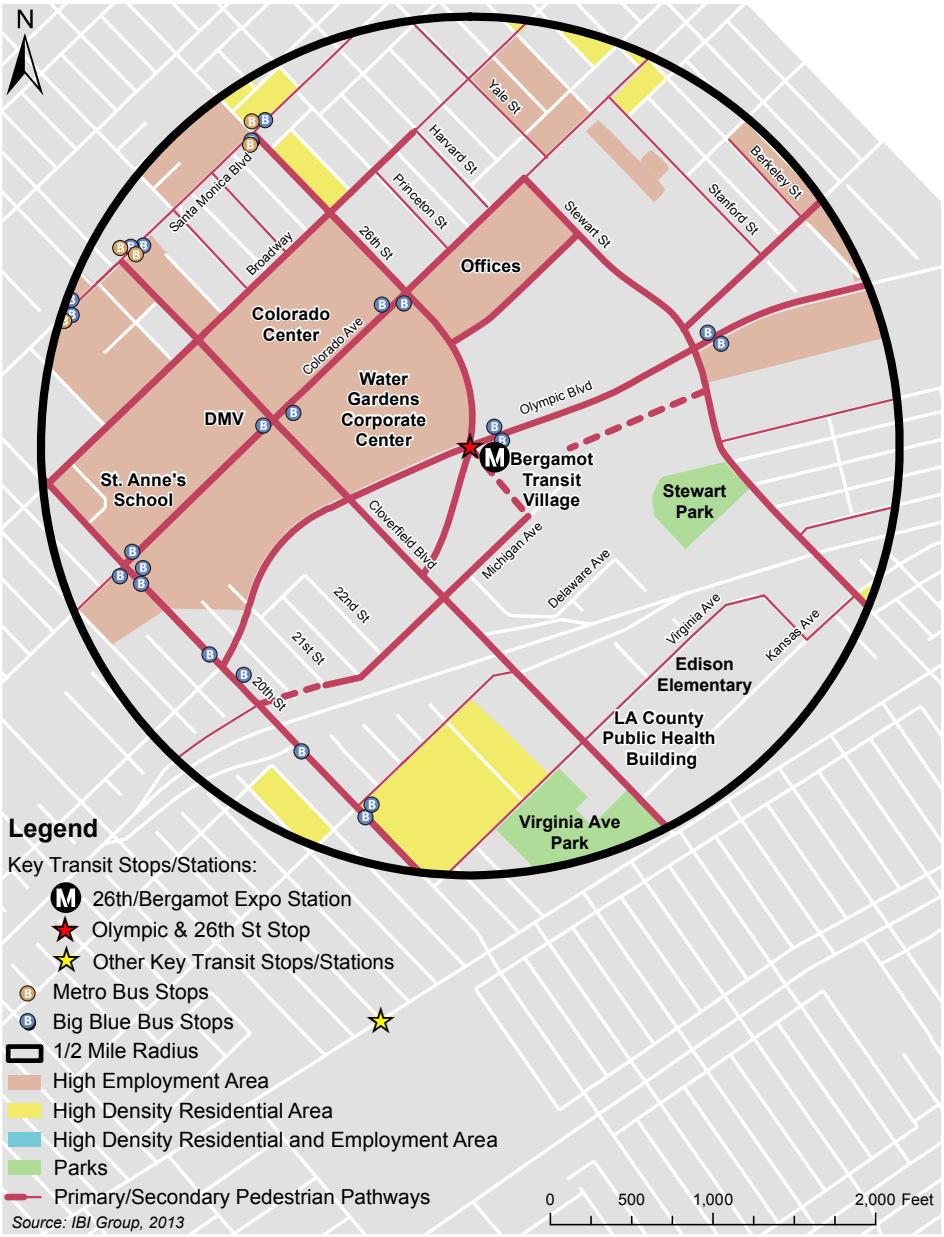
Accessibility

Enhance crosswalks at:

- 26th Street at Broadway, Colorado Avenue
- Olympic Boulevard at Cloverfield Boulevard, Stewart Street, Expo station (east entrance), and Stanford Street
- Cloverfield Boulevard at Michigan Avenue and Delaware Avenue

Provide wider sidewalks for pedestrian movement and queuing along 26th Street

Figure 9-2 Olympic Boulevard at 26th Street



10. Pico Boulevard at 18th Street

Pico Boulevard at 18th Street is located approximately 2 miles from the City's downtown. This focus intersection is located adjacent to Santa Monica College, and is located within close proximity to several high density residential areas and high employment areas. This intersection is served by five bus routes, each operated by Big Blue Bus, including Route 6, Route 7, Route 7 (Rapid), Route 11, and Route 44 (Sunset Ride). The Metro Route 534 also runs through the focus area, but does not stop near Pico Boulevard at 18th Street.

Crossing Pico Blvd. from the Northwest at 18th Ct. (left); Looking East along Pico Blvd. (right)

Looking West along Pico Blvd. (left); Looking East along Pico Blvd. (right)

Opportunities and Constraints

A review of the pedestrian pathways from the focus transit stop to major destinations was conducted to identify opportunities and constraints from a pedestrian perspective.

Table 10-1 summarizes the evaluation results for each pedestrian pathway identified in the focus area.

Table 10-1 Pico Boulevard at 18th Street Station Walkshed Analysis

Pathway Location	Safety				Aesthetics		Accessibility			
	Presence of lighting	Presence of pedestrian buffers	Low traffic speeds (<=25 mph)	Pedestrian signage	Landscaping	Pedestrian amenities	Sidewalks	Crossings	Transit transfer options	Curb and curb ramps provided
Pico Bl (w/o 18th St)	Good	Minimal	None/Few	None/Few	Good	Minimal	Minimal	Minimal	Minimal	Minimal
Pico Bl (e/o 18th St)	Good	Minimal	None/Few	None/Few	Good	Minimal	Minimal	Minimal	None/Few	Minimal
17th St (n/o Pico Bl)	None/Few	Good	Good	None/Few	Minimal	None/Few	Minimal	None/Few	None/Few	Minimal
17th St (s/o Pearl St)	None/Few	Good	Good	None/Few	Minimal	None/Few	Minimal	Minimal	None/Few	Minimal
Michigan Av	None/Few	Good	Good	None/Few	Good	None/Few	Minimal	None/Few	None/Few	Minimal
Delaware Av	Minimal	Good	Good	None/Few	Good	None/Few	Minimal	None/Few	None/Few	Minimal
Pearl St	None/Few	Good	Good	None/Few	Minimal	Minimal	Minimal	Minimal	None/Few	Minimal
14th St (n/o Pico Bl)	None/Few	Minimal	Minimal	None/Few	Minimal	None/Few	Minimal	None/Few	None/Few	Minimal
14th St (s/o Pico Bl)	None/Few	Good	Minimal	None/Few	Minimal	None/Few	Minimal	Minimal	None/Few	Minimal
20th St	Minimal	Minimal	Minimal	None/Few	Minimal	None/Few	Minimal	None/Few	Minimal	Minimal
Cloverfield Bl (n/o Pico Bl)	Good	Minimal	Minimal	None/Few	Minimal	None/Few	Minimal	Minimal	None/Few	Minimal

None/Few
Minimal, may need work
Good

Potential Improvements

The following are some potential improvements that may be implemented based on the analysis and findings for this focus area. A map is provided in Figure 10-2.

Safety

Provide additional pedestrian scale lighting along:

- 14th Street
- 17th Street
- 20th Street
- Michigan Avenue

Enhance pedestrian buffers between sidewalks and traffic lanes along:

- Pico Boulevard, 14th Street, and 20th Street

Provide pedestrian signage to create awareness and safety along:

- 14th Street north of Pico Boulevard
- 17th Street north of Pico Boulevard

Aesthetics

Provide landscaping (i.e., planters, gardens, trees, etc.) along:

- Pico Boulevard

Provide pedestrian amenities where applicable (benches, rest areas, trash receptacles, etc.) along:

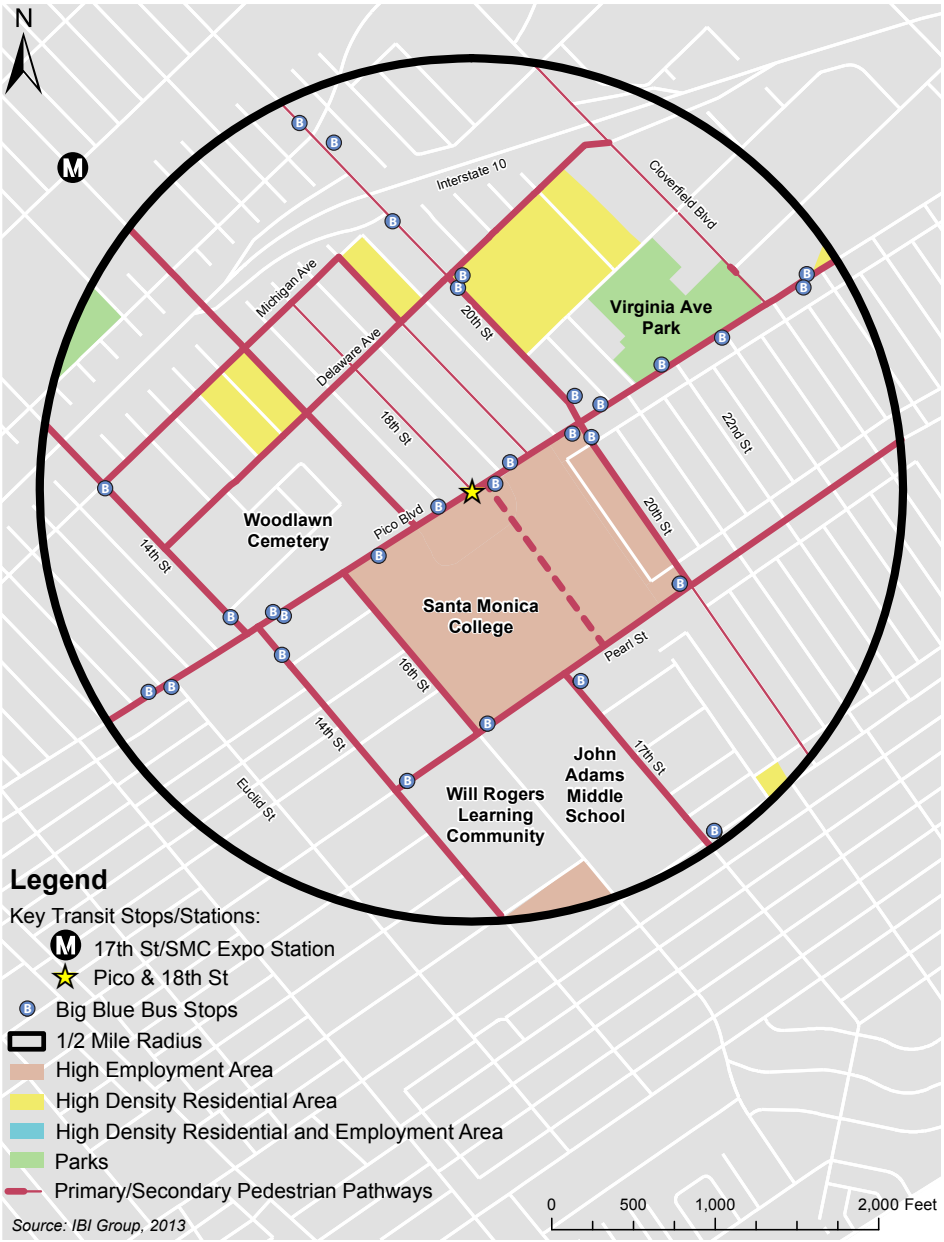
- All pedestrian pathways within this focus area

Accessibility

Enhance crosswalks by providing high visibility crosswalks at:

- Michigan Avenue
- Delaware Avenue
- Pico Boulevard
- 14th Street
- 17th Street west of Pico Boulevard
- 20th Street

Figure 10-2 Pico Boulevard at 18th Street



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City of
Santa Monica®

APPENDIX D

PEDESTRIAN DESIGN TOOLKIT

CONTENT

General Considerations.....211

City of Santa Monica

INTRODUCTION

The Pedestrian Design Toolkit is intended to assist the City of Santa Monica in the selection and design of pedestrian facilities. The toolkit provides a collection of proven pedestrian countermeasures and design treatments to prevent collisions and further the transportation goals in the Santa Monica Pedestrian Action Plan. The guidance provided here also serves as a tool for creatively developing capital and land development projects throughout the city, toward the Pedestrian Action Plan goals of creating connectivity, stewarding sustainability, creating a compassionate and healthy community, supporting walking, coordinating city efforts, and being a Vision Zero community.

This toolkit compiles best practices by facility type from public agencies and municipalities nationwide. Treatments are covered within a full spread format relaying important design information and applications, example photos, schematics (if applicable), and existing summary guidance from current or Pedestrian Action Plan recommended standards. Each treatment features the applicable roadway characteristics, collision types, and plan goals addressed. Existing standards are referenced throughout and should be the first source of information when seeking to implement any of the treatments featured here.

The design guidance offered in the Toolkit is flexible and should be applied using professional judgment. This document references specific national and statewide guidelines for pedestrian facility design. It also introduces a number of design treatments not specifically covered under current guidelines. Statutory and regulatory guidance may change. For this reason, the guidance and recommendations in this document function to complement other resources considered during a design process, such as Community Policing Through Environmental Design and Americans with Disability Act current guidance. Sound engineering judgment should be used in all cases.

The Pedestrian Design Toolkit features a Countermeasure Selection Matrix that allows the user to identify the appropriate pedestrian design treatment for a given collision type(s). The collision types listed correspond to the most common collision types in the City of Santa Monica at controlled intersections, uncontrolled intersections and at mid-block.

The Pedestrian Design Toolkit is also complemented by the Enhanced Pedestrian Treatment Decision Support Matrix which provides detailed guidance on selecting the most appropriate pedestrian crossing treatments at uncontrolled intersections.

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COUNTERMEASURE SELECTION GUIDE

Chapter 3 of the Pedestrian Action Plan describes collision patterns in Santa Monica. Crashes are mainly happening at intersections with traffic signals, intersections controlled by two way stop signs, and midblock, in between intersections. Collision types are defined by what conditions and actions precede a driver hitting a person walking. Potential engineering solutions vary depending both upon collision location and collision type. The main types of collisions are described below:

Collision Types

- Through Vehicle: Through vehicle crashes occur when a driver proceeds straight and hits a person walking across the street.
- Left Turning: Left turning vehicle crashes occur when a driver turns left and hits a person walking across the street.
- Right Turning: Right turning vehicle crashes occur when a driver turns right and hits a person walking across the street.
- Dart/Dash collisions happen when a driver hits a pedestrian who has stepped out to cross a street without providing the driver sufficient time to stop.
- Multiple Threat: A multiple threat collision is a through vehicle collision on a street with multiple lanes. It happens when a driver in one lane of traffic yields to a person crossing the street but the driver coming from behind in the adjacent lane does not.

Countermeasure Selection Guide

Collision Type	Marked Crosswalks - Intersections	Marked Crosswalks - Midblock	Median Refuge Islands	Offset Crossing/ zig zag	Raised Crosswalks	ADA Compliant Curb Ramps (diagonal and directional)	Advance Stop or Yield Lines	Parking Control
Through vehicle								
At traffic signals	X		X		X	X	X	X
At two-way stops	X		X		X	X	X	X
Midblock		X	X	X	X	X	X	X
Left turning vehicle								
At traffic signals	X		X			X		X
At two-way stops	X		X			X		X
Midblock			X			X		
Right turning vehicle								
At traffic signals	X		X			X	X	X
At two-way stops	X		X			X	X	X
Midblock			X			X	X	
Dart/Dash								
At traffic signals			X					
At two-way stops			X					
Midblock		X	X					
Multiple Threat								
At traffic signals			X				X	
At two-way stops			X				X	
Midblock		X	X	X			X	

Overcrossings	Rectangular Rapid Flash Beacons (RRFBs)	In-Road Warning Lights (IRWL)	Raised Pavement Markers	Transverse Rumble Strips in Advance of Crosswalks	School Zone Crossing Paddle	Pedestrian Flags	Routing Users to Signalized Crossings
X	X	X	X	X	X	X	
X			X	X	X	X	
X	X	X	X	X	X	X	
X	X	X	X	X	X	X	
X							
X							
X							
X							
X							
X							
X							X
X							
X							X
X							X
X		X					X
X							
X	X	X					X
X							X

Countermeasure Selection Guide

Collision Type	Sidewalks					
	Widths	Driveways + Obstructions	Lighting	Transit Stops	Landscaping and Tree Maintenance	Pedestrian Warning Systems at Driveways
Through vehicle			X	X	X	
At traffic signals			X	X	X	
At two-way stops			X	X	X	
Midblock			X	X	X	
Left turning vehicle		X	X		X	X
At traffic signals			X		X	
At two-way stops			X		X	
Midblock		X			X	X
Right turning vehicle		X	X	X	X	X
At traffic signals			X	X	X	
At two-way stops			X	X	X	
Midblock		X		X	X	X
Dart/Dash	X	X		X		
At traffic signals	X			X		
At two-way stops	X			X		
Midblock	X	X		X		
Multiple Threat				X		
At traffic signals				X		
At two-way stops				X		
Midblock				X		

Roadways						
Lane Reconfiguration	Lane Narrowing	Neighborhood Greenways	Horizontal Traffic Calming	Vertical Traffic Calming	Parklets	Pedestrian Plazas
X	X	X	X	X		
X	X	X	X	X		
X	X	X	X	X		
X	X	X	X	X		
X	X	X	X	X		
X	X	X	X	X		
X	X	X	X	X		
X	X	X	X	X		
X	X	X				
X	X	X				
X	X	X				
X	X	X				

Countermeasure Selection Guide

Collision Type	Unsignalized				Signalized			
	All Way Stop Control	Minimizing Curb Radii	Curb Extensions	Increased Curb Radii	Traffic Control Device Modifications	Traffic Signal Phasing	Pedestrian Signals, Manual Actuation	Pedestrian Signals, Enhanced Actuation and Detection
Through vehicle	X	X	X		X	X	X	X
At traffic signals	X	X	X		X	X	X	X
At two-way stops	X	X	X					
Midblock			X					
Left turning vehicle	X		X		X	X	X	X
At traffic signals	X		X		X	X	X	X
At two-way stops	X		X					
Midblock								
Right turning vehicle	X	X	X		X	X	X	X
At traffic signals	X	X	X		X	X	X	X
At two-way stops	X	X	X					
Midblock								
Dart/Dash					X		X	X
At traffic signals					X		X	X
At two-way stops								
Midblock								
Multiple Threat		X	X		X		X	X
At traffic signals		X	X		X		X	X
At two-way stops		X	X					
Midblock			X					

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COMPLETE STREETS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

A Complete Street is a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, freight, and motorists, appropriate to the function and context of the facility.

In addition to general purpose vehicular travel lanes and sidewalks, a complete street may include items such as bike lanes or shoulders, bus lanes, transit stops, crosswalks, median refuges, curb extensions, appropriate landscaping, and other features that add to the usability of the street. A complete street would include multiple countermeasures described in this toolkit.

Typical Application

Not all complete streets look or function alike. Complete streets in Santa Monica will serve to balance land use, mobility, modal priority, relationships to other streets in the network and land limitations. As such, there is considerable flexibility in determining the appropriate amenities and cross sections.

In general, as speeds and volumes on a roadway increase, so does the need for separation of non-motorized users from motor vehicles.

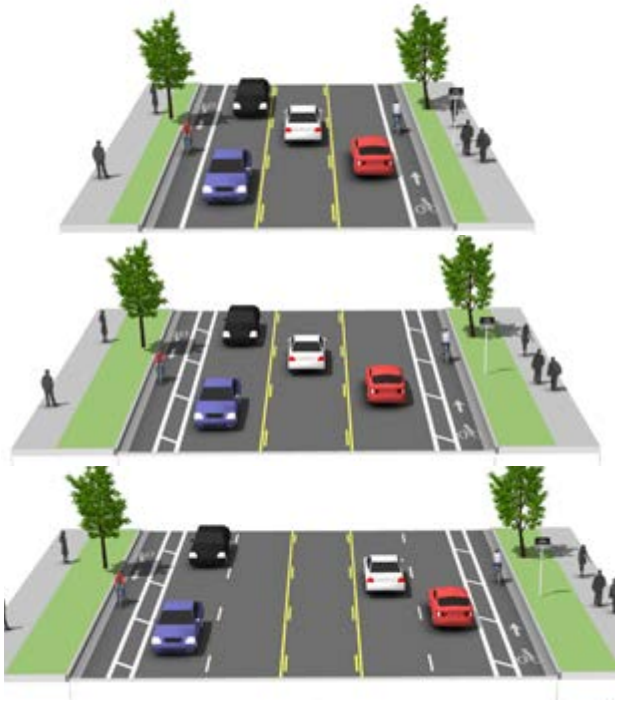
Benefits of Complete Streets

Caltrans Complete Streets Implementation Action Plan identifies the benefits of complete streets as:

- **Increased Transportation Choices:** Streets that provide travel choices can give people the option to avoid traffic congestion, and increase the overall capacity of the transportation network.
- **Economic Revitalization:** Complete streets can reduce transportation costs and travel time while increasing property values and job growth in communities.
- **Improved Return on Infrastructure Investments:** Integrating sidewalks, bike lanes, transit amenities, and safe crossings into the initial design of a project spares the expense of retrofits later.
- **Quality of Place:** Increased bicycling and walking are indicative of vibrant and livable communities.
- **Improved Safety:** Design and accommodation for bicyclists and pedestrians reduces the incidence of crashes.
- **More Walking and Bicycling:** Public health experts are encouraging walking and bicycling as a response to the national obesity epidemic. Streets that provide room for bicycling and walking encourage physical activity and help children gain independence.

Potential Street Configuration in Santa Monica:

Potential Street Configuration in Santa Monica:
Avenue: Major/secondary/minor
Commercial: Downtown/Neighborhood
Boulevard, Transit Investment



Complete Streets Policies

California's AB 1358 calls for adoption of Complete Streets policies when local general plans come up for review; the clear safety benefits of a Complete Streets approach indicate that more communities should act now to change their transportation planning practices.

On state facilities, Deputy Directive 64-R1 states that Caltrans routinely plans, programs, designs, constructs, operates and maintains the entire right-of-way to enable safe access for all users.

Additional References and Guidelines

Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians.2010.

Caltrans Memo: Design Flexibility in Multimodal Design. April 2014.

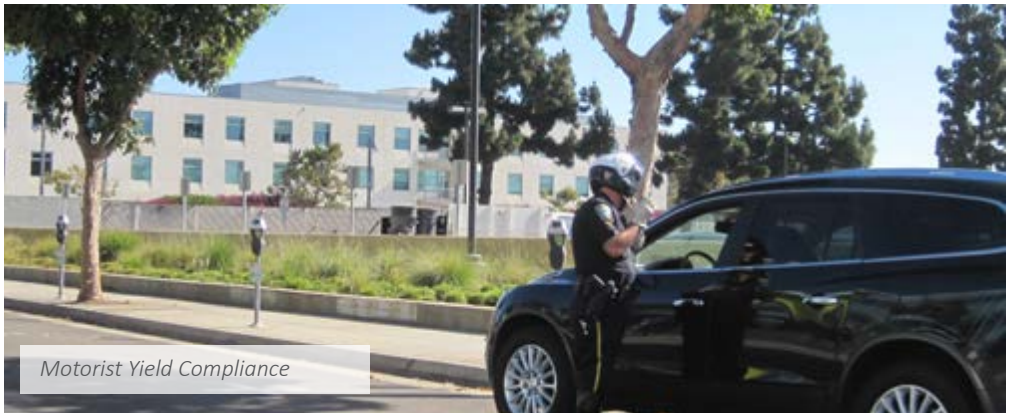
Main Street, California: A Guide for Improving Community and Transportation Vitality. 2013.

NACTO. Urban Streets Design Guide. 2012.

TRAFFIC ENFORCEMENT

Speed Radar Feedback


Jaywalking


Motorist Yield Compliance

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Speed Radar Feedback

Speed radar feedback signs use radar and an electronic display to alert drivers of the speed at which they are traveling. Many signs can be pre-set to flash warnings when speeds are above an established threshold.

These signs have been shown to be highly effective at reducing motorist's speeds where they are used intermittently. They may be installed in a fixed location, or affixed to a trailer and transported to different locations as needed.

Traffic Enforcement itself is not a countermeasure but is critical to the toolkit by enforcing proper use of design.

These signs are commonly used at locations with a documented speeding problem, or where heightened awareness of the existing speed limit is desired, such as along Neighborhood Greenways.

Speed radar feedback signs are generally more supported by adjacent property owners than speed humps/cushions.

Photo Enforcement

Red light photo enforcement has been demonstrated to reduce crashes at intersections by as much as 40 percent. The addition of cameras at one intersection tends to positively affect compliance at nearby intersections that do not have cameras.

Red light cameras only take photos of drivers that travel through the intersection after the red light phase has been triggered.

Automated speed limit enforcement requires special cameras that measure the time it takes a vehicle to travel a known fixed distance to calculate travel speed. Motorists found to be traveling in excess of the posted speed limit are ticketed.

These cameras may be movable, or in fixed locations, but are generally placed in areas with a documented problem with vehicles speeding or running red lights.

Jaywalking Enforcement

Where a high incidence of pedestrian injury/fatality rates occur, police often turn to pedestrian crosswalk enforcement, or "jaywalking", actions. During these enforcement actions police set up at a signalized intersection with a marked crosswalk and ticket people crossing the street against the pedestrian signal, or where they cross outside of the marked crosswalk. These enforcement actions are often met with heated criticism and there is scant evidence demonstrating a correlation between jaywalk enforcement actions and future crosswalk compliance. Often the reason people jaywalk is because there are insufficient numbers of marked crossings, distances to crossing are too far away, or excessive pedestrian delay at signalized intersections.

Motorist Yield Compliance

Motorist yield compliance actions are the inverse of jaywalking actions. Plain clothes police officers set up at a marked crosswalk location and ticket motorists that fail to yield to the officer in the crosswalk.

Unlike jaywalking enforcement actions, motorist yield compliance stings have been shown to have lasting positive effects on driver yield compliance. These actions are commonly used at locations with documented low compliance rates.

Materials and Maintenance

Speed radar feedback signs and red light video camera equipment must be regularly maintained

COST: $-$$

Additional References and Guidelines

Insurance Institute for Highway Safety. 2002.

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

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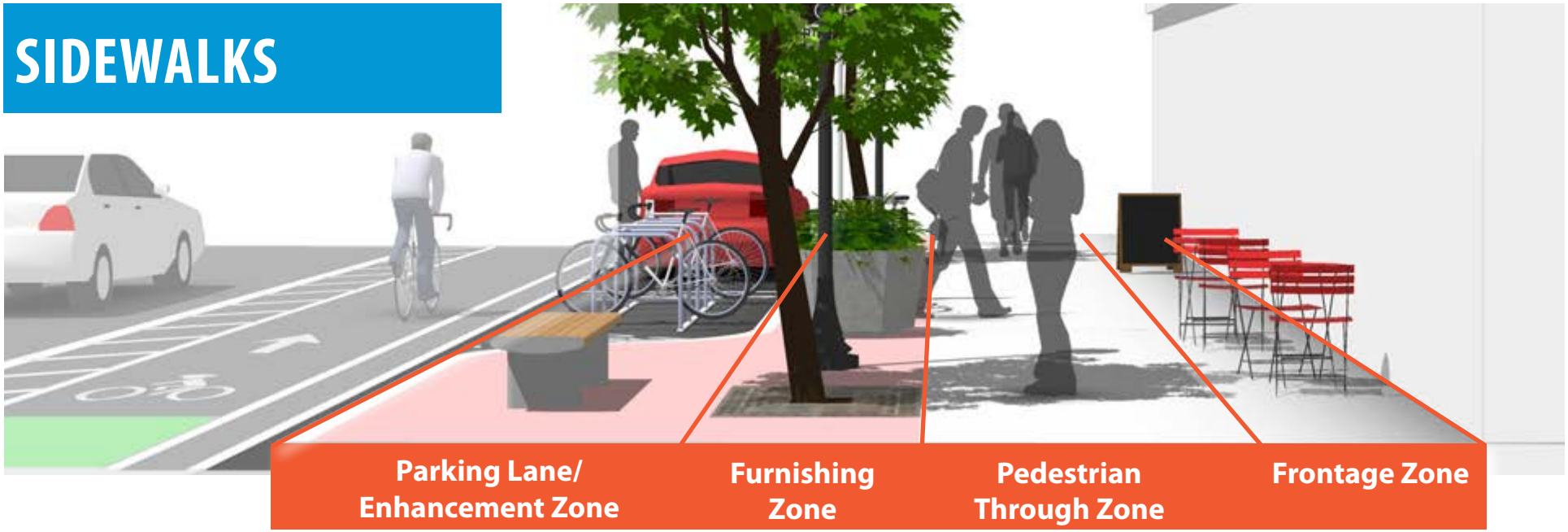
SIDEWALK CORRIDORS

SIDEWALKS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. A variety of considerations are important in sidewalk design. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved safety, and the creation of social space.

The sidewalks in Santa Monica fulfill a variety of community needs ranging from transportation and recreation, to economic development and equity.

Typical Application

Sidewalks should be more than areas to travel; they should provide places for people to interact. There should be places for standing, visiting, and sitting. Sidewalks should contribute to the character of neighborhoods and business districts, strengthen their identity, and be an area where adults and children can safely participate in public life.

In Downtown and commercial areas, they should provide for higher volumes and engagement at varying activity levels. In residential areas they should be designed for comfort, recreation and socialization.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

A well-defined sidewalk corridor creates a pleasant and intuitive walking environment

Guidance

The parking lane can act as a flexible space to buffer the sidewalk from moving traffic. Curb extensions, bike corrals and parklets may occupy this space where appropriate.

The furnishing zone buffers pedestrians from the adjacent roadway, and is also the area where elements such as street trees, signal poles, signs, and other street furniture are properly located. In residential neighborhoods it's typically a parkway with street trees and vegetation, but in more heavily travelled pedestrian areas, it may be used for through travel if free of obstructions, and right of way does not permit sufficient sidewalk space.

The through zone is the area intended primarily for pedestrian travel and should be entirely free of permanent and temporary objects. Wide through zones are needed in Downtown or where pedestrian flows are high.

The frontage zone allows pedestrians a comfortable "shy" distance from the building fronts. It provides opportunities for window shopping, to place signs, planters, tables/chairs.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped space. Colored, patterned, or stamped concrete can add distinctive visual appeal.

COST: $$

Additional References and Guidelines

USDOJ. ADA Standards for Accessible Design. 2010. United States Access Board. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public-Right-of-Way (PROWAG). 2011. AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004.

NACTO. Urban Street Design Guide. 2013.

SIDEWALKS - WIDTHS

Classification	Parking Lane/ Enhancement Zone	Furnishing Zone	Pedestrian Through Zone	Frontage Zone	Total
Neighborhood/Shared Streets	Varies	2- 5 feet	5- 6 feet	N/A	7- 11 feet
Avenue: Major, Secondary, Minor	Varies	2-6 feet	5-8 feet	3-5 feet	10-19 feet
Commercial Downtown	Varies	6-8 feet	6-12 feet	3-5 feet	15-25 feet
Commercial Neighborhood/Boulevard	Varies	5-6 feet	8-10 feet	2-5 feet	15-21 feet
Transit Investment	Varies	6-8 feet	8-10 feet	1-2 feet	15-20 feet

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

The width and design of sidewalks will vary depending on street context, classification, and pedestrian demand. Above are preferred widths of each sidewalk zone according to the general street types in the Santa Monica Land Use Circulation Element. Standardizing sidewalk guidelines for different areas of the city, dependent on the above listed factors, ensures a minimum level of quality for all sidewalks.

Typical Application

It is important to provide adequate width along a sidewalk corridor. Two people should be able to walk side-by-side and pass a third comfortably. In areas of high demand, sidewalks should contain adequate width to accommodate the high volumes and different walking speeds of pedestrians. The Americans with Disabilities Act requires a 4 foot clear width in the pedestrian zone plus 5 foot passing areas every 200 feet.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Different paving materials can be used to add visual appeal and define walking, seating , and entrance areas

Guidance

The enhancement zone offers increased area for transit stops and shelters with curb extensions. They also offer increased safety for passengers boarding and alighting as they increase visibility at intersections and reduce the crossing distance.

In the Pedestrian Through Zone, six feet enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped space.

Colored, patterned, or stamped concrete can add distinctive visual appeal, and can be especially functional in defining pedestrian spaces in high activity commercial areas. Sidewalk materials should accommodate people who are visually impaired or with low vision.

COST: $$

Additional References and Guidelines

USDOJ. ADA Standards for Accessible Design. 2010. United States Access Board. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public-Right-of-Way (PROWAG). 2011. AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004.

NACTO. Urban Street Design Guide. 2013.

City of Santa Monica. Land Use Circulation Element. 2010.

SIDEWALKS - DRIVEWAYS + OBSTRUCTIONS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Obstructions to pedestrian travel in the sidewalk corridor typically include driveways, automobile ramps, curb ramps, sign posts, utility and signal cabinets and poles, mailboxes, fire hydrants and street furniture.

Driveways and entrances to parking structures can be particularly challenging due to the restricted visibility of exiting motorists. Utility boxes and traffic signal cabinetry should be located in the furnishing zone and set back from driveway entrances to increase visibility of pedestrians.

Typical Application

Obstructions such as utility boxes, pull boxes and traffic signal cabinetry should be placed in the furnishing or utility zone between the sidewalk and the roadway to create a buffer for increased pedestrian comfort.

The furnishing or utility zone also serves as the extended area where driveway grade changes should occur. This ensures a continuous cross slope along the pedestrian through zone.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Obstacles in the sidewalk pose additional challenges to wheelchair users and visually-impaired pedestrians

Guidance

Reducing the number of access points eliminates points of conflict between vehicles and pedestrians. This strategy should be pursued first.

Driveways are a common sidewalk obstruction, especially for wheelchair users. When constraints only allow sidewalks without a furnishing zone, dipping the entire sidewalk at the driveway approaches keeps the cross-slope at a constant grade. However, this may be uncomfortable for pedestrians and could create drainage problems behind the sidewalk.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped space. Surfaces must be firm, stable, and slip resistant.

COST: $-$$

Additional References and Guidelines

USDOJ. ADA Standards for Accessible Design. 2010. United States Access Board. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public-Right-of-Way (PROWAG). 2011. AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004.

SIDEWALKS - LIGHTING

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Pedestrian scale lighting improves visibility for both pedestrians and motorists - particularly at intersections and in areas where personal safety is a concern.

Pedestrian scale lighting is characterized by short light poles (around 12 to 15 feet high), close spacing, low levels of illumination (except at crossings), and the use of LED lamps to produce good color rendition, long service life and high energy efficiency. Lighting should be oriented downward to illuminate the pedestrian environment.

Typical Application

Both street and pedestrian lighting levels should be considered for the same street corridor, especially in areas with tree canopy. “Dark Sky” lighting should be pursued to reduce light pollution. Pedestrian scale lighting should be used in areas of high pedestrian activity and along pedestrian corridors connecting destinations, including transit hubs and access points, and multi-family neighborhoods. Pedestrian scale lighting fixures should be consistent with surrounding architectural and streetscape design elements and can be used to incorporate local art, or other cultural or historical relevance.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Pedestrian scaled lighting can be used creatively to enhance the visual appeal a corridor

Guidance

Pedestrian scale lighting should be located in the furnishing/utility zone so as not to impede pedestrian traffic in the through area.

Lamp fixtures should be at height of about 12-15 feet, and poles should be spaced approximately 30-50 feet apart depending on the intensity of lights.

Lamp fixtures should be shaded so as to project light downward and provide sufficient illumination of the sidewalk while limiting excess light pollution.

Illumination should be warm and moderate, rather than dim or glaring, and provide a balanced coverage of the corridor and surrounding area for comfort and security.

Materials and Maintenance

Street trees should be regularly maintained so as not to obstruct light fixtures and light projection. Low-cost light emitting diodes (LED) offer a wide range of light levels and can reduce long term utility costs.

Given appropriate intensity and spacing, lights can be installed on existing poles or frontages at lower costs.

COST: $-$$

Additional References and Guidelines

Illuminating Engineering Society of North America. American National Standard Practice for Roadway Lighting. 2005.

FHWA. Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations. 2005.

SIDEWALKS - TRANSIT STOPS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

At transit stops, a variety of streetscape elements can define the pedestrian realm, offer protection from moving vehicles, and enhance the walking experience.

Typical Application

Big Blue Bus and Metro policies and design standards establish the basic types of transit stop infrastructure in Santa Monica. Traffic regulations should prohibit parking, standing, or stopping at bus stops. Some communities allow for passenger vehicles to stop to load or unload passengers in the bus stops.

Guidance

Public Info Kiosks and Signage at bus stops are an important element of good transit service. Signs serve as a source of information to patrons and operators regarding the location of the bus stop and are excellent marketing tools to promote transit use. Basic signs with a route maps and applicable ADA information will be provided at all stops with 49 or less average daily boardings (ADB). Stops with 50-99 boardings will receive larger signs. Stops with 100 or more boardings will show up-to-the-minute arrival time information, according to Big Blue Bus guidance.

Lighting is important for safety and security. A brightly lit bus stop makes it easier for the bus driver to observe waiting passengers and allows motorists to see pedestrians around the bus stop.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Transit stop shelters should protect passengers from the elements yet retain visibility for comfort and safety

Seating provides comfort and convenience at bus stops and are usually installed on the basis of existing or projected ridership figures. Seats may be installed by themselves or as part of a shelter. Seating and shelters should be provided at all stops with 50 or more average daily boardings.

Shelters provide protection from the elements and seating for patrons waiting for rides. An attractive, well designed shelter can also be a positive addition to a streetscape that contributes to a sense of place. It also provides an excellent opportunity to improve the visibility of the transit service and to provide maps and other information.

Waste receptacles provided at higher use transit stops reduce unwanted items from being brought on the vehicle, and results in a cleaner stop area.

Marked Crossings should help pedestrians safely navigate to bus stops and the surrounding destinations.

Bus stops located on the far side of intersections result in pedestrians crossing the street behind the bus, which makes them more visible to motorists. It also generally increases the overall efficiency of transit operations by reducing delay at traffic signals.

Materials and Maintenance

Features should be maintained to ensure proper lighting, comfort and security.

COST: $-$$

Additional References and Guidelines

FHWA. Federal Highway Administration University Course on Bicycle and Pedestrian Transportation. Lesson 18: Bicycle and Pedestrian Connections to Transit. 2006.

Big Blue Bus. Service, Design, Performance and Evaluation Guidelines. 2013.

NACTO. Urban Street Design Guide. 2013.

LANDSCAPING + TREE MAINTENANCE

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Landscaping and tree maintenance enhances the pedestrian environment by creating a visual buffer from the roadway, but also allows for adequate visibility at intersections, crossings and driveways. Trees also offer welcome shade on warmer days.

Sidewalks and alleyways can become inaccessible due to overgrown vegetation, so landscaping needs to be designed and maintained to ensure compatibility with the use of pedestrian facilities. Curbs around landscaped areas should be flush with the adjacent sidewalk to prevent a trip hazard.

Landscaping can also include bioswales, which capture stormwater runoff at intersections, and share many of the benefits of curb extensions.

Typical Application

Plants material in a public setting should be chosen for aesthetic quality, sustainability and durability over time. The result is a planting that reduces maintenance costs, water needs and replacement of improperly suited species while increasing beauty to the surrounding community.

Trees and plantings must not hang into or impede passage along sidewalks. Landscaping in parkways and medians should grow to a maximum of 24” to be consistent with the City’s hazardous visual obstruction policy. They should create a buffer from the roadway to encourage a comfortable, pleasant walking environment.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Bioswales manage stormwater runoff, create a natural buffer and beautify the pedestrian environment

Guidance

A landscape specification document should be provided by the city to the contractor and maintenance managers ensuring proper ongoing care. This document will detail pruning guidelines, soil preparation, irrigation management, insect/pest/disease control, mulching and more.

Install thriving plants, that show signs of growth and no signs of stress, disease, or any other weaknesses. Trees should be consistent with the Urban Forest Master Plan: free of dead or dying branches and branch tips, with foliage of normal density, size and color. Minimize use of pesticides, insecticides, fertilizers and irrigation by installing plants uniquely suited for the region, which often results in a mix of native and non-invasive, disease-resistant exotics.

Materials and Maintenance

Maintain watering basins around the perimeter of plants so that the root zones maintain adequate soil moisture. Maintain the specified thickness of mulch material to reduce evaporation and frequency of watering. Planting areas should be weeded regularly, and plantings should be checked for signs of wilting, un-seasonal or early flowering or loss of leaves, and insect or disease infestation due to declining vigor.

COST: $$

Additional References and Guidelines

City of Santa Monica. Urban Forest Master Plan. 2011.
American National Standard Institute. American National Standard for Tree Care Operation, Tree, Shrub and Other Wood Plant Maintenance (ANSI A300).
American National Standard Institute. American National Standard for Tree Care Operations (ANSI Z133)

PEDESTRIAN WARNING SYSTEMS AT DRIVEWAYS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Driveway design should first and foremost allow for adequate visibility and visual cues to alert pedestrians and motorists of potential conflicts. Pedestrian warning systems are enhancements installed to alert pedestrians and motorists of the presence of the other at driveways and other low-visibility entrances and exits.

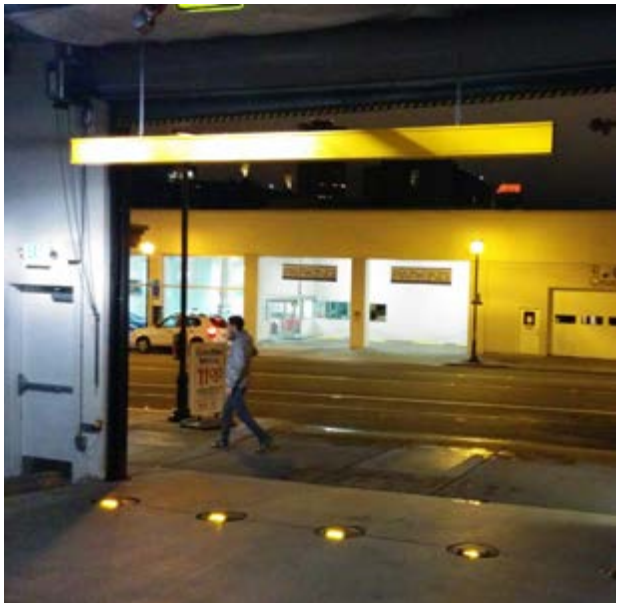
They are useful in downtown areas where there are a confluence of high pedestrian volumes, high vehicle volumes entering and exiting driveways, and poor visibility around buildings faces, entrances and exits.

Typical Application

Pedestrian warning systems can comprise an array of standard and non-standard warning and traffic control elements including signage, pavement markings, mirrors, warnings and beacons for pedestrians, and beacons for motorists. Other complementary treatments include changes in grade (for vehicles) and sidewalk surface material or texture, and gates. Audio warnings should be limited as a means of reducing noise.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)



Similar to In-Roadway Warning Lights, beacons are activated when a pedestrian is detected to warn exiting motorists.

Guidance

Pedestrians have the right-of-way on sidewalks, therefore warning queues should be primarily aimed at the driver. Pedestrian detection and actuation should occur early enough that drivers about to cross the sidewalk have enough time to yield. Any audible warning should end after the vehicle has cleared the driveway.

Per California MUTCD, driveways in areas generating significant congestion should use controlled measures, such as a red flashing beacon and/or signage controlling vehicle turning movements upon exit.

Directional pavement markings and stop control signage should follow the standards set forth in the California MUTCD.

Materials and Maintenance

Pedestrian warning systems should be regularly monitored and maintained to ensure that all beacons and detection hardware are functional.

COST: $-$$

Additional References and Guidelines

Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

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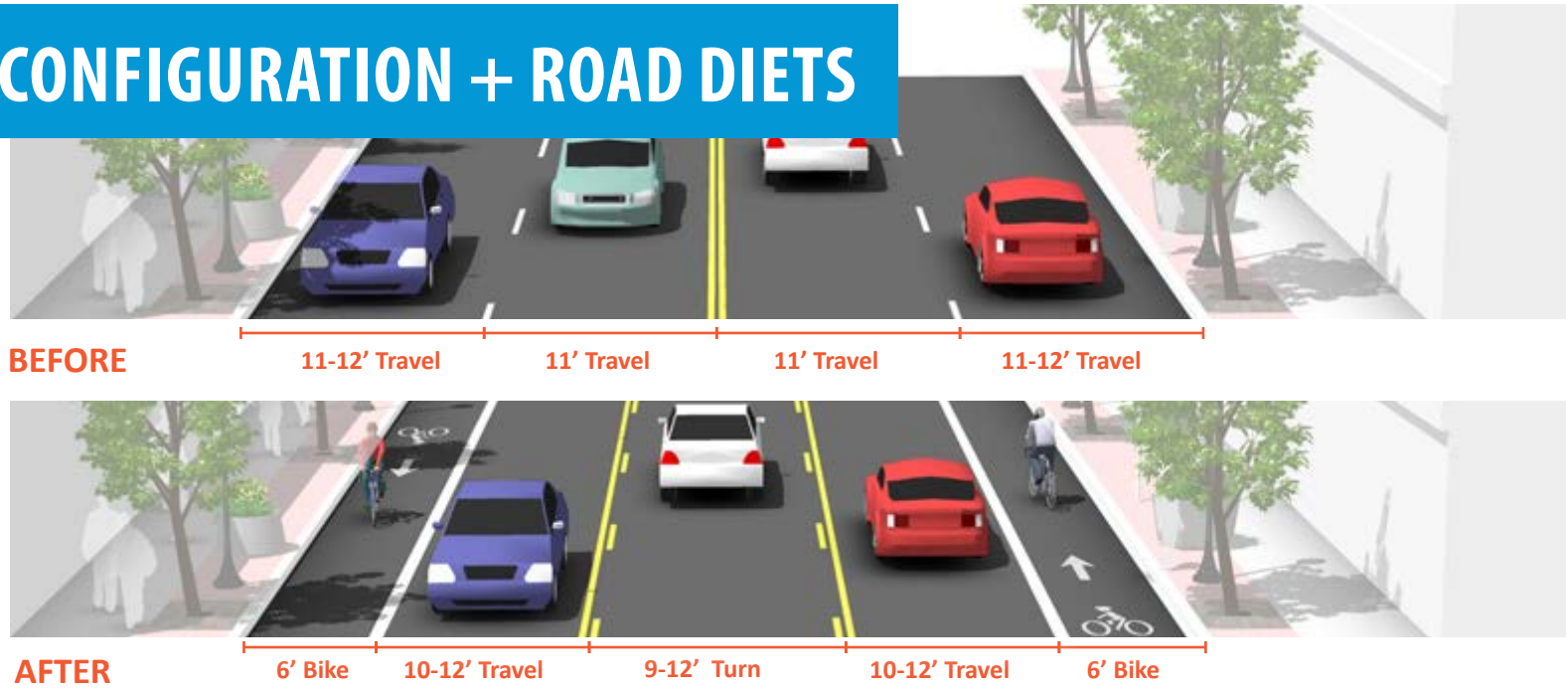
ROADWAYS

LANE RECONFIGURATION + ROAD DIETS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Streets with wider lane widths often make excellent candidates for lane reconfigurations or road diet projects. The removal of a single travel lane will generally provide sufficient space for bike lanes on both sides of a street.

Even if the width of the sidewalk does not increase, pedestrians benefit from the buffer that the new bike lanes create between the sidewalk and travel lanes. Although the actual roadway crossing distance has not been reduced, the addition of bike lanes reduces the number of automobile travel lanes pedestrians must cross, further reducing the likelihood of the "multiple threat crash" on multi-lane roads.

Typical Application

Depending on a street's existing configuration, traffic operations, user needs and safety concerns, various lane reduction configurations may apply. For instance, a four-lane street (with two travel lanes in each direction) could be modified to provide one travel lane in each direction, a center turn lane, and bike lanes. Prior to implementing this measure, a traffic analysis should identify potential impacts.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

The Ocean Park Blvd Road Diet balances the needs of all road users

Guidance

Vehicle lane width:

- Width depends on project. No narrowing may be needed if a lane is removed.

Bicycle lane width:

- Standard bicycle lane width is 5-6 feet. A buffered bike lane requires an additional 2-3 feet.

Number of Lanes:

- The number of lanes needed to accomodate vehicle flow. Generally, 3 lanes can support 20,000 vehicles per day.

Materials and Maintenance

Repair rough or uneven pavement surface. Use bicycle compatible drainage grates. Raise or lower existing grates and utility covers so they are flush with the pavement.

COST: $$

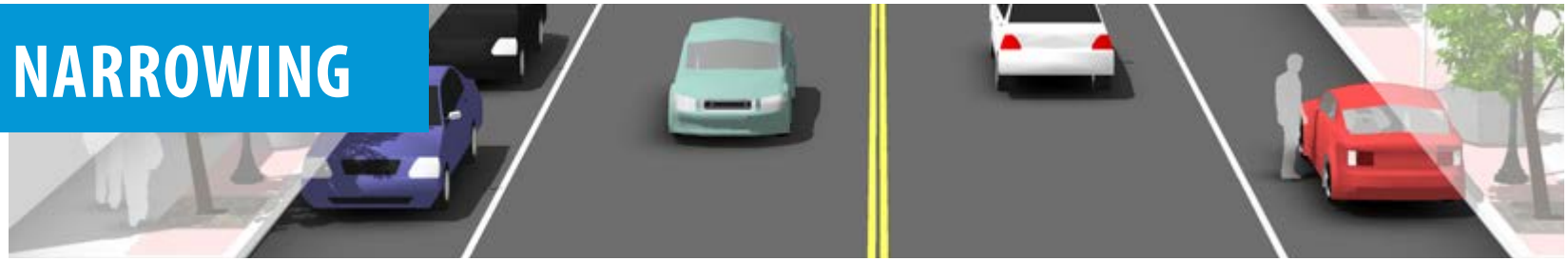
Additional References and Guidelines

AASHTO. Guide for the Development of Bicycle Facilities. 2012.

FHWA. Evaluation of Lane Reduction "Road Diet" Measures on Crashes. Publication Number: FHWA-HRT-10-053. 2010.

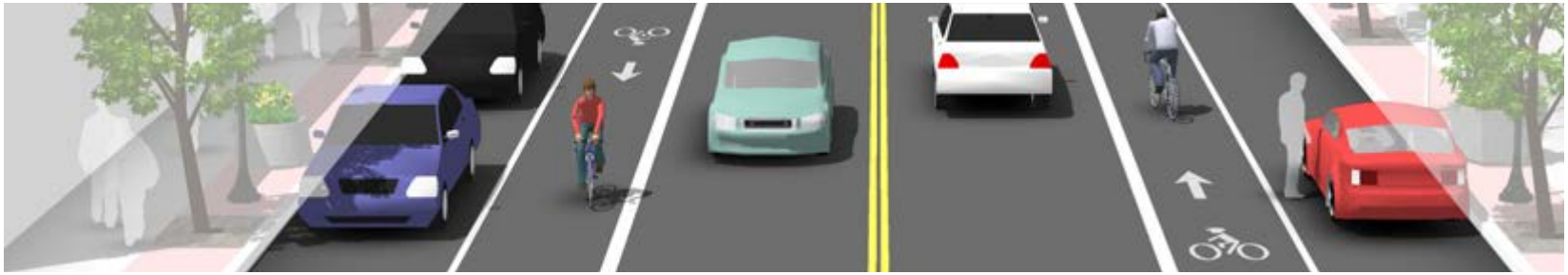
NACTO. Urban Street Design Guide. 2013.

LANE NARROWING



BEFORE

24' Travel/Parking



AFTER

7' Parking | 6' Bike | 10-11' Travel

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Lane narrowing utilizes roadway space that exceeds minimum standards to provide the needed space for bike lanes. Many roadways have existing travel lanes that are wider than those prescribed in local and national roadway design standards, or which are not marked. Most standards allow for the use of 11 foot and sometimes 10 foot wide travel lanes to create space for bike lanes.

Similar to road diets and lane reconfigurations, lane narrowing can have both direct and indirect benefits for pedestrians.

Typical Application

Special consideration should be given to the amount of heavy vehicle traffic and horizontal curvature before the decision is made to narrow travel lanes. Center turn lanes can also be narrowed in some situations to free up pavement space for bike lanes.

AASHTO supports reduced width lanes in A Policy on Geometric Design of Highways and Streets: "On interrupted-flow operation conditions at low speeds (45 mph or less), narrow lane widths are normally adequate and have some advantages."

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Narrowing a lane of traffic can provide enough room for a buffered bike lane

Guidance

Vehicle lane width:

- Before: 10-15 feet
- After: 10-11 feet, turn lane: 9-11 feet

Bicycle lane width:

- Guidance on bicycle lanes applies to this treatment.

Materials and Maintenance

Repair rough or uneven pavement surface. Use bicycle compatible drainage grates. Raise or lower existing grates and utility covers so they are flush with the pavement.

COST: $

Additional References and Guidelines

AASHTO. Guide for the Development of Bicycle Facilities. 2012.

AASHTO. A Policy on Geometric Design of Highways and Streets. 2004.

NACTO. Urban Street Design Guide. 2013.

City of Santa Monica. Bike Action Plan. 2011.

NEIGHBORHOOD GREENWAYS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Neighborhood Greenways are low-volume, low-speed streets modified to enhance pedestrian and bicyclist comfort by using treatments such as traffic calming and/or traffic reduction, intersection modifications, pedestrian lighting, signage, and pavement markings. These treatments allow through movements of pedestrians and bicyclists while discouraging similar through-trips by non-local motorized traffic.

Typical Application

Neighborhood Greenway retrofits to local streets are often located on streets without existing signalized crossings of larger roadways. These include Neighborhood Streets and Shared Streets.

Traffic calming can deter motorists from driving on a street. Anticipate and monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Neighborhood Greenways provide connectivity and comfort for Pedestrians and bicyclists

Guidance

Signs and pavement markings are the minimum treatments necessary to designate a street as a Neighborhood Greenway.

Neighborhood Greenways should have a maximum posted speed of 25 mph. Use traffic calming to maintain an 85th percentile speed below 22 mph.

Implement volume control treatments based on the context of the street, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.

Intersection crossings should be designed to enhance safety and minimize delay for pedestrians and bicyclists.

Materials and Maintenance

Sidewalks and curb ramps should be maintained to facilitate smooth transitions for wheelchair users. Tree branches and vegetation should be regularly trimmed to maintain visibility and attractiveness.

Stormwater catchment basins with native plantings can be incorporated into curb extensions to reduce stormwater runoff, and enhance neighborhood attractiveness.

COST: $$

Additional References and Guidelines

Alta Planning + Design and IBPI. Bicycle Boulevard Planning and Design Handbook. 2009. BikeSafe. Bicycle countermeasure selection system.

Ewing, Reid. Traffic Calming: State of the Practice. 1999.

Ewing, Reid and Brown, Steven. U.S. Traffic Calming Manual. 2009.

HORIZONTAL TRAFFIC CALMING

Curb Extension

Neckdown or Choker

Diverter with bicycle cut-through

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Horizontal traffic calming devices benefit pedestrians and bicyclists by causing drivers to reduce speeds. This is done by constricting the roadway space or by requiring careful maneuvering around the roadway feature.

Traffic calming design elements reinforce the expectation of lowered speeds, and can help to define low-speed routes or areas that serve higher numbers of pedestrians.

Horizontal traffic calming also provides opportunities for planting trees, vegetation, and/or stormwater management.

Typical Application

Traffic calming should allow smooth transitions for pedestrian at crossings, and offer enhanced visibility. Horizontal traffic calming can potentially be used to shorten pedestrian crossing distances. Horizontal speed control measures should not infringe on bicycle space.

Allowing a small space between islands/extensions and the curb can improve drainage flow and reduce construction and maintenance costs. Monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

A chicane is used to effectively manage vehicle speeds on a downhill

Guidance

Maintain a minimum clear width of 20 feet (or 28 feet with parking on both sides), with a constricted length of at least 20 feet in the direction of travel.

The California Fire Code standard of a minimum clear width of 20' can be reduced at the discretion of the Fire Chief.

Traffic calming treatments can include curb extensions, chicanes, pinchpoints, neckdowns, diverters, and traffic circles or roundabouts. Generally speaking horizontal traffic calming narrows the visual field to reduce travel speeds without affecting motor vehicle through travel.

Materials and Maintenance

Traffic calming should be designed to minimize impacts to streetsweepers. Vegetation should be regularly trimmed to maintain visibility and attractiveness.

Other streetscape elements should be used to further calm traffic including unique/decorative paving, trees, lighting or other street furniture.

COST: $$

Additional References and Guidelines

AASHTO. Guide for the Development of Bicycle Facilities. 2012.
Alta Planning + Design and IBPI. Bicycle Boulevard Planning and Design Handbook. 2009.
BikeSafe. Bicycle countermeasure selection system.
Ewing, Reid. Traffic Calming: State of the Practice. 1999.
Ewing, Reid and Brown, Steven. U.S. Traffic Calming Manual. 2009.
NACTO. Urban Street Design Guide. 2013.

VERTICAL TRAFFIC CALMING

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Motor vehicle speeds affect the frequency at which automobiles pass pedestrians as well as the severity of crashes that can occur. Slower motor vehicle speeds greatly improves pedestrians' comfort on a street. Slower vehicular speeds also improve motorists' ability to see and react to pedestrians and minimize conflicts at driveways and other turning locations.

Vertical speed control measures are composed of slight rises in the pavement, on which motorists and bicyclists must reduce speed to cross.

Typical Application

Emergency vehicle response times should be considered where vertical deflection is used. Because emergency vehicles have a wider wheel base than passenger cars, speed lumps/cushions allow them to pass unimpeded while slowing most other traffic. Alternatively, speed tables are recommended because they cannot be straddled by a truck, decreasing the risk of bottoming out. Traffic calming can also deter motorists from driving on a street. Monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Speed tables effectively manage vehicle speeds

Guidance

Speed humps are raised areas usually placed in a series across both travel lanes. A 14' long hump reduces impacts to emergency vehicles. Gaps can be provided in the center or by the curb for bicyclists and to improve drainage. Humps can be offset to accommodate emergency vehicles.

Speed lumps or cushions have gaps to accommodate the wheel tracks of emergency vehicles.

Speed tables are longer than speed humps and flat-topped. Raised crosswalks are speed tables that are marked and signed for a pedestrian crossing.

For all vertical traffic calming, slopes should not exceed 1:10 or be less steep than 1:25. Tapers should be no greater than 1:6 to reduce the risk of bicyclists losing their balance. The vertical lip should be no more than a 1/4" high. Speed humps are not permitted on designated Emergency Response Streets.

Advance speed hump markings can be used to enhance visibility and conspicuity of vertical deflection.

Materials and Maintenance

Traffic calming should be designed to minimize impacts to streetcleaners. Maintenance requirements will depend on the durability of materials, such as concrete, asphalt or other paver types.

COST: $-$$

Additional References and Guidelines

AASHTO. Guide for the Development of Bicycle Facilities. 2012.

Caltrans. California Manual of Uniform Traffic Control Devices. 2012.

Ewing, Reid. Traffic Calming: State of the Practice. 1999.

Ewing, Reid and Brown, Steven. U.S. Traffic Calming Manual. 2009.

NACTO. Urban Street Design Guide. 2013.

Santa Monica Residential Traffic Management Handbook. 2000. http://www.smgov.net/departments/council/agendas/2000/20000215/s2000021509-B-1.html

PARKLETS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Parklets can enhance neighborhood vitality, especially in areas currently lacking public space or in locations where sidewalk space is constrained. The nature of a parklet will vary based on factors such as size, location, surrounding land uses and the duration of the installation. Parking availability should be considered when determining the overall benefit of parklet installation against parking loss. Because they are generally located adjacent to on-street parking, they do not impede motor vehicle or bicycle through travel.

Typical Application

A parklet is an outdoor space typically the size of an on-street parking space. These mini-parks are often designed for passive recreation and may include planters, benches, café tables and chairs. Additionally, parklets can be designed to include bike corrals, fitness equipment, chess boards and other activities. Because parklets may require the removal of an on-street parking space, outreach to adjacent property owners and businesses is recommended.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE

- Dart/Dash
- Multiple Threat
- **Walking Along Roadway**
- Left Turning Vehicle
- Right Turning Vehicle
- Through Vehicle
- Bus Related
- Non-Roadway (Driveway or Backing)

A parklet occupies 2-3 parking spaces, seats individuals and/or groups, and activates the pedestrian environment

Guidance

Often parklets are constructed on a platform that rests on the street pavement. This allows them to meet the grade of adjacent sidewalks, extending the pedestrian zone.

Parklet design should comply with ADA standards and be easily accessible from the sidewalk. Avoid placement near intersections and do not block fire hydrants or bus stops.

Parklets must be designed and located in areas so as not to restrict stormwater runoff or cause other drainage issues.

Materials and Maintenance

Most municipalities require a permitting process for both temporary and permanent parklet installations. In many communities applicants, often business owners or community organizations, agree to maintain the parklet and renew the permit annually. The applicant is usually responsible for daily cleaning, sweeping, and maintenance of plants, in and around the parklet installation.

COST: $-$$

Additional References and Guidelines

City of San Francisco - Pavement to Parks. San Francisco Parklet Manual". 2013. http://sfpavementtoparks.sfplanning.org/docs/SF_P2P_Parklet_Manual_1.0_FULL.pdf

Madeline Brozen, Anastasia Loukaitou-Sideris, Colleen Callahan. Reclaiming the Right-of-Way: A Toolkit for Creating and Implementing Parklets. UCLA Luskin School of Public Affairs. 2012. http://www.lewis.ucla.edu/wp-content/uploads/sites/2/2014/06/UCLAParkletToolkit.pdf

PEDESTRIAN PLAZAS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

A pedestrian plaza is a public open space that varies in size from a large city square to a more intimate gathering space between buildings. Successful urban plazas maintain popularity among a diverse range of visitors, local residents, tourists, etc. throughout the day and night.

Plazas are also home to local art/sculpture, fountains, and other attractions of local or historical significance. Plazas are ideal locations for hosting festivals, concerts, and larger community gatherings.

Typical Application

Public open space provides people with opportunities for recreation, relaxation and community interaction. Activities in an urban plaza vary throughout the day and often include strolling, sitting, people-watching, eating lunch alone or with friends, evening dining, and more.

Plazas may be developed on private property through dedication, public property, or by closing sections of city streets.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Plazas are vibrant destinations that afford opportunities for socializing, place-making and community building

Guidance

Pedestrian plazas should offer a range of activities for people of all ages and life stages to attract the widest user base. There should be places to sit, places to walk, areas for groups, quieter areas for solitude, areas in the sun and areas in the shade. There should be clear sight lines throughout the plaza.

Pedestrian scale lighting is an important consideration to ensure that all spaces within the plaza are comfortable and secure at night.

Opportunities to create plazas should be pursued through street closures, public projects and property development.

Materials and Maintenance

Planting and material selection should be carefully considered to balance aesthetics with sustainable maintenance over time. Maintenance responsibilities of urban plazas varies from private property owners to public organizations.

COST: $$-$$$

Additional References and Guidelines

William H. Whyte. The Social Life of Small Urban Spaces. Project for Public Spaces Inc. 2001.

Clare Cooper Marcus, Carolyn Francis. People Places: Design Guidelines for Urban Open Space. 2nd Edition. 1997.

Jan Gehl. Life Between Buildings: Using Public Space. 6th Edition. 2011.

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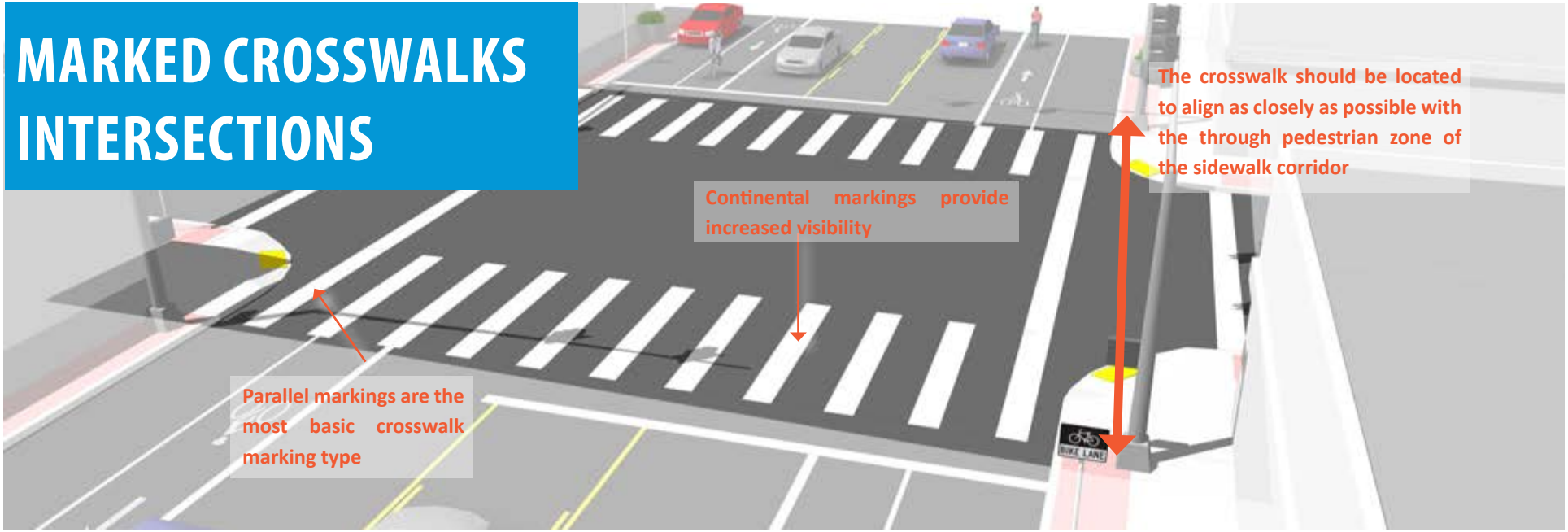
GENERAL CONSIDERATIONS

MARKED CROSSWALKS INTERSECTIONS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer, especially on multi-lane roadways.

At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks.

Typical Application

"Continental" crosswalk markings (aka "Zebra" markings) or diagonal markings should be used at crossings with high pedestrian use or where vulnerable pedestrians are expected, including: school crossings, across streets for pedestrian-only signals, at mid-block crosswalks, and at intersections where there is expected high pedestrian use and the crossing is not controlled by signals or stop signs.

Per California Vehicle Code 21368, crosswalks near K-12 schools must be yellow, and accompanied by a "SLOW-SCHOOL XING" marking in advance of uncontrolled crossings.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Highly visible marked crosswalks are a necessity in areas of high pedestrian activity

Guidance

At signalized intersections, all crosswalks should be marked. At un-signalized intersections, crosswalks may be marked under the following conditions:

- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the shortest route across traffic with the least exposure to vehicular traffic and traffic conflicts.
- At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.
- At an intersection within a school zone on a walking route.

Longitudinal "Continental" or diagonal markings (with or without transverse markings) are preferred to transverse markings alone, as they provide enhanced visibility and conspicuity for approaching motorists.

Materials and Maintenance

Locate markings out of wheel tread when possible to minimize wear and maintenance costs.

COST: $

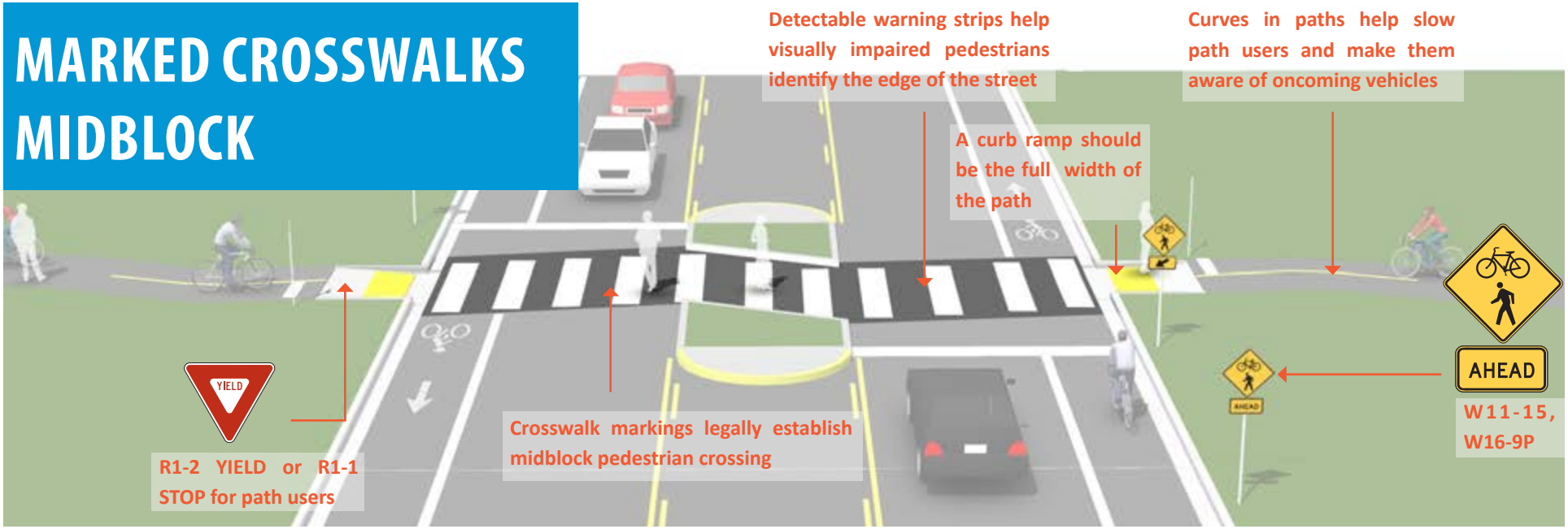
Additional References and Guidelines

Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

California Vehicle Code 21368

AASHTO. Guide for the Development of Bicycle Facilities. 2012.

MARKED CROSSWALKS MIDBLOCK



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

A marked/unsignalized crossing consists of a marked crossing area, warning signage and other markings to slow or stop traffic. Designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, pathway traffic, use patterns, vehicle speed, road type and width, and other safety issues such as proximity to major attractions.

When space is available, using a median refuge island can improve user safety by providing pedestrians space to perform the safe crossing of one side of the street at a time.

Typical Application

Unsignalized crossings of multi-lane roadways over 15,000 ADT may be possible with features such as sufficient crossing gaps (more than 60 per hour), median refuges, and/or active warning devices like rectangular rapid flash beacons or in-pavement flashers, and excellent sight distance. For more information see the discussion of active warning beacons.

On roadways with low to moderate traffic volumes (<12,000 ADT) a raised crosswalk may be the most appropriate crossing design to improve pedestrian visibility and safety.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Crosswalks and median refuge islands should be maintained at a consistent grade for accessibility and convenience

Guidance

Marked crosswalks at uncontrolled/midblock locations without additional crossing enhancements should not be installed when the speed limit of the roadway is greater than 40 MPH and the roadway has either of the following volume and physical characteristics:

- 12,000 ADT or greater on four-lane roads without a median or pedestrian refuge island
- 15,000 ADT or greater on four-lane roads, with a median or pedestrian refuge island

Minimum line of sight

- 25 MPH zone: 155 feet
- 35 MPH zone: 250 feet
- 45 MPH zone: 360 feet

Materials and Maintenance

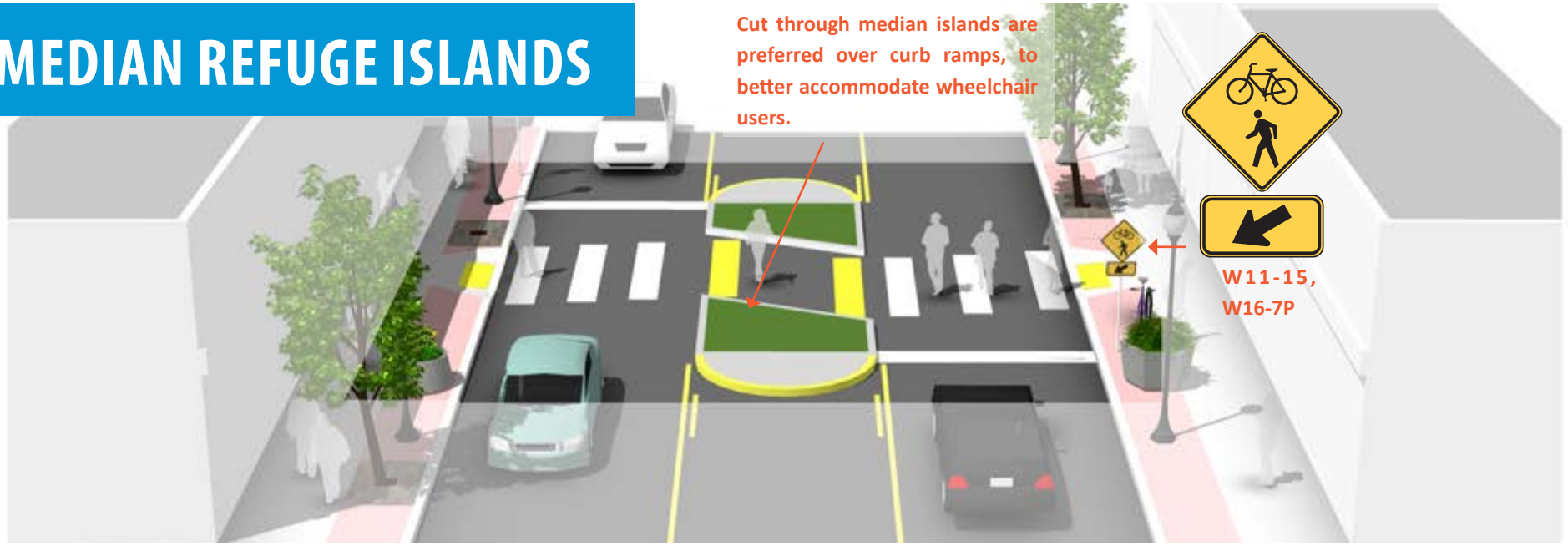
Locate longitudinal markings out of wheel tread when possible to minimize wear and maintenance costs.

COST: $-$$

Additional References and Guidelines

AASHTO. Guide for the Development of Bicycle Facilities. 2012.
Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

MEDIAN REFUGE ISLANDS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Median refuge islands are located at the mid-point of a marked crossing and help improve pedestrian safety by increasing pedestrian visibility and allowing pedestrians to cross one direction of traffic at a time.

Refuge islands minimize pedestrian exposure by shortening the crossing distance and increasing the number of available gaps for crossing.

Typical Application

Median refuge islands can be installed on roadways with existing medians or on multi-lane roadways where adequate space exists (see Lane Reconfiguration and Road Diets). Median Refuge Islands should always be paired with crosswalks and advance pedestrian warning signage.

On multi-lane roadways, consider configuration with active warning beacons for improved yielding compliance.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Median Refuge Islands provide a safe space for pedestrians to wait at signalized or unsignalized crossings.

Guidance

- Can be applied on any roadway with a left turn center lane or median that is at least 6' wide.
- Appropriate at signalized or unsignalized crosswalks. The median may be equipped with a push button to reactivate a beacon or signal at locations where pedestrians might need extra time to cross.
- The refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.
- The island should be at least 6' wide between travel lanes (to accommodate bikes with trailers and wheelchair users) and at least 20' long (40' minimum preferred).
- On streets with speeds higher than 25 mph there should also be double centerline marking, reflectors, and "KEEP RIGHT" signage.
- If a median refuge island is landscaped, the landscaping should not compromise the visibility of pedestrians crossing in the crosswalk. Shrubs and ground plantings should be no higher than 24" to be consistent with the hazardous vehicle obstruction policy.

Materials and Maintenance

Refuge islands may require frequent maintenance of road debris. Trees and plantings must be maintained so as not to impair visibility.

COST: $$

Additional References and Guidelines

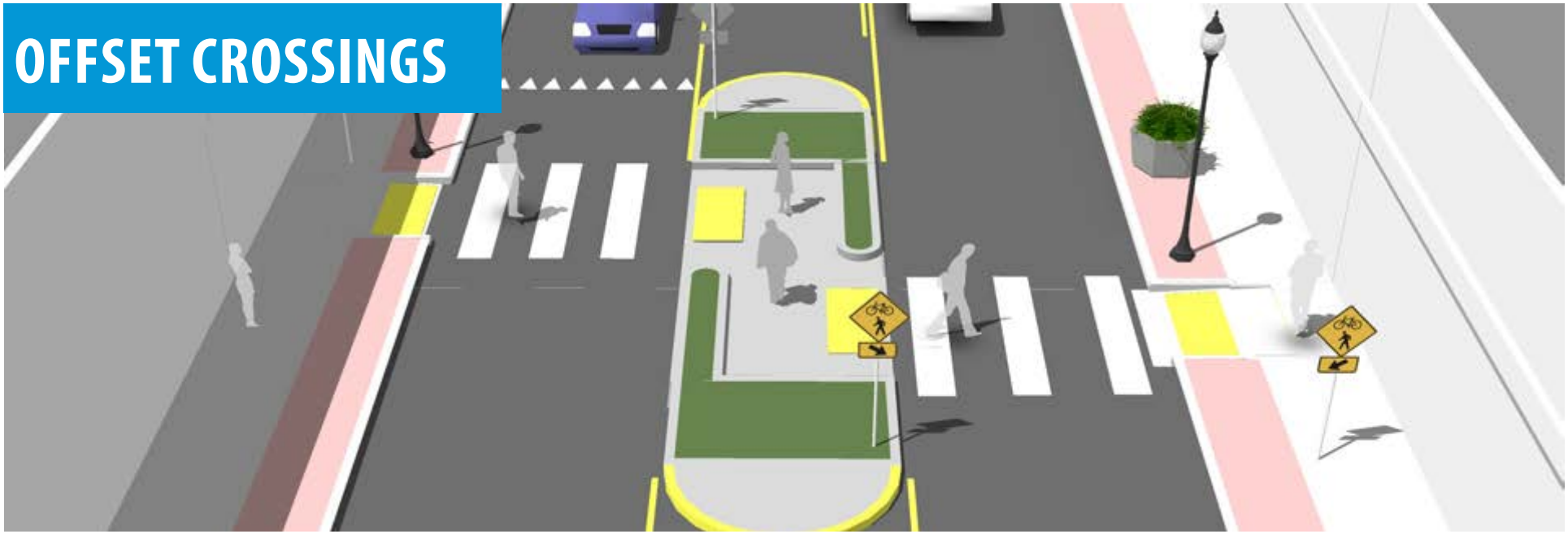
Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004.

NACTO. Urban Bikeway Design Guide. 2012.

NACTO. Urban Street Design Guide. 2013.

OFFSET CROSSINGS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Offset crossings share similar characteristics to that of a standard median refuge island with one major difference--a staggered crossing. This offset is done to help orient the pedestrian toward oncoming traffic on the approach to each leg of the crossing. Eye contact between the pedestrian and motorist is improved at an offset crossing, which improves communication between the two roadway users.

Typical Application

Offset crossings can be used in place of a standard median refuge island at most locations where the latter is appropriate, however, offset median refuge islands are typically installed at mid-block locations where there is an existing center turn lane or median at least 6' wide.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Offset Median Crossings force pedestrians to face the direction of oncoming traffic before crossing

Guidance

- The refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.
- The island should be at least 6' wide between travel lanes (to accommodate bikes with trailers and wheelchair users) and at least 20' long.
- On streets with speeds higher than 25 mph there should also be double centerline marking, reflectors, and "KEEP RIGHT" signage.

Materials and Maintenance

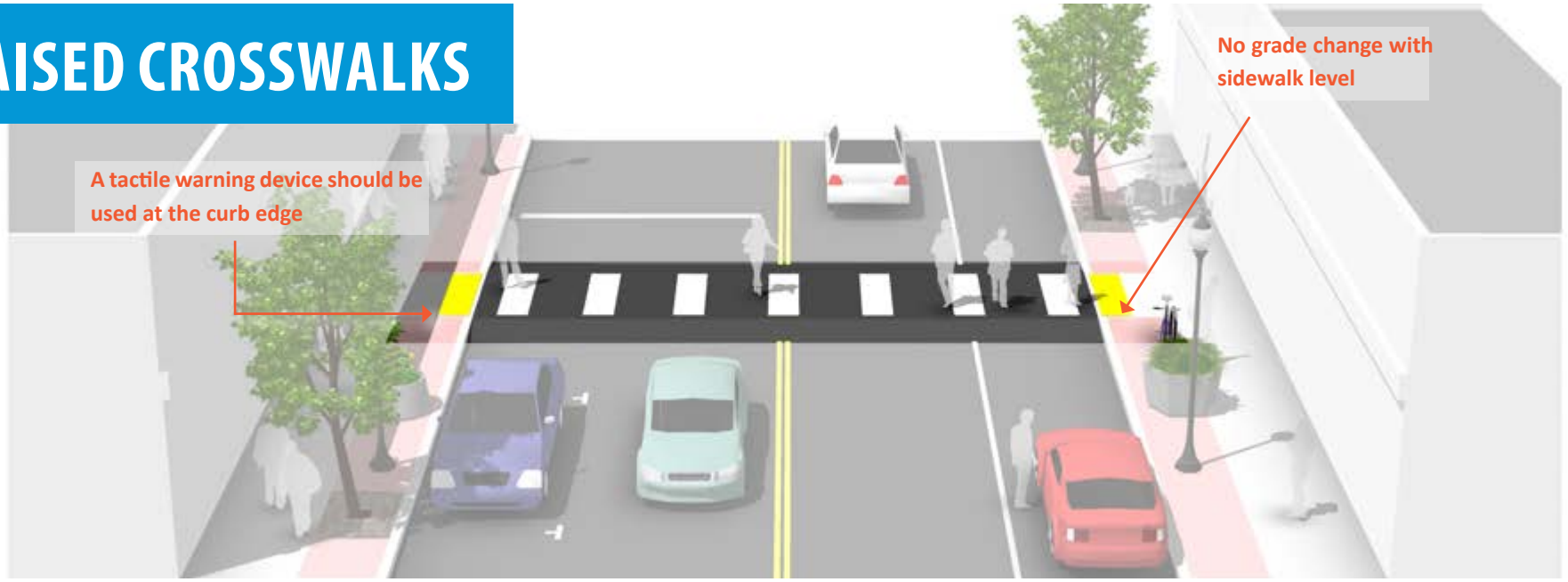
Offset crossings include refuge islands which may collect road debris and may require somewhat frequent maintenance. Trees and plantings must be maintained so as not to impair visibility.

COST: $$

Additional References and Guidelines

Redmon, Tamara. Evaluating Pedestrian Safety Countermeasures. Public Road. March/April 2011.

RAISED CROSSWALKS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

A raised crosswalk can eliminate grade changes from the pedestrian path and give pedestrians greater prominence as they cross the street. Raised crosswalks should be used only in very limited cases where a special emphasis on pedestrians is desired; review on a case-by-case basis.

Typical Application

Like a speed hump, raised crosswalks have a traffic slowing effect which may be unsuitable on emergency response routes. The width of the flat portion on top is marked as a crosswalk, and is dependent on pedestrian demand.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Raised Crosswalks can also utilize varying surface materials for increased visibility

Guidance

- Use detectable warnings at the curb edges to alert vision-impaired pedestrians that they are entering the roadway.
- Approaches to the raised crosswalk may be designed to be similar to speed humps or speed tables.
- Raised crosswalks can also be used as a traffic calming treatment.
- Design must reflect and recognize street grade and drainage concerns

Materials and Maintenance

Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority.

Drainage channels can be maintained with the use of a drainage culvert or a depression with ADA compliant curb ramps.

COST: $$

Additional References and Guidelines

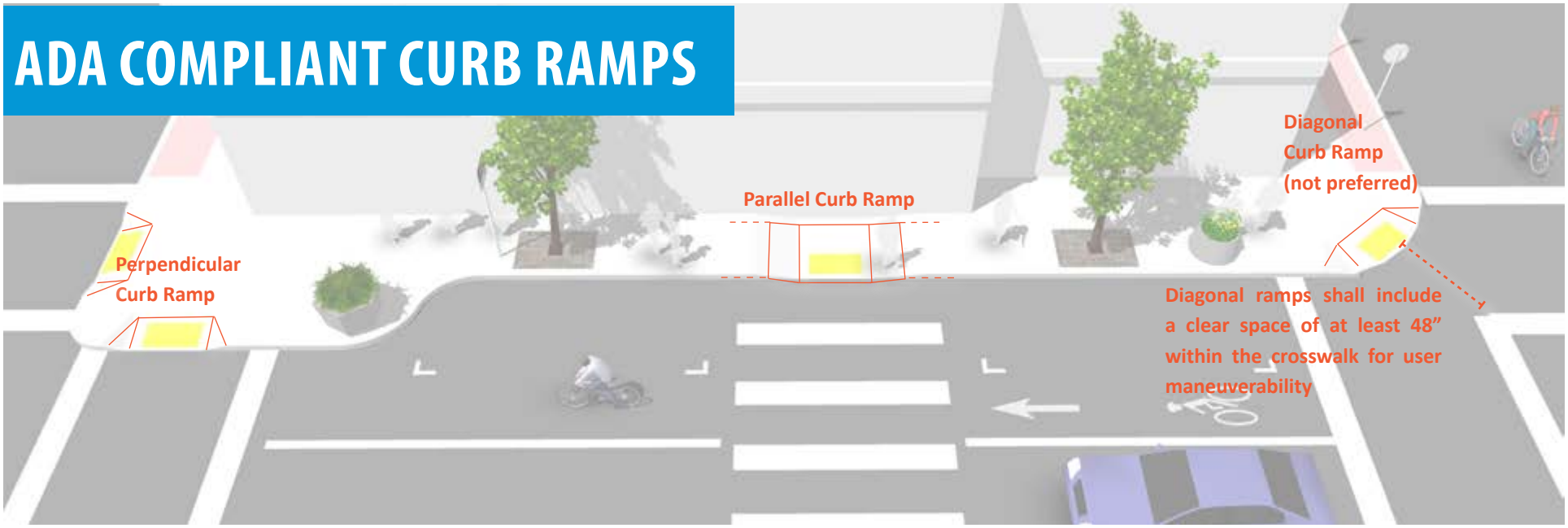
Caltrans. California Manual on Uniform Traffic Control Devices. (3B.18). 2012.

AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004.

USDOJ. ADA Standards for Accessible Design. 2010.

NACTO. Urban Street Design Guide. 2013.

ADA COMPLIANT CURB RAMPS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Curb ramps are design elements that allow all users to transition from the street to the sidewalk. There are a number of factors to be considered in the design and placement of curb ramps at corners. Properly designed curb ramps ensure that the sidewalk is accessible from the roadway by people using wheelchairs, other mobility devices and strollers. The preferred ramp type is the perpendicular configuration. This allows all people to cross the street without having to change their path of travel.

Although diagonal curb ramps might save money, they create potential safety and mobility problems for pedestrians, including reduced maneuverability and increased interaction with turning vehicles, particularly in areas with high traffic volumes. Diagonal curb ramp configurations are the least preferred of all options.

Typical Application

The edge of an ADA compliant curb ramp may be marked with a tactile warning device (also known as truncated domes) to alert people with visual impairments to changes in the pedestrian environment. Contrast between the raised tactile device and the surrounding infrastructure is important so that the change is readily evident. These devices are most effective when adjacent to smooth pavement so the difference is easily detected. The devices should provide color contrast so partially sighted people can see them. Mid-block parallel ramps can be

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

ADA compliant curb ramps at an intersection.

considered where there are design constraints related to slope or landing area.

Guidance

- The landing at the top of a ramp shall be at least 4 feet long and at least the same width as the ramp itself.
- The ramp shall slope no more than 1:12 , with a maximum cross slope of 2.0%.
- If the ramp runs directly into a crosswalk, the landing at the bottom will be in the roadway.
- If the ramp lands on a dropped landing within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 5'-0" long and at least as wide as the ramp, although a width of 5'-0" is preferred.
- Curb ramps shall be located so as not to project into vehicular travel lanes, parking spaces or parking access aisles

Materials and Maintenance

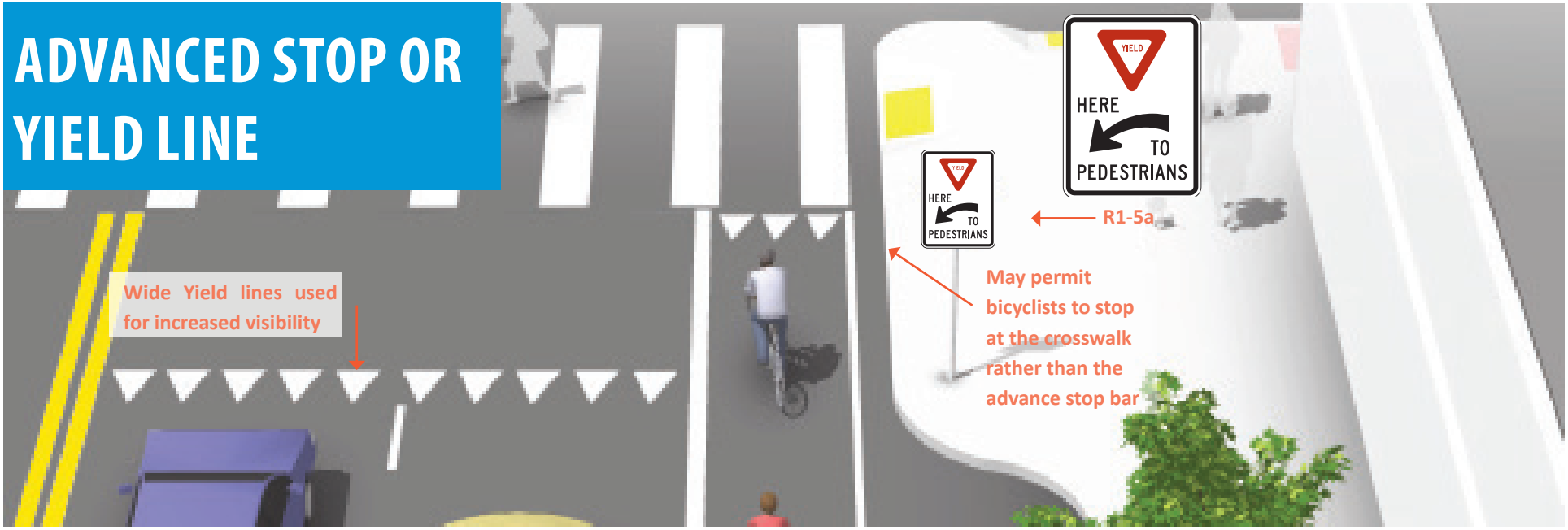
It is critical that the interface between a curb ramp and the street be maintained adequately. Asphalt street sections can develop potholes at the foot of the ramp, which can catch the front wheels of a wheelchair.

COST: $$

Additional References and Guidelines

United States Access Board. Accessibility Guidelines for Buildings and Facilities. 2002.
United States Access Board. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public-Right-of-Way (PROWAG). 2011.
USDOJ. ADA Standards for Accessible Design. 2010.
Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

ADVANCED STOP OR YIELD LINE



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Advance stop lines and yield lines increase pedestrian comfort and safety by stopping motor vehicles well in advance of marked crosswalks, allowing vehicle operators a better line of sight of pedestrians and giving inner lane motor vehicle traffic time to stop for pedestrians.

Advance stop lines are placed where autos must stop, such as traffic signals and stop signs. Yield lines are placed at locations where vehicles must yield to pedestrians, such as uncontrolled crosswalks.

Typical Application

Advanced stop lines or yield lines should be used:

- On streets with at least two travel lanes in each direction.
- Prior to a marked crosswalk
- In one or both directions of motor vehicle travel

On multi-lane approaches, stop lines and yield lines can be staggered lane-by lane to increase visibility of pedestrians, and reduce the likelihood of the “Multiple Threat.”

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

An advance stop line allows a generous amount of room for pedestrians to cross

Guidance

Advanced stop lines or yield lines are recommended 4-30 feet in advance of marked crosswalks, at least 40 feet before the signal indication for signalized midblock locations, or 20-50 feet before crosswalks crossing uncontrolled multilane approaches, depending on roadway configuration. A greater distance is necessary for midblock crossings and uncontrolled crossings.

California State law requires drivers to yield to pedestrians in marked crosswalks. At marked crossings, an advance stop line should only be used in conjuction with a stop sign (R1-1) or other traffic control device requiring a stop. An advance yield line marking must only be used in conjunction with yield signage (R1-2, R1-5, or R1-5a).

If a bicycle lane is present, mark the advance stop bar or yield line to permit bicyclists to stop at the crosswalk ahead of the stop bar.

Placement of stop or yield lines can also depend on roadway geometry and whether the street is designated for buses or freight vehicle use (see Increasing Curb Radii).

Materials and Maintenance

Because the effectiveness of markings depends entirely on their visibility, maintaining markings should be a high priority.

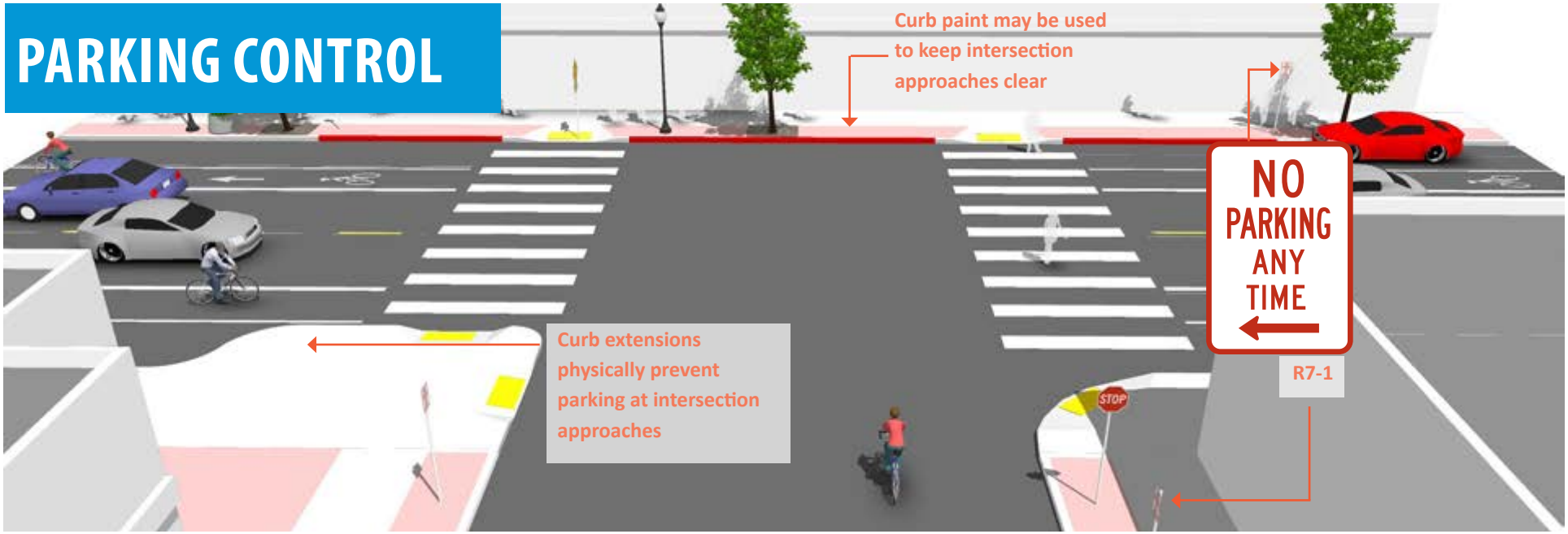
COST: $

Additional References and Guidelines

Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

NACTO. Urban Street Design Guide. 2013.

PARKING CONTROL



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Parking control involves restricting or reducing on-street parking near intersections or driveways with high pedestrian activity. Locating parking away from the intersection or a high-volume driveway improves visibility for motorists and pedestrians on the approach to the intersection and crosswalk. Improved sight lines at intersections reduces conflicts between motorists and pedestrians.

Typical Application

In areas where there is high parking demand parking compact vehicles may be allowed within “T” or offset intersections and on either side of the crosswalk. At these locations, signs will be placed to prohibit parking within the designated crosswalk areas, and additional enforcement should be provided, particularly when the treatment is new.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Red curbs show where parking is prohibited and protect space for pedestrians crossing the street

Guidance

Curb extensions, NO PARKING signage, or curb paint can be used to keep the approach to intersections clear of parked vehicles. Parking should be prohibited between advance stop or yield lines and crosswalks.

At "T" and offset intersections, where the boundaries of the intersection may not be obvious, this prohibition should be made clear with signage.

Materials and Maintenance

Signage and striping require routine maintenance.

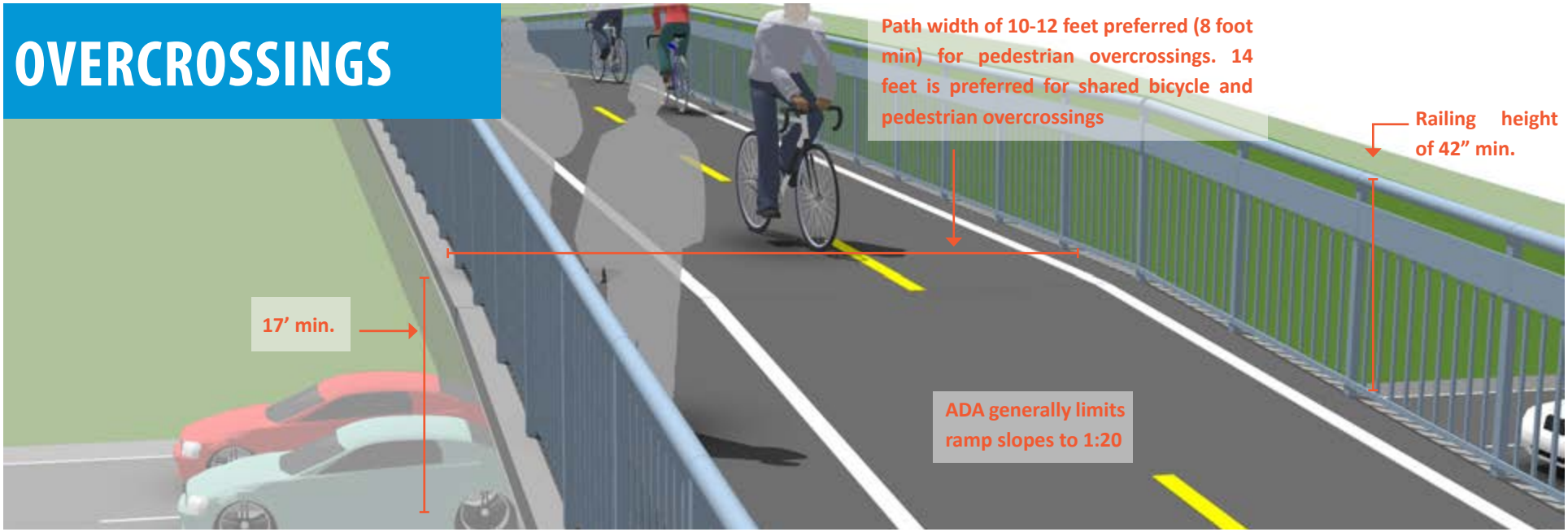
COST: $

Additional References and Guidelines

AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004. AASHTO. A Policy on Geometric Design of Highways and Streets. 2004.

Caltrans. California Manual of Uniform Traffic Control Devices. 2012.

OVERCROSSINGS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Pedestrian overcrossings provide critical non-motorized system links by joining areas separated by barriers such as freeways or highways. In most cases, these structures are built in response to user demand for safe crossings where they previously did not exist.

There are no minimum roadway characteristics for considering grade separation. Depending on the type of facility or the desired user group grade separation may be considered in many types of projects.

Overcrossings require a minimum of 17 feet of vertical clearance to the roadway below. This results in potentially greater elevation differences and much longer ramps for pedestrians and bicyclists to negotiate.

Typical Application

Overcrossings for pedestrians and bicycles typically fall under the Americans with Disabilities Act (ADA), which strictly limits ramp slopes to 5% (1:20) with landings at 400 foot intervals, or 8.33% (1:12) with landings every 30 feet. The cross slope must not exceed 1:48.

Overcrossings pose potential concerns about visual impact and functional appeal, as well as space requirements necessary to meet ADA guidelines for slope. Overcrossings are appropriate in Santa Monica over the freeway and Pacific Coast Highway. Overcrossings over alleys may be appropriate to connect a single use.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

A vital pedestrian connection between the beach and Ocean Ave

Guidance

8 foot minimum width, 14 feet preferred for shared use with bicycles or other non-motorized uses. If overcrossing has any scenic vistas additional width should be provided to allow for stopping. A separate 5 foot pedestrian area may be provided for facilities with high bicycle and pedestrian use. There should also be at least 10 feet of headroom.

Vertical clearance from the roadway below will vary depending on feature being crossed:

- Roadway: 17 feet
- Freeway: 18.5 feet

The overcrossing should have a centerline stripe even if the rest of the path does not have one.

Art and other pedestrian amenities should be incorporated to improve the pedestrian experience.

Materials and Maintenance

Requires regular pathway maintenance, including maintenance of lighting fixtures and signage. Potential issues with vandalism and litter.

COST: $$$

Additional References and Guidelines

AASHTO. Guide for the Development of Bicycle Facilities. 2012.
AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004.
USDOJ. ADA Standards for Accessible Design. 2010.
Caltrans. California Highway Design Manual. 2012.

RECTANGULAR RAPID FLASH BEACONS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Rectangular Rapid Flash Beacons (RRFB) are a type of active warning beacon used at unsignalized crossings. They are designed to increase motor vehicle yielding compliance on multi-lane or high volume roadways.

They are typically activated by pedestrians manually with a push button, or can be actuated automatically with passive detection systems.

Typical Application

Rectangular rapid flash beacons ellicit the highest increase in compliance of all the warning beacon enhancement options.

A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88%. Additional studies of long term installations show little to no decrease in yielding behavior over time.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE

- Dart/Dash
- Multiple Threat
- Walking Along Roadway
- Left Turning Vehicle
- Right Turning Vehicle
- **Through Vehicle**
- Bus Related
- Non-Roadway (Driveway or Backing)

Vehicle Yield Compliance rates Increase Significantly with RRFBs

Guidance

Guidance for marked/unsignalized crossings applies.

- RRFBs shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic control signals.
- RRFBs shall initiate operation based on user actuation and shall cease operation at a predetermined time after the user actuation or, with passive detection, after the user clears the crosswalk.

RRFB's may be considered for use in locations where In-Road-Warning Lights (IRWL) are installed and scheduled for replacement.

Materials and Maintenance

RRFBs should be regularly maintained to ensure that all lights and detection hardware are functional.

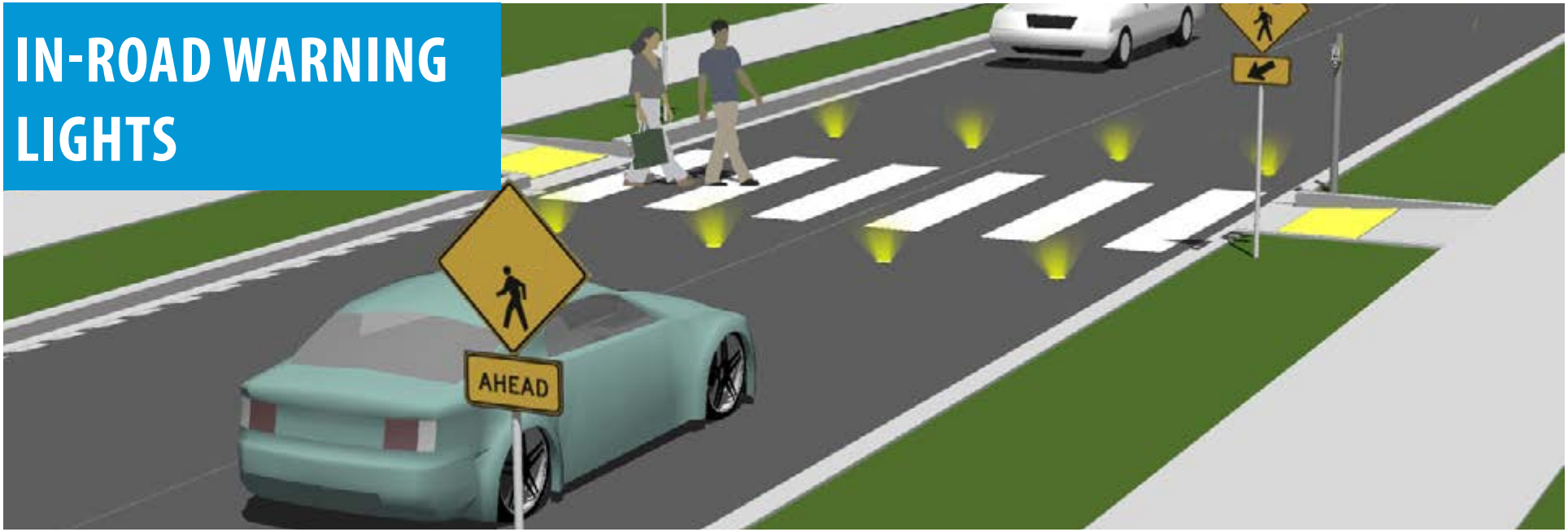
COST: $

Additional References and Guidelines

NACTO. Urban Bikeway Design Guide. 2012.
Caltrans. California Manual on Uniform Traffic Control Devices. 2012.
FHWA. MUTCD- Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11). 2008.

Sam Morrissey and Steve Weinberger. Enhanced Pedestrian Crossing Treatments in Santa Monica. 2012.

IN-ROAD WARNING LIGHTS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

In Road Warning Lights (IRWL) are a type of active warning beacon used at enhanced pedestrian crossings. IRWL illuminate a marked crossing to alert motorists of the presence of pedestrians. IRWL units are embedded in the pavement and flash when activated.

IRWL can be activated manually by pedestrians with a push button, or pedestrians can be detected automatically using passive video, infrared, or microwave detection systems.

Typical Application

IRWL are used along marked crosswalks at uncontrolled intersections or midblock crossings, and are accompanied by pedestrian crossing warning signage. IRWL must be installed on both sides of the crosswalk and along the entire length of the crossing.

IRWL are also occasionally used at such locations as driveways to alert motorists of the presence of pedestrians upon exit. Because of the higher costs to replace, and the availability of more effective countermeasures, IRWL should be considered for limited application.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

In-Road Warning Lights actuated with a pushbutton and accompanied by signage and beacons

Guidance

IRWL should be installed within 10 feet of crosswalk edges. On one-way single-lane roadways, at least two IRWL units should be installed. On two-lane roadways, at least three IRWL units should be installed. On roadways with more than two lanes, at least one IRWL unit per travel lane should be installed.

Bidirectional IRWL units serve as indication to pedestrians that they have been detected.

Materials and Maintenance

IRWL should be regularly monitored and maintained to ensure that all lights and detection hardware are functional. IRWL should only be placed in concrete, requiring the crosswalk also to be in concrete. While this creates more durability and longevity, inevitable replacement is more expensive.

When IRWL equipment is damaged or requires replacement, Rectangular Rapid Flash Beacons (RRFB) should be considered as a very cost effective substitute.

COST: $$

Additional References and Guidelines

Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

Sam Morrissey and Steve Weinberger. Enhanced Pedestrian Crossing Treatments in Santa Monica. 2012.

RAISED PAVEMENT MARKERS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Raised pavement markers are generally used to supplement longitudinal pavement markings and medians, or curb islands to increase visibility and delineate travel lanes. However, some agencies have used them in a transverse orientation alongside crosswalks to increase the visibility of the crossing for approaching motorists.

Typical Application

Raised pavement markers are typically used to accentuate pavement markings. No general guidance on the use of non-illuminated retroreflective raised pavement markers along crosswalks currently exists. When they are illuminated, they are generally referred to as In-road Warning Lights (IRWL), and should follow CA-MUTCD guidance as such.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Raised Pavement Markers accentuate a crosswalk in Davis, CA

Guidance

The color of raised pavement markers should match the color of the pavement markings it accompanies. When used with crosswalks they should be white, or yellow in school zones. Raised pavement markers should be placed on the approach side of the crosswalk only.

Consider In-road warning lights (IRWL) or Rectangular Rapid Flash Beacons (RRFB) as an alternative to raised pavement markings, especially at high volume pedestrian crossings.

Materials and Maintenance

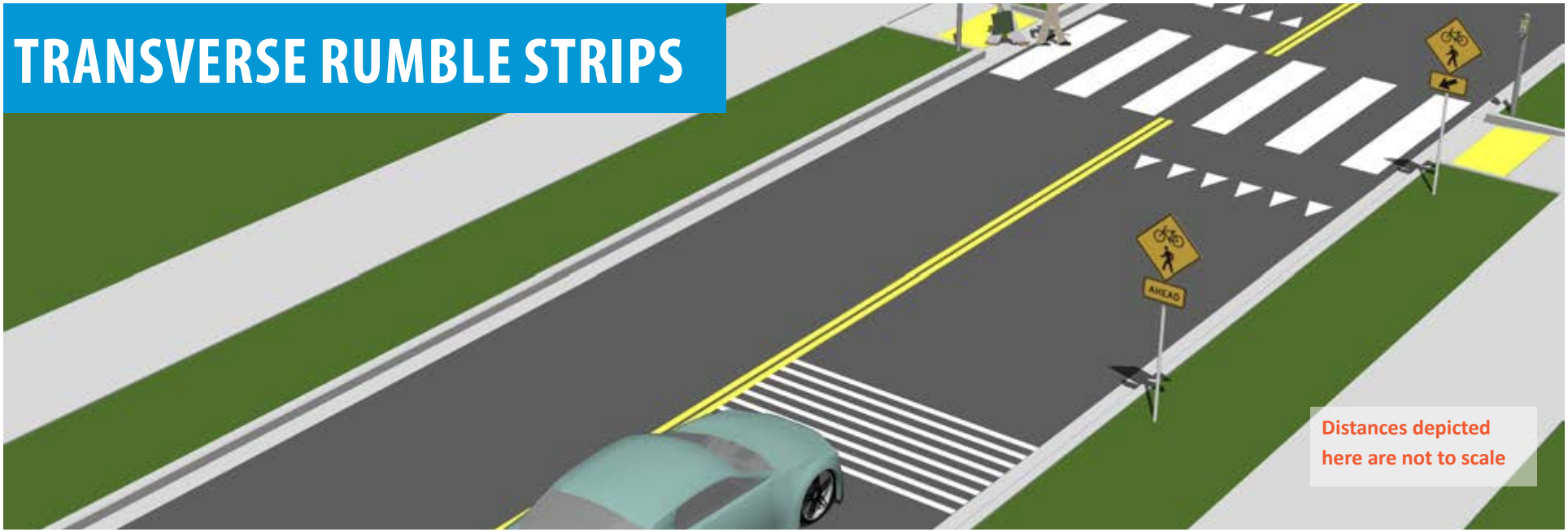
Raised pavement markers may be subject to high wear and damage, and may require frequent maintenance. The condition of raised pavement markers should be regularly checked and replaced when damaged.

COST: $

Additional References and Guidelines

Caltrans, California Manual on Uniform Traffic Control Devices. 2012.

TRANSVERSE RUMBLE STRIPS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Transverse rumble strips are used to warn approaching motorists of an upcoming pedestrian crossing or intersection, and to slow accordingly. Similar to longitudinal rumble strips, transverse rumble strips consist of a series of raised strips or depressions in the road surface that create both a tactile and audible warning when a vehicle passes over them. Unlike longitudinal strips, transverse strips are placed in the travel lane rather than on the shoulder or roadway edge. Rumble strips should not be used in residential areas, where noise is a concern.

Typical Application

Transverse rumble strips are typically placed in uniform groups of 2-5 depending on travel speeds block length, and sight distance. The placement of each group of rumble strips from the crosswalk and from advance warning signage varies, but they are generally placed further from crosswalks so as not be mistaken for crosswalk or stop lines pavement markings.

Rumble strips that are not the color of the the pavement must be either white or black to alert motorists of their presence on approach.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE

- Dart/Dash
- Multiple Threat
- Walking Along Roadway
- Left Turning Vehicle
- Right Turning Vehicle
- **Through Vehicle**
- Bus Related
- Non-Roadway (Driveway or Backing)

Transverse Rumble Strips in Davis, California

Guidance

Rumble strips that comprise a set or group should be spaced uniformly 6” to 12” apart.

Installation of rumble strips should be accompanied by warning signage in advance of the crossing. Groups of rumble strips should be offset in advance of the signage by 200’-250’, Consult references for additional guidance.

Rumble strips should terminate before the shoulder or adjacent bike lane so as to provide a clear, unimpeded path for bicyclists , and should be limited in use to areas where noise is not a concern.

Materials and Maintenance

Rumble strips and pavement markings should be regularly inspected for wear and damage.

COST: $

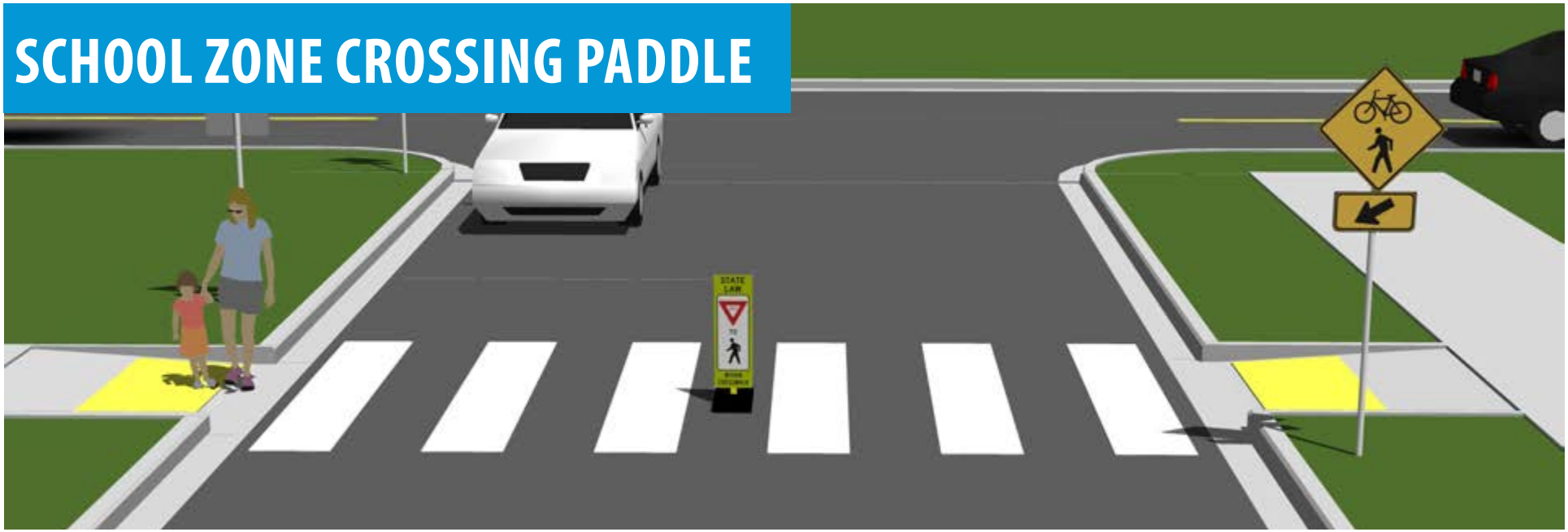
Additional References and Guidelines

Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

Highway Safety Information System - FHWA. Safety Evaluation of Transverse Rumble Strips on Approaches to Stop-Controlled Intersections in Rural Areas. 2012

Maryland DOT- State Highway Administration. Guidelines for the Application of Rumble Strips and Rumble Stripes. 2011.

SCHOOL ZONE CROSSING PADDLE



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

School Zone Crossing Paddles are in-road "yield for pedestrians" signs attached to a flexible plastic bollard on the centerline of the roadway. They are used at intersections where additional cues are needed to alert motorists both of the possibility of crossing pedestrians and the legal requirement to yield to people in the crosswalk.

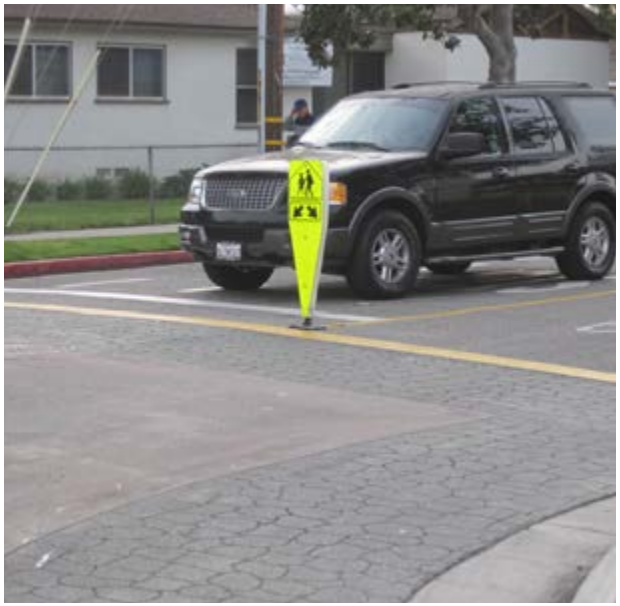
Typical Application

Crossing paddles may be used at unsignalized crosswalk locations in existing school zones where enhancing the crosswalk is desired.

The signs perform better on narrow roadways, where the visibility of the signs is maximized.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)



School Zone Crossing Paddles have a demonstrated effect on motor vehicle yield compliance

Guidance

- Install in a manner that does not impede pedestrian flow.
- Install outside the turn radius of vehicles that may be approaching from cross street.
- May be placed on a median island (when available).

Materials and Maintenance

These flexible signs must be extremely durable to withstand potential impacts of motor vehicles.

The frame outlining the sign should be a high visibility neon-green with optional reflective coating to maintain night time visibility.

Semi-permanent installations are also possible when the sign is combined with a moveable base. This allows for application solely during the school day.

COST: $

Additional References and Guidelines

Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

Redmon, Tamara. Evaluating Pedestrian Safety Countermeasures. Public Road. 2011.

Hua, Jenna. San Francisco PedSafe II Project Outcomes and Lessons Learned. TRB Annual Meeting. 2009.

PEDESTRIAN FLAGS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Pedestrian flags are high visibility flags that pedestrians can pick up at one end of the crosswalk, carry with them through the crosswalk and then drop off upon reaching the sidewalk on the other side. They are used to help pedestrians signal to drivers that they are planning to cross the street, as well to heighten the visibility of the pedestrians to motorists. Pedestrian flags were first used in Salt Lake City in response to a desire to reduce pedestrian injuries.

Typical Application

Pedestrian flags may be used at any legal crosswalk facility. For best results they should be used in combination with other treatments that increase the visibility of the pedestrian crossing (e.g., Continental crosswalk markings and curb extensions).

A flag program that distributes flags to interested tourists and residents may reduce the threat of theft from particular locations.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Crossing Flags should be placed in an accessible location, clear of the pedestrian throughway and curb ramps

Guidance

Install the flag holders on poles or posts a maximum of 5' away from the crosswalk.

Flags should be a neon orange or neon green color and be of sufficient size to increase motorists' visibility (approx. 10" x 10").

Permanent pedestrian flag holder installations are not recommended.

Materials and Maintenance

Routine maintenance of crosswalks outfitted with pedestrian crossing flags is required as the flags are a frequent target for theft. The City of Salt Lake City uses an Adopt-a Crosswalk program to help combat this issue. The city of Seattle ended its Pedestrian Flag Program due to a lack of a clear benefit to pedestrians and the frequent theft of flags/maintenance obligations.

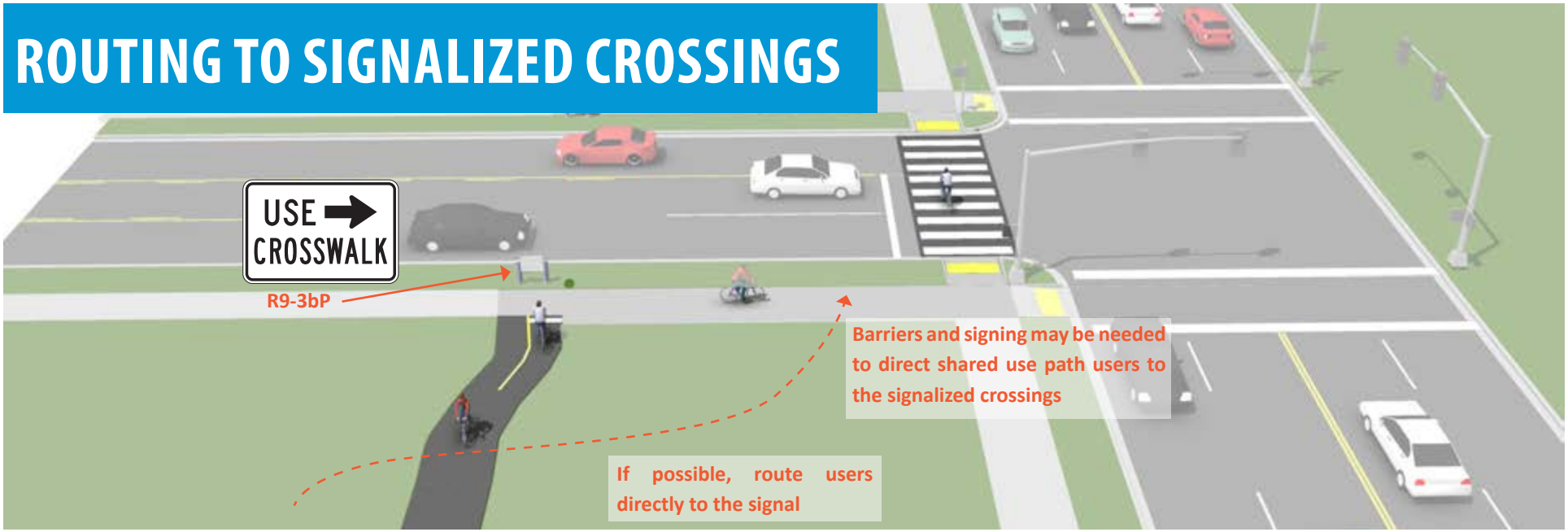
COST: $

Additional References and Guidelines

Pedestrian and Bicycle Information Center. Crosswalk Flags and Adopt-a-Crosswalk Program. http://www.pedbikeinfo.org/data/library/details.cfm?id=2933

Seattle Department of Transportation. Pedestrian Crossing Flags. http://www.seattle.gov/transportation/pedpolicy_pedcrossingflags.htm

ROUTING TO SIGNALIZED CROSSINGS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Sometimes park pathways or offset intersections lead people to an unsignalized location. Should they want to cross the street, it might be easier to cross safely by walking slightly out of direction to a signalized intersection.

For this restriction to be effective, medians with fencing and signing may be needed to direct people to the signalized crossing. If no pedestrian crossing exists at the signal, modifications should be made.

Typical Application

In the US, the minimum distance a marked crossing can be from an existing signalized intersection varies from approximately 250 to 660 feet. Engineering judgement and the context of the location should be taken into account when choosing the appropriate allowable setback. Pedestrians are particularly sensitive to out of direction travel and undesired mid-block crossing may become prevalent if the distance is too great.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Signage should be located outside of the pedestrian throughway, yet visible from the connecting paths termination point

Guidance

When popular destinations are located across the street from each other within 400' of a signalized intersection or other enhanced crossing, pedestrians should be encouraged to travel to the protected crossing. If the destinations are further than 400' from an intersection, a new crossing treatment should be considered.

The appropriate enhanced crossing treatments should be evaluated for path crossings more than 400 feet from signalized intersections.

Materials and Maintenance

If a sidewalk is used for crossing access, it should be kept clear of obstructions and/or debris and the surface should be level for wheeled users.

COST: $

Additional References and Guidelines

AASHTO. Guide for the Development of Bicycle Facilities. 2012.
AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004.

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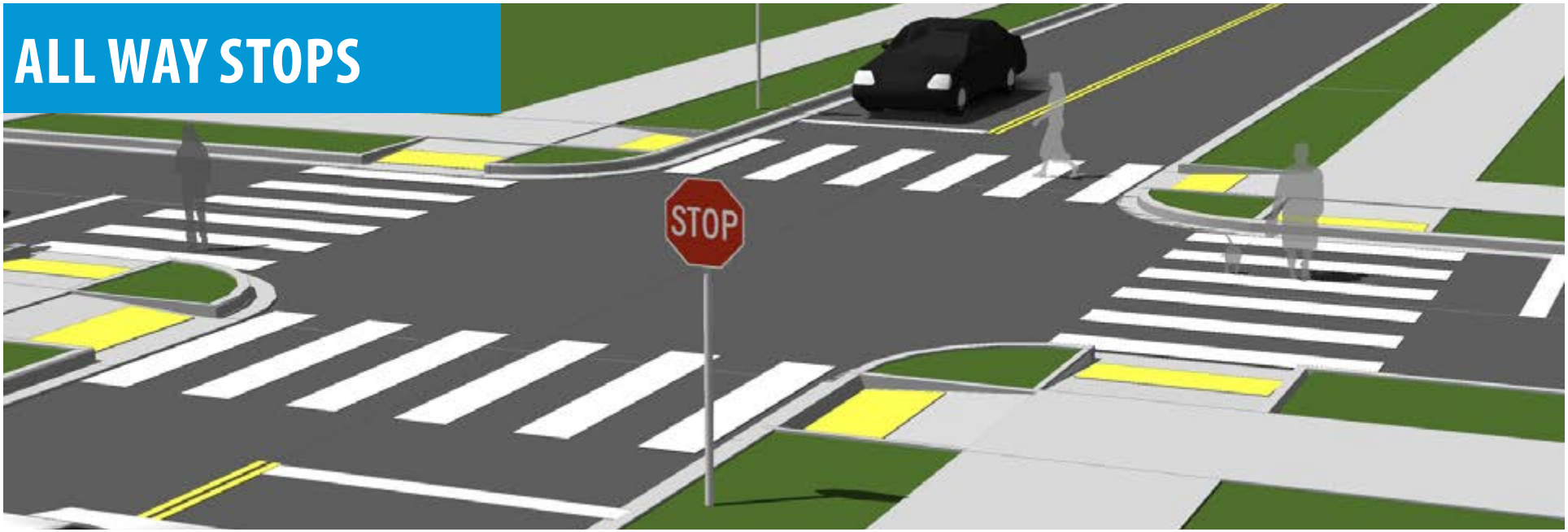
INTERSECTIONS

ALL WAY STOPS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

All way stop controls are used at intersections where traffic volumes on the intersecting streets are similar. Because all vehicles are required to stop, pedestrian delay and conflicts are minimized.

The delay caused to all roadway users should be taken into account before selecting this traffic control option.

All way stop controls are often installed in the interim, when an intersection has met signal warrants and is in the process of being brought up to full signalization.

Typical Application

All-way stop control is especially important in areas with higher pedestrian volumes, limited visibility at intersection corners for pedestrians and/or vehicles, and intersections with left-turn conflict issues.

An engineering study should be performed to determine whether crash and minimum volume criteria for all-way stop installation is met, and on bicycle priority streets other treatments to increase pedestrian safety should be considered first.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

All-way stops are especially important in areas with high pedestrian volumes and poor visibility around corners

Guidance

Recommended Minimum Crash Criteria:

- 5 or more crashes of the type succeptible to correction by an all way stop control, (such as right- or left-turn collisions and right angle collisions) in a 12 month period.

Recommended Minimum Volume Criteria:

- Average of 300 vehicles per 8 hour period, and
- Average combined vehicle, pedestrian and bicycle volume of 200 units per 8 hour period, and
- Minimum 30 second delay per vehicle during peak hour for vehicles on minor street.
- If the 85th percentile speed on the major street is greater than 40mph, than the volume warrants are reduced to 70% of the values listed above.
- If at least 80% of each of the above crash and volume criteria are met, this condition does not apply.
- See additional criteria in CA-MUTCD 2B.07 for details and exceptions.
- All Way Stop supplemental signage (sign number R1-3P) should accompany all stop signs.

Materials and Maintenance

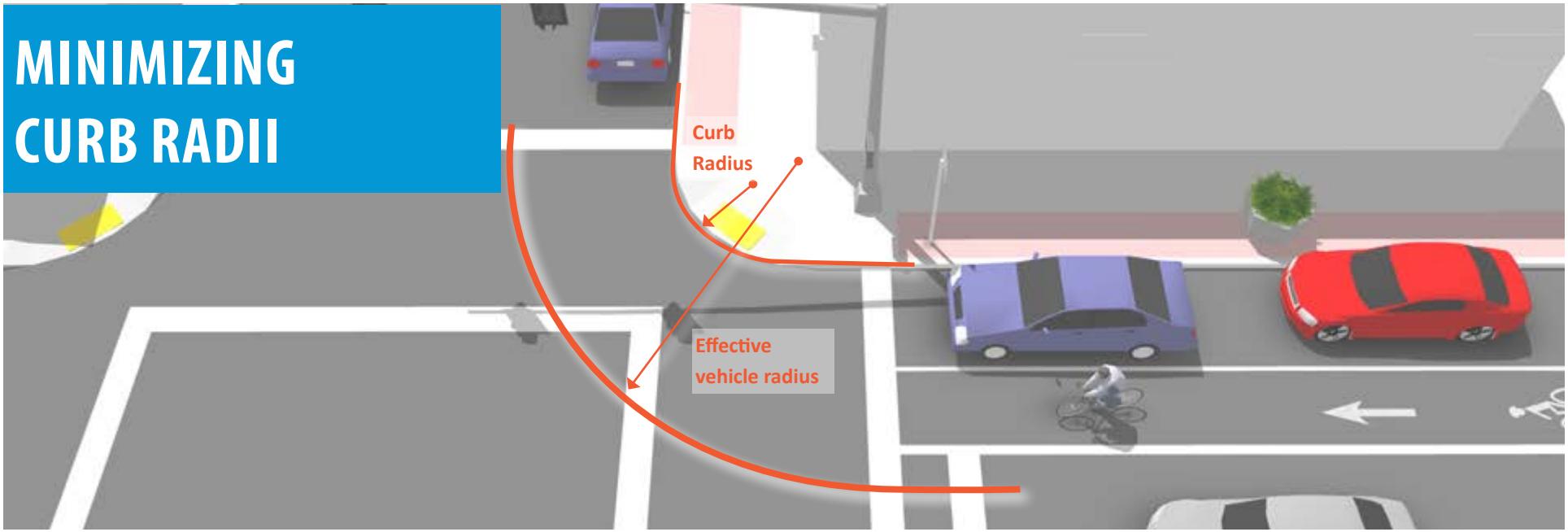
Stop signs should be regularly maintained. Law enforcement and public employees should be encouraged to report damaged signage.

COST: $

Additional References and Guidelines

Caltrans. California Manual on Uniform Traffic Control Devices. 2012.

MINIMIZING CURB RADII



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

The size of a curb's radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, and requires vehicles to negotiate turns at slower speeds. During the design phase, the chosen radius should be the smallest possible for the circumstances.

Typical Application

Several factors govern the choice of curb radius in any given location. These include the desired pedestrian area of the corner, traffic turning movements, street classifications, design vehicle turning radius, intersection geometry, and whether there is parking or a bike lane (or both) between the travel lane and the curb.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE

- Dart/Dash
- Multiple Threat
- Walking Along Roadway
- Left Turning Vehicle
- Right Turning Vehicle
- Through Vehicle
- Bus Related
- Non-Roadway (Driveway or Backing)

Tighter corners help to manage the speed of turning vehicles

Guidance

The radius may be as small as 3 ft where there are no turning movements, or 5 ft where there are turning movements, adequate street width, and a larger effective curb radius created by parking or bike lanes.

The city standard curb radius is 10-15 feet. In Pedestrian districts a reduced radius of 8' should be customary.

Larger curb radii may need to be considered for bus turning movements. See Increasing Curb Radii.

Materials and Maintenance

Improperly designed curb radii at corners may be subject to damage by large trucks.

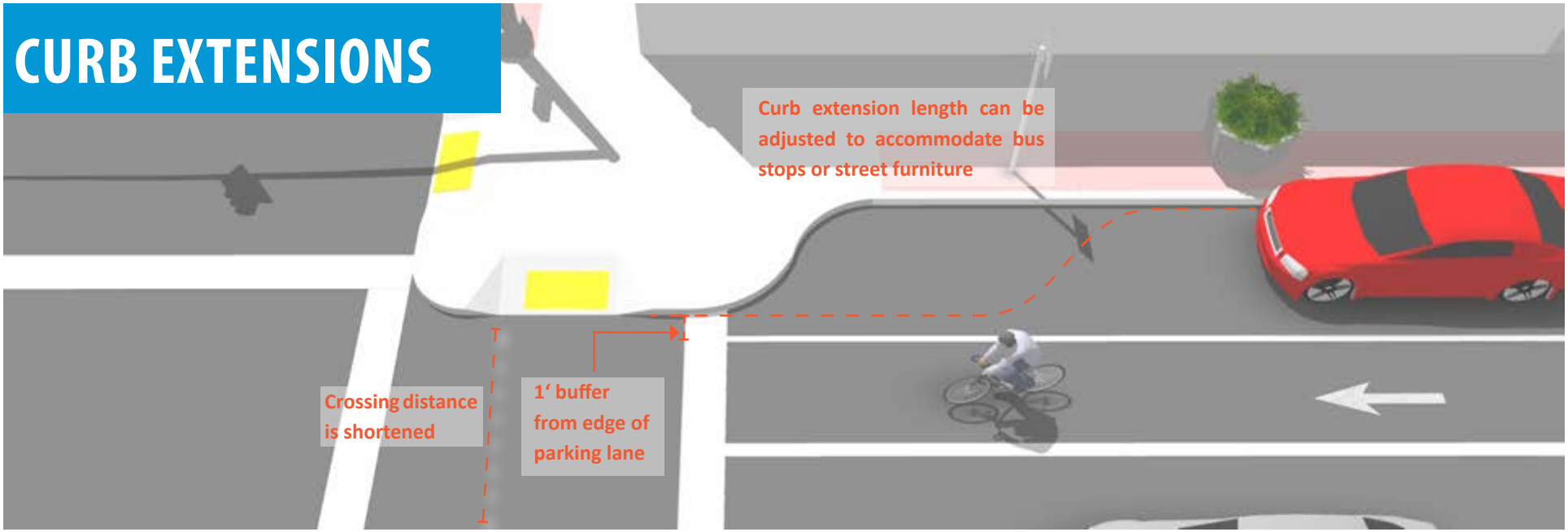
COST: $$

Additional References and Guidelines

AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004. AASHTO. A Policy on Geometric Design of Highways and Streets. 2004.

NACTO. Urban Street Design Guide. 2013.

CURB EXTENSIONS



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Curb extensions minimize pedestrian exposure during crossing by shortening crossing distance and giving pedestrians a better chance to see and be seen before committing to crossing. They are appropriate at crossings where it is desirable to shorten the crossing distance and there is a parking lane adjacent to the curb. Because they are generally located adjacent to on-street parking, they do not impede motor vehicle through travel.

Special attention should be paid to curb radii. See Minimizing Curb Radii and Increasing Curb Radii for details.

Typical Application

Curb extensions are best suited where parking lanes already exist to eliminate the need to merge from the curb lane, and to create a suitable turn radius for larger vehicles.

Curb extensions should be considered at all intersections marked by high pedestrian activity.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Curb extensions shorten the crossing distance and improve visibility for pedestrians and drivers

Guidance

In most cases, the curb extensions should be designed to transition between the extended curb and the running curb in the shortest practicable distance.

For purposes of efficient street sweeping, the minimum radius for the reverse curves of the transition is 10 ft and the two radii should be balanced to be nearly equal.

Curb extensions should terminate one foot short of the parking lane to maximize bicyclist safety.

An engineering study should be conducted at corners where turning vehicles account for 20% or more of the through vehicle movement, or where there are at least 3 turning vehicles per signal cycle.

Paint and bollards can serve as an effective interim measure or temporary substitute for curb extensions.

Storm drains and drainage patterns require special consideration during design.

Materials and Maintenance

Planted curb extensions may be designed as a bioswale, a vegetated system for stormwater management. In this case, vegetation, debris, and drainage require special attention.

COST: $$

Additional References and Guidelines

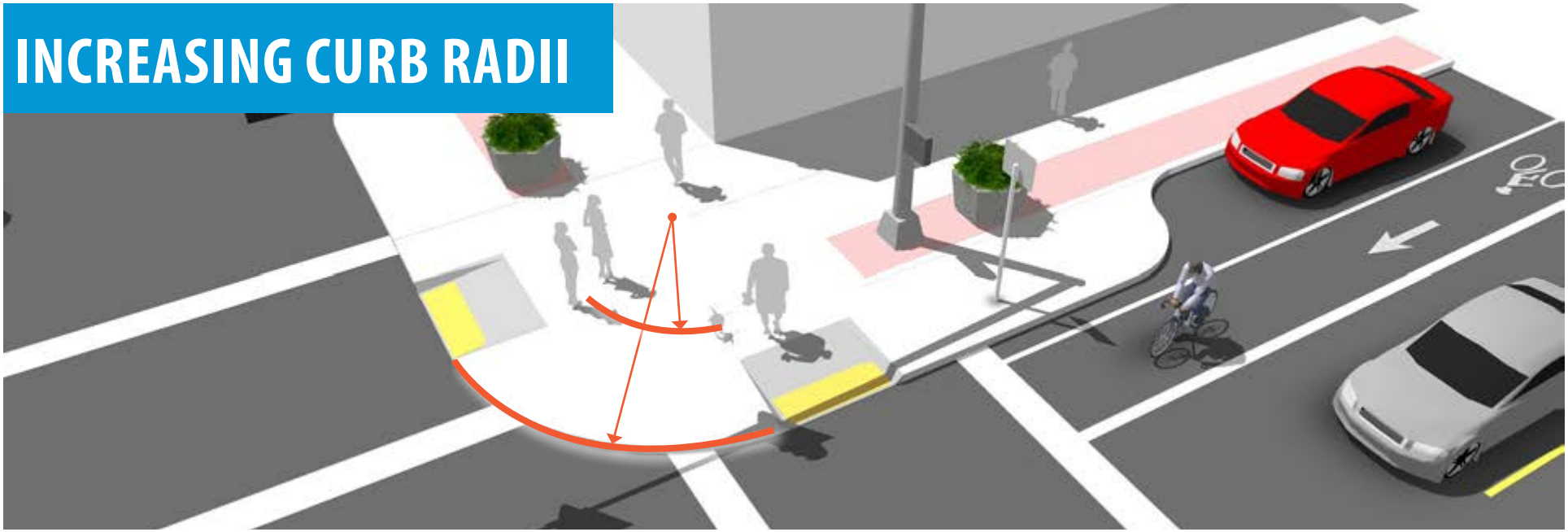
AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004. AASHTO. A Policy on Geometric Design of Highways and Streets. 2004.

Caltrans. California Highway Design Manual. 2012.

NACTO. Urban Street Design Guide. 2013.

Michael King. Calming New York City Intersections. Transportation Research Circular E-C019. 2000.

INCREASING CURB RADII



SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Curb extensions at intersections narrow the roadway creating a much shorter crossing distance for pedestrians. However, the narrower roadway may still need to accommodate turning movements of larger trucks, buses, and emergency vehicles. In this particular case where curb extensions project onto both intersecting streets, it may be necessary to increase the curb radii to preserve the effective turning radii of larger vehicles, while simultaneously reducing the crossing distance for pedestrians.

Typical Application

Increasing the curb radii typically leads to higher turning speeds by standard passenger vehicles, so this treatment should be applied on a case by case basis, on roadways where traffic is calmed to appropriate speeeds and volumes.

As in the case of minimizing curb radii, increasing curb radii depends on several factors. These include the desired pedestrian area of the corner, traffic turning movements, street classifications, design vehicle turning radius, intersection geometry, and whether there is parking or a bike lane (or both) between the travel lane and the curb.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE

- Dart/Dash
- Multiple Threat
- Walking Along Roadway
- Left Turning Vehicle
- Right Turning Vehicle
- Through Vehicle
- **Bus Related**
- **Non-Roadway (Driveway or Backing)**

Larger Curb Radii, but narrower street and shorter crossing distances

Guidance

The radii should be no larger than is necessary to facilitate turning movements of larger vehicles. For 90 degree intersections, the curb radii should be no larger than is necessary to allow for perpendicular crosswalks and curb ramps in both directions. Setting the vehicle stop lines back from the intersection further helps to facilitate turning movements for larger vehicles.

Diagonal curb ramps should be avoided at these locations, as pedestrians waiting to cross would be more exposed to turning vehicles.

Materials and Maintenance

Improperly designed curb radii at corners may serve to lengthen the crossing distance, or pose a threat to pedestrians waiting to cross. Improperly designed curb radii may also be subject to damage by large trucks.

COST: $$

Additional References and Guidelines

AASHTO. Guide for the Planning, Design, and Operation of Pedestrian Facilities. 2004.
AASHTO. A Policy on Geometric Design of Highways and Streets. 2004.

NACTO. Urban Street Design Guide. 2013.

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SIGNALIZED INTERSECTIONS

TRAFFIC CONTROL DEVICE MODIFICATIONS

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Traffic control devices can sometimes be modified to enhance visibility of the display, and to reduce confusion among roadway users. These typically include such enhancements as retroflective backplates/borders on signs and traffic signal heads, LEDs or flashing beacons used in conjunction with warning or regulatory signs.

Traffic signal displays can also be outfitted with signal visors, limited visibility lens, or signal louvers to prevent preemptive movements, and minimize confusion about the right of way among adjacent movements.

Typical Application

Flashing beacons are typically used when visibility is compromised due to location, or when conditions warrant hightened attention or advance warning.

Signal modifications are typically made when visibility is compromised due to location, time of day, or sunlight glare, or when otherwise inconspicuous conditions exist.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

A traffic signal head with Retroreflective border, vented backplate and visors

Guidance

Stop signs and warning signs may be accompanied by LED units along the border of the sign for illumination (Not including changeable message signs).

Beacons should not be installed within the borders of warning or regulatory signs. The bottom edge of the beacon housing unit must be located between 12-24" above a stop sign.

Signal backplates can be vented to account for higher wind loads.

Strobe lights complementing traffic signal displays are not MUTCD compliant.

Louvers, the inside surfaces of visors, and the front surface of backplates must retain a matte black finish.

Retroreflective borders on signal backplates offer enhanced visibility at night and during power outages. The border should be between 1"-3"

Materials and Maintenance

All signs and signals and their accompanying enhancements including reflectivity, LEDs and Beacons must be regularly maintained to ensure proper working order.

COST: $-$$

Additional References and Guidelines

Caltrans. California Manual on Uniform Traffic Control Devices (2A.07). 2012.

FHWA. Signalized Intersections: Informational Guide. 2nd Edition. 2013.

TRAFFIC SIGNAL PHASING

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Fixed or Actuated Operations

There are two basic categories of traffic signalization operations: Fixed and Actuated. Fixed traffic signals operate on a fixed schedule for all phases in the cycle. Every traffic phase is cycled through regardless of actual demand. This makes operations more predictable for drivers and pedestrians, and more efficient from a pedestrian delay perspective. Fixed signal timing may vary by time of day.

Actuated signals employ detection equipment and can be further distinguished as fully- or semi-actuated. Semi-actuated operations allow the major street to rest in green (fixed), until traffic is detected on cross streets.

Actuated signals can operate in coordinated or free modes. When signals are coordinated, the signal controller is "coordinating" with other signals to prioritize vehicle throughput downstream. This progression is often referred to as a "green wave." While this increases efficiency for vehicles along the major street, it also tends to increase delay for pedestrians at crossings.

By contrast signals operating in "free" mode operate independently of other signals, and can significantly reduce pedestrian delay and noncompliance.

To further reduce pedestrian delay consider minimizing the green interval for vehicles, increasing the permissive period (call window) for pedestrians, and/or programming a pedestrian recall.

Split Phasing

Split phasing separates traffic movements on opposite approaches and can reduce pedestrian conflicts at intersections with protected left turns. This is generally safer because it separates pedestrian crossings from vehicle left-turn and through movements. Split phasing can simplify otherwise complex intersection operations and make vehicle and pedestrian movements more predictable, but it also increases cycle lengths.

Split phasing is generally reserved for locations with atypical geometric constraints, such as a shared through/left turn lane, and/or variation in opposing approach volumes. As such, use of split phasing should be preceded by a detailed analysis of traffic volumes and intersection movements.

Right Turn Overlap Phase

Right turn overlap phases provide consecutive permissive and protected right turn phases, and can increase efficiency at intersections by "overlapping" the right turn movement with a nonconflicting left turn phase. A signal head with five displays is used to indicate the transition from permissive green display (circular) to protected green display (arrow).

Controllers should be programmed to ensure that protected right turn intervals will not coincide with the adjacent through/pedestrian movements. Additional auditory indication should be given to visually-impaired pedestrians at these locations as it may be difficult for them to judge phase changes based on auditory cues provided by traffic alone.

Protected - Permissive Left Turns

With Protected-Permissive Left Turn (PPLT) phasing, motorists have left turn right of way with the protected green arrow, and can also make a left turn on a circular green display (yielding to traffic in the opposing direction and concurrent pedestrian movements). This mode can offer the safety benefits of protected left turns and the efficiency benefits of permissive left turns.

Pedestrians are most vulnerable on the permissive left turn interval, where motorists trying to make a left turn are focused on the traffic signal head and potential gaps in on-coming traffic. They may not see pedestrians before they accelerate to clear the intersection, and may collide with pedestrians entering the crosswalk.

Similar to the permissive-only left turn phase issue described above, caution must be taken to avoid the "Yellow Trap" lead-lag scenario when motorists assume that traffic in the opposing direction is following a signal with identical and concurrent phasing. This is called the "Dallas Signal"; it and flashing yellow arrow are two MUTCD approved displays that have been shown to effectively reduce incidence of yellow traps.

Materials and Maintenance

Detection and actuation equipment will require regular maintenance.

Intersections employing split phasing, right turn overlaps, or PPLT should be monitored to ensure that conflicting pedestrian and vehicle movements do not occur.

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

COST: $

Additional References and Guidelines

FHWA. Signal Timing Manual. 2008.

FHWA. Signalized Intersections: Informational Guide. 2004.

NACTO. Urban Street Design Guide. 2013.

PEDESTRIAN SIGNALS, MANUAL ACTUATION

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Description

Manual activation of pedestrian signals is performed with a pedestrian push button. This requires the pedestrian to locate and press the pushbutton to actuate the pedestrian signal phase. For this reason, pushbuttons should be easy to identify and access, and ideally, be user-responsive.

A favorable alternative to manual actuation is passive detection possible with a variety of automated detection equipment, including microwave and infrared detectors. Because detection is automatic, it saves the pedestrian the trouble of having to locate the pushbutton. Passive detection can also contribute to the efficiency of signal operations by allowing for walk time extensions, and/or not dedicating walk time in the absence of pedestrians.

Typical Application

Manual pushbuttons are installed at intersections operating on actuated signal timing and fixed timing. They can be utilized in semi-actuated or fully-actuated operations, and in coordinated or free modes.

The decision to install pushbuttons, should take into account pedestrian accessibility needs and pedestrian volumes.

	Posted Speed (mph)	Traffic Volume (AADT)
Low	< 25	< 5k
Medium	25 - 35	5k - 20 k
High	30 - 45	20k - 75k
Very High	+ 45	+ 75k

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

An accessible pushbutton and signage featuring pilot and auditory indicators

Guidance

The minimum walk interval time is 7 seconds.

The walk and pedestrian clearance times can be adjusted to account for the elderly, wheelchair users, and visually-disabled people who typically need more time to cross. The walk time can be calculated based on a slower walking speed, 2.8 fps- 3.0 fps (feet per second), and/or a longer crossing distance from pushbutton-to-far curbside (or pushbutton-to-pushbutton), instead of curb-to-curb.

Pushbuttons should be accompanied by adjacent all-weather surfaces for wheelchair users, and informational signage.

A pushbutton outfitted with a pilot or indicator light and/or audible/vibrotactile feedback acknowledges that the pedestrian call has been placed, reassuring the pedestrian that they have been detected.

Materials and Maintenance

Pushbuttons require routine maintenance to ensure satisfactory actuation and pedestrian compliance.

COST: $$

Additional References and Guidelines

Caltrans. California Highway Design Manual. 2012

FHWA. Signalized Intersections: Informational Guide. 2nd Edition. 2013.

PEDESTRIAN SIGNALS, ENHANCED ACTUATION + DETECTION

SUPPORTED PLAN GOALS

- A Healthy Community
- Community Compassion
- Steward Sustainability
- Walking as the First Choice
- Vision Zero
- A Barrier Free Network
- Pedestrian Awareness & Education
- Coordinated City Efforts

Pedestrian Recall

Pedestrian recall is a traffic signal controller setting that automatically provides a pedestrian walk phase during every cycle. Since Pedestrian recall does not require detection or actuation, it eliminates the need for push buttons or other costly detection equipment.

This makes pedestrian crossings predictable, minimizes unnecessary pedestrian delay, and does not leave pedestrians wondering whether they have been detected or not. The most appropriate use of pedestrian recall is in locations and/or times of day with high pedestrian volumes.

Pedestrian Countdown Indicators

Pedestrian signal head displays that only feature a flashing don't walk indication, can make it difficult for pedestrians to judge whether they have enough time to cross an intersection safely. Countdown indicators on pedestrian signals solve this by providing pedestrians with the exact amount of time they have to clear the intersection. The California MUTCD requires the use of countdown indicators for all signalized crossings with a change interval (flashing don't walk) greater than 7 seconds.

Extended Pedestrian Walk Time

Pedestrians may arrive at an intersection late, or may not have an indication of how much time they have to safely cross the intersection. Having to wait an entire cycle for the next walk phase, may lead to a higher incidence of non-compliance or jay-walking. Pedestrian push buttons can be configured to provide additional crossing time when they arrive at the crossing during the flashing don't walk interval. The CA-MUTCD requires signage indicating the walk time extension at or adjacent to the push button (R10-32P)

Passive pedestrian detection devices are also capable of tracking pedestrians as they cross the intersection to extend the walk/flashing don't walk interval.

Leading Pedestrian Interval

Leading Pedestrian Intervals (LPI) are used to reduce right turn and permissive left turn vehicle and pedestrian conflicts. The through pedestrian interval is initiated first, effectively offseting the otherwise fully concurrent through/right/permissive left turn interval. The LPI minimizes vehicle-pedestrian conflicts because it gives pedestrians a headstart into the intersection, thereby making them more visible, and reducing crossing exposure. Audible cues should be given for visually-impaired pedestrians.

Audible Pedestrian Signals

Audible pedestrian signals are designed to be accessible by individuals with visual disabilities. They provide audible tones or verbal messages to convey when it is appropriate to walk, when they must wait, and feedback when the signal has been actuated via pushbutton. This eliminates the need for pedestrians to rely entirely on the audible cues provided by moving cars, which may can be deceiving depending on the complexity of traffic signal operations at the intersection.

Audible pedestrian signals are either directly requested by individuals, or installed based on observed conditions at specific locations, such as low-traffic volumes, or complex signal operations.

Materials and Maintenance

Detection and actuation equipment will require regular maintenance. As a result, fixed operations require less maintenance than actuated operations. Intersections employing split phasing, right turn overlaps, or PPLT should be monitored to ensure that conflicting pedestrian and vehicle movements do not occur.

COST: $

ADDRESSED COLLISION TYPE
Dart/Dash
Multiple Threat
Walking Along Roadway
Left Turning Vehicle
Right Turning Vehicle
Through Vehicle
Bus Related
Non-Roadway (Driveway or Backing)

Additional References and Guidelines

FHWA. Signal Timing Manual. 2008.
FHWA. Signalized Intersections: Informational Guide. 2nd Edition. 2013.
Caltrans. California Manual on Uniform Traffic Control Devices. 2012.
NACTO. Urban Street Design Guide. 2013.