Pedestrian Master Plan

The City of Oakland

Part of the Land Use and Transportation Element
of the City of Oakland's General Plan
November 12, 2002

ACKNOWLEDGEMENTS

Mayor and City Council

Mayor Jerry Brown	
Jane Brunner	District 1
Danny Wan	District 2
Nancy Nadel	District 3
Dick Spees	District 4
Ignacio De La Fuente	District 5
Moses L. Mayne, Jr.	District 6
Larry Reid	District 7
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Michael Voorhies	District 2
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Molly Bradshaw	Public Health Professional
Walter Finch	Building Owners and Managers Association
Heather Hood	Urban Ecology

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Natalie Fay	Community and Economic Development Agency
Margaret Stanzione	Community and Economic Development Agency
Lynn Warner	Community and Economic Development Agency
Jon Ewigleben	Community and Economic Development Agency
Raul Godinez	Public Works Agency
Amit Kothari	Public Works Agency
Joe Wang	Public Works Agency
Kathryn Hughes	Public Works Agency
Jose Martinez	Public Works Agency
Wladimir Wlassowsky	Public Works Agency
Christine Calabrese	Office of the City Manager
Jim Cunradi	Alameda-Contra Costa Transit District
Nathan Landau	Alameda-Contra Costa Transit District

Oakland Pedestrian Safety Project

Thomas Van Demark	Director
Zachary Wald	Pedestrian Plan Project Manager
Amit Patel	Design & Planning Intern
Jason W. Patton	Editor

Consultants

Allan Jacobs	Jacobs MacDonald: CityWorks
Mika Miyasota	Korve Consulting
Cheryl Parker	Urban Explorer
Noah Raford	Urbitran Associates
Bill Reuter	Reuter Design
Mathew Ridgeway	Fehr and Peers Associates

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California Vehicle Code Section 467. (a) A "pedestrian" is any person who is afoot or who is using a means of conveyance propelled by human power other than a bicycle. (b) "Pedestrian" includes any person who is operating a self-propelled wheelchair, invalid tricycle, or motorized quadricycle and, by reason of physical disability, is otherwise unable to move about as a pedestrian, as specified in subdivision (a).

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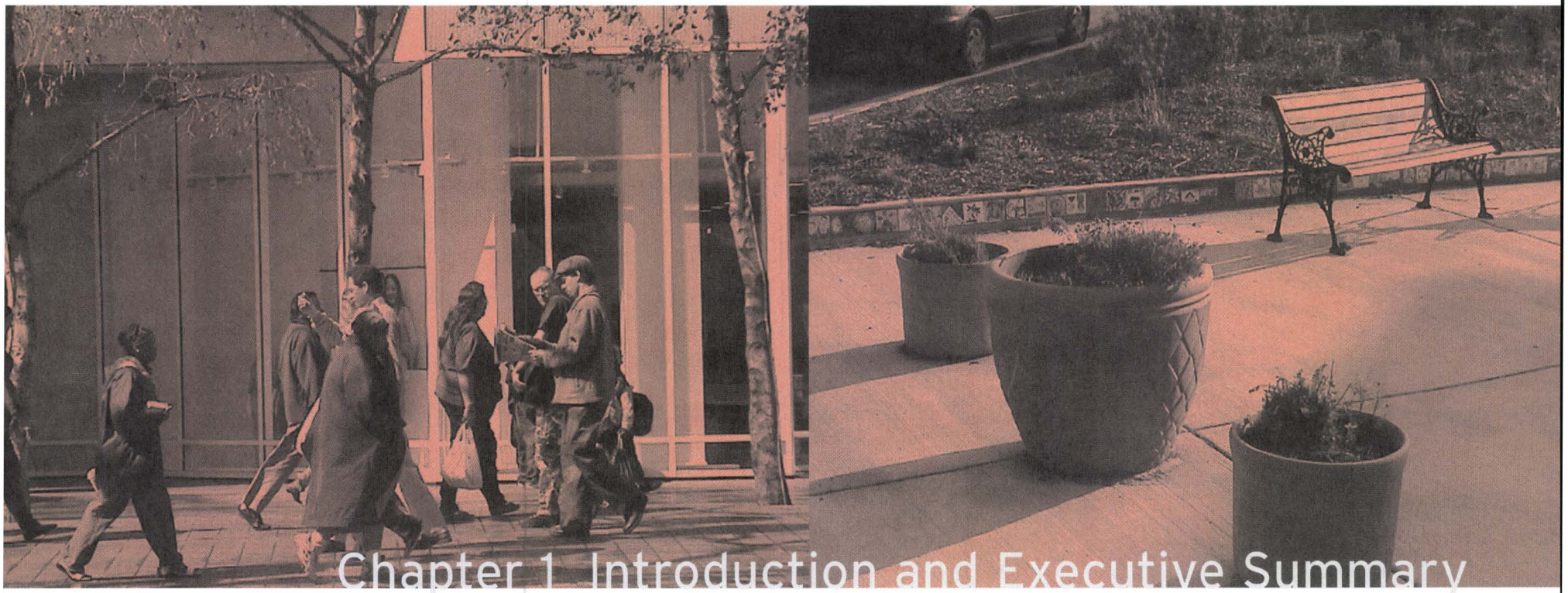


Chapter 1 Introduction and Executive Summary

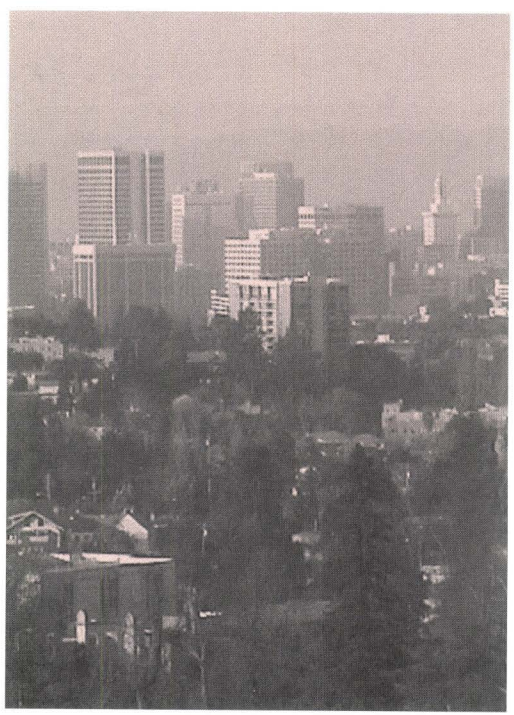
Vision Statement To promote a pedestrian-friendly environment; where public spaces, including streets and off-street paths, will offer a level of convenience, safety and attractiveness to the pedestrian that will encourage and reward the choice to walk.

Getting people out of their cars and walking as much as possible will put Oakland in the forefront of the pedestrian movement. As a matter of fact, we will be one of the first cities in America to create a Pedestrian Master Plan.

Oakland Mayor Jerry Brown, August 14, 2001

The Pedestrian Master Plan promotes pedestrian safety and access to help ensure that Oakland is a safe, convenient, and attractive place to walk. It establishes a Pedestrian Route Network emphasizing safe routes to school and connections to transit. The routes include streets, walkways, and trails that connect schools, libraries, parks, neighborhoods, and commercial districts throughout the City. It identifies priority street segments along these routes for targeted improvements over the next twenty years. The plan also identifies new pedestrian design elements to promote pedestrian safety and access throughout the City.

Policy T4.5 of Envision Oakland, the Land Use and Transportation Element of the Oakland General Plan, recommends the creation of a Pedestrian Master Plan as part of its objective to increase the use of alternative modes of transportation. While walking is the least expensive transportation mode, building and maintaining a high quality pedestrian infrastructure requires comprehensive planning and long term funding. The Pedestrian Master Plan will be a key resource for the City in securing grants from the increasingly large pool of funds dedicated to pedestrian safety and livable communities.



Goals

The City of Oakland is committed to walking as a form of transportation and recreation that is safe, accessible, healthy, and affordable for all citizens. Every Oaklander is a pedestrian at some point during the day. We all walk with or without mobility aids* whether to a school, transit stop, to a parked car, to work, or for exercise. The City also recognizes the value of walking for promoting environmental sustainability and the commercial vitality of downtown and neighborhood districts. To promote these benefits of a walkable city, the Pedestrian Master Plan specifies the following five goals.

1 Pedestrian Safety. Create a street environment that strives to ensure pedestrian safety.

2 Pedestrian Access. Develop an environment throughout the City – prioritizing routes to school and transit – that enables pedestrians to travel safely and freely.

3 Streetscaping and Land Use. Provide pedestrian amenities and promote land uses that enhance public spaces and neighborhood commercial districts.

4 Education. Educate citizens, community groups, business associations, and developers on the safety, health, and civic benefits of walkable communities.

5 Implementation. Integrate pedestrian considerations based on federal guidelines into projects, policies, and the City's planning process.

*Mobility aids are devices including wheelchairs, walkers, crutches, canes, scooters, and service animals used by people with disabilities.

The Benefits of a Walkable City

The City of Oakland has amongst the highest walking rates for all cities in the San Francisco Bay Area (U.S. Census 2000). Additionally, approximately one out of five households in Oakland does not have an automobile (MTC 2001a) and 37% of Californians do not have driver's licenses. (STPP 2000a, p. 19).

With these goals, the Pedestrian Master Plan provides targeted solutions to pedestrian access and safety problems. The solutions also promote Oakland as a walkable city for sustainability, equity, vitality, and health – especially for children and seniors.

Safety

Continuous sidewalks and safe crossings are the basic building blocks for pedestrian safety.* These elements are essential for the most vulnerable populations: children, seniors, and persons with disabilities.

High speeds and volumes of motor vehicles can create safety concerns for pedestrians and residents. Neighborhood streets that provide motor vehicle shortcuts for through traffic are of particular concern to residents. On larger streets, high speeds and volumes of motor vehicle traffic can be at odds with crossing safety, especially on streets with infrequent traffic signals. According to the Federal Highway Administration, "At higher speeds, motorists are less likely to see a pedestrian, and are even less likely to be able to stop in time to avoid hitting one" (FHWA 2002b, p. 13). In collisions with motor vehicles, a pedestrian has an 85% chance of fatality at 40mph, a 45% chance of fatality at 30mph, and a 5% chance of fatality at 20mph (FHWA 2002b, p. 13).

A balanced approach to street design regulates motor vehicle speeds and affords pedestrians safe and convenient crossing opportunities. Ample sidewalks also serve to buffer pedestrians from motor vehicle traffic. Drivers and pedestrians share responsibility for pedestrian safety. Education and enforcement to prevent dangerous behaviors by both of these groups are important elements of a comprehensive solution.

*California Vehicle Code Section 21949 specifies that "safe and convenient pedestrian travel and access, whether by foot, wheelchair, walker, or stroller, be provided to the residents of the state."

The Benefits of a Walkable City

Sustainability

Walkable cities reduce environmental impacts by promoting walking as a zero emissions form of transportation. Good walking routes to transit complement the role of public transit in providing an environmentally sustainable alternative to the private automobile. Although typically not counted in transportation surveys, every trip on transit is sandwiched between two pedestrian trips. Especially in conjunction with cycling and transit riding, walking provides a promising non-polluting transportation alternative.

Equity

Walking is the most inexpensive and broadly accessible form of transportation and recreation. Walking requires no fare, fuel, or license. For those who cannot afford other modes of transportation, the ability to walk safely is essential. For young people, walking affords a sense of independence that is not possible with other modes. For older people, walking is an effective means to stay active, both physically and socially.

Vitality

Walkable cities make for vital and active streets by promoting commercial and social exchange. With approximately 40% of the land area of United States' cities dedicated to transportation, streets and sidewalks are the city's most expansive public spaces. Sidewalks ideally function as positive places to meet, play, live, work, and shop. However, high speeds and heavy volumes of motor vehicle traffic can create inhospitable city blocks where people are less likely to know their neighbors and children are not allowed to play (Appleyard 1981). In residential areas, motor vehicle traffic negatively impacts residential property values. In commercial areas, the most congested streets are often the most economically vital.

Health

Walkable cities promote healthy citizens. Health professionals recommend walking as a form of physical activity to help prevent a host of diseases including obesity, heart disease, and some forms of cancer. In announcing the nomination for U.S. Surgeon General, President George W. Bush said, "Walking 30 minutes a day will dramatically improve your life." Drawing on the success of the public health model in reducing smoking, cities are recognizing that good places to walk help promote healthy citizens.

In the United States, 300,000 deaths per year are associated with obesity and the number of overweight adolescents almost tripled in the last twenty years. While almost two-thirds of children walked or biked to school only thirty years ago, less than 10% do today (STPP 2000a, p. 6). According to the Surgeon General, encouraging at least 30 minutes of walking per day and creating walkable environments are recommended methods for reducing overweight and obesity (U.S. Dept. of Health 2001).

Executive Summary

In the following chapters, the Pedestrian Master Plan identifies the existing conditions for pedestrians in Oakland and formulates a pedestrian route network, policies, and design elements for the City. Taken together, these chapters promote pedestrian safety and access by focusing improvements on safe routes to school, connections to transit, and in other areas of high pedestrian activity.

Existing Conditions

Chapter 2 provides a comprehensive picture of pedestrian safety and access in Oakland. It addresses the City's existing street conditions, walking rates, pedestrian/vehicle collision data, school safety, connections to transit, education and enforcement, and the community outreach process for this Plan.

Oakland's downtown and many vibrant neighborhoods give it the foundation for a walkable city. Oakland has amongst the highest walking rates of cities in the San Francisco Bay Area. Large numbers of pedestrian trips are to AC Transit bus lines, Oakland public schools, and BART stations.

Major constraints on walking include pedestrian/motor vehicle conflicts on busy streets and freeways as physical barriers for pedestrians.

On average, a pedestrian/vehicle collision occurs each day in Oakland. Over three-quarters of those collisions result in pedestrian injuries. 36 fatal pedestrian collisions occurred between 1996 and 2000. Most pedestrian/vehicle collisions occur in downtown, in Chinatown, and along arterial streets.

By age, children have the highest rates of pedestrian injury and seniors have the highest rates of pedestrian fatality. By race, African-Americans and Hispanics are more likely than Caucasians to be a pedestrian in a collision.

In developing the Pedestrian Master Plan, the Oakland Pedestrian Safety Project (OPSP) conducted 70 community presentations reaching 1,750 Oaklanders.

Through this outreach, citizens identified hundreds of areas of concern, noting in particular the danger of crossing streets with two or more lanes in each direction and the safety of children walking to school.

Sources of additional community input included the City Commissions on Aging and Disability and the Public Safety Committee of the City Council.

Pedestrian Route Network

Chapter 3 presents a long-term vision for a network of on- and off-street routes that extends throughout Oakland. It includes "Safe Routes to School" and "Safe Routes to Transit." The network identifies common walking routes to schools, transit, neighborhood commercial districts, major employment centers, and other pedestrian destinations. These routes respond to community concerns over safe routes

to these destinations and across major streets. They include city routes, district routes, neighborhood routes, walkways, and trails.

This chapter explains the Downtown Pedestrian District, Safe Routes to School, and Safe Routes to Transit. It describes the criteria used in the selection of routes and provides illustrations of each of the five route types. The Pedestrian Route Network identifies those streets in greatest need of improvements and those areas where improvements will have the greatest impact. The Pedestrian Route Network thereby serves as a long term planning tool for targeting pedestrian improvements. A citywide map of the network is included in this chapter. Maps of each Council District showing the Pedestrian Route Network and priority projects are included in the Implementation Plan. A comprehensive survey of the Pedestrian Route Network is included in the appendices.

Policy Recommendations

Chapter 4 identifies policies and action items for meeting the goals of the Pedestrian Master Plan. The Land Use and Transportation Element (LUTE) of the Oakland General Plan calls for the preparation, adoption, and implementation of a comprehensive pedestrian plan for the City (LUTE T4.5, p. 58).

Oakland's General Plan has many policy directives promoting a walkable city and the goals of pedestrian safety, access, streetscaping and land use, and education. Each goal of the Pedestrian Master Plan is listed with policy directives from the LUTE and the proposed policies and action items for achieving that goal.

Source documentation including the Open Space, Conservation, and Recreation (OSCAR) Element, Bicycle Master Plan, and Pedestrian Master Plans from other cities was consulted in developing policies for the Oakland Pedestrian Master Plan.

Recommended policies relating to implementation are listed as part of the Implementation Plan in Chapter 6.

This chapter concludes with a section identifying marked crosswalks, speed humps, and pedestrian auto-detection as issues for further discussion. These issues require ongoing debate in the City of Oakland. They lack the necessary consensus of stakeholders for establishing policy positions in the Pedestrian Master Plan. The differing viewpoints on these issues are presented here to facilitate further discussion on how best to promote pedestrian safety and access in the City of Oakland.

Design Elements

Chapter 5 identifies guidelines and elements for improving Oakland streets and paths. Rather than proposing design standards, the Pedestrian Master Plan presents these design elements to inform designers, planners, and policymakers on available design treatments and best practices for pedestrians.

The Design Elements are organized into three sections. First, the Sidewalk Guidelines section proposes minimum requirements for sidewalks and utility zones. Second, the Crossing Treatments

section explains best practices for crosswalks and corners. And third, the Traffic Calming section presents concepts for reducing motor vehicle speeds.

Implementation Plan

Chapter 6 contains the Implementation Plan identifying policies and priority projects to promote a safe and walkable city. Twenty years of projects are identified to rectify existing gaps and shortcomings in the City's pedestrian infrastructure. As part of a comprehensive planning process, this list of priority projects makes Oakland very competitive for the growing amount of transportation funding directed at pedestrian safety and livable communities. This chapter identifies staffing needs and funding sources to help ensure that these projects are managed, funded, and implemented. It also includes maps of each Council District showing the Pedestrian Route Network and the locations of priority projects.

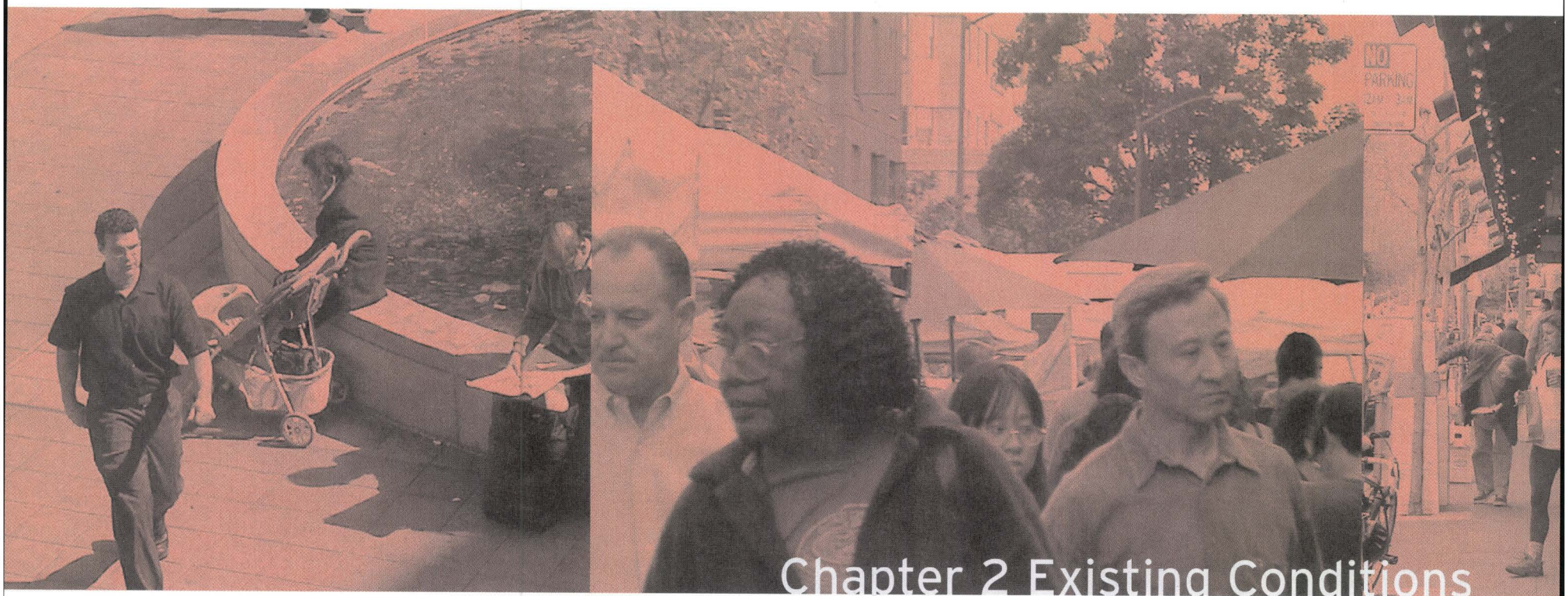
Appendices A-B: Pedestrian Route Network Survey

These appendices provide a comprehensive survey of the Pedestrian Route Network. They identify the routes that comprise the network and potential improvements to these routes. Appendix A contains the Pedestrian Route Network Survey for on-street routes. It identifies potential project components and cost estimates from which potential improvements to the route network are specified. It also explains a route context evaluation as a simple method for comparing potential improvements along the Pedestrian Route Network. Appendix B contains a survey of the City's walkways and includes a set of maps showing their locations throughout the City. These appendices provide the starting point for: (1) the development of a capital improvement program for pedestrian projects; and (2) the development of specific pedestrian improvement projects for specific street segments.

For implementation, the proposed projects would require additional review by traffic engineering and under the California Environmental Quality Act (CEQA). Furthermore, engineering judgment is necessary to determine the specific locations and features of each project.

Appendices C-F: Additional Resources

The final four appendices provide additional resources on pedestrian planning. Appendix C presents a set of street transformations that provide a long-term vision for designing streets for pedestrians. Appendix D summarizes a recommended crosswalk policy developed by the Federal Highway Administration. Appendix E introduces pedestrian level of service and Space-Syntax as two emerging tools in pedestrian planning. Lastly, Appendix F lists the publications used in writing this Plan.



Chapter 2 Existing Conditions

Above all, do not lose your desire to walk: every day I walk myself into a state of well-being and walk away from every illness; I have walked myself into my best thought, and I know of no thought so burdensome that one cannot walk away from it.

Søren Kierkegaard, Danish Philosopher

The Pedestrian Master Plan is based on a survey of the City's existing street conditions, an analysis of the City's pedestrian collision data, and an extensive community outreach process. These three data sets provide a comprehensive picture of Oakland's pedestrian opportunities and constraints.

This chapter begins by identifying the opportunities and constraints to making Oakland a more walkable city. It then examines pedestrian walking rates and pedestrian/vehicle collision data to identify pedestrian collision rates, reasons, locations, and times as well as at-risk groups. It also examines school safety, connections to transit, and education and enforcement for pedestrians. The chapter concludes by explaining the community outreach process used in gathering data and identifies the role of the Citizen's Pedestrian Advisory Committee (CPAC) and the Technical Advisory Committee (TAC) in the planning process.

Oakland's Street Grid

Oakland's downtown and vibrant neighborhoods provide the foundation for a walkable city. Oakland's street grid was laid out when walking and transit were the most common modes of transportation. Neighborhoods like Temescal, Fruitvale, Seminary, Glenview, Lakeshore, and Fairfax developed with housing and businesses clustered along streetcar lines.

These neighborhoods can be pedestrian-friendly because they were designed for people to walk from their homes to trolley stops and the surrounding shops. In neighborhoods with irregular street grids, walkways provided pedestrian access through long blocks to schools, businesses, and transit. Many of these historical routes still exist and provide practical and attractive routes for walkers.

Oakland's street grid has much variation but generally the shortest blocks are located in the oldest and most walkable areas of the city. Short blocks are a standard feature of streets platted before the development of motorized urban transportation in the late nineteenth century. Such blocks fit the scale of walking because they provide frequent places to cross and frequent choices of direction. They make it easy to reach destinations directly and provide numerous route choices that make walking interesting and enjoyable.

Opportunities

The following opportunities highlight Oakland's walkability:

- Many neighborhoods contain a mixture of homes, businesses, and public services within easy walking distance of each other.
- Short blocks in older sections of Oakland are pedestrian-friendly because they increase the number of possible walking routes and destinations.
- Old industrial areas of the City are being redeveloped as residential and live/work neighborhoods with improved pedestrian infrastructure.
- Oakland is well-served by public transit, making walking an important mode of transportation for trips across the City as well as within neighborhoods.
- Frank Ogawa Plaza, Jack London Square, and Lake Merritt are lively destinations explicitly designed for pedestrians.
- Oakland has many walkways and trails of historic and natural interest

including the Bay Trail and the Ridge Trail.

- The City's residential traffic calming program has effectively reduced motor vehicle speeds in residential neighborhoods.
- Oakland is a leader in ensuring accessible streets by providing audible pedestrian signals and curb ramps.
- The Oakland Pedestrian Safety Project has been effective in coalition-building to promote education and enforcement for pedestrian safety and access.

Constraints

The following constraints limit Oakland's walkability:

- Many arterial streets have large volumes of motor vehicle traffic which, according to the Federal Highway Administration, "can inhibit a person's feeling of safety and comfort and create a 'fence effect'" that makes crossing those streets difficult (FHWA 2002b, p. 8).
- More traffic signals are needed, particularly on long corridors with a lot of pedestrian activity.
- Some areas of the City have incomplete or inadequate sidewalks that could discourage pedestrian activity.
- Freeways are physical barriers that are rarely convenient or pleasant to walk under, over, or near.
- Intersections with freeway on- or off-ramps could create conflicts between pedestrians and drivers transitioning to or from freeway speeds.
- Overflow traffic from congested freeways puts additional pressure on surface streets in the City.
- Newer areas of the City including parts of the Oakland Hills and East Oakland do not always have sidewalks, crosswalks, short blocks, or numerous destinations within easy walking distance.
- Some street design elements like extra turn lanes, large corner radii, and frequent driveways improve motor vehicle access yet decrease pedestrian safety.
- Some older schools may need more vehicle capacity at pick-up and drop-off zones.
- Many Oakland streets lack benches, bus shelters, trees, and other street furniture that are important ingredients of a walkable city.

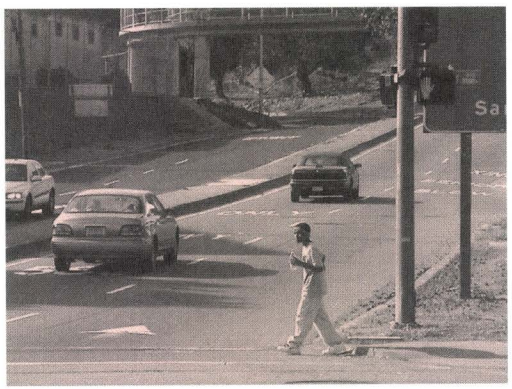
Walking Rates in Oakland

Current and accurate figures on walking rates in the City of Oakland do not exist. However the data that are available suggest that the rate of walking in Oakland is amongst the highest in the San Francisco Bay Area. Some figures are available from U.S. Census data on journey to work. Information at the County and sub-regional levels on walking rates and car-ownership is also available from the Metropolitan Transportation Commission. Compared to other areas in the region, the City of Oakland likely has more pedestrian trips because many neighborhoods are densely populated and well served by transit.

The United States Census "journey to work" statistics provide local information about modal choice for commuters. The 2000 U.S. Census recorded that 2.3% of Oaklanders walked to work. Because work trips are generally a small percentage of total walking trips, this figure is only marginally useful. This figure does not count walking trips to transit as part of the journey to work nor does it include walking trips to other destinations. For example, Figure 1 suggests that in the San Francisco Bay Region there are seven times as many home-based pedestrian trips to school as home-based pedestrian trips to work.

MODE	H.B.* WORK	H.B.* SHOP	H.B.* SOCIAL/RECREATIONAL	H.B.* SCHOOL	NON-H.B.*	OTHER PURPOSES
WALK	3%	8%	10.8%	21.5%	13.7%	9.9%

FIGURE 1 1990 REGIONAL WEEKDAY WALKING TRIPS BY PURPOSE (MTC 1994, P. 12) *H.B. = HOME BASED



Walking rates from model simulations are available at the County level. Alameda County has the second highest walking rate when compared to the other 8 counties in the San Francisco Bay Region (Figure 2).

Because the City of Oakland has different characteristics than much of Alameda County, walking rates for the City are likely higher than rates for the County as a whole.

Rates of car ownership are useful for considering the differences between the City of Oakland (combined with the City of Alameda) and the County of Alameda. Lower car ownership rates in Oakland suggest higher rates of walking and transit ridership. Figure 3 compares car ownership rates for selected sub-regions of the nine county San Francisco Bay Area.

Taken as a whole, these figures suggest that the City of Oakland has one of the highest rates of walking for all cities in the nine-county San Francisco Bay Region. At the county level, Alameda County has the second highest rate following San Francisco County. Within Alameda County, the City of Oakland's dense development patterns, good transit service, and low levels of car ownership suggest that walking rates for the City are higher than that of the County. As discussed in greater detail below, the largest shares of walking trips in the City of Oakland are likely to schools and to transit.

COUNTY	WALKING TRIPS AS % OF TOTAL TRIPS
ALAMEDA	12.0%
CONTRA COSTA	5.8%
MARIN	4.6%
NAPA	5.3%
SAN MATEO	8.4%
SANTA CLARA	5.7%
SAN FRANCISCO	21.3%
SOLANO	5.5%
BAY AREA AVERAGE	9.3%

FIGURE 2 WALKING TRIPS AS A PERCENTAGE OF TOTAL TRIPS BY COUNTY (MTC 2001B, P. 95)

GEOGRAPHICAL AREA	ZERO CAR HOUSEHOLDS	1-CAR HOUSEHOLDS	MULTIPLE CAR HOUSEHOLDS	AVG. CARS/ HOUSEHOLD
OAKLAND/ALAMEDA	19.3%	40.7%	40.0%	1.375
(HOUSEHOLDS)	(32,139)	(67,774)	(66,609)	(166,522)
ALAMEDA COUNTY	10.8%	32.5%	56.7%	1.745
BERKELEY/ALBANY	16.9%	46.6%	36.5%	1.323
SAN FRANCISCO	28.1%	40.4%	31.5%	1.134
BAY AREA REGION	8.9%	29.5%	61.7%	1.847

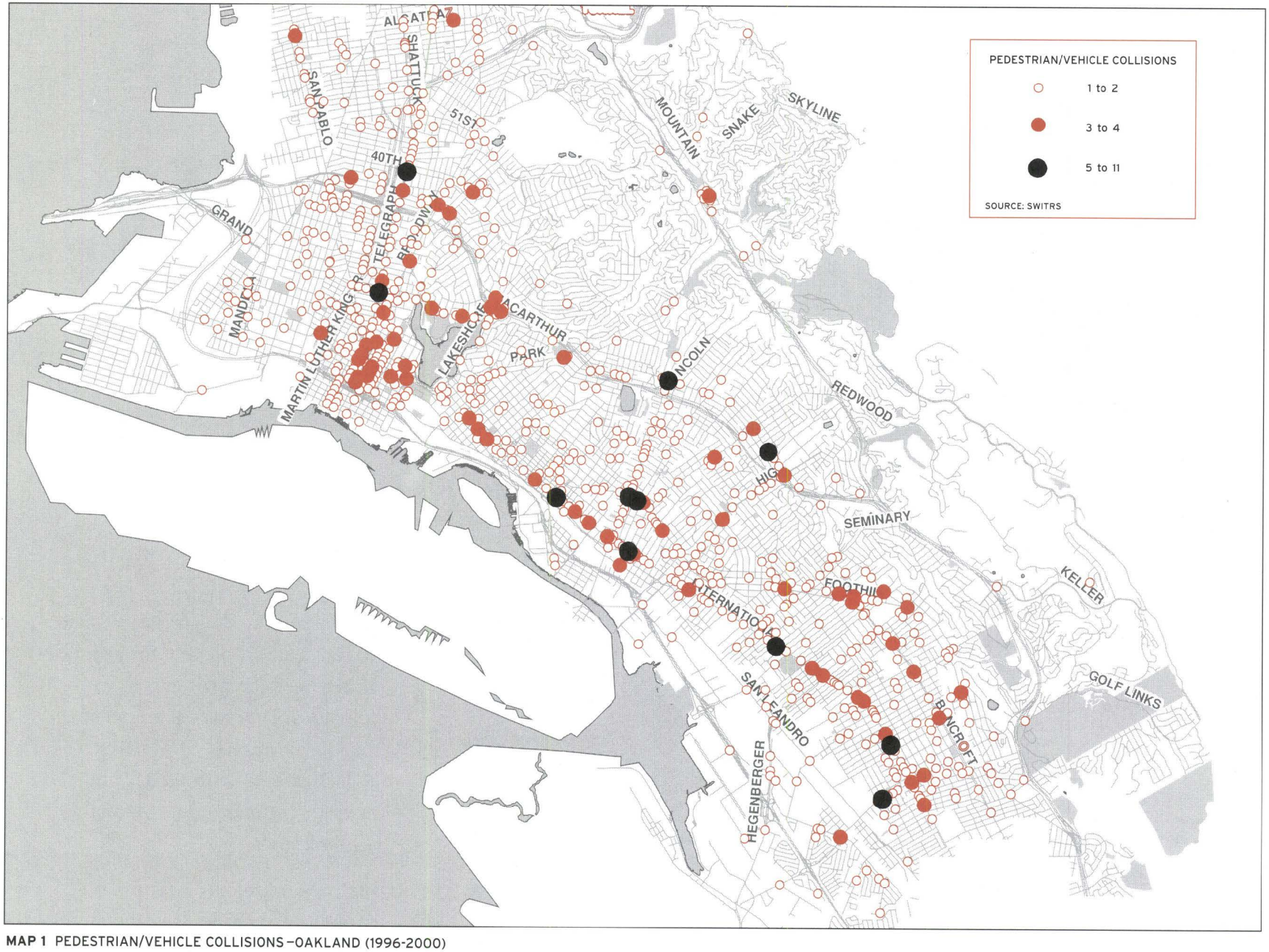
FIGURE 3 CAR OWNERSHIP IN 2000 FOR OAKLAND/ALAMEDA VERSUS OTHER AREAS (MTC 2001A, PP. 49 - 54)

Pedestrian/Vehicle Collision Data

Pedestrians are the most vulnerable road users and collisions with motor vehicles often result in serious injury or death. While pedestrian/vehicle collisions represent 4% of total collisions in Oakland, pedestrian fatalities comprise 39% of the total number of traffic fatalities in the City of Oakland. This figure is three times the national average of 13% (Alameda County Congestion Management Agency 2001). These numbers may be explained in part by Oakland having more pedestrians than other cities.

The following data are primarily from the Statewide Integrated Traffic Records System (SWITRS), a database of collision records collected by local police throughout California and the California Highway Patrol (CHP).

While useful for locating problem areas, collision maps tend to highlight those areas where large numbers of people walk. For example, areas like Chinatown and International Boulevard have high pedestrian volumes and high numbers of pedestrian collisions. In contrast, collision maps do not identify those areas where people avoid walking because they are perceived as too dangerous for pedestrians. For a comprehensive analysis, feedback from the community outreach process described in the following section balances this shortcoming of collision data.



MAP 1 PEDESTRIAN/VEHICLE COLLISIONS – OAKLAND (1996-2000)

Pedestrian/Vehicle Collision Data

Rates of Pedestrian Collisions

On average, a pedestrian/vehicle collision occurs each day in Oakland. The number of collisions has decreased slightly in recent years. Possible explanations for this decline include the extensive education, engineering, and enforcement activities of the City of Oakland over the last five years. In 2000 there were a total of 312 collisions involving pedestrians – down 12% from 353 collisions in 1996. Pedestrian injury collisions declined from 292 in 1996 to 240 in 2000 – a 18% drop. The number of pedestrian fatality collisions fell from 8 in 1996 to 6 in 2000 – a 25% reduction. Over this five year period, 2% of all pedestrian/motor vehicle collisions resulted in a pedestrian fatality. Total pedestrian collisions for 2000 may be artificially low because the Oakland Police Department did not file reports on non-injury collisions from October 2000 to October 2001.

	1996	1997	1998	1999	2000	TOTAL	% TOTAL
INJURY	292	277	309	286	240	1404	77.7%
NON-INJURY	53	73	85	90	66	367	20.3%
FATAL	8	9	8	5	6	36	2.0%
TOTAL	353	359	402	381	312	1807	100%

FIGURE 4 PEDESTRIAN COLLISIONS TABLE (1996-2000)

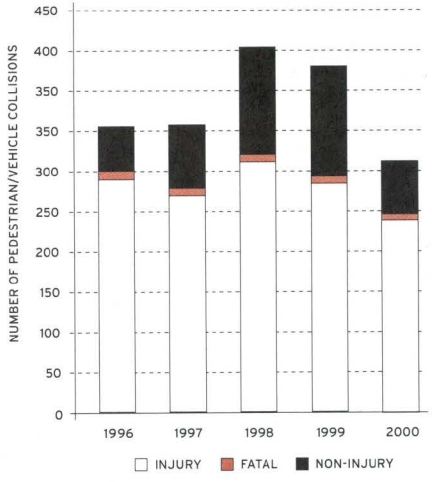


FIGURE 5 PEDESTRIAN COLLISIONS CHART, (1996-2000)

Reasons for Pedestrian Collisions

As Figure 6 demonstrates, vehicle drivers are responsible for approximately 51% of pedestrian/vehicle collisions. Pedestrians are responsible for approximately 31% of such collisions and in about 18% of the cases the primary factor is "other" or "unknown."

Violation of the pedestrian right-of-way by a motor vehicle driver is the most common cause of pedestrian/vehicle

collisions. Other common driver movements include unsafe starting or backing and unsafe speed. Furthermore, 22.4% of pedestrian/vehicle collisions are hit-and-run collisions.

When pedestrians are at fault the motorist is generally going straight. When the motorist is at fault it is generally during a turning movement. Figure 8 shows that 60% of vehicles are proceeding straight when involved in a pedestrian/vehicle collision. Left-turn vehicle movements account for 15% while right-turn vehicle movements account for 10% of the total. For collisions with the pedestrian at fault, 90% involve drivers proceeding straight as the movement preceding collision. For collisions with the driver at fault, the majority involve driver turning movements as the movement preceding collision.

Pedestrian violations are tabulated as a single category in the data so it is not possible to distinguish the particular pedestrian actions that cause collisions. Some well-known pedestrian violations include failing to obey traffic signals and jaywalking (crossing outside of a legal crosswalk).

PRIMARY COLLISION FACTOR	NUMBER	% OF TOTAL
PEDESTRIAN		
PED VIOLATIONS	513	28.4
PED OR OTHER UNDER INFLUENCE	27	1.5
AUTO RIGHT-OF-WAY VIOLATION	18	1.0
SUBTOTAL	**558**	**30.9**
DRIVER		
PED RIGHT-OF-WAY VIOLATION	625	34.6
UNSAFE SPEED	70	3.9
UNSAFE PARKING/BACKING	69	3.8
IMPROPER TURNING	54	3.0
DRIVING UNDER THE INFLUENCE (DUI)	34	1.9
IMPROPER PASSING	25	1.4
OTHER HAZARDOUS MOVEMENTS	19	1.1
WRONG SIDE OF ROAD	12	0.7
OTHER IMPROPER DRIVING	2	0.1
HAZARDOUS PARKING	2	0.1
IMPEDING TRAFFIC	1	0.1
SUBTOTAL	**913**	**50.5**
OTHER		
UNKNOWN	280	15.5
TRAFFIC SIGNAL/SIGN	41	2.3
OTHER THAN DRIVER OR PED	15	0.8
SUBTOTAL	**336**	**18.6**
TOTAL	1807	100.0

FIGURE 6 PRIMARY COLLISION FACTORS TABLE

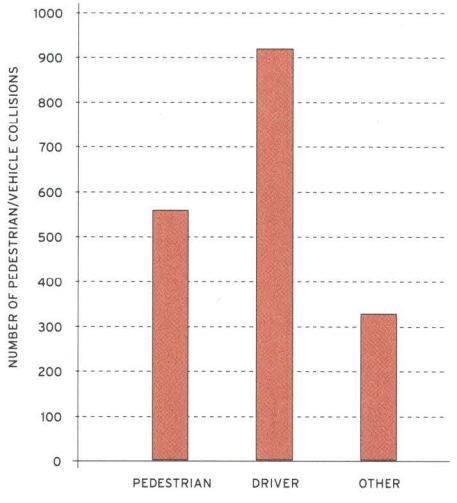


FIGURE 7 PRIMARY COLLISION FACTORS CHART

Pedestrian/Vehicle Collision Data

Half of pedestrian/vehicle collisions occur when the pedestrian is in a crosswalk (marked or unmarked). Accounting for 33% of the total, the next most frequent pedestrian action in collisions is crossing not in a crosswalk. For collisions with pedestrians violating motor vehicle rights-of-way, pedestrians were not in crosswalks 74% of the time. For collisions with drivers violating pedestrian rights-of-way, pedestrians are in crosswalks 90% of the time. By age, seniors are the most likely to be hit by a vehicle while in a crosswalk. Conversely, children are the most likely to be hit by a vehicle while not in a crosswalk.

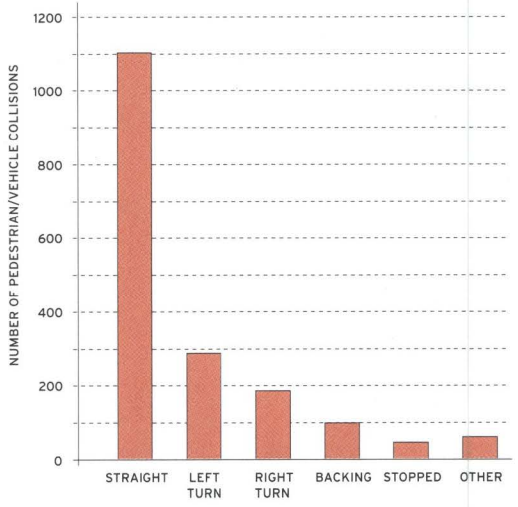


FIGURE 8 MOVEMENT PRECEDING COLLISION

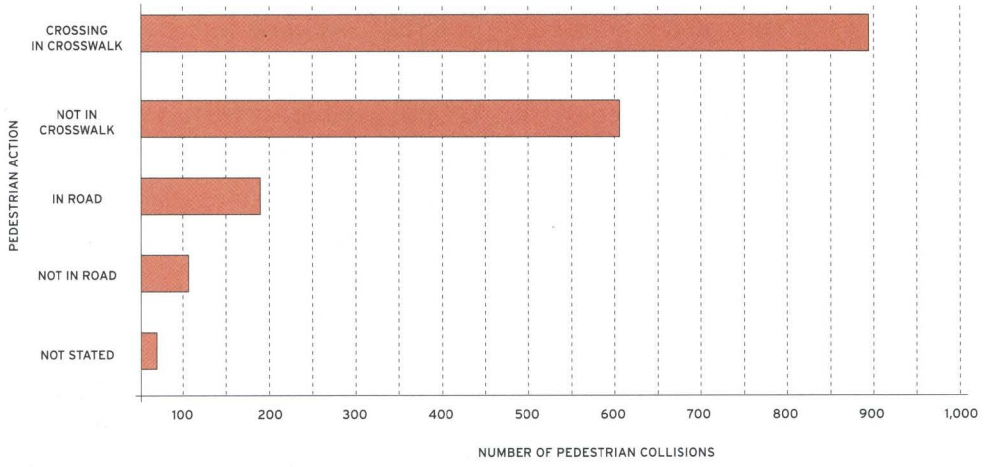


FIGURE 9 PEDESTRIAN ACTION IN COLLISION

Driver Speed and Pedestrian Collisions

Data on driver speed is difficult to obtain and this difficulty may explain why speeding is infrequently identified as a primary collision factor. According to the Oakland Police Traffic Enforcement Division, speed is difficult to determine because accurate estimates depend upon forensic analysis or detailed witness statements. According to National Highway Traffic Safety Administration data including both vehicle collisions and pedestrian collisions, "In 1997, speeding was a contributing factor in 30% of all fatal crashes." (FHWA 2002b, p. 13).

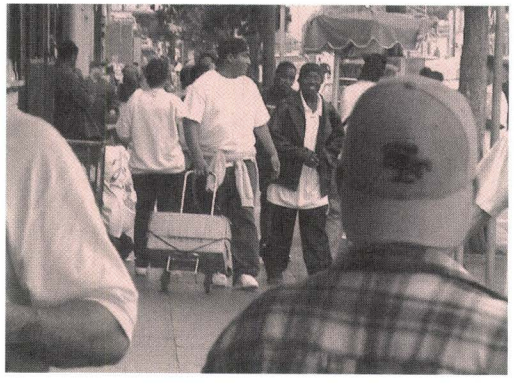
Higher speeds increase the severity of collisions between vehicles and pedestrians. One study identified an 85% chance of pedestrian fatality at 40mph, which declines to 45% at 30mph and 5% at 20mph (FHWA 2002b, p. 13). The Federal Highway Administration explains, "At higher speeds, motorists are less likely to see a pedestrian, and even less likely to

actually stop in time to avoid a crash. At a mere 31 mph, a driver will need about 200 ft. to stop which may exceed available sight distance; that number is halved at 19 mph" (FHWA 2002b, p. 8).

Location of Pedestrian Collisions

Most pedestrian/vehicle collisions occur in downtown, in Chinatown, and along arterial streets. Both downtown and Chinatown have high levels of pedestrian activity and high levels of motor vehicle traffic on multi-lane, one-way streets. Many signalized intersections in this area do not have pedestrian signal heads to inform pedestrians when it is safe to cross. The city is in the process of installing pedestrian signal heads for all existing traffic signals.

The following figures show the intersections with the greatest number of pedestrian collisions, senior pedestrian collisions, and child pedestrian collisions, respectively. For intersections



with the most pedestrian collisions, seven out of eleven of those intersections have traffic signals. For the senior pedestrian collisions, four of

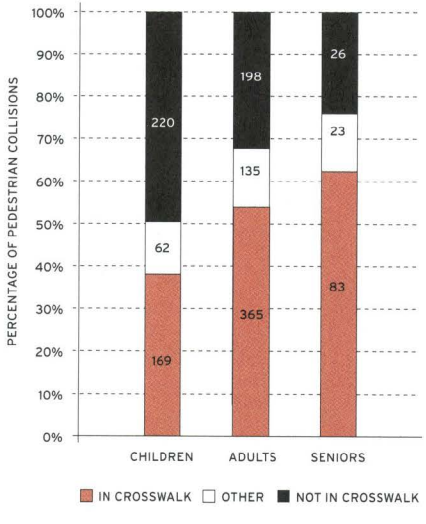


FIGURE 10 PEDESTRIAN ACTION IN VEHICLE COLLISION (BY AGE GROUP)

RANK	INTERSECTION	COLLISIONS	TRAFFIC SIGNAL
1	INTERNATIONAL BOULEVARD / 64TH AVENUE	11	NO
2	FRUITVALE AVENUE / FOOTHILL BOULEVARD	11	YES
3	38TH AVENUE / MACARTHUR BOULEVARD	9	YES
4	7TH STREET / FRANKLIN STREET	9	NO
5	INTERNATIONAL BOULEVARD / 90TH AVENUE	8	YES
6	14TH STREET / MADISON STREET	8	YES
7	FRUITVALE AVENUE / MACARTHUR BOULEVARD	7	YES
8	INTERNATIONAL BOULEVARD / 35TH AVENUE	7	YES
9	40TH STREET / TELEGRAPH AVENUE	7	YES
10	77TH AVENUE / BANCROFT AVENUE	7	NO
10	D STREET / 98TH AVENUE	7	NO

FIGURE 11 TOP 10 RANKED INTERSECTIONS BY NUMBER OF PEDESTRIAN COLLISIONS (1996-2000)

Pedestrian/Vehicle Collision Data

the eleven intersections have traffic signals and six of out of the eleven intersections are located within 1/4 mile of a senior center. For child pedestrian collisions, six out of ten intersections have traffic signals and eight of the ten intersections are located within 1/4 mile of a school.

The pedestrian safety problem is especially severe on Oakland's arterial streets. According to the Alameda Countywide Bicycle Plan, International Boulevard, Foothill Boulevard, and MacArthur Boulevard have the highest number of pedestrian collisions for all streets in the county. Approximately 10% of Oakland's pedestrian collisions take place along International Boulevard alone. Figure 14 gives the top ten pedestrian/vehicle collision

RANK	INTERSECTION	COLLISIONS	TRAFFIC SIGNAL	SENIOR CENTER (WITHIN 1/4 MILE)
1	28TH STREET/BROADWAY	4	NO	YES
2	38TH AVENUE/MACARTHUR BOULEVARD	3	YES	YES
3	FOOTHILL BOULEVARD/FRUITVALE AVENUE	3	YES	YES
4	108TH AVENUE/BANCROFT AVENUE	2	NO	NO
5	E. 16TH STREET/FRUITVALE AVENUE	2	NO	YES
6	24TH STREET/MARKET STREET	2	NO	NO
7	40TH STREET/TELEGRAPH AVENUE	2	YES	NO
8	41ST STREET/TELEGRAPH AVENUE	2	NO	NO
9	57TH AVENUE/BANCROFT AVENUE	2	NO	YES
10	5TH AVENUE/10TH STREET	2	YES	YES

FIGURE 12 TOP 10 RANKED INTERSECTIONS FOR SENIORS (1996-2000)

RANK	INTERSECTION	COLLISIONS	TRAFFIC SIGNAL	SCHOOL (WITHIN 1/4 MILE)
1	33RD STREET/PARK BOULEVARD	4	NO	YES
2	57TH AVENUE/BANCROFT AVENUE	4	NO	NO
3	11TH STREET/JACKSON STREET	3	YES	YES
4	18TH STREET/MARKET STREET	3	YES	YES
5	64TH AVENUE/FOOTHILL BOULEVARD	3	NO	YES
6	68TH AVENUE/FOOTHILL BOULEVARD	3	NO	YES
7	82ND AVENUE/BANCROFT AVENUE	3	YES	YES
8	BROOKDALE AVENUE/HIGH STREET	3	YES	YES
9	MACARTHUR BOULEVARD/HIGH STREET	3	YES	NO
10	INTERNATIONAL BOULEVARD/98TH AVENUE	2	YES	YES

FIGURE 13 TOP 10 RANKED INTERSECTIONS FOR CHILDREN (1996-2000)

streets over the total length of the street in the City of Oakland. Figure 15 gives the top ten pedestrian/vehicle collision streets per road mile of the street in the City of Oakland.

At-Risk Groups

By age group, children and seniors are the most likely to be involved as a pedestrian in a pedestrian/vehicle collision. Male drivers are over-represented by sex in pedestrian/vehicle collisions. Furthermore, younger drivers are over-represented by age in pedestrian/vehicle collisions. As pedestrians, African-Americans and Hispanics are at an elevated risk of injury.

While data are unavailable for pedestrian collision rates amongst people with disabilities, they are widely recognized as an at-risk group.

From 1996 to 2000, 1446 injury records specify the pedestrian's age. For 37% of these, the pedestrians were children (17 years and under) even though they comprised 25.0%

	STREET	NUMBER OF PEDESTRIAN/VEHICLE COLLISIONS (1996-2000)
1	INTERNATIONAL BOULEVARD	174
2	MACARTHUR BOULEVARD	125
3	FOOTHILL BOULEVARD	96
4	BROADWAY	60
5	TELEGRAPH AVENUE	57
6	FRUITVALE AVENUE	50
7	BANCROFT AVENUE	45
8	GRAND AVENUE (TIE)	43
9	12TH STREET (TIE)	43
10	WEBSTER STREET	38

FIGURE 14 TOP 10 RANKED VEHICLE/COLLISION STREETS BY TOTAL NUMBER OF COLLISIONS

	STREET	NUMBER OF PEDESTRIAN/VEHICLE COLLISIONS PER ROAD MILE (1996-2000)
1	INTERNATIONAL BOULEVARD	26.2
2	FRUITVALE AVENUE	20.1
3	FRANKLIN STREET	19.8
4	FOOTHILL BOULEVARD	18.0
5	TELEGRAPH AVENUE	17.5
6	BROADWAY	15.5
7	35TH AVENUE	13.4
8	HIGH STREET	13.3
9	GRAND AVENUE	13.2
10	WEBSTER STREET	12.8

FIGURE 15 TOP 10 RANKED COLLISION STREETS BY NUMBER OF COLLISIONS PER ROAD MILE

Pedestrian/Vehicle Collision Data

of the City's population (U.S. Census 2000). That children suffer the highest rates of pedestrian injury is generally attributed to the risk taking behavior of youth and, for those under 10 years of age, a cognitive inability to judge the speed and danger of motor vehicle traffic.

Children tend to get hit near schools. They are also over-represented in collisions where the pedestrian was crossing not in a crosswalk. In fact, 56% of pedestrian violations are committed by youth even though they represent 25% of the population.

Seniors (65 years and over) suffer the highest rates of pedestrian fatality accounting for 24% of the fatal pedestrian/motor vehicle collisions. However, Oakland seniors comprised 10.5% of the population (U.S. Census 2000). Seniors tend to get hit near their homes and senior centers. Of all age groups, seniors are the most likely to be hit in crosswalks. Senior fatalities are often attributed to the frailty of older age.

People of color are disproportionately represented in pedestrian/vehicle collisions. In Alameda County, African-Americans are 2.5 times more likely than Caucasians to be hospitalized or killed as a pedestrian in a collision. The rates of pedestrian hospitalization and fatality are 30.9 per 100,000 for African-Americans and 12.3 per 100,000 for Caucasians (Center for Third World Organizing). African-Americans are 50% more likely than Caucasians to be killed in a pedestrian/vehicle collision. The rates of pedestrian fatality are 11.2 per 100,000 for African-Americans and 7.4 per 100,000 for Caucasians (Alameda County 2000).

AGE GROUP	0-4	5-9	10-13	14-17	18-24	25-34	35-44	45-54	55-64	65+	TOTAL
INJURY	119	193	114	104	131	176	208	174	83	144	1446
FATALITY	2	1	0	0	3	1	5	11	5	9	37
% OF INJURIES	8.2%	13.3%	7.9%	7.2%	9.1%	12.2%	14.4%	12.0%	5.7%	10.0%	-
% OF FATALITIES	5.4%	2.7%	0.0%	0.0%	8.1%	2.7%	13.5%	29.7%	13.5%	24.3%	-
% OF POPULATION	7.1%	7.5%	5.4%	4.9%	9.6%	18.1%	15.8%	13.5%	7.4%	10.5%	-

FIGURE 16 PEDESTRIAN INJURIES/FATALITIES BY AGE GROUP (1996-2000)

In the City of Oakland, the density of pedestrian/vehicle collisions is greatest in minority and low-income neighborhoods including Chinatown, the Fruitvale, and along International and Foothill Boulevards. These neighborhoods are some of the densest in the City and have high levels of pedestrian activity and transit ridership. The SWITRS database, which is the primary source for this data analysis, does not record race or ethnicity in pedestrian/vehicle collisions.

Time of Pedestrian Collisions

Overall, pedestrian/vehicle collisions correspond to times of high pedestrian and vehicle volumes. The risk of pedestrian injury rises during the day and peaks during the evening rush hour. The risk also rises, though less dramatically, to a peak on Friday. Peak collision times for children are before and after school hours. Peak collision times for adults are the morning and evening rush hours. For seniors, collisions occur at relatively constant levels throughout the day with a small peak during the morning rush hour. Fewer collisions occur on weekends than during the week.

Collisions with pedestrians occur year round at consistent levels with a slight rise during the winter months from October to February.

Collisions Between Pedestrians and Bicyclists

While bicycling on the sidewalk is an issue for pedestrians, no pedestrian/bicyclist collisions in Oakland were recorded in the SWITRS database from 1996 to 2000. Given the light weights and typically low speeds of bicyclists compared to motor vehicles, this issue may be more annoyance than hazard to pedestrians when compared to the frequency and risk of pedestrian/motor vehicle collisions.

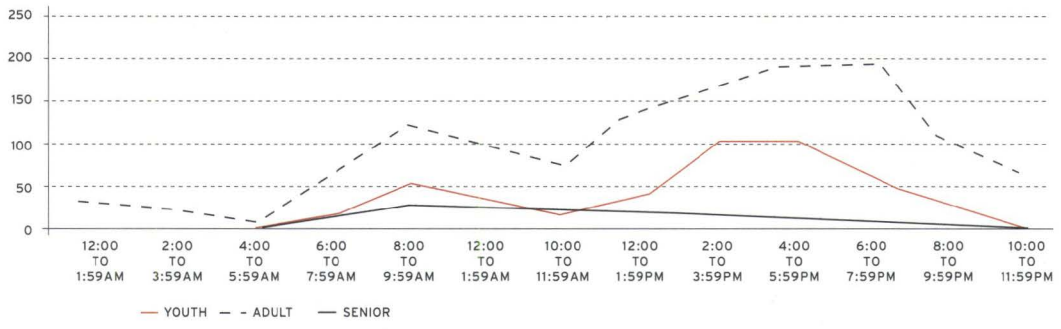


FIGURE 17 PEDESTRIAN COLLISIONS BY TIME OF DAY

Pedestrian/Vehicle Collision Data

CITY/ POPULATION	FATALITIES PER 100,000	INJURIES PER 100,000
OAKLAND 399,900	3.0	85.5
BERKELEY 108,900	1.7	129.7
LONG BEACH 452,900	2.3	79.1
LOS ANGELES 3,781,500	3.0	78.0
RICHMOND 93,800	1.3	50.5
SACRAMENTO 396,200	2.8	62.7
SAN FRANCISCO 790,500	3.5	134.2
SAN JOSE 909,100	1.9	45.8

FIGURE 18 PEDESTRIAN INJURY AND FATALITY FOR SELECTED CALIFORNIA CITIES (AVERAGES OF SWITRS 1995-1999 ANNUAL REPORTS)

Oakland Compared to the Rest of California

Rates of pedestrian/vehicle collisions in Oakland are higher than statewide averages. In 1999, 19.1% of injury and fatality collisions in Oakland involved a pedestrian, compared to 8.0% statewide. That same year, one in 1,292 Oaklanders was a pedestrian injury or fatality compared to one in 2,700 Californians (Institute of Transportation Studies 2001).

In the State of California from 1995 to 1999, Oakland had the second highest rate of pedestrian fatalities after San Francisco. Oakland had the third highest rate of pedestrian injuries after San Francisco and Berkeley. These higher rates of pedestrian injury and fatality are explained in part by cities like Oakland, San Francisco, and Berkeley having more pedestrians than other cities in the State.

School Safety

The Oakland Unified School District enrolls 53,000 students in approximately 100 schools, of which 61 are elementary schools. Many of these schools are located on or near arterial streets. At the district's largest elementary schools, approximately 75% of children walk to school.

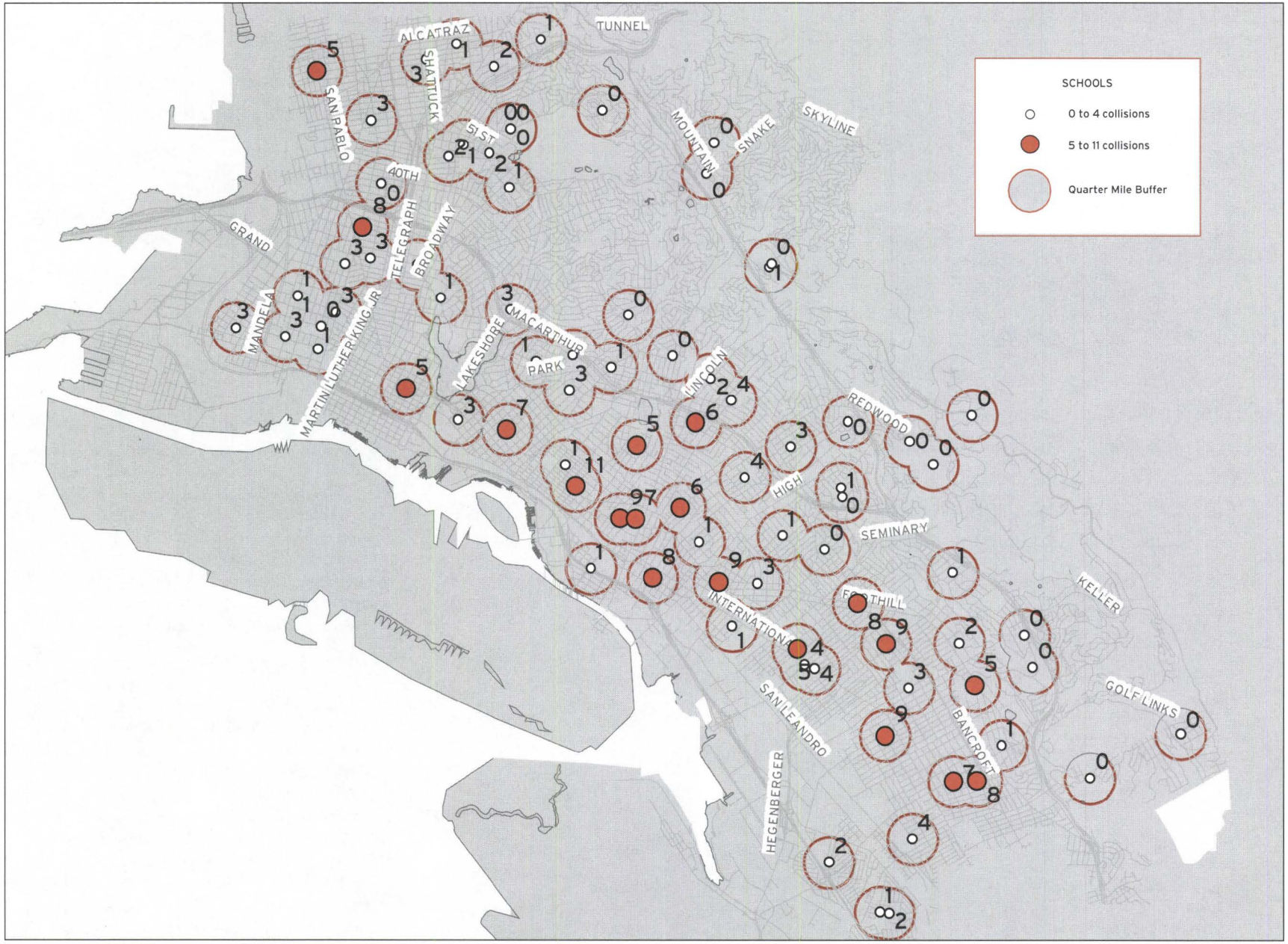
Assuming an average walking rate of 50% for students, Oakland public schools would generate 53,000 weekday pedestrian trips. For example, Hawthorne Elementary is the largest elementary school in the district with 1179 students enrolled in the 2001–2002 school year. Three-quarters of those children walking means approximately 875 walking trips to and from school, or 1,750 pedestrian trips per weekday. While exact numbers are unavailable, walking rates are expected to be much lower for schools in the Oakland Hills. Similarly, the total number of weekday pedestrian trips will be comparatively small for schools with significantly fewer students. At elementary schools, many parents also walk with their children.

Figure 20 lists the public schools with the greatest number of nearby child pedestrian/vehicle collisions. All of the collisions listed involved pedestrians of 17 years or under and occurred within 1/4 mile of the school. There may be some double counting of collisions because of overlap in the 1/4 mile area around schools, which is not corrected for in this document.

In spring 2002, the Transportation Services Division began examining the existing conditions at these schools to identify possible pedestrian safety improvements. The following chapters on the Pedestrian Route Network and Policy Recommendations provide additional information on improving school safety in general.

RANK	SCHOOL	ADDRESS	NUMBER OF CHILD PEDESTRIAN/VEHICLE COLLISIONS OVER 5 YEARS WITHIN 1/4 MILE
1	GARFIELD YEAR ROUND ELEMENTARY SCHOOL	1650 22ND AVENUE	11
2	HAWTHORNE YEAR ROUND ELEMENTARY SCHOOL	1700 28TH AVENUE	9
3	HIGHLAND YEAR ROUND ELEMENTARY SCHOOL	8521 A STREET	9 (TIE)
4	FREMONT HIGH SCHOOL	4610 FOOTHILL BOULEVARD	9 (TIE)
5	MARKHAM ELEMENTARY SCHOOL	7220 KRAUSE AVENUE	9 (TIE)
6	E MORRIS COX ELEMENTARY SCHOOL	9860 SUNNYSIDE STREET	8
7	DEWEY HIGH SCHOOL	3709 E. 12TH STREET	8 (TIE)
8	HOOVER ELEMENTARY SCHOOL	890 BROCKHURST STREET	8 (TIE)
9	FRICK JUNIOR HIGH SCHOOL	2845 64TH AVENUE	8 (TIE)
10	FRANKLIN YEAR ROUND ELEMENTARY SCHOOL	915 FOOTHILL BOULEVARD	7
10	CHARLES WHITTON ELEMENTARY SCHOOL	2920 E. 18TH STREET	7 (TIE)
10	ELMHURST MIDDLE SCHOOL	1800 98TH AVENUE	7 (TIE)

FIGURE 19 TOP TEN RANKED CHILD PEDESTRIAN/VEHICLE COLLISION SCHOOLS (1996-2000)



MAP 2 CHILD PEDESTRIAN/VEHICLE COLLISIONS NEAR SCHOOLS–OAKLAND (1996-2000)

Connections to Transit

Transit is a significant source of pedestrian trip generation. The Alameda-Contra Costa Transit District (AC Transit) and the Bay Area Rapid Transit District (BART) are the major providers of transit service in the City of Oakland. AC Transit's five largest bus lines travel along Oakland's major corridors and there are numerous smaller lines that cross all areas of the City. BART serves Oakland with eight passenger rail stations.

In Oakland, approximately 148,000 pedestrian trips on weekdays are to or from AC Transit buses.* People using Oakland BART stations may account for another 57,000 pedestrian trips.** These numbers are significant because many surveys on transportation mode share do not count how people get to and from transit. To suggest where those trips occur, Figure 21 identifies the five largest bus lines in Oakland and their daily patronage. Each of

BUS LINE (CORRIDOR)	1998 DAILY PATRONAGE
40/40L/43 TELEGRAPH/SHATTUCK/FOOTHILL/BANCROFT	22,000
51 COLLEGE/UNIVERSITY/BROADWAY/ALAMEDA	17,000
57/58 MACARTHUR	19,000
72/72L/73 SAN PABLO	13,000
82/82L E. 14TH/INTERNATIONAL	22,500
5 LINE TOTAL	93,500
SYSTEM TOTAL	**206,000**
% OF SYSTEM TOTAL	**45%**

FIGURE 20 AC TRANSIT DAILY RIDERS, TRUNK LINES (AC TRANSIT 2002)

* The number of 148,000 pedestrian trips is based on weekday boardings and alightings for AC Transit's Central and East Oakland planning zones (AC Transit Boarding and Alighting Survey, Fall 1997 – Winter 1998). Total pedestrian trips were computed using AC Transit's 1993 systemwide on-board survey that found 74.0% of respondents walked to the bus and 66.5% of respondents walked from the bus. The total figure may be slightly inflated because the Central Oakland planning zone includes Piedmont and Emeryville. On the other hand, the figure may be slightly deflated because it does not include pedestrian trips to or from transbay buses.

** Data on walking mode share to and from BART stations in the City of Oakland is not available. The number of 57,000 pedestrian trips is a rough estimate based on the following two assumptions. First, it assumes that average weekday entrances and exits to the BART system in the City of Oakland are approximately equal. This assumption suggests that there are 114,000 entrances to and exits from the BART system in Oakland. Second, it assumes that each BART rider will be a pedestrian on one end of her or his trip. This assumption suggests that half of all entrances and exits – 57,000 – will be pedestrian trips.

these corridors is identified as a major pedestrian route in the Pedestrian Route Network described in Chapter 3. Figure 21 provides average weekday exits and the walking mode share for AM peak entrances at each BART station in Oakland. For the stations in downtown Oakland, the pedestrian mode share for AM peak exits is likely much higher than for AM peak entrances.

BART STATIONS	AVERAGE WEEKDAY EXITS	WALKING MODAL SHARE (AM PEAK ENTRANCES)	PEDESTRIAN CONDITIONS
12th Street	12,510	27%	Downtown location - needs improved access under Interstate 880 to Jack London District.
19th Street	8,327	46%	Downtown location - needs crossing improvements along Broadway and 20th Street.
Coliseum	6,854	5%	Low density of surrounding land uses does not support pedestrian activity. Sidewalks are absent on north side of San Leandro Street. San Leandro is a wide and fast street that is not pleasant to walk along or cross.
Fruitvale	8,217	10%	The Fruitvale Transit Village Plan is addressing access issues to the Fruitvale BART station. Current conditions include unpleasant access through a parking lot via 34th Street.
Lake Merritt	4,655	27%	Downtown location - needs improved access under Interstate 880 to Jack London District.
MacArthur	6,527	24%	Needs improved connections under Highway 24 to the west side and Martin Luther King Jr. Way. Access from Telegraph Avenue via 40th Street is hazardous. Collisions have occurred at illegal mid-block crossing on 40th.
Rockridge	4,916	29%	This station is integrated into the surrounding land uses. Access for pedestrians is excellent. One-way streets surrounding the station area may encourage speeding.
West Oakland	4,979	9%	Low density of surrounding land uses does not support a large share of pedestrian activity. 7th Street is a multi-lane street that is difficult to cross due to large volumes of car and truck traffic and infrequent traffic signals.
Oakland Total	56,985		

FIGURE 21 BART DAILY RIDERS, OAKLAND STATIONS (BART 2000)

Education and Enforcement

The Oakland Pedestrian Safety Project (OPSP) is responsible for pedestrian safety education in the City of Oakland. Formed in 1995, the OPSP addresses pedestrian safety by building coalitions between City staff from the Public Works Agency, Community and Economic Development Agency, Police and Fire Services, Life Enrichment Agency as well as representatives of the Oakland Children's Hospital and other public health agencies and community representatives. Beginning in 2000, the OPSP was funded by a two-year, $600,000 grant from the State Office of Traffic Safety.

OPSP emphasizes the "three E's" of pedestrian injury prevention: Education, Engineering, and Enforcement. The major educational activities of the OPSP are:

- Walk a Child to School Day (annual event)
- Pedestrian Safety Week (annual event)

- Safe Moves Town (pedestrian safety training for children)
- public relations campaigns (including "It's Our Town, Let's Slow it Down")

The Oakland Police Department (OPD) works in conjunction with the OPSP to target enforcement of laws that promote pedestrian safety. OPD pedestrian safety programs include the following:

- pedestrian right-of-way enforcement ("pedestrian stings")
- pedestrian violation enforcement (jaywalking)
- data checklist of pedestrian collision information data (providing additional data on pedestrian collisions collected by officers)

The perception of criminal activity in streets is a deterrent to pedestrian activity. In addition to the regular beat operations of the OPD, the City of Oakland developed the Safe Walks to School program through the Office of the City Manager to protect children from assault when walking to and from school. The Safe Walks to School program is funded from allocations of Community Development Block Grant funds through Community Development District Boards.

The Safe Walks to School program places site monitors along the most heavily traveled streets of selected schools during the hours when children are present. Locations for the Safe Walks to School program were selected by rates of criminal activity affecting youth and truancy rates. Initiated in 2000-2001 school year, the program is currently in operation at five Oakland Public Schools.

Community Outreach

The community outreach process for the Pedestrian Master Plan consisted of community presentations plus monthly meetings throughout the two-year planning process of the Citizen's Pedestrian Advisory Committee (CPAC) and the Technical Advisory Committee (TAC).

Community Outreach Presentations

The Oakland Pedestrian Safety Project (OPSP) conducted 70 community presentations reaching 1,750 Oaklanders during the planning process. Members of the CPAC and staff of OPSP brought citywide collision maps to Neighborhood Crime Prevention Councils (NCPCs) and community groups throughout the City. Citizens identified areas and issues of concern through these outreach efforts. The City Commissions on Aging and Disability and the Public Safety Committee of the City Council were additional sources of input.

The community meetings identified the following two major issues throughout the city:

- safety walking along and crossing major streets
- safety walking to and around schools

Regardless of the particular neighborhood, the overwhelming proportion of community feedback identified crossing streets with two or more lanes in each direction as a major obstacle to safe and comfortable walking. This issue speaks directly to the balancing act between accommodating vehicles traveling through a neighborhood and accommodating pedestrians within a neighborhood. Second, community groups identified the safety of routes to school and safety along the perimeter of schools including drop off and pick up areas. In particular, large numbers of parents driving children to school create hazardous conditions for kids. *These two issues regarding schools and major streets are directly related because community concern is often greatest where routes to school cross wide streets.*

"At the core...is the pedestrian. Pedestrians are the catalyst, which makes the essential qualities of communities meaningful. They create the place and time for casual encounters and the practical integration of diverse places and people. Without the pedestrian, a community's common ground - its parks, sidewalks, squares and plazas, become useless obstructions to the car. Pedestrians are the lost measure of a community, they set the scale for both center and edge of our neighborhoods."

Peter Calthorpe

Community Outreach

The following list explains other issues identified in community meetings as common concerns:

Crossing Issues

- Streets with large volumes of motor vehicles are difficult to cross.
- Many busy pedestrian areas don't have frequent enough crossings.
- Streets with many lanes are difficult to cross because of their width.
- Drivers often do not yield for pedestrians at crosswalks.
- Traffic signals do not provide enough crossing time for families, seniors, and persons with disabilities.
- Local streets are dangerous to cross when used as "cut-through" routes by drivers.

Enforcement

- Speeding cars are a problem on both one-way and multi-lane streets.
- Speeding cars entering and exiting freeways threaten pedestrian safety.
- Speeding buses are a problem.
- Double-parked vehicles block sight lines between pedestrians and drivers.
- Cars parked on sidewalks create hazards by forcing pedestrians into the street.

School Safety Issues

- Residents are concerned about drivers failing to yield to pedestrians in school zones.
- Drivers do not always obey stop signs and crossing guards in school zones.
- Some streets near schools are missing sidewalks.
- Traffic moves too fast near many schools.
- Children do not understand how streets are dangerous.
- Schools do not have enough crossing guards and stop signs to regulate traffic.
- Double parking in school zones needs more stringent enforcement.
- Residents are frustrated by drivers who "do donuts" on local streets and near schools.

Streetscaping Issues

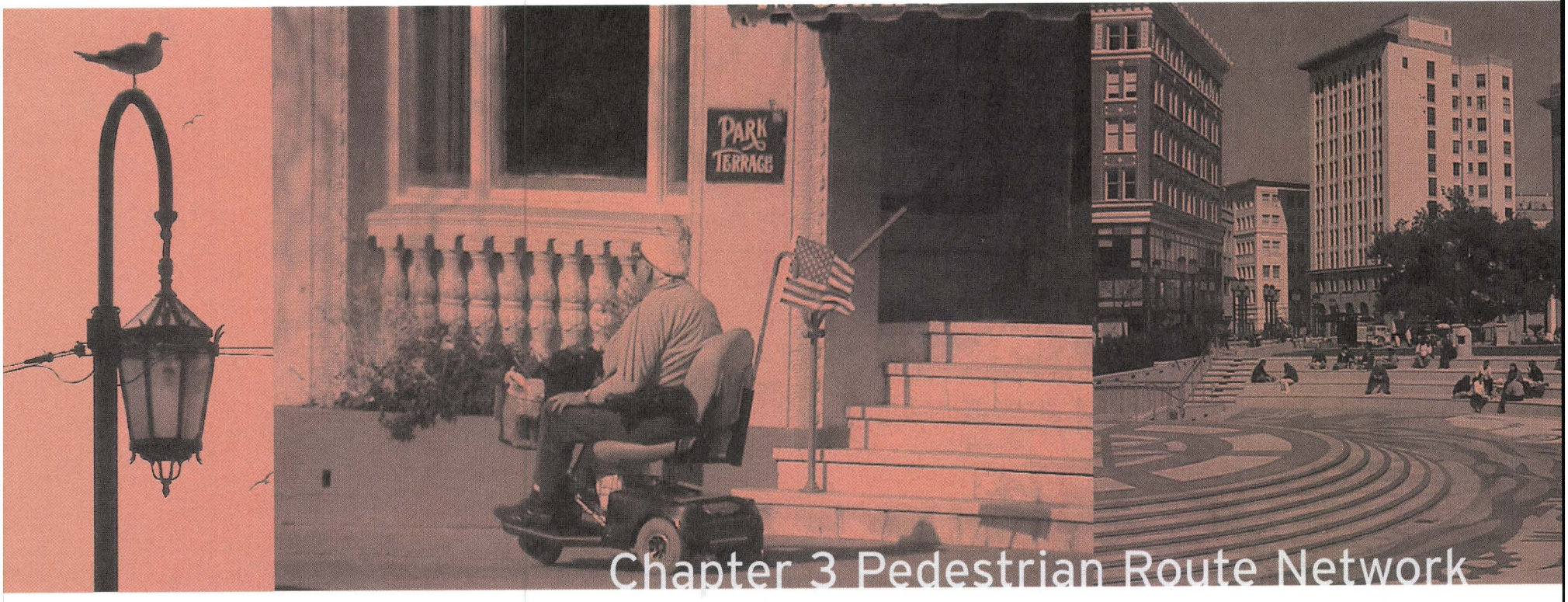
- → The prevalence of trash and petty crime discourages walking.
- → Older curb ramps are too steep for persons in wheelchairs and create drainage problems.
- → Diagonal curb ramps direct people into the intersection, not the crosswalk.
- → Many sidewalks and crosswalks are not adequately lit.
- → Neighborhood commercial streets should be safe and inviting for pedestrians.
- → The area between Lake Merritt and the Estuary lacks an adequate pedestrian connection.

Citizen's Pedestrian Advisory Committee

The Citizen's Pedestrian Advisory Committee (CPAC) provided continuous public oversight and feedback during the development of the Pedestrian Master Plan. The CPAC was composed of district representatives appointed by each City Councilmember and one mayoral appointee from each of the Mayoral Commissions on Aging and Disability. Additional representatives of several community stakeholder groups including the Building Owner's and Manager's Association (BOMA), the Bicycle and Pedestrian Advisory Committee, and Urban Ecology also attended meetings. The CPAC met monthly for one and a half years to oversee the planning process. Members of the CPAC are listed in the Acknowledgements at the beginning of this document.

Technical Advisory Committee

The Technical Advisory Committee (TAC) was comprised of city staff and provided an analogous role to the CPAC. Meetings included representatives from the Public Works Agency, Community and Economic Development Agency (CEDA), City Manager's Americans with Disabilities Act (ADA) Programs, and other City departments and programs. The TAC was also a forum for working with the Alameda-Contra Costa Transit District (AC Transit). The TAC met monthly for over one and a half years. Members of the TAC are listed in the Acknowledgements at the beginning of this document.



Chapter 3 Pedestrian Route Network

A journey of one thousand miles begins with a single step.

Lao Tse, Chinese Philosopher

The Pedestrian Master Plan designates a Pedestrian Route Network that extends throughout Oakland. The network identifies common walking routes to schools, transit, neighborhood commercial districts, and other pedestrian destinations. These routes respond to community concerns regarding safe routes to these destinations and across major streets. It includes city routes, district routes, neighborhood routes, walkways, and trails.

The Pedestrian Route Network identifies those streets in greatest need of improvement and those areas where improvements will have the greatest impact. Streets not included in the network may also need pedestrian improvements. The Pedestrian Route Network should not be used as an argument against pedestrian improvements on streets that are not designated as part of the Pedestrian Route Network. A survey of the Pedestrian Route Network is included as an appendix. For implementation, the proposed projects would require additional review by traffic engineering and under the California Environmental Quality Act (CEQA). Furthermore, engineering judgment is necessary to determine the specific locations and features of each project.

Selection of Routes

The following criteria were used to identify a draft route network that was then refined through community and staff input. Routes were selected to:

- → Connect schools, transit, senior centers, disability centers, libraries, parks, neighborhoods, and commercial districts.
- → Include other areas of high pedestrian activity.
- → Address areas with a history of pedestrian collisions.
- → Provide routes through and between neighborhoods.
- → Overcome barriers including freeways, railroad tracks, and topographies that separate neighborhoods.
- → Complement existing and proposed bike paths, lanes, and routes.
- → Facilitate connections to bus stops and routes.
- → Reinforce transit-oriented development around BART stations.
- → Highlight creeks, shorelines, ridgelines, and other natural features.

MAP 3 PEDESTRIAN ROUTE NETWORK

Downtown Pedestrian District

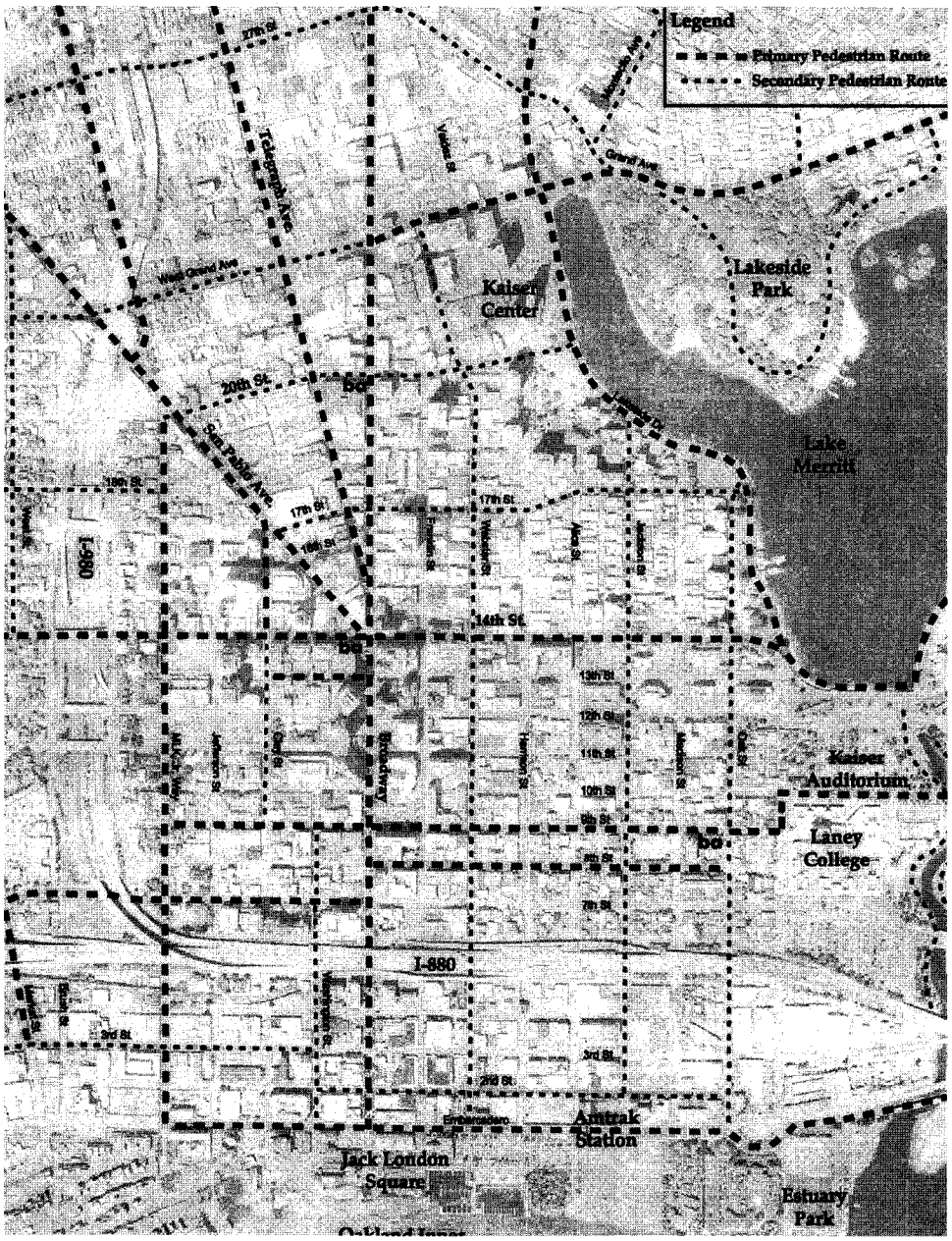
The Pedestrian Master Plan designates the downtown area as a pedestrian district based on high levels of pedestrian activity, the number of pedestrian trip generators, and a pedestrian-friendly street grid. This designation signifies that every street in the pedestrian district is a pedestrian route, comparable to the routes identified throughout the rest of the City. In addition to this general designation, pedestrian routes are identified in the downtown to specify the most important streets for prioritizing pedestrian improvements. The selection of these routes reflects those streets with the highest pedestrian use, the best connectivity, and pedestrian improvements proposed by the concurrent planning processes listed below.

This Downtown Pedestrian District is bounded by and includes Brush Street, Grand Avenue, El Embarcadero, Lakeshore Avenue, Channel Park, and the Oakland Inner Harbor. It includes City Center, Chinatown, Uptown, Jack London Square, and Produce Market areas and the Lakeside, Madison Square, and Lafayette Square neighborhoods. It also includes Lake Merritt. Its designation as a pedestrian district reflects the high density of commercial, residential, cultural, and recreational uses all within walking distance and well-served by transit. The designation also reinforces the Land Use and Transportation Element's promotion of a transit-oriented downtown.

Within the Downtown Pedestrian District, current pedestrian-related planning processes include the following:

- Chinatown Environmental Justice Planning Grant
- Downtown Streetscape Master Plan
- Downtown Parking and Circulation Master Plan
- Estuary Plan
- Lake Merritt Master Plan

The designation of the Downtown Pedestrian District indicates the City's commitment to the downtown as a safe and enjoyable place to walk. The following two chapters identify policies and design elements that should serve both as resources and benchmarks for ensuring that these and future planning processes in the downtown area promote pedestrian safety and access.



MAP 4 DOWNTOWN PEDESTRIAN DISTRICT

Safe Routes to School

The Pedestrian Route Network connects every public school, park, recreational center, and library in the City of Oakland. The neighborhood routes of the network were selected from local streets both to serve these destinations and provide through routes for pedestrians. These destinations were given priority because of the large number of pedestrian trips that they generate and community concern over the safety of children walking to these destinations. This section explains how the Pedestrian Route Network can contribute to establishing a comprehensive and seamless "Safe Routes to School" program in the City.

The Pedestrian Master Plan recommends that the City develop designated "safe routes to school" by integrating existing school safety programs with targeted sidewalk and crossing improvements. The existing school safety programs include the following:

- → Adult crossing guards
- → Student safety patrols
- → Parent volunteers
- → Safe Walks to School program

The Pedestrian Master Plan recommends that these programs be coordinated to ensure that all schools have adequate traffic safety programs. Adult crossing guards and student safety patrols are already used at many schools. However, financial constraints limit adult crossing guards to those schools with the most severe safety concerns. Some schools that have requested adult crossing guards do not have them. While student safety patrols play an invaluable role, they are not used at some locations because of the traffic risk to the patrols themselves. At some schools, parent volunteers are organizing to fill gaps that are not covered by the adult crossing guards or the child safety patrols.

While the Safe Walks to School program is focused on criminal activity, it is another important resource for developing a seamless approach to safe routes to school in the City.

The Pedestrian Master Plan recommends that a citywide parent volunteer program be established to provide training, safety equipment, and coordination such that parents who are concerned with school safety can help contribute to solutions. This program should augment – not compete – with the existing programs of adult crossing guards and student safety patrols. Citywide coordination is necessary to ensure that these programs work together effectively.

To help develop safe routes to school, the Pedestrian Route Network identifies candidate streets at the citywide level for targeted crossing and sidewalk improvements. These routes should be refined and further specified based on local knowledge of traffic safety condi-

tions at each of the approximately 100 schools in the district.

For each individual school, these routes will help identify where physical improvements and safety programs will have the largest impact. At the citywide level, the pedestrian/vehicle collision data for pedestrians 17 years and under and within one-quarter mile of a school identifies which schools in the district are in most immediate need of safety improvements.

Safe Routes to Transit

"Safe Routes to Transit" is a strategy for targeting street improvements where they are the most needed and will have the greatest impact. In the City of Oakland, AC Transit generates

at least 148,000 weekday pedestrian trips and BART generates at least 57,000 weekday pedestrian trips. Safe Routes to Transit helps operationalize the Land Use and Transportation Element's designation of transit streets and its policy directive for promoting alternative modes of transportation. Targeted street improvements for these groups will improve pedestrian safety and access while promoting transportation alternatives in the City. Connecting homes to transit with non-motorized trips has the added benefit of reducing cold starts.

The Pedestrian Route Network identifies key routes that serve AC Transit bus lines and BART stations. These routes include the "transit streets" designated by the Land Use and Transportation Element:

Regional Transit Streets

- San Pablo Avenue
- International Boulevard
- Telegraph Avenue
- Foothill Boulevard
- MacArthur Boulevard

Local Transit Streets

- Hegenberger/73rd Avenue
- College Avenue
- Bancroft Avenue
- Park Boulevard
- 23rd Avenue
- 35th Avenue
- 40th Street

The Pedestrian Route Network also designates routes that radiate out from each BART station to adjoining neighborhoods and commercial districts. The identification of these routes by the Pedestrian Master Plan is a resource for station area planning processes to promote pedestrian safety and access. Pedestrian planning around BART stations is especially important given the emerging transit-oriented development at Fruitvale, MacArthur, West Oakland, and Coliseum stations. The 12th Street, 19th Street, Rockridge, and Lake Merritt stations already have high levels of pedestrian activity that warrant improved pedestrian infrastructure.

Route Types

A street's physical form shapes how it is used and perceived. By identifying a pedestrian route network, establishing policies, and defining design elements, the Pedestrian Master Plan suggests improving existing streets by emphasizing their human scale. The proposed changes promote pedestrian safety and access while improving the appearance of streets.

City routes designate streets that are destinations in themselves – places to live, work, shop, socialize, and travel.

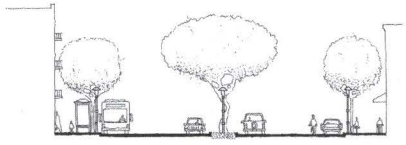


ILLUSTRATION 1 CITY ROUTE SECTION

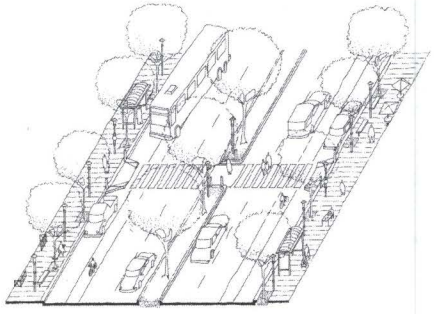


ILLUSTRATION 2 CITY ROUTE

They provide the most direct connections between walking and transit and connect multiple districts in the City.

District routes have a more local function as the location of schools, community centers, and smaller scale shopping. They are often located within a single district and help to define the character of that district.

Neighborhood routes are local streets that connect to schools, parks, recreational centers, and libraries.

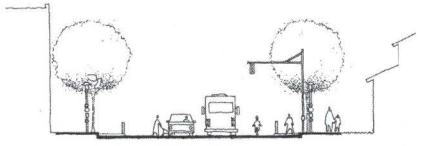


ILLUSTRATION 3 DISTRICT ROUTE SECTION

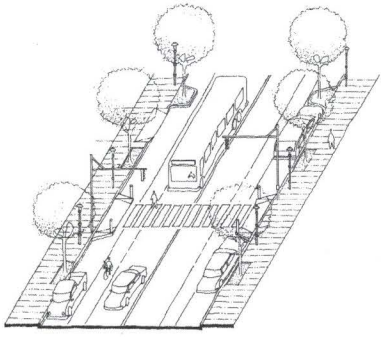


ILLUSTRATION 4 DISTRICT ROUTE

They are places for people to meet and they provide the basis for neighborhood life. They are used for walking to school, walking for exercise, and safe walking at night.

Walkways are off-street routes that provide shortcuts for pedestrians. They are most common in older neighborhoods with hilly terrain and long street blocks. Approximately 200 walkways exist in the City of Oakland with the highest concentrations located in the Upper Rockridge, Montclair, Trestle Glen, San

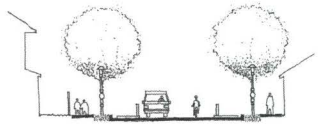


ILLUSTRATION 5 NEIGHBORHOOD ROUTE SECTION

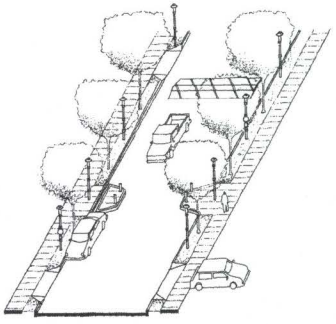


ILLUSTRATION 6 NEIGHBORHOOD ROUTE

Antonio, Fruitvale, and Eastmont neighborhoods and along Glen Echo Creek. Particularly in hilly areas where street access may be limited or indirect, walkways provide important alternate routes for emergency evacuation.

Most of the approximately 200 walkways are located on City controlled rights-of-way for underground sewers. At least 200 additional rights-of-way exist as potential sites for future walkway development.

As part of the planning process for this document, volunteers from the Citizens Pedestrian Advisory Committee surveyed the existing walkways in the City. The resulting walkway maps and survey data are provided in Appendix B. Trails are off-street routes that often follow natural features like creeks, ridges, and shorelines. They are much longer than walkways, sometimes unpaved, and separated from streets.

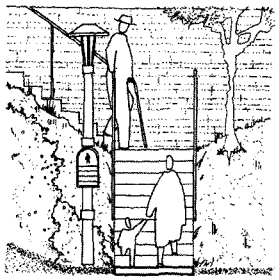


ILLUSTRATION 8 WALKWAY ROUTE SECTION

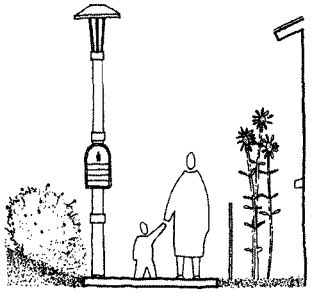


ILLUSTRATION 10 WALKWAY ROUTE SECTION

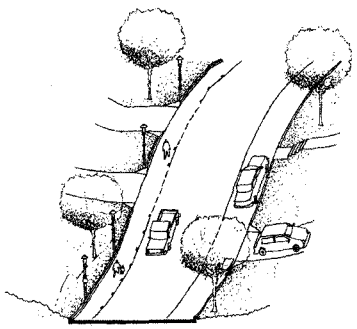


ILLUSTRATION 7 NEIGHBORHOOD HILL ROUTE

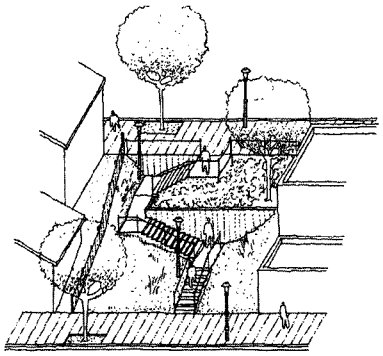


ILLUSTRATION 9 WALKWAY ROUTE

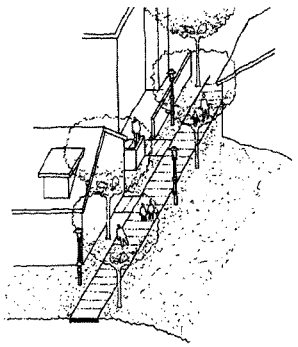
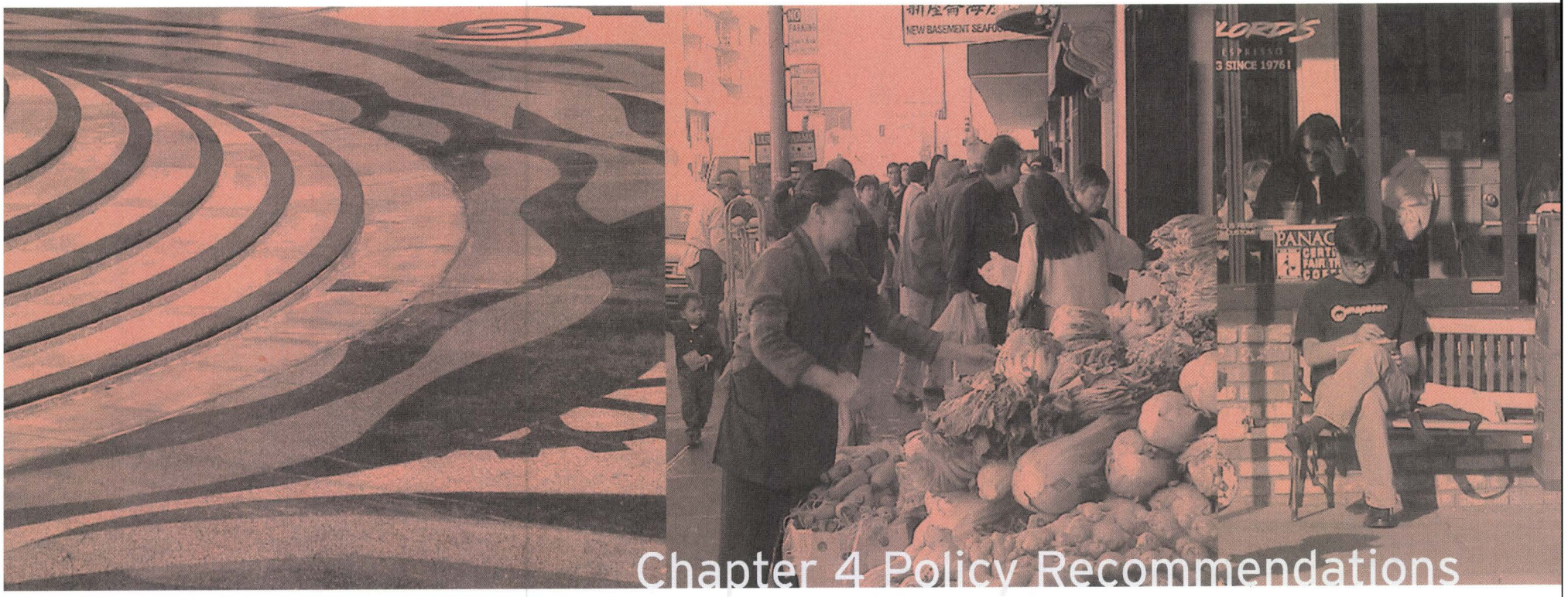


ILLUSTRATION 11 WALKWAY ROUTE



Chapter 4 Policy Recommendations

The City should prepare, adopt, and implement a Bicycle and Pedestrian Master Plan as a part of the Transportation Element of this General Plan.

City of Oakland General Plan, Policy T4.5, p. 58

The Land Use and Transportation Element (LUTE) of the Oakland General Plan recommends the preparation, adoption, and implementation of a comprehensive pedestrian plan for the City (LUTE T4.5, p. 58, above). Oakland's General Plan has many clear policy directives related to the promotion of a walkable City. Other policy directives from the LUTE are listed below with the specific goals of the Pedestrian Master Plan. Through these goals, policies, and action items, the Pedestrian Master Plan places a greater emphasis on pedestrians in the City's ongoing work of shaping streets and managing traffic.

This emphasis on pedestrian considerations parallels new policies within the California Department of Transportation (Caltrans) and the U.S. Department of Transportation (USDOT). The Caltrans Deputy Directive 64 explains, "The Department fully considers the needs of non-motorized travelers (including pedestrians, bicyclists, and persons with disabilities) in all programming, planning, maintenance, construction, operations and project development activities and products. This includes incorporation of the best available standards in all of the Department's practices" (Caltrans 2001). The Caltrans policy is based on a federal policy statement on better integrating walking and bicycling into the nation's transportation infrastructure (FHWA 2001).

The following policies and action items were prepared in consultation with source documentation including the Open Space, Conservation, and Recreation (OSCAR) Element, Oakland Bicycle Master Plan, and Pedestrian Master Plans from other cities. The Citizens Pedestrian Advisory Committee (CPAC) and the Technical Advisory Committee (TAC) reviewed existing City policies with respect to pedestrians and formulated the policies listed below. (Policies relating to implementation are listed in the Implementation Plan chapter.)

For implementation, the proposed projects would require additional review by traffic engineering and under the California Environmental Quality Act (CEQA). Furthermore, engineering judgment is necessary to determine the specific locations and features of each project.

A Policy Response to Existing Conditions

This section reiterates the goals of the Pedestrian Master Plan and summarizes key points identified in the Existing Conditions chapter. It links the policies of the Pedestrian Master Plan to the existing conditions by tying both to the Plan's goals. The remainder of this chapter on Policy Recommendations presents the Plan's policies in terms of the Plan's goals.

1 Pedestrian Safety

Create a street environment that strives to ensure pedestrian safety.

- → On average, a pedestrian/vehicle collision occurs each day in Oakland.
- → Most pedestrian/vehicle collisions occur in downtown, in Chinatown, and along arterial streets.
- → Children are at greatest risk of pedestrian injury and seniors are at greatest risk of pedestrian fatality.
- → Half of pedestrian/vehicle collisions occur when the pedestrian is in a crosswalk.

2 Pedestrian Access

Develop an environment throughout the City – prioritizing routes to school and transit – that enables pedestrians to travel safely and freely.

- → Walking rates in Oakland are amongst the highest of all cities in the San Francisco Bay Region.
- → An estimated 53,000 weekday pedestrian trips are to and from elementary schools of the Oakland Unified School District.
- → Approximately 148,000 weekday pedestrian trips are to and from AC Transit bus lines in the City of Oakland.
- → An estimated 57,000 weekday pedestrian trips are to and from BART stations in the City of Oakland.

3 Streetscaping and Land Use

Provide pedestrian amenities and promote land uses that enhance public spaces and neighborhood commercial districts.

- → Many Oakland neighborhoods are walkable because they contain a mixture of homes, businesses, and public resources within easy walking distance of each other.
- → Newer areas of the City including parts of the Oakland Hills and East Oakland do not always have sidewalks, crosswalks, short blocks, and numerous destinations within easy walking distance.
- → Many Oakland streets lack benches, bus shelters, trees, and other street furniture that are important ingredients of a walkable city.

4 Education

Educate citizens, community groups, business associations, and developers on the safety, health, and civic benefits of walkable communities.

- → Vehicle drivers are responsible for approximately 51% of pedestrian/motor vehicle collisions.
- → Pedestrians are responsible for approximately 31% of pedestrian/motor vehicle collisions.
- → In collisions where the pedestrian is at fault, 56% of the pedestrians are ages 17 and under even though they comprise 25% of the population.

The following sections identify policies and actions for each goal.

Goal 1: Pedestrian Safety

Create a street environment that strives to ensure pedestrian safety.

General Plan Policies

→ **Objective T6, Safety.** Make streets safe, pedestrian accessible, and attractive. "In the past few years, public hearings have been held throughout the city on reducing traffic in the neighborhoods by slowing it down or redirecting it to arterial streets. Measures that have been suggested include speed bumps, traffic diverters, traffic circles, stop signs, and retiming of signals. Some of these have been implemented, but funding is insufficient to meet all of the public's requests...Measures to reduce traffic impacts need to be prioritized and coordinated with overall circulation planning" (LUTE, p. 60).

→ **Policy T6.1, Posting Maximum Speeds.** "Collector streets shall be posted at the lowest possible speed (usually a maximum speed of 25 miles per hour), except where a lower speed is dictated by safety and allowable by law" (LUTE, p. 60).

Policies and Action Items

PMP Policy 1.1. Crossing Safety: Improve pedestrian crossings in areas of high pedestrian activity where safety is an issue.

Action 1.1.1. Consider the full range of design elements – including bulb-outs and refuge islands – to improve pedestrian safety.

Action 1.1.2. Update crossing treatment policy guidelines for all types of crossings based on current federal research (FHWA 2002a, FHWA 2002b).

Action 1.1.3. Conduct a test of the FHWA-based crosswalk policy (FHWA 2002a) in the Fruitvale District.

Action 1.1.4. Use pedestrian safety, bicyclist safety, and residential and business densities to establish lower speed limits in areas with a high level of pedestrian activity or a history of pedestrian/motor vehicle collisions (California Vehicle Code Section 627).

Action 1.1.5. Evaluate whether to update the City's current lighting policy to ensure that crosswalks are properly lit at night.

Action 1.1.6. Analyze pedestrian/motor vehicle collisions to reduce the incidences of pedestrian/motor vehicle conflict.

PMP Policy 1.2. Traffic Signals: Use traffic signals and their associated features to improve pedestrian safety at dangerous intersections.

Action 1.2.1. Review the guidelines for signal need prioritization to ensure that pedestrian considerations are given due consideration.

Action 1.2.2. Create guidelines, priorities and a schedule for the installation of pedestrian signal heads at locations with significant pedestrian crossing volumes.

Action 1.2.3. Seek additional funds to pay for the retrofitting of traffic

signals with pedestrian signal heads and the maintenance costs that such additions may incur.

Action 1.2.4. Review the signal-timing program to ensure that it incorporates the needs of pedestrians by providing adequate crossing times.

Action 1.2.5. Seek funds to address the backlog of traffic signals with special attention to signals in front of schools, senior centers, and other high-pedestrian activity centers.

Action 1.2.6. Continue the City's programs to install audible pedestrian signals at all new and retrofitted traffic signals. Continue the on-demand program to install such signals at additional locations based on requests from persons with visual impairments.

Action 1.2.7. Consider using crossing enhancement technologies like countdown pedestrian signals (a device not yet approved by State or Federal agencies) at the highest pedestrian volume locations.

PMP Policy 1.3. Sidewalk Safety: Strive to maintain a complete sidewalk network free of broken or missing sidewalks or curb ramps.

Action 1.3.1. Conduct a survey of areas lacking sidewalks and estimate the cost and feasibility of filling sidewalk gaps in areas with pedestrian traffic.

Action 1.3.2. Assign responsibility for sidewalk additions to ensure that sidewalk gaps are filled.

Action 1.3.3. Create a program to enforce the responsibility of adjacent property owners for the addition of sidewalks to close gaps and accompany new development.

Action 1.3.4. Aid in the finance of sidewalk improvements through the creation of assessment districts.

Action 1.3.5. Budget funds for additional sidewalks to fill in gaps in the sidewalk network in areas identified as high priority for safety reasons.

Action 1.3.6. Implement pedestrian-scale lighting at regular intervals in areas of high pedestrian activity to promote pedestrian safety and discourage criminal activity.

Action 1.3.7. Conduct a survey of all street intersections to identify corners with missing, damaged, or non-compliant curb ramps and create a plan for completing their installation.

Action 1.3.8. Continue the City's in-fill and on-call curb ramp programs to fulfill the federal mandate for curb ramps at every pedestrian crossing.

Action 1.3.9. Continue and expand the City's program of on-demand sidewalk repairs.

Goal 2: Pedestrian Access

Develop an environment throughout the City – prioritizing routes to school and transit – that enables pedestrians to travel safely and freely.

General Plan Policies

→ **Policy T3.5, Including Bikeways and Pedestrian Walks.** "The City should include bikeways and pedestrian walks in the planning of new, reconstructed, or realized streets, wherever possible" (LUTE, p. 57).

→ **Policy T4.6, Making Transportation Accessible for Everyone.** "Alternative modes of transportation should be accessible for all of Oakland's population. Including the elderly, disabled, and disadvantaged" (LUTE, p. 58).

→ **Policy T4.7, Reusing Abandoned Rail Lines.** "Where rail lines (including siding and spurs) are to be abandoned, first consideration should be given to acquiring the line for transportation and recreational uses, such as bikeways, footpaths, or public transit" (LUTE, p. 59).

→ **Policy T4.10, Converting Underused Travel Lanes.** "Take advantage of existing transportation infrastructure and capacity that is underutilized. For example, where possible and desirable, convert underused travel lanes to bicycle or pedestrian paths or amenities" (LUTE, p. 59).

Policies and Action Items

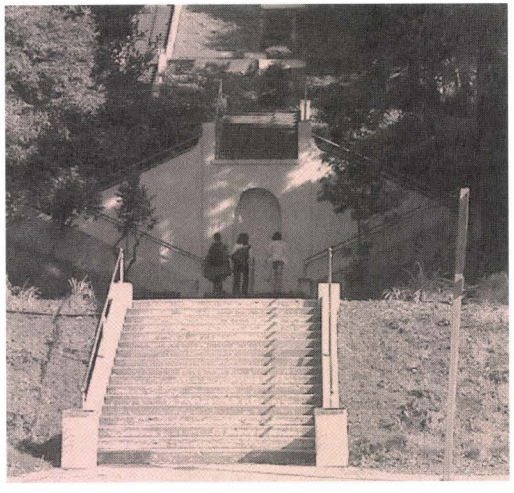
PMP Policy 2.1. Route Network: Create and maintain a pedestrian route network that provides direct connections between activity centers.

Action 2.1.1. Improve existing connections across/under freeways to activity centers using lighting, acoustics, and other design features.

Action 2.1.2. Develop a system of signage for pedestrian facilities including walkways and trails.

Action 2.1.3. Create trails, identified in the Open Space, Conservation, and Recreation (OSCAR) Element that follow creeks and help promote the restoration of those creeks.

Action 2.1.4. Avoid the use of pedestrian overpasses and underpasses for pedestrian crossings on surface streets (FHWA 2002b, p. 49).



Action 2.1.5. Install signage to discourage drivers from using local streets as through routes.

Action 2.1.6. Conduct a study to identify streets with underused travel lanes for potential traffic calming projects including restriping, lane reduction, and sidewalk widening.

Action 2.1.7. Srive to maintain the existing walkways to ensure that they are safe and free of debris and vegetation.

Action 2.1.8. To the maximum extent possible, make walkways accessible to people with physical disabilities.

PMP Policy 2.2. Safe Routes to School: Develop projects and programs to improve pedestrian safety around schools.

Action 2.2.1. Using the Pedestrian Route Network as a base, work with schools having the highest walking rates to designate, improve, and publicize safe routes to school.

Action 2.2.2. Implement a seamless school safety program that coordinates adult crossing guards, student safety patrols, and parent volunteers to ensure that all schools have adequate traffic safety programs.

Action 2.2.3. Prioritize crossing and sidewalk improvements around schools with the greatest number of child pedestrian/vehicle collisions.

Action 2.2.4. Work with schools having inadequate pick-up and drop-off facilities to develop compensatory programs.

Action 2.2.5. All new schools in Oakland should consider vehicle pick-up and drop-off areas to accommodate child pedestrian safety.

PMP Policy 2.3. Safe Routes to Transit: Implement pedestrian improvements along major AC Transit lines and at BART stations to strengthen connections to transit.

Action 2.3.1. Develop and implement street designs (like bus bulb-outs) that improve pedestrian/bus connections.

Action 2.3.2. Prioritize pedestrian improvements at transit locations with the highest pedestrian volumes and the most pedestrian/vehicle collisions.

Action 2.3.3. Prioritize the implementation of street furniture (including bus shelters) at the most heavily used transit stops.

Action 2.3.4. Improve pedestrian wayfinding by providing local area maps and directional signage at major AC Transit stops and BART stations.

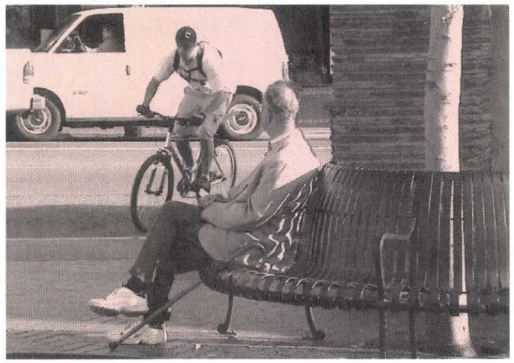
Goal 3: Streetscaping and Land Use

Provide pedestrian amenities and promote land uses that enhance public spaces and neighborhood commercial districts.

General Plan Policies

→ **Policy T6.2, Improving Streetscapes.** "The City should make major efforts to improve the visual quality of streetscapes. Design of the streetscape, particularly in neighborhoods and commercial centers, should be pedestrian-oriented and include lighting, directional signs, trees, benches, and other support facilities" (LUTE, p. 60).

→ **Policy T2.2, Guiding Transit-Oriented Development.** "Transit-oriented developments should be pedestrian oriented, encourage night and day time use, provide the neighborhood with needed goods and services, contain a mix of land uses, and be designed to be compatible with the character of surrounding neighborhoods" (LUTE, p. 56).



Policies and Action Items

PMP Policy 3.1. Streetscaping: Encourage the inclusion of street furniture, landscaping, and art in pedestrian improvement projects.

Action 3.1.1. Identify pedestrian routes in neighborhood commercial districts and in the downtown to prioritize streetscaping improvements.

Action 3.1.2. Budget funds for the concrete cutting of tree pits to facilitate the City's street tree program.

Action 3.1.3. Prioritize the replacement of dead or missing trees at locations with existing tree pits.

Action 3.1.4. Include pedestrian-scale lighting in streetscaping projects.

Action 3.1.5. Use part of the City's 1.5% Public Art Ordinance and seek additional funding sources to incorporate public art into the Pedestrian Route Network.

Action 3.1.6. Work with community groups to install signs, artwork, and landscaping that highlight historical and community landmarks.

PMP Policy 3.2. Land Use: Promote land uses and site designs that make walking convenient and enjoyable.

Action 3.2.1. Use building and zoning codes to encourage a mix of uses, connect entrances and exits to sidewalks, and eliminate "blank walls" to promote street level activity.

Action 3.2.2. Promote parking and development policies that encourage multiple destinations within an area to be connected by pedestrian trips.

Action 3.2.3. Consider implementing "pedestrian only" areas in locations with the largest pedestrian volumes.

Action 3.2.4. Require contractors to provide safe, convenient, and accessible pedestrian rights-of-way along construction sites that require sidewalk closure.

Action 3.2.5. Continue the programs to clean up trash and blighted buildings at the street level and expand the use of business associations in this regard.

Action 3.2.6. Encourage the inclusion of public walkways or trails in large, private developments.

Action 3.2.7. Encourage the development of pocket parks and plazas that are along the Pedestrian Route Network.

Action 3.2.8. Discourage motor vehicle parking facilities that create blank walls, unscreened edges along sidewalks, and/or gaps between sidewalks and building entrances.

Goal 4: Education

Educate citizens, community groups, business associations, and developers on the safety, health, and civic benefits of walkable communities.

General Plan Policies

→ **Objective T4, Alternative Modes of Transportation.** "Increase use of alternative modes of transportation" (LUTE, p. 58).

→ **Policy T4.2, Creating Transportation Incentives.** "Through cooperation with other agencies, the City should create incentives to encourage travelers to use alternative transportation options" (LUTE, p.58).

Policies and Action Items

PMP Policy 4.1. Education. Promote safe and courteous walking and driving and the benefits of walking through targeted outreach programs.

Action 4.1.1. Sponsor Walk to School Day as an annual, city-wide event that encourages people to walk and promotes both pedestrian and driver safety around schools.

Action 4.1.2. Sponsor Pedestrian Safety Week as an annual, city-wide educational event to promote pedestrian and driver safety.

Action 4.1.3. Continue the use of Safe Moves Town in public schools as an educational tool for pedestrian safety.

Action 4.1.4. Publicize the Pedestrian Route Network through the internet and other means.

Action 4.1.5. Publicize the network of walkways in brochures that explain their history and describe suggested walking tours.

Action 4.1.6. Work with residents and community groups to expand the network of walkways on existing City rights-of-way.

Action 4.1.7. Publicize the City's audible pedestrian signal network and provide wayfinding orientation for persons with visual impairments through the Mayor's Commission on Persons with Disabilities and local organizations.

PMP Policy 4.2. Enforcement: Prioritize the enforcement of traffic laws that protect the lives of pedestrians.

Action 4.2.1. Develop a fine structure that discourages walking and driving behaviors that threaten the safety or access of pedestrians.

Action 4.2.2. Continue the program of radar trailer deployment in high speed areas.

Action 4.2.3. Continue the program of targeted enforcement of the pedestrian's right-of-way at unsignalized crosswalks.

Action 4.2.4. Continue the "Stop" program that takes unqualified drivers off the road.

Action 4.2.5. As part of the city budget process, consider if an adequate number of officers are assigned to traffic enforcement and if additional officers could be funded through additional citation revenue.

Issues for Further Discussion

This chapter concludes with a section identifying marked crosswalks, speed humps, and pedestrian auto-detection as issues for further discussion. These issues require ongoing debate because they lack consensus for establishing policy positions in the Pedestrian Master Plan. The differing viewpoints on these issues are presented here to facilitate further discussion on how best to promote pedestrian safety and access in the City of Oakland.

Marked Crosswalks

Marked crosswalks are a basic design treatment for pedestrian crossings. In Oakland, they are common at signalized and unsignalized intersections and comparatively rare at mid-block locations. The California Vehicle Code recognizes crosswalks at all locations where streets with sidewalks meet at approximately right angles (CVC Section 275). This definition applies for both marked and unmarked crosswalks except at those locations where a local authority has placed signs that prohibit crossing. In the United States, marked crosswalks have been controversial because of a complicated history of research on crosswalk safety and differing approaches for ensuring pedestrian safety.

The City of Oakland's current crosswalk policy is that new crosswalks will be installed only at signalized or stop-controlled intersections. Additionally, some signalized intersections in Oakland have recently had crosswalks removed that were recognized as especially dangerous for pedestrians. These intersections include Webster Street at 10th Street and Lakeshore Avenue at E. 18th Street. In these instances, pedestrian safety has been promoted by eliminating dangerous crossings.

This policy follows a study by Herms (1972) that found a greater incidence of pedestrian collisions in marked crosswalks than in unmarked crosswalks at 400 uncontrolled intersections in San Diego, California. A recent study in the City of Los Angeles found that marked crosswalks at uncontrolled intersections negatively impacted pedestrian safety (Jones and Tomcheck 2000). To enhance pedestrian safety, the City of Los Angeles is removing many crosswalks citywide.

With this approach, the primary purpose of a marked crosswalk is to direct pedestrians to a designated location to cross the street. The installation of crosswalks beyond this basic purpose is seen as giving the pedestrian a false sense of security and diluting the effect of crosswalks on drivers.

Issues for Further Discussion

To promote the goals of pedestrian safety and access, the Pedestrian Master Plan recognizes that safe and convenient crossings are a necessary component of a walkable city. The California Vehicle Code explains, "[I]t is the intent of the Legislature that all levels of government in the state, particularly the Department of Transportation, work to provide convenient and safe passage for pedestrians on and across all streets and highways..." (CVC 21949).

The importance of pedestrian access suggests that the City of Oakland's crosswalk policy may benefit from reconsideration. Marked crosswalks demonstrate that under state law pedestrians are legitimate users of the roadway at designated locations. Unfortunately, many pedestrians and drivers are unaware that unmarked crosswalks are legally recognized in the State of California. This issue is of particular importance because State law specifies that pedestrians have the right-of-way in all legally recognized crosswalks. Furthermore, the contrasting colors of marked crosswalks provide an important resource for persons with visual impairments when navigating city streets.

The Pedestrian Master Plan proposes the reconsideration of Oakland's existing crosswalk policy in light of research published in 2002 by the Federal Highway Administration (FHWA 2002a, 2002b) that emphasizes the importance of both pedestrian safety and access at crossings. This research recognizes that the marked crosswalk is only one of many contemporary design treatments for ensuring safe pedestrian crossings. Where safety considerations permit, crosswalks should be installed to promote pedestrian access. When safe crosswalks cannot be installed on their own, additional design treatments should be evaluated and implemented to ensure that those crossings are in fact safe. Chapter 5 titled "Design Elements" identifies treatments that may be combined with

marked crosswalks to ensure safe and accessible crossings.

Speed Humps

Oakland's current speed hump program installed approximately 1,600 speed humps on residential streets from March 1, 1995 through March 1, 2000. Installation requires a petition with signatures representing 67% of the addresses on the block in question. A recent evaluation of speed humps in Oakland shows that children who have a speed hump on their block are 50% less likely to be injured by a motor vehicle collision (Tester 2001). Speed humps may have brought down average speeds to the point where some collisions are being

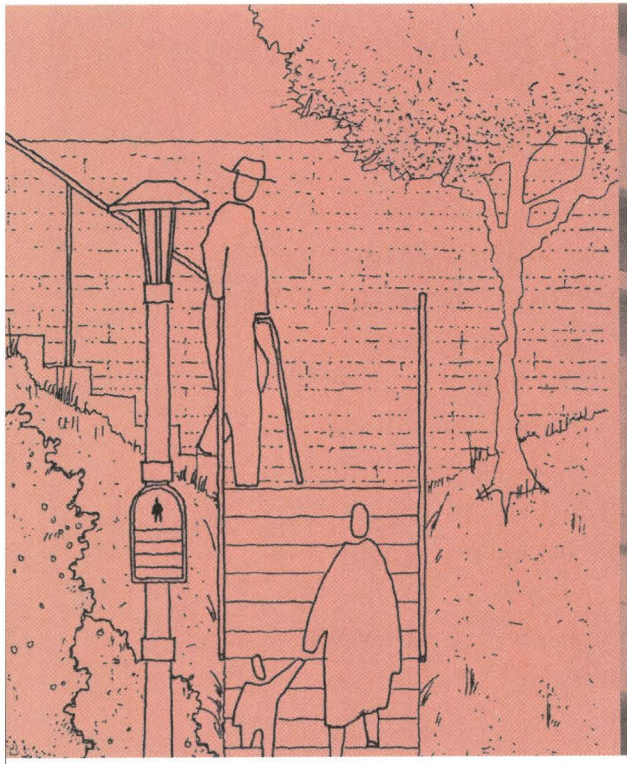
avoided altogether and the severity of injuries is being moderated by slower motor vehicle speeds.

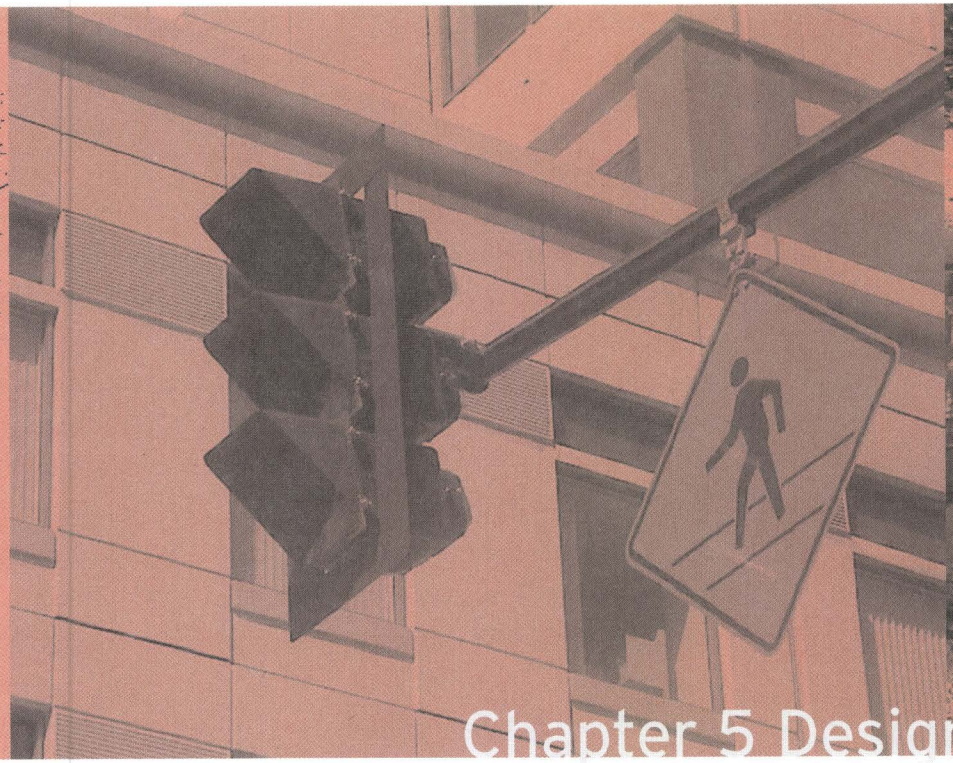
However, speed humps have two notable drawbacks. First, they create delays in emergency vehicle response times. Second, they may cause discomfort and possible injury for people with disabilities when driving over them. The City of Oakland is currently evaluating chicanes and slow points (also known as chokers) as alternatives to speed humps for slowing motor vehicle traffic on neighborhood streets. (See Chapter 5 on Design Elements for further discussion of these treatments.) At this time, the speed hump program remains in effect and no alternative has been identified with comparable efficacy and cost-effectiveness.

Pedestrian Auto-Detection

Pedestrian auto-detection is a concept for the automatic detection of pedestrians at intersections. At traffic signals that do not include pedestrian phases with every signal cycle, pedestrians must press buttons to request signal phases. At traffic signals that are not on timers, the presence of motor vehicles is commonly recognized by a loop detector embedded in the street that triggers the signal phase for those waiting vehicles. New types of detectors based on electromagnetic sensors are creating additional possibilities for serving intersection users. However, two significant issues indicate that pedestrian auto-detection remains an unresolved issue for the City of Oakland. First, the technology remains unproven because it is characterized by an unacceptable rate of false triggers. Second, the concept of pedestrian auto-detection is arguable because the act of pushing a button may be a reminder to the pedestrian to be careful when crossing the street.

While the technology remains unproven, the Pedestrian Master Plan recognizes that it could develop to the point where the auto-detection of pedestrians is technically reliable. If such systems emerge, they would have three significant advantages. First, people with visual impairments would not need to find pedestrian call buttons. Pedestrian auto-detection would also eliminate the need of retrofitting push buttons with audible call buttons. Second, such detectors could dynamically set the length of the pedestrian phase by recognizing when people have not cleared the intersection in the allotted time. By using real-time sensing, the system could provide additional crossing time for those who need it. Third, pedestrian auto-detection would provide equal treatment for pedestrians at intersections where motor vehicles are currently auto-detected. These systems could also be used at crosswalks where push buttons would otherwise be located in inconvenient locations.





Chapter 5 Design Elements

I have met but one or two people who understand the art of walking.

Henry David Thoreau, American Philosopher

This section identifies design elements for improving Oakland streets, sidewalks, and paths. Rather than proposing design standards, the Pedestrian Master Plan presents design elements to inform designers, planners, and policymakers on available design treatments and best practices for pedestrians. When implementing these elements, engineering judgment will determine the specific locations and features of each design.

The Design Elements are organized into the following three sections. First, the Sidewalk Guidelines section gives minimum requirements for sidewalks and utility zones. Second, the Crossing Treatments section explains best practices for crosswalks and corners. And third, the Traffic Calming section presents concepts for reducing motor vehicle speeds.

Sidewalk Guidelines

Proposed sidewalk guidelines apply to new development and depend upon available street width, motor vehicle volumes, surrounding land uses, and pedestrian activity levels. Standardizing sidewalk guidelines ensures a minimum level of quality for all sidewalks.

The City of Oakland currently requires a minimum 48" wide sidewalk with a 36" through passage for new development. For projects that retrofit existing sidewalks, width must conform to the existing conditions on the block. These dimensions conform to sidewalk requirements found in the Americans with Disabilities Act Accessibility Guidelines (ADAAG) which are minimum widths for passage, not sidewalk width recommendations.

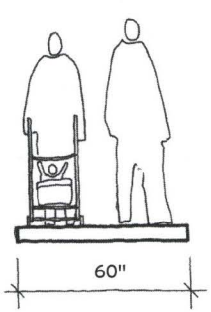


ILLUSTRATION 12
SIDEWALK FOR TWO PEDESTRIANS

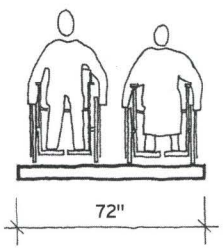


ILLUSTRATION 13
SIDEWALK FOR TWO PEDESTRIANS IN WHEELCHAIRS

The Institute for Transportation Engineers recommends planning sidewalks that are a minimum 60" wide with a planting strip of 24" on local streets and in residential and commercial areas.

Sidewalk and Utility Zone Widths

Sidewalks consist of the through passage zone and the utility zone. The through passage zone is the paved part of the sidewalk pedestrians use. This zone should be wide enough to accommodate different walking speeds and shared use by people with mobility aids. It should also be proportionate to street size and pedestrian volumes.

All streets require a utility zone to accommodate above ground public infrastructure including street furniture, lampposts, street trees, and signs. Locating this infrastructure in the utility zone prevents it from encroaching on the through passage zone. The utility zone also creates an important buffer between pedestrians and motor vehicles by providing a horizontal separation and a vertical buffer. Vertical elements like utility poles, signs, parking meters, and street trees improve pedestrian safety and comfort by buffering the sidewalk

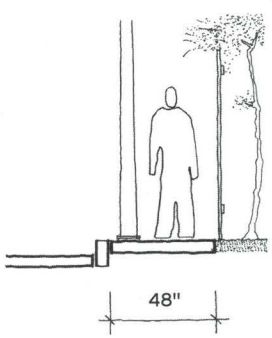


ILLUSTRATION 14
EXISTING OAKLAND SIDEWALK STANDARD

from travel lanes. This buffering effect is similar to that provided by curbside motor vehicle parking.

On local hill streets where sidewalks are not possible, a wide shoulder or sidewalk striping with parking restrictions is an acceptable alternative. Walkways and trails do not have utility zones but still require a minimum through passage zone. For accessibility for persons with disabilities, sidewalks should be continuous, stable, firm, and slip-resistant with minimum running slopes and cross slopes.

The proposed guidelines would apply to sidewalks accompanying new development with sufficient right-of-way. For sidewalk retrofits, the existing City policy of sidewalk width conforming to existing conditions would still apply.

Sidewalk Materials

Paving materials should be consistent, durable, accessible to people using mobility aids, and smooth enough for passage but not slippery. Concrete paving is recommended for arterial, collector, and local sidewalks. The concrete should be textured for safety and scored to match existing patterns. In pedestrian activity areas, painted curbs should be textured to ensure traction. To support pedestrians, cyclists, and joggers, trails may be constructed of asphalt, crushed granite, or bark mulch. However, concrete is the preferred paving material.

STREET TYPE	THROUGH PASSAGE ZONE	UTILITY ZONE	TOTAL WIDTH
ARTERIAL (CITY)	96"	48"	144"
COLLECTOR (DISTRICT)	72"	48"	120"
LOCAL (NEIGHBORHOOD)	60"	48"	108"
WALKWAY	48"	-	48"
TRAIL	72"	-	72"

FIGURE 22 PROPOSED SIDEWALK GUIDELINES

Special paving may occur at neighborhood commercial areas, schools, and parks to give them a distinctive identity. Acceptable materials include brick or concrete pavers, stained or scored concrete, decorative tile, rubberized sidewalk coatings, stone, slate, and granite if they provide a consistently smooth travel surface and good traction. The careful selection of such materials for contrasting colors or textures can provide valuable wayfinding cues for people with visual impairments.

Walkways

Walkways are usually made of concrete, wood, or stone. The construction of new walkways and the reconstruction of existing walkways should avoid wood to minimize long-term maintenance costs. Where wood is used, the construction should be of Redwood or Douglas Fir. Continuous handrails of wood on wood stairs and metal on concrete stairs are required on both sides. Stairs should have 7" closed risers, 11" treads with non-slip surfacing, contrasting striping, and sufficient clearance from surrounding

Sidewalk Guidelines

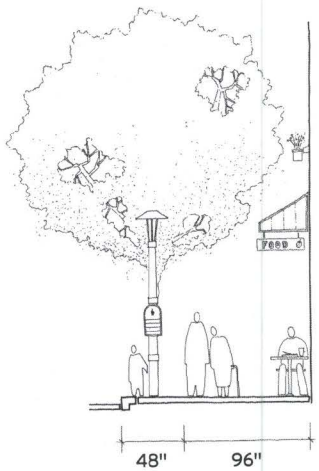


ILLUSTRATION 15
CITY SIDEWALK SECTION

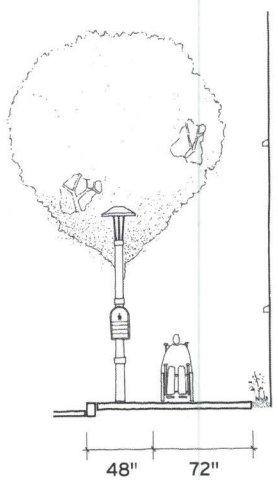


ILLUSTRATION 16
DISTRICT SIDEWALK SECTION

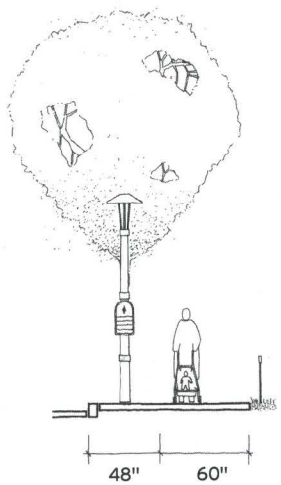


ILLUSTRATION 17
NEIGHBORHOOD SIDEWALK SECTION

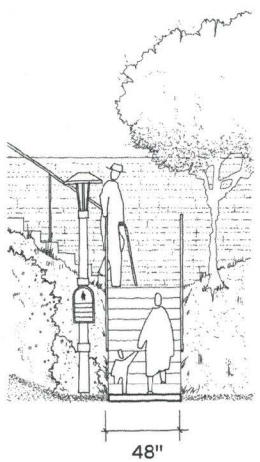


ILLUSTRATION 18
WALKWAY SECTION

vegetation. Stair flights should be 12' in length or less and separated by 5' landings with concrete footings.

Lighting

Pedestrian-scale lighting improves accessibility by illuminating sidewalks, crosswalks, curbs, curb ramps, and signs as well as barriers and potential hazards. From the pedestrian's point of view, frequent lampposts of lower height and illumination are preferred over fewer lampposts that are very tall and bright. The Plan recommends the use of pedestrian-scale lighting in areas of high pedestrian activity and where implementation is practical. Lampposts should be staggered on opposite sides of the street and be placed at crosswalks, bus stops, and corners. These lampposts provide vertical buffers between the sidewalk and street and help define pedestrian areas.

Pedestrian-scale lighting and motor vehicle-scale lighting each should be provided as a complement to the other to ensure that both sidewalks and travel lanes are effectively illuminated.

Pedestrian-scale lighting may be installed between existing lampposts to obtain the frequencies given in the table below. They must be located at least ten feet from the full growth canopy of adjacent trees. Poles and fixtures should be chosen from existing models identified by the City. Existing standards require hoods on lampposts to reduce light pollution.

STREET TYPE	LAMPPOST HEIGHT	DISTANCE BETWEEN LAMPPOSTS	SIDEWALK ILLUMINATION	CROSSWALK ILLUMINATION
ARTERIAL	14'	50'	0.9 FC (10 LUX)	2.0 FC (22 LUX)
COLLECTOR	12'	50'	0.6 FC (6 LUX)	1.0 FC (11 LUX)
LOCAL	12'	50'	0.2 FC (2 LUX)	0.5 FC (5 LUX)
WALKWAY	12'	30' (OR AT LANDINGS)	0.2 FC (2 LUX)	0.5 FC (5 LUX)
TRAIL	12'	30'	0.2 FC (2 LUX)	0.5 FC (5 LUX)

FIGURE 23 PROPOSED LIGHTING GUIDELINES (FEHR & PEERS ASSOCIATES, 2001)

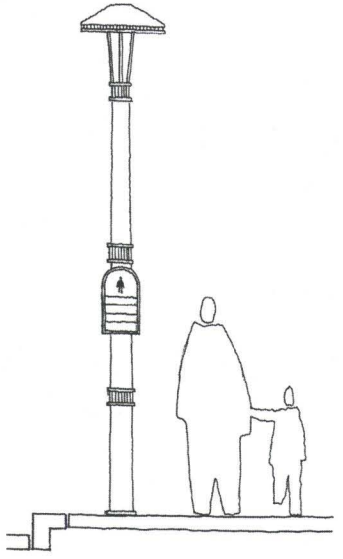


ILLUSTRATION 19 ROUTE LIGHTING

Sidewalk Guidelines

These hoods should also be designed to direct lighting onto the sidewalks. The installation of new lighting should take into account potential overflows that may adversely affect adjacent residents. The proposed lighting guidelines provide guidance in establishing adequate pedestrian-scale lighting for a range of rights-of-way. The implementation of pedestrian-scale lighting should occur as part of pedestrian-oriented street projects as they are completed in the City. The Pedestrian Master Plan does not propose stand-alone lighting projects.

Signage

The Pedestrian Route Network will include signage for pedestrians to aid in wayfinding. The signs will consist of a distinctive logo and directional guidance to neighborhood destinations. They will be attached to lampposts and located at decision points along the route network.

For example, destinations like the Oakland Rose Garden are often

ILLUSTRATION 20 PEDESTRIAN ROUTE SIGNAGE

invisible from adjacent streets like Oakland and Grand Avenues and would benefit from pedestrian-scale signage. The City of Berkeley's bicycle boulevard program includes a successful signage component that may serve as an exemplar. Pedestrian signage will comply with the criteria for character proportion, height, and contrast specified by the Manual on Uniform Traffic Control Devices and the Americans with Disabilities Act Accessibility Guidelines. The implementation of these signs should occur as part of pedestrian-oriented street projects as they are completed in the City. The Plan does not propose stand-alone signage projects.

Plantings

Trees are a dramatic street improvement that creates an attractive visual and psychological separation for pedestrians between the sidewalk and the roadway. Trees may also encourage drivers to move through an area more slowly. They can be located in the utility zone to provide sidewalk shading or placed between on-street parking spaces in tree bulb-outs where sidewalks are narrow. (See the explanation of Bulb-outs, below.) For high pedestrian traffic areas, crushed granite in tree wells is preferred over tree gratings. Tree cages are also acceptable. Refer to the City of Oakland Street Tree Plan for appropriate tree types,

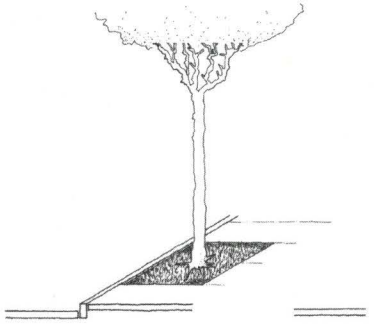


ILLUSTRATION 21 TREE WELL

spacing, tree well sizes, maintenance standards, and potential conflicts with utilities and street lights. The Street Tree Plan is available from the Department of Parks and Recreation.

Street Furniture

Street furniture includes benches, mailboxes, trash and recycling receptacles, bike racks, newspaper boxes, drinking fountains, information boards, kiosks, parking meters, artwork, public phones, signs, bus shelters, and other items used by pedestrians. These features humanize the scale of a street and encourage pedestrian activity. Street furniture should be placed in the utility zone to maintain through passage zones for pedestrians and to provide a buffer between the sidewalk and the street. For bus shelters on crowded sidewalks, bus bulb-outs are recommended for providing additional space. (See the explanation of Bulb-outs, below.) Bus shelters should also have clearly displayed bus schedules and city maps for way-finding.

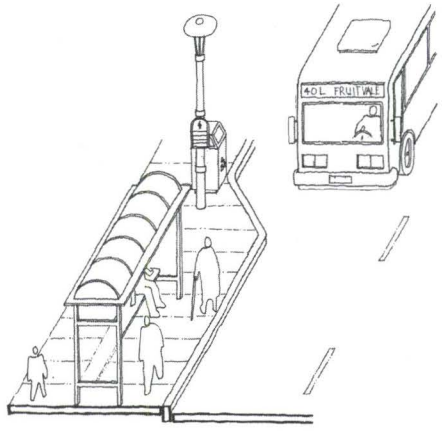


ILLUSTRATION 22 BUS BULB-OUT

Building Edges

Placement of street furniture along building edges is acceptable if the through passage zone is preserved. Buildings with lower floor windows, canopies for rain protection, tables, umbrellas, signs, planters, benches, and other street furniture contribute to street life and enhance the pedestrian environment.

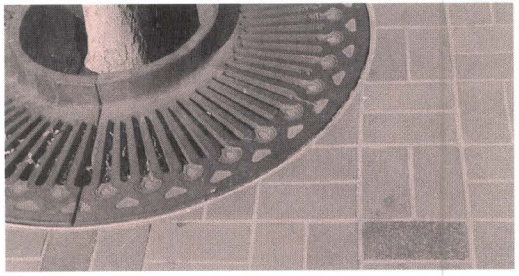
Wayfinding

Straightforward and predictable routing along sidewalks supports wayfinding by persons with visual impairments. Open areas that do not have detectable landmarks like curbs and building edges may not provide sufficient cues. Where a sidewalk borders a park, parking lot, or building setback, a raised edge should be provided as a shoreline for cane travelers. Tactile curb markings may also be used to indicate the location of street edges and pedestrian crossings. The sidewalk's through passage zone should not be obstructed or narrowed by street furniture, especially at turns and ramps. Additionally, items installed for pedestrian use on or along sidewalks should be accessible for persons with disabilities.

Driveways

Driveway entrances can be both dangerous and inconvenient for pedestrians. Driveway curbcuts that extend into the through passage zone may cause people on foot or in wheelchairs

Sidewalk Guidelines



to fall. Driveways expose pedestrians on the sidewalk to motor vehicle cross traffic and cars parked in driveways often block sidewalks. Driveways also reduce the available space for street trees, lighting, street furniture, and parallel parking.

As redevelopment or new development allows, minimum driveway widths and frequencies should be promoted as permitted by the planning code. Wherever possible, entrances should be consolidated such that multiple users share a common curbcut for motor vehicle access. The ramp portion of a drive entrance should be located within the utility zone where possible. Driveways should also be spaced at a minimum of 20' to reduce the amount of curbside parking eliminated.

Crossing Treatments

Crossing treatments help pedestrians get from one side of the road to the other and provide continuity to sidewalks. Crossing treatments are classified as either passive or active treatments. Passive treatments are physical improvements like crosswalks or curb ramps that do not change in time. Active treatments like traffic signals and audible pedestrian signals have multiple states that are triggered by automated detection or activated by pedestrians. Both types of treatments may be combined to create a comprehensive crossing system. With all treatments, engineering judgment is necessary to determine the specific locations and features of each project.

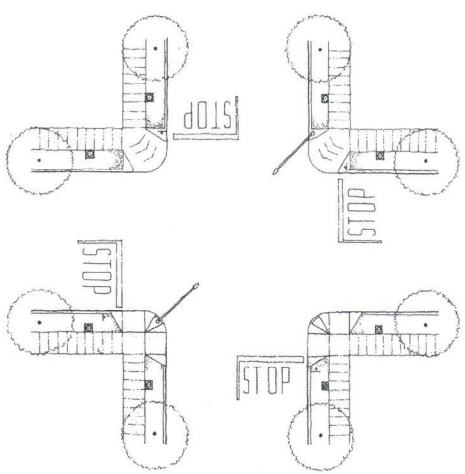


ILLUSTRATION 23 LOCAL INTERSECTION

Passive Crossing Treatments

Crosswalks

Safe and frequent pedestrian crossings are a basic building block of the pedestrian infrastructure. A crosswalk is an area of roadway designated for pedestrian crossings and is a continuation of the sidewalk across an intersection. In addition to marked crosswalks, unmarked crosswalks are legally recognized at most intersections of streets that have sidewalks and meet at right angles. California State law requires drivers to yield to pedestrians in both marked and unmarked crosswalks. Marked crosswalks should be straight for easy navigation and perpendicular to the sidewalks to minimize crosswalk length. However, ensuring the safety of crossings is the most important priority and engineering judgment should be used on a case-by-case basis. In locations where a marked crosswalk alone does not provide a safe crossing, additional treatments like bulb-outs, refuge islands, and signage may be considered to ensure pedestrian safety and access.

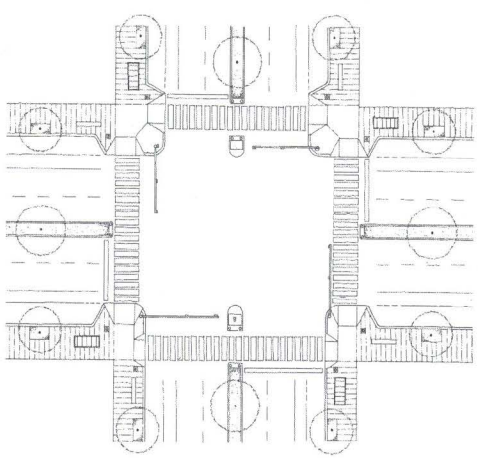


ILLUSTRATION 24 ARTERIAL INTERSECTION

The City of Oakland Transportation Services Division is currently examining its crossing policy based on the most recent Federal Highway Administration guidelines (FHWA 2002a, 2002b). These guidelines are provided in the appendix titled "FHWA Crosswalk Guidelines."

Crossing Treatments

Crosswalk Striping

Crosswalks can be marked with paint, reflective tape, signs, and/or lighting. Two types of crosswalk striping are used in Oakland: standard striping and high-visibility ladder striping. Crosswalks marked in yellow indicate that a crossing is in a school zone. While striping of all four legs of an intersection is recommended, engineering judgment should be used in all cases.

High contrast crosswalk striping also helps people with visual impairments to cross streets. Striping should correspond to the width and location of sidewalks. For improved wayfinding, crosswalk edge stripes can be slightly raised for people using canes.

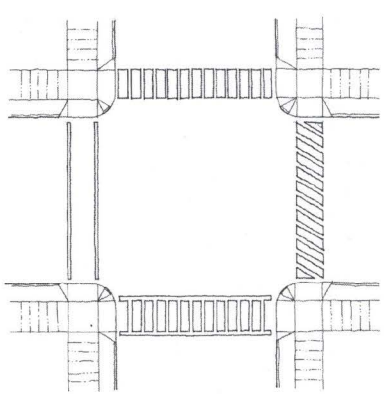


ILLUSTRATION 25 CROSSWALK STRIPING

Crosswalk Paving

Crosswalks may be further marked with distinctive paving materials, colors, or textures. Concrete is preferred over brick for its durability. Concrete may be stained or embossed with patterns to give crossings in a particular area a distinctive feel. Textures should be selected to provide a smooth travel surface and good traction. Pedestrian crossings at railroad tracks should use concrete rather than asphalt to ensure as smooth and constant of travel surface as possible. Asphalt is a poor material for railroad crossings because it tends to curl and crumble at its edges along the rails.

Curb Ramps

According to ADA regulations, all streets with sidewalks and curbs or other barriers must have curb ramps at intersections (U.S. Access Board 1999, p. 58). The City of Oakland requires curb ramp installation at all street intersections contained within street resurfacing, sidewalk improvement, utility, new construction, and alteration projects. New curb ramps must comply with the requirements of the State of California Code of Regulations Title 24 and the Americans with Disabilities Act Accessibility Guidelines.

Curb ramps should be oriented to direct pedestrians to the opposite corner and to provide a direct connection between the sidewalk through passage zone and the crosswalk. Diagonal corner curb ramps are sometimes an

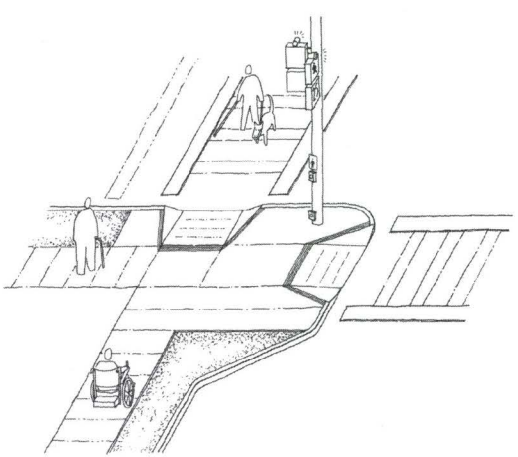


ILLUSTRATION 26 ACCESSIBLE INTERSECTION

acceptable alternative for retrofits. However, signalized intersections on arterial streets should have one curb ramp per marked crosswalk at each corner. Refer to City of Oakland Standard Details for Public Works for curb ramp design guidelines.

Texture and Contrast

Sharply contrasting colors help people with visual impairments identify crosswalks and the boundaries between sidewalks and roadways. Corners and crosswalks should be boldly marked with contrasting colors and textures. Markings can be designed to be both functional and attractive.

Bulb-outs

Bulb-outs reduce the crossing distance for pedestrians, increase visibility for motorists and pedestrians, prevent illegal parking at corners, and provide additional room for people waiting to cross the street. The added space may also be used for street furniture like benches, bike racks, and street trees. Bulb-outs are also important for accessibility because they provide space for curb ramps, crossing buttons, and a safe waiting area. Bus bulb-outs provide space for bus shelters and increase the pick up and drop off efficiency of transit.

Wherever possible, a bulb-out located at a bus stop should be designed as a bus bulb-out. If a bus bulb-out is not possible, the bulb-out should be designed with special care so as not to interfere with bus movements. Tree bulb-outs can be used where sidewalks would otherwise be too narrow for plantings. Bulb-outs can be used at mid-block crossings and are beneficial when combined with pedestrian refuges. All bulb-outs should extend into the street no further than the edge of the travel or bike lane. Bulb-outs and accompanying street furniture will require additional maintenance.

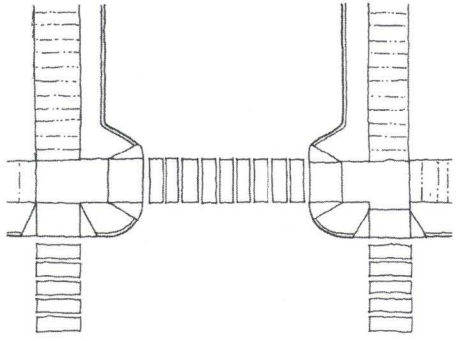


ILLUSTRATION 27 BULB-OUTS

Refuge Islands

Refuge islands are located at crosswalks in the middle of streets to provide a safe waiting area for pedestrians. They may include curbs and bollards to ensure the safety of waiting pedestrians. A refuge island may be part of a median or a stand-alone feature (see Medians below). By allowing pedestrians to cross only half of the street and then wait, the refuge island increases the number of gaps in

traffic that are safe for crossing. While increasing the visibility of pedestrian crossings, refuge islands decrease the percentage of pedestrian collisions by reducing pedestrian/vehicle conflicts, motor vehicle speeds, and exposure time for pedestrians (FHWA 2002b, p. 72). The waiting area in refuge islands

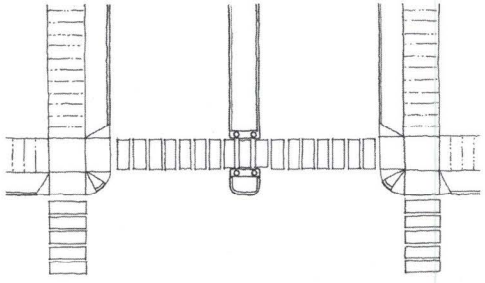


ILLUSTRATION 28 REFUGE ISLAND

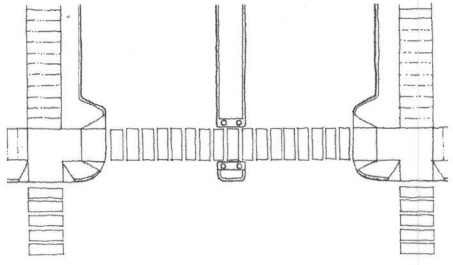


ILLUSTRATION 29
BULB-OUTS AND REFUGE ISLAND

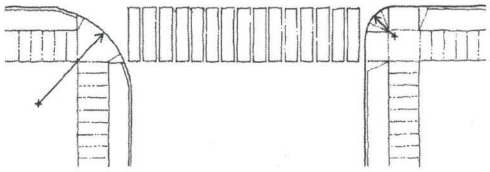


ILLUSTRATION 30 CORNER RADIUS

should be in line with the crosswalk and as wide as the crosswalk such that persons with disabilities are able to pass through without obstruction.

Corner Radius

A corner's turning radius determines how fast a driver can comfortably make a turn. A tighter turn or shorter radius forces drivers to slow down allowing them to see pedestrians better and stop more quickly. Slow corners with short turning radii increase safety for pedestrians at intersections by creating more sidewalk space and less road space. A decreased curb radius also allows for the placement of curb ramps that are aligned parallel to crosswalks. A 10' turning radius is recommended for streets with curbside parking. For streets without curbside parking, a 20' turning radius is recommended. Streets with significant volumes of truck traffic may also have larger corner radii.

Slip Turns

Also known as free right turns, slip turns allow motor vehicles to corner at higher speeds and merge with through vehicle traffic. However, drivers looking over their left shoulders to merge with vehicle traffic are less likely to see pedestrians entering the intersection from the right. The removal of slip turns decreases pedestrian crossing distances, reduces the speed of turning vehicles, and improves pedestrian visibility. To address these three issues, slip turns may be converted to conventional corners or made into pedestrian areas with benches, transit stops, lighting, or selective planting. Where slip turns cannot be eliminated, the problem of vehicle speed may be addressed with traffic signals. However, this solution does not address the increased crossing distance and decreased visibility created by slip turns. The problem of visibility may be addressed with an improved slip turn design (FHWA 2002b, p. 59).

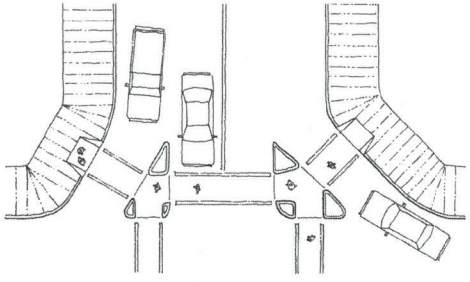


ILLUSTRATION 31 SLIP TURN BEFORE

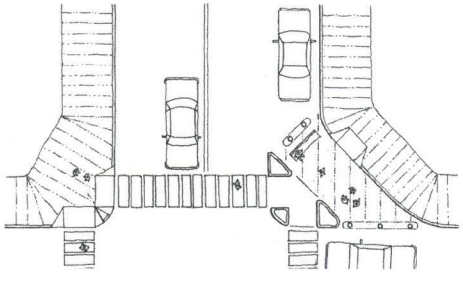


ILLUSTRATION 32 SLIP TURN AFTER

Safety Barrels, Posts, and Bollards

Adding vertical elements at the roadway center line is an inexpensive solution for slowing motor vehicle traffic and improving safety at pedestrian crossings. They can also be used temporarily to test and fine-tune proposed crossing treatments such as refuge islands or bulb-outs. Barrels, posts, and bollards should be highly visible and signed. They should also be positioned to ensure access by people with wheelchairs. Safety barrels, posts, and bollards are not currently used by the City of Oakland. Their inclusion in this plan does not indicate approval or endorsement by the Public Works Agency.

Flashers and Overhead Signs

Flashers are signs showing the universal pedestrian symbol hung from a mast arm that extends over the street. The symbol may be marked in standard yellow, fluorescent yellow, or LED displays. They alert drivers to pedestrian activity and mitigate safety concerns. Flashers are even more visible when combined with overhead signs indicating a pedestrian crossing.

Speed Limit Signs

Speed limit signs should be posted regularly according to Federal guidelines and standards.

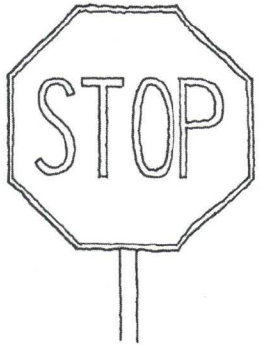


ILLUSTRATION 33 STOP SIGN

Stop Signs

Drivers are more likely to yield to pedestrians when they are already stopped at an intersection. However, stop signs may only be installed where the combined crossing volume of vehicles and pedestrians is comparable to the main street traffic volume.

Active Crossing Treatments

Traffic Signals

Traffic signals provide protected crossing opportunities for pedestrians and may be used with other solutions categorized as either passive or active. Traffic signals can be especially

Crossing Treatments

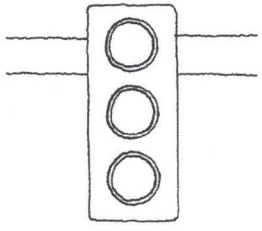


ILLUSTRATION 34 TRAFFIC SIGNAL

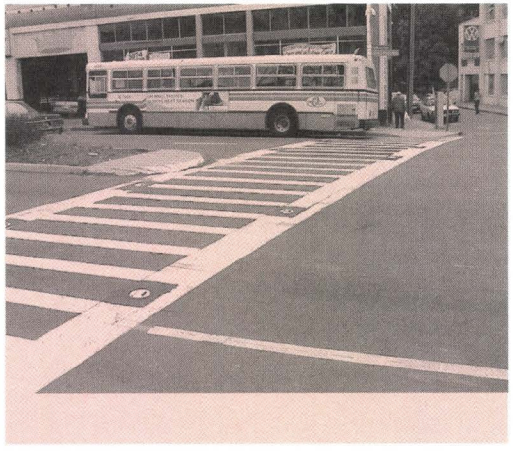
effective at maintaining vehicle flow while limiting vehicle speeds to provide a safe and comfortable pedestrian environment. However, such speed regulation requires numerous traffic signals on a single street and the careful coordination of traffic signal timings. See also Pedestrian Signals below.

Pedestrian Signals

Pedestrian signals work in conjunction with traffic signals to assign right-of-way at intersections. Pedestrian signals are appropriate at all intersections with traffic signals where crossing is permitted. Using symbols and colors, they should provide a clear distinction between "walk" and "don't walk" that is readily identifiable for people with limited vision.

The timing of traffic signals may be adjusted in the following ways to benefit pedestrians. These approaches are experimental and should be tailored to particular circumstances by engineering judgment.

- ➔ Set the Walk Phase based on a walking speed of 3.5 ft/sec at intersections commonly used by seniors or persons with disabilities. The City establishes standard crossing times based on a walking speed of 4 ft/sec.
- ➔ Leading Pedestrian Interval Timing improves the visibility of pedestrians by allowing them to enter an intersection before vehicles with conflicting movements.



- ➔ Scramble Pedestrian Signals allow pedestrians to cross in all directions during the walk phase. The City of Oakland has tested such a system at 8th and Webster Streets although this system has not yet been approved by State or Federal agencies.
- ➔ Countdown Signals let pedestrians know the exact amount of time remaining in the walk phase. These systems are being installed throughout San Francisco although they have not yet been approved by State or Federal agencies.
- ➔ Audible Signals indicate to persons who are blind or have low vision

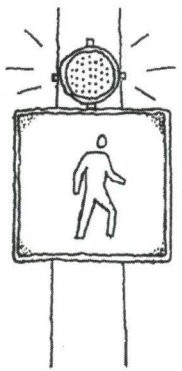


ILLUSTRATION 35 AUDIBLE SIGNAL

the direction in which it is safe to cross. They should be installed at intersections with new traffic signals, actuated signal timings, complex traffic patterns, or irregular traffic volumes. Traffic signals should be retrofitted wherever there is a request from persons with visual impairments.

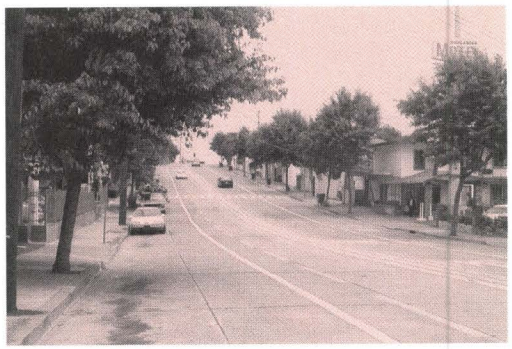
Pedestrian Call Buttons

Pedestrian call buttons and kickplates allow pedestrians to request a signal phase for safe crossing. Audible call buttons should be installed in conjunction with audible pedestrian signals. They should be conveniently located and clearly marked to indicate the crossing directions they trigger. Tactile symbols may also be installed alongside call buttons to provide crossing information on lane configurations for persons with visual impairments. (For additional explanation, see the discussion of pedestrian auto-detection in "Issues for Further Discussion" at the end of Chapter 4).

Flags

Pedestrian flags increase the visibility of pedestrians who carry them at crosswalks. The bright orange flags are an inexpensive approach to improving safety at high volume intersections. The City of Berkeley is currently experimenting with pedestrian flags. They are not currently used by the City of Oakland. Their inclusion in this plan does not indicate approval or endorsement by the Public Works Agency.

Traffic Calming



Traffic calming modifies the physical arrangement of a street to deflect the path of motor vehicles and thereby slow traffic. It provides a cost-effective alternative to traffic signals for reducing motor vehicle speeds and improving pedestrian safety. Two types of deflection are discussed in this section:

- ➔ Vertical deflection slows traffic by making motor vehicles drive over traffic calming devices.
- ➔ Horizontal deflection slows motor vehicles by changing the street width or course of travel.

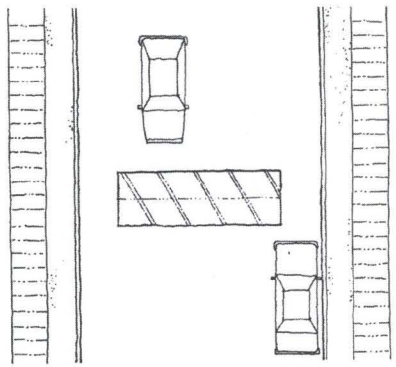


ILLUSTRATION 36 SPEED HUMP

Vertical Deflection

Speed Humps

Speed humps are broad and gently sloping mounds of asphalt added across the width of a street to slow traffic. They are like speed bumps except they tend to be wider such that the slope of the bump is more gradual. Oakland has installed speed humps on many neighborhood streets as part of its citywide traffic calming effort.

To qualify for a speed hump in the City of Oakland, a street must meet the following criteria:

- ➔ It must be classified as a local street.
- ➔ The curb-to-curb width must be 40 feet or less.
- ➔ It must have no more than two lanes with one in each direction.
- ➔ The street grade must not exceed 8%.
- ➔ The speed limit must be 25 mph and the 85% speed must be over 32 mph.
- ➔ The block must not be on AC Transit route.
- ➔ The street cannot be a cul-de-sac or dead-end street.
- ➔ It must be in a grid street system.
- ➔ It must not be in the Oakland Hills area.

Rumble Strips

Rumble strips are textured materials in pavement such as raised plastic bumps that make a rumbling sound when cars pass over. They may be used to create awareness of upcoming pedestrian traffic or of speed limit transitions like at freeway off-ramps.

Raised Crosswalks

Raised crosswalks provide a continuous street crossing for pedestrians at sidewalk level. They additionally work like speed humps to slow motor vehicle traffic at crosswalks. While eliminating the need for curb ramps, raised crosswalks should be marked or textured so that persons with visual impairments are able to identify the street edge. The City of Oakland currently does not use raised crosswalks.

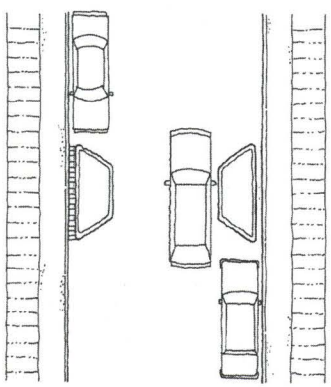


ILLUSTRATION 37 SLOW POINT

Horizontal Deflection

Slow Points

A slow point is an extension of the sidewalk curb in the middle of a block. Slow points are also known as chokers because they narrow the street to slow down motorists. Slow points and bulb-outs are similar in that both extend the curb line to narrow the street and thereby slow traffic. However, bulb-outs are located at crosswalks whereas slow points are not. The extra public

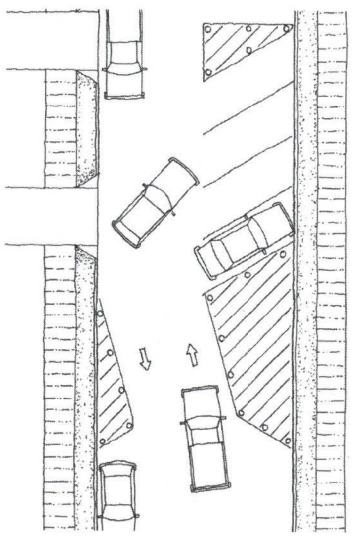


ILLUSTRATION 38 CHICANES

space created by a slow point may be used for benches, bike racks, or street trees. Slow points and their accompanying street furniture may require additional maintenance compared to unimproved street segments.

Chicanes

Chicanes are alternating curb extensions that slow motor vehicles by requiring them to move in an s-motion along a street. Alternating on-street parking from one side of the street to the other is a cost-effective alternative to achieve the same effect (Ewing 1999, p. 38).

Traffic Calming

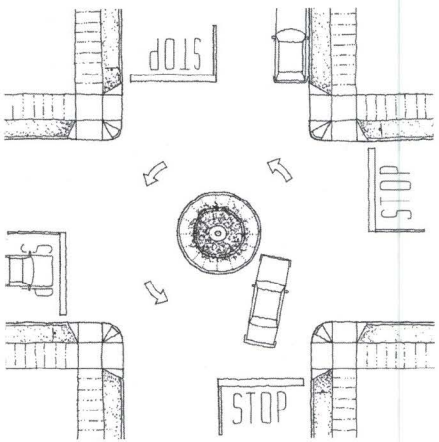


ILLUSTRATION 39 TRAFFIC CIRCLE

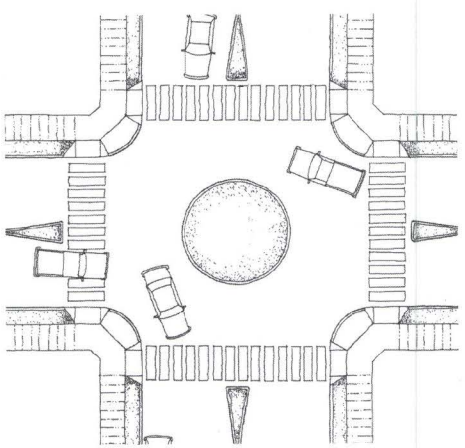


ILLUSTRATION 40 ROUNDABOUT

Traffic Circles

Traffic circles may be raised islands, large planters arranged in a circle, or other elements that cause vehicles to move slowly through an intersection in a counter-clockwise direction. Traffic circles can include landscaping or trees.

Roundabouts

Roundabouts are an alternative to signalized intersections. They use a raised circular island to allow large volumes of traffic to pass counter-clockwise through an intersection at a safe speed without the use of stop signs or signals. Compared to traffic signals, roundabouts have lower rates of collisions at intersections because they reduce motor vehicle speeds and the number of potential conflict points (Insurance Institute for Highway Safety 2000).

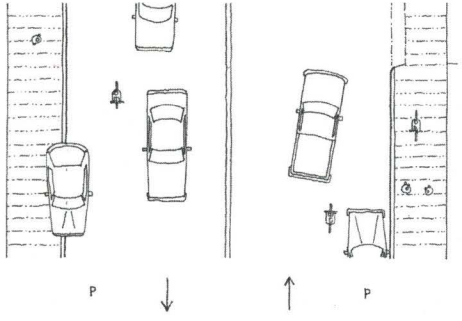


ILLUSTRATION 41 NARROW LANES BEFORE

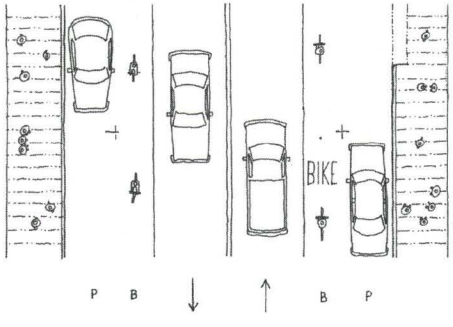


ILLUSTRATION 42 NARROW LANES AFTER

Narrow Lanes

Ten foot lanes increase street flexibility in areas with limited rights-of-way and may reduce motor vehicle speeds. Compared to the twelve foot standard, ten foot lanes provide additional right-of way for bike lanes or sidewalks. Where 5-foot standard bike lanes are not possible, 14-foot outer lanes should be provided to accommodate both drivers and cyclists. While slowing motor vehicle traffic and improving safety and access for non-motorized users, narrow lanes may increase the number of sideswipe and head-on motor vehicle collisions.

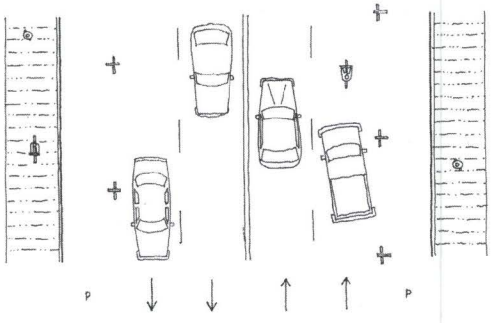


ILLUSTRATION 43 RESTRIPING BEFORE

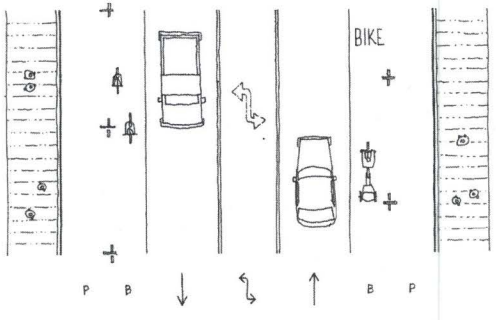


ILLUSTRATION 44 RESTRIPING AFTER

Restriping for Lane Reduction

Restriping streets for fewer lanes slows motor vehicle traffic and increases crossing safety. For streets with four or more lanes, it may be possible to reduce the number of travel lanes without increasing congestion by adding a center turn lane. For example, a four lane street may be restriped to one lane in each direction, a center turn lane, bike lanes, and a wider sidewalk. Proposals for lane reductions require careful study and City Council approval because such reconfigurations may create motor vehicle congestion.

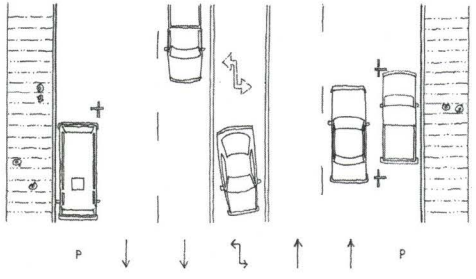


ILLUSTRATION 45 MEDIAN BEFORE

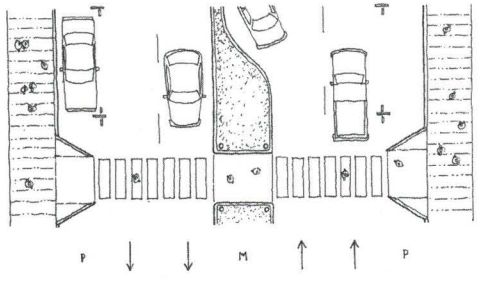


ILLUSTRATION 46 MEDIAN AFTER

Medians and Access Control

Medians increase safety by separating oncoming motor vehicle traffic and minimizing turning conflicts. They may be constructed with curbs or painted stripes and combined with pedestrian refuge islands. Medians also increase the safety of marked crosswalks at uncontrolled intersections (FHWA 2002a). Medians with landscaping will beautify wide streets by breaking up large expanses of pavement and making the street feel smaller. Wide medians can be used for trails or transit stops. Through an approach known as "access control," a street's efficiency may be increased by limiting the number of locations where left turns are allowed.

The benefits of medians should be weighed against the following disadvantages:

- Medians reduce street flexibility by increasing the cost of reconfigurations. Future development, usage patterns, and changing transportation demands may require reconfigurations to accommodate bicycle lanes, bus rapid transit lanes, light rail right-of-way, or new turning movements.
- Medians use limited street width that may be allocated instead to pedestrian, bicyclist, or motor vehicle capacity.
- Medians with plantings may reduce sight lines. Additionally, street trees and plants located along the sidewalk will have a more immediate benefit to pedestrians.

Traffic Calming

On-Street Parking

On-street parking slows traffic and acts as a buffer between pedestrians and motor vehicles. It increases the number of people on the street and thereby increases public safety. Diagonal parking may be used to narrow streets but it causes serious conflicts with bicyclists.

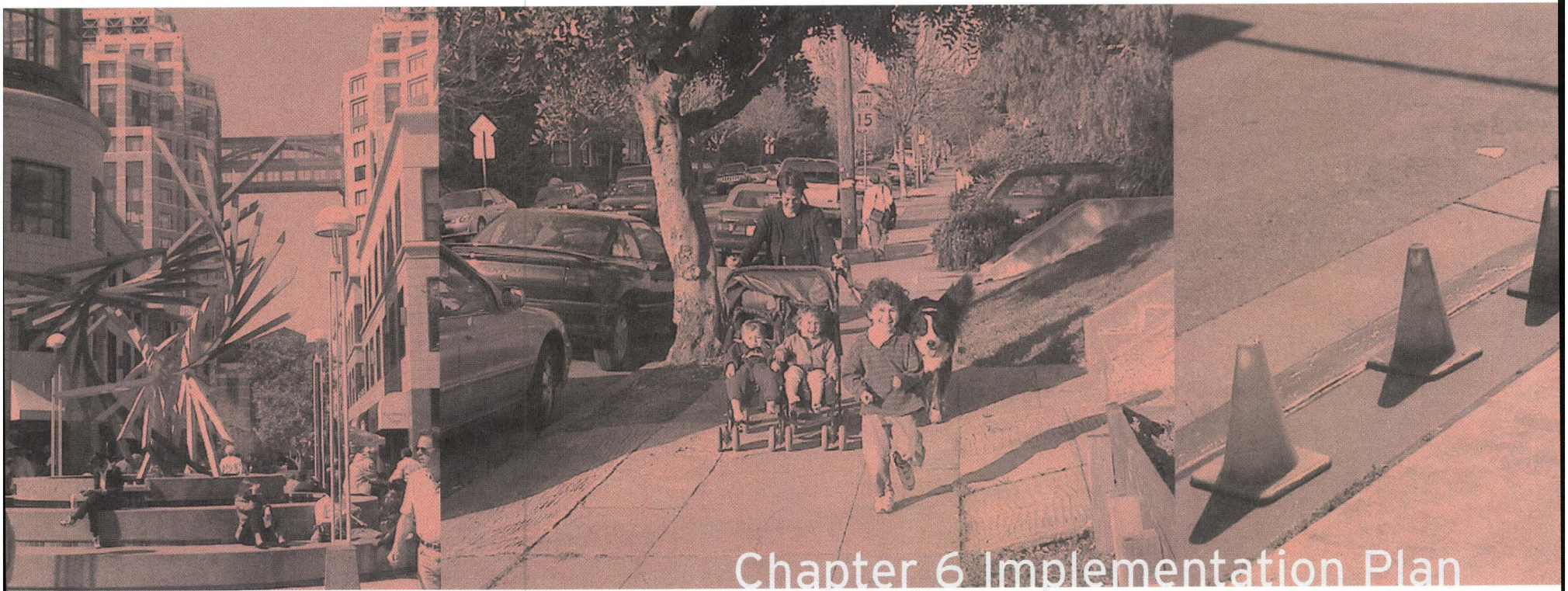
Street Closure

Partial street closures on local streets divert through motor vehicle traffic away from neighborhoods while maintaining access for pedestrians, cyclists, and emergency vehicles. Partial closure is accomplished by installing a physical barrier at one end of the street with accompanying signage. The barriers may include planters. Curbs can be constructed to create closed streets or diagonal diversion at intersections. In addition to the street in question, surrounding streets may be significantly affected by a street closure. The City of Oakland has an existing petition process for the implementation of partial street closures that involves residents on affected streets. Decisions are based on engineering judgment, community input, and council approval. According to a recent study conducted in Oakland, children who live on streets connected directly to arterial streets are twice as likely to be hit by an automobile in their neighborhood as children who live on streets that do not directly connect to arterials (Tester 2001). Street closure may be an effective safety solution by keeping unnecessary motor vehicle traffic out of residential neighborhoods. Numerous street closures exist in the Clinton Park neighborhood of Oakland.

Pedestrian Only Streets

Blocking off both ends of a street creates a pedestrian mall and public open space. There are many examples of pedestrian streets in Oakland. San Pablo Avenue in downtown was transformed into Frank Ogawa Plaza, the civic center and heart of Oakland. 13th Street in downtown was made into City Center, a BART station, and a vibrant shopping area. 34th Avenue will become a pedestrian connection to the Fruitvale BART station.

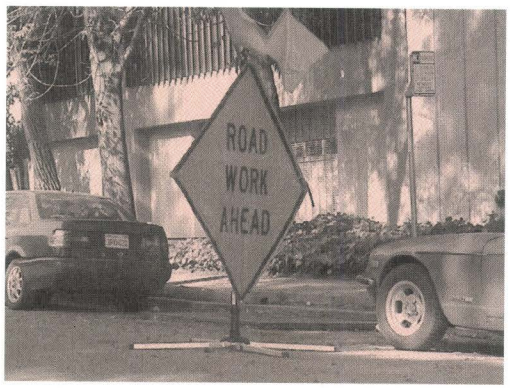
The key to good pedestrian-only streets is to make sure they connect important places and are pleasant and active in themselves. Civic areas, high-density residential buildings, and public transit are all catalysts for pedestrian street activity. Streets also may be temporarily closed to motor vehicle traffic like 9th Street for the Friday Farmers' Market in Old Oakland. Local residential streets can be designed to become play streets with priority given to bicyclists and pedestrians.



Chapter 6 Implementation Plan

Walking is the oldest and most basic form of human transportation. It requires no fare, no fuel, no license, and no registration. With the exception of devices to enhance the mobility of the disabled, walking demands no special equipment. Thus, walking is the most affordable and accessible of modes.

Pedestrian Master Plan, City of Portland, Oregon



The Pedestrian Master Plan identifies policies and priority projects to promote a citywide effort to create a safe and walkable city. Twenty years of priority projects are identified to rectify existing gaps and shortcomings in the City's pedestrian infrastructure. As part of a comprehensive planning process, these projects are highly competitive for the growing amount of transportation funding directed at pedestrian safety and livable communities. After reiterating the Plan's goals, this chapter identifies the implementation policies, priority projects, staffing needs, and funding sources to ensure that these projects are managed, funded, and implemented. For implementation, the proposed projects would require additional review by traffic engineering and under the California Environmental Quality Act (CEQA). Furthermore, engineering judgment is necessary to determine the specific locations and features of each project.

Policy Implementation

To promote Oakland as a walkable city, the Pedestrian Master Plan specifies the following five goals:

Pedestrian Safety. Create a street environment that strives to ensure pedestrian safety.

Access. Develop an environment throughout the City – prioritizing routes to school and transit – that enables pedestrians to travel safely and freely.

Streetscaping and Land Use. Provide pedestrian amenities and promote land uses that enhance public spaces and neighborhood commercial districts.

Education. Educate citizens, community groups, business associations, and developers on the safety, health, and civic benefits of walkable communities.

Implementation. Integrate pedestrian considerations based on federal guidelines into projects, policies, and the City's planning process.

The priority projects identified below emphasize the goals of pedestrian safety, access, and streetscaping. Pedestrian safety and access are also addressed through the education policies specified in the Policy Recommendations chapter. The implementation goal encompasses the other four goals by establishing a more prominent role for pedestrian considerations in the work of City staff. To achieve these goals, the Pedestrian Master Plan identifies the following implementation policies and suggested ordinances to be considered for adoption.

General Plan Policies

Policy T4.1, Incorporating Design Features for Alternative Travel: "The City will require new development, rebuilding, or retrofit to incorporate design features in their projects that encourage use of alternative modes of transportation such as transit, bicycling, and walking" (LUTE, p. 58).

Implementation Policies

PMP Policy 5.1. Dedicate the necessary staff support to implement the Pedestrian Master Plan.

PMP Policy 5.2. Conduct public outreach to residents, merchants, and property owners affected by major pedestrian improvements scheduled for implementation.

PMP Policy 5.3. Coordinate pedestrian improvement projects with scheduled projects for street re-paving, streetscaping, and utility undergrounding.

PMP Policy 5.4. Revise existing design standards where necessary using federal guidelines for arterial, collector, and local streets to ensure pedestrian safety and access.

PMP Policy 5.5. Work with existing and future plans to ensure that they promote the safety, convenience, and enjoyability of walking, while meeting approved design guidelines.

These plans include but are not limited to the following:

Downtown Pedestrian District

- → Chinatown "Environmental Justice" Planning Grant
- → Downtown Parking and Circulation Master Plan
- → Downtown Streetscape Master Plan
- → Estuary Plan
- → Lake Merritt Master Plan

BART Station Areas

- → Coliseum BART Station Area Plan
- → Fruitvale Transit Village Plan
- → MacArthur Transit Village Plan
- → West Oakland Transit Village Plan

Corridor and Streetscaping Improvements

- → AC Transit Major Investment Study
- → Eastlake Streetscape and Pedestrian Enhancement Project
- → International Boulevard Streetscape Plan
- → Laurel District "Transportation for Livable Communities" Planning Grant
- → MacArthur Streetscape Plan
- → San Pablo Corridor Plan
- → Splash Pad Park Streetscape Plan

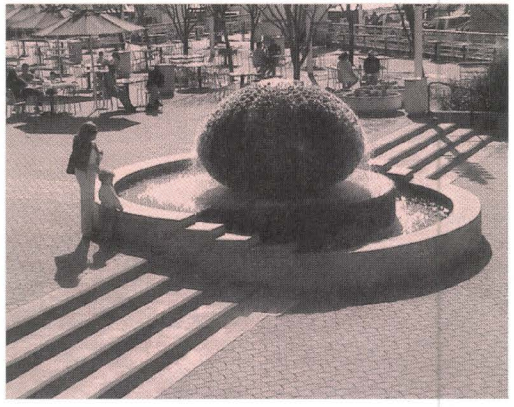
Other Pedestrian-Related Plans

- → Americans with Disabilities Act (ADA) Transition Plan
- → Bay Trail Master Plan
- → Open Space, Conservation, and Recreation Element – Trail Plans

Suggested Ordinances

- → Consider adopting an ordinance to codify the design guidelines for sidewalks recommended by the Pedestrian Master Plan.
- → Consider adopting an ordinance to codify a crossing treatment policy based on current research by the Federal Highway Administration (2002a, 2002b).

Priority Projects



The following list identifies twenty years of priority projects to improve safety, access, and streetscaping for pedestrians in the City of Oakland. It is prioritized into two phases: projects to be completed within one to five years and projects to be completed within six to twenty years. This list is composed of projects approved by City Council for Measure B funding and additional projects identified by the survey of the Pedestrian Route Network. In spring 2002, City Council approved a project list as the City's recommended pedestrian and bicycle safety projects for the Alameda County Transportation Improvement Authority (ACTIA). These projects are eligible for funding from the Measure B 1/2 cent sales tax for transportation in fiscal year 2002-03 to fiscal year 2007-08. The priority project list also includes potential projects identified by the survey of the Pedestrian Route Network. The majority of projects specified by the Measure B list were also identified by the route network survey. The projects identified by the route network survey but not included in the City's Measure B projects are listed as "Candidate Sites" for pedestrian and crosswalk improvements under both phases.

Pedestrian safety and access are central components of this list. When adopting the Measure B list, City Council identified the importance of streetscaping projects that improve pedestrian safety. They emphasized that streetscaping projects with a primary focus on aesthetics are of secondary importance. Additionally, the street re-striping projects identified as bicycle projects are important pedestrian improvements. Street re-striping projects benefit pedestrian crossing safety by reducing the number of motor vehicle travel lanes. For pedestrians beginning to cross the street, bicycle lanes also provide an important buffer zone and improve visibility with motor vehicle drivers.

For implementation, the proposed projects would require additional review by traffic engineering and under the California Environmental Quality Act (CEQA). Furthermore, engineering judgment is necessary to determine the specific locations and features of each project.

FIGURE 24 PEDESTRIAN MASTER PLAN PRIORITY PROJECTS, 1-5 YEARS

PROJECT NAME	ESTIMATED COST ($000)	BIKE	PED	GAP CLOSURE	INTERMODAL CONNECTION	ADA	COUNCIL DIST	SPONSOR AGENCY	COMMENTS SHORTFALLS ON FUNDED PROJECTS
1 PROJECT SHORTFALLS									
Streetscape Projects									
Eastlake Phase I (International: 5th-10th/E 12th: 5-8th)	250	X	X			X	2	CEDA	contingency
San Pablo Median (53rd - 67th)	100		X				1	PWA	pedestrian refuge
Splash Pad Park Streetscape (Grand/Lake Park/ Lakeshore/MacArthur)	100		X		X	X	2	CEDA	street median/sidewalk/curb ramps
Washington Streetscape Improvements (7th-9th & 9th: Broadway to Clay)	200		X	X	X	X	3	CEDA	feasibility, design & construction
Street Re-Striping (approved as per Bicycle Master Plan and Measure B Priority list submitted to City Council on June 11, 2002)									
Telegraph Avenue (16th to Aileen)	200		X	X			1,3	PWA	feasibility, design & construction
2 LOCAL MATCH FOR NEW GRANTS									
Hazard Elimination and Safety (HES) Grants	200		X	X			ALL	PWA	$40K annual request
Safe Routes To School (SRS) Grants	250	X	X				ALL	PWA	$50K annual request
Tree Damaged Sidewalk/ Curb & Gutter Repair	520	X	X			X	ALL	PWA	Match for $4M federal grants
3 NEW PED/BIKE PROJECTS									Outside grants will also be sought for these projects
Pedestrian Access/Safety									
Signal Improvements									
Signal Countdowns and Pedestrian Signals (Citywide)	450		X			X	ALL	PWA	$90K annual request
Traffic Signals (Citywide - one signal per year)	1,250		X			X	ALL	PWA	$250K annual request
Traffic Signal Modifications (Citywide)	125		X			X	ALL	PWA	$25K annual request
On-Call Audible Signal Program	450		X			X	ALL	PWA	$90K annual request
Pedestrian and Crosswalk Improvements Candidate Streets (based on highest collisions): **Foothill Boulevard** (MacArthur Boulevard to 3rd Avenue) **Fruitvale Avenue** (MacArthur Boulevard to 12th Street) **Grand/W. Grand Avenue** (Elwood Avenue to Adeline Street) **12th Street** (10th Avenue to Brush Street) **Franklin Street** (22nd Street to Embarcadero)									

FIGURE 24 PEDESTRIAN MASTER PLAN PRIORITY PROJECTS, 1-5 YEARS (CONTINUED)

PROJECT NAME	ESTIMATED COST ($000)	BIKE	PED	GAP CLOSURE	INTERMODAL CONNECTION	ADA	COUNCIL DIST	SPONSOR AGENCY	COMMENTS SHORTFALLS ON FUNDED PROJECTS
35th Avenue (MacArthur Boulevard to San Leandro) **98th Avenue** (Bancroft Avenue to Edes Avenue) **High Street** (MacArthur Boulevard to I-880) **MacArthur Boulevard** (Dimond District), (Piedmont Avenue to San Pablo Avenue), (Canon Avenue to Park Boulevard) **Mountain Boulevard** (Ascot Drive to Lake Temescal) College Avenue Candidate Intersections (based on highest collisions): International Boulevard and 64th Avenue Fruitvale Avenue and Foothill Boulevard 38th Avenue and MacArthur Boulevard 7th Street and Franklin Street International Boulevard and 90th Avenue 14th Street and Madison Street Fruitvale Avenue and MacArthur Boulevard International Boulevard and 35th Avenue 40th Street and Telegraph Avenue 77th Street and Bancroft Avenue D Street and 98th Street Highest collision sites near schools Highest collision sites near senior centers	1,000		X			X	ALL	PWA	$200K annual request
Other Ped Projects									
27th/Bay Place Ped and Bike Improvements (Grand Ave - Telegraph)	200	X	X	X	X	X	3	PWA	feasibility, design & construction
Coliseum 66th Overpass (Bike and Ped Impr)	400	X	X	X	X	X	7	PWA	feasibility, design & construction
Hill Area Stairway Rehabilitation (one stairway)	375		X	X			4	PWA	feasibility, design & construction
MacArthur BART Underpass, Transit Village and Access Improvements	TBD	X	X	X	X	X	1	CEDA	feasibility, design & construction
Streetscape Projects									
Coliseum BART Transit Hub Streetscape	2,000	X	X			X	7	CEDA	feasibility, design & construction
Eastlake Phase II (International: 10th-14th; E 12th -8th to 14th Avenue)	1,800	X	X	X X		X	2	CEDA	feasibility, design & construction
Grand Avenue Streetscape (I-580 to Harrison)	TBD		X				3	CEDA	feasibility, design & construction
3 NEW PED/BIKE PROJECTS									
Streetscape Projects									
International Blvd Streetscape and Fruitvale up to 33rd	2,400		X	X	X	X	5	CEDA	feasibility, design & construction
Laurel District/MacArthur Streetscape Phase II	2,200		X	X	X	X	4	CEDA	feasibility, design & construction
San Pablo Gateway at Emeryville Border	TBD		X	X	X	X	1	CEDA	feasibility, design & construction
Seminary/MacArthur Streetscape	2,000		X	X	X	X	6	CEDA	feasibility, design & construction
Downtown Streetscape Master Plan Projects									
Oak St. Street/Sidewalks 2nd to 14th	2,000		X	X	X	X	2	CEDA	feasibility, design & construction

FIGURE 24 PEDESTRIAN MASTER PLAN PRIORITY PROJECTS, 1-5 YEARS (CONTINUED)

PROJECT NAME	ESTIMATED COST ($000)	BIKE	PED	GAP CLOSURE	INTERMODAL CONNECTION	ADA	COUNCIL DIST	SPONSOR AGENCY	COMMENTS SHORTFALLS ON FUNDED PROJECTS
Telegraph Ave Street/Sidewalks 16th-20th	2,500		X	X	X	X	3	CEDA	feasibility, design & construction
Telegraph Ave (20th - 40th)bike and ped	TBD	X	X	X	X	X	1	CEDA	feasibility, design & construction
Webster St. Street/Sidewalks 6th to 11th	1,000		X	X	X	X	2	CEDA	feasibility, design & construction
Chinatown Streetscape Project	TBD		X	X	X	X	2	PWA	feasibility, design & construction
Temescal Area Improvements	TBD	X	X		X	X	1	CEDA	feasibility, design & construction
West Oakland 8th St (Market to Pine; Center - 7th & 8th; Mandela - 7th & 8th)	600		X		X	X	3	CEDA	feasibility, design & construction
Webster St. Street/Sidewalks 6th to 11th	1,000		X	X	X	X	2	PWA	feasibility, design & construction
West Oakland Bay Trail Sidewalk Improvements (2nd/Brush/3rd St. between Broadway-Union)	100		X	X	X	X	3	CEDA	feasibility, design & construction
West Oakland Transit Village Access (7th Street: Union to Wood)	TBD	X	X	X	X	X	3	CEDA	feasibility, design & construction
Street Re-Striping (approved as per Bicycle Master Plan and Measure B Priority list submitted to City Council on June 11, 2002)									
Bancroft Avenue (98th to San Leandro border)	100	X	X	X			7	PWA	feasibility, design & construction
Broadway Corridor (MacArthur to Old Tunnel Road)	200	X	X	X			1	PWA	feasibility, design & construction
MacArthur Blvd (Park to Lake Merritt)	200	X	X	X			2	PWA	feasibility, design & construction
Telegraph Ave Restriping (Aileen to Berkeley border)	50		X	X			1	PWA	feasibility, design & construction
4 Citywide Curb Ramp Program	250		X			X	ALL	PWA	$50K annual request
On-call curb ramp program	450		X			X	ALL	PWA	$90K annual request local match for app. $400,000/annual Federal Grants
5 Street Resurfacing Program						X	ALL	PWA	Backfills portion of street resurfacing program costs
New Curb Cuts for Pedestrian Ramps	1,250		X	X	X	X	ALL	PWA	$250K annual request
Street Name & Traffic Sign Replacement	1,000		X	X	X	X	ALL	PWA	$200K annual request
TOTAL Estimated Cost (Year 1-5 program)	27,070								

FIGURE 25 PEDESTRIAN MASTER PLAN PRIORITY PROJECTS, 6-20 YEARS

PROJECT NAME	ESTIMATED COST ($000)	BIKE	PED	GAP CLOSURE	INTERMODAL CONNECTION	ADA	COUNCIL DIST	SPONSOR AGENCY	COMMENTS SHORTFALLS ON FUNDED PROJECTS
1 PROJECT SHORTFALLS									Shortfalls on funded projects
Streetscape Projects									
Broadway Streetscape, Phase II (9th to 17th)	TBD		X	X	X	X	2	CEDA	sidewalk treatments
2 LOCAL MATCH FOR NEW GRANTS									Use to leverage new grants
Hazard Elimination and Safety (HES) Grants	600		X				ALL	PWA	$40K annual request
Safe Routes To School (SRS) Grants	750	X	X				ALL	PWA	$50K annual request
Tree Damaged Sidewalk/Curb & Gutter Repair	520	X	X				ALL	PWA	Match for $4M federal grants
3 NEW PED/BIKE PROJECTS									Outside grants will also be sought for these projects
Pedestrian Access/Safety									
Signal Improvements									
Traffic Signal Countdowns and Pedestrian Signals (Citywide)	1,350		X				ALL	PWA	$90K annual request
Traffic Signals (Citywide - one signal per year)	3,750		X				ALL		$250K annual request
Traffic Signal Modifications (Citywide)	375		X				ALL	PWA	$25K annual request/design & construction
On-call Audible Signal Program	1,350		X			X	ALL	PWA	$90K annual request
Pedestrian and Crosswalk Improvements (Citywide) Candidate Streets (based on highest collisions): **High Street** (International Boulevard to Tidewater Avenue); **High Street** (MacArthur Boulevard to Fairfax Avenue); **Martin Luther King Jr.** (51st Street to San Pablo Avenue); **Park Boulevard** (Beaumont Avenue to E18th Street); **Telegraph Avenue** (Upper Telegraph NCR); **Foothill Boulevard** (73d Avenue to Seminary Avenue); Edes Avenue; **MLK Jr.** (61st Street to 51st Street); **Seminary Avenue** (International Blvd. to Foothill Blvd.); **Piedmont Avenue;** **MacArthur Boulevard** (Canon Ave. to Park Boulevard); **Shattuck Avenue** (Shattuck/Telegraph NCR); **35th Avenue** (MacArthur Boulevard to San Leandro Blvd.); **51st/52nd Street** (Telegraph Ave. to Martin Luther King Jr.); **MacArthur Boulevard** (Piedmont Ave. to San Pablo Avenue); **West Grand Avenue** (MLK Jr. to Peralta Street) **14th Ave.**	3,750		X			X	ALL		$250K annual request/design & construction
Other Ped Projects 12th Street Corridor (Oak to International) ped/bike and multi-use path; and Lake Merritt connection, crosswalks and ped signals	3,000	X	X		X		2	CEDA	feasibility, design & construction

FIGURE 25 PEDESTRIAN MASTER PLAN PRIORITY PROJECTS, 6-20 YEARS (CONTINUED)

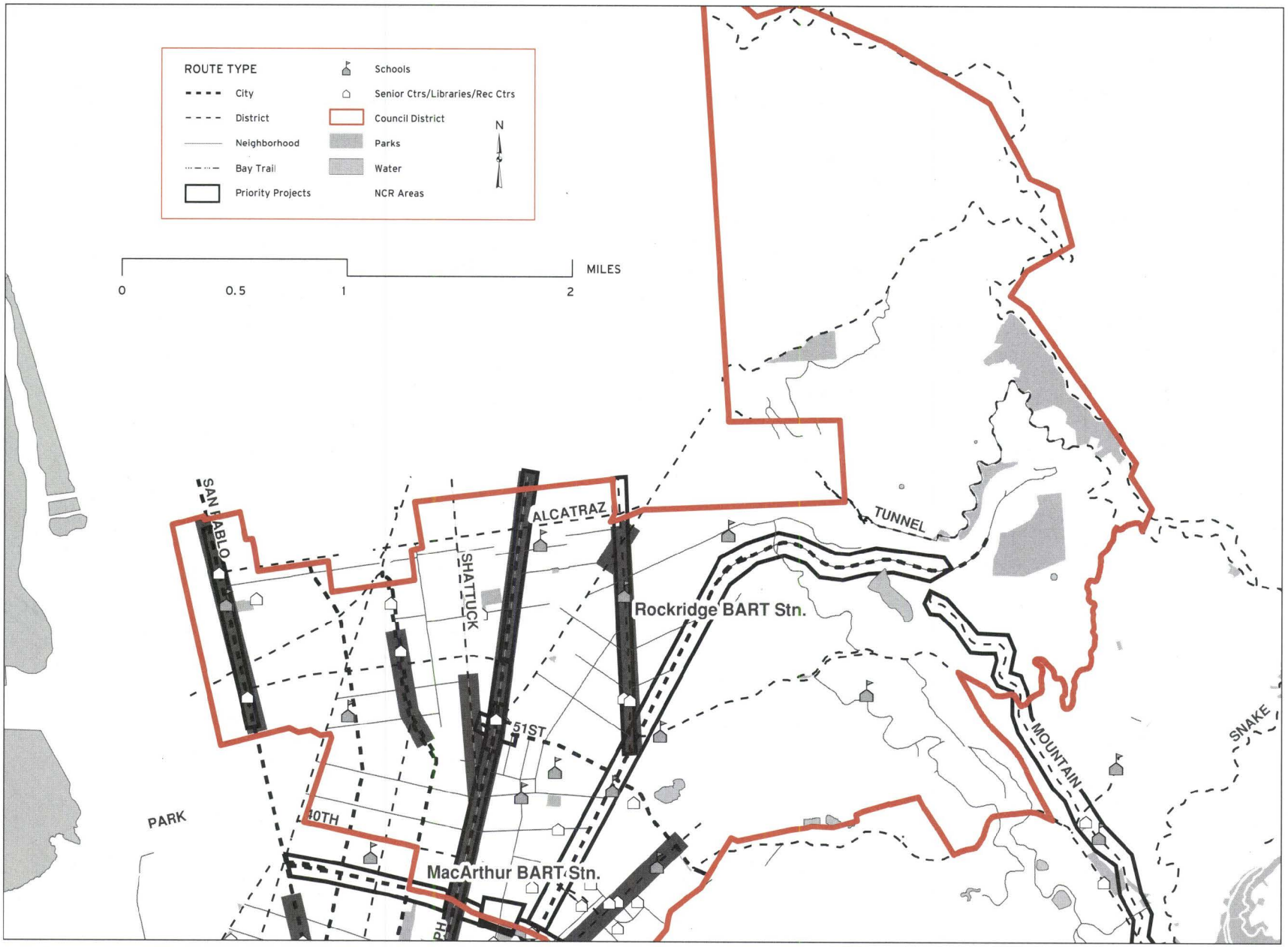
PROJECT NAME	ESTIMATED COST ($000)	BIKE	PED	GAP CLOSURE	INTERMODAL CONNECTION	ADA	COUNCIL DIST	SPONSOR AGENCY	COMMENTS SHORTFALLS ON FUNDED PROJECTS
Eastlake Phase II (International - 10th-14th; E 12th -8th to 14th Avenue)	1,800	X	X			X	2	PWA	feasibility, design & construction
El Embarcadero/Grand Ave. Bike and Ped Impr	500	X	X	X	X	X	3	CEDA	feasibility, design & construction
Foothill (28th Ave to High)	TBD		X	X	X	X	3	PWA	feasibility, design & construction
Hill Area Stairway Rehabilitation (one stairway)	375		X	X			4	CEDA	feasibility, design & construction
International Blvd. Streetscape - (Fruitvale to 39th & portions of Fruitvale and East 12th)	12,100		X	X	X	X	5	CEDA	feasibility, design & construction
International Blvd. Streetscape (42nd Ave to San Leandro border)	2,000		X	X	X	X	5,6,7	CEDA	feasibility, design & construction
Streetscape Projects									
23rd Avenue Streetscape	TBD		X	X			2	CEDA	feasibility, design & construction
Fruitvale Avenue (Estuary to MacArthur)	TBD		X		X	X	5	CEDA	feasibility, design & construction
Lake Merritt Channel Park Connection	TBD	X	X	X			2	CEDA	feasibility, design & construction
Lake Merritt Multi-Use Path Widening	4,373	X	X				2,3	CEDA	feasibility, design & construction
MacArthur BART Underpass and Access Improvements	TBD	X	X		X	X	1	CEDA	feasibility, design & construction
MacArthur, West Oakland, Coliseum, and Fruitvale BART Station Transit Village Bike/Ped Improvements	TBD	X	X		X	X	1,2,3,7	CEDA	feasibility, design & construction
Railroad Crossing Sidewalk Approaches (citywide)	TBD		X	X	X	X	VARIOUS	PWA	feasibility, design & construction
San Pablo Gateway at Emeryville Border	TBD		X	X	X	X	1	CEDA	feasibility, design & construction
Street Re-Striping (Approved as per Bicycle Master Plan and Measure B Priority List submitted to City Council on June 11, 2002)									
40th-Linda Street (Emeryville Border to Piedmont Border)	200	X	X	X	X		1	PWA	feasibility, design & construction
82nd-Golf Links (San Leandro to Mountain Blvd.)	400	X	X		X		6,7	PWA	feasibility, design & construction
Bay Trail Linkage - Brooklyn Basin Gap	500	X	X	X	X	X	5	CEDA	feasibility, design & construction
Bay Trail Linkage - High Street Gap	2,000	X	X	X			5	CEDA	feasibility, design & construction
Oakland Army Base Bay Trail Connection	TBD	X	X	X			3	CEDA	feasibility, design & construction
Broadway Corridor (25th St. to Embarcadero)	200	X	X	X			2,3	PWA	feasibility, design & construction
Foothill Blvd (42nd to Lake Merritt)	300	X	X				2,5	PWA	feasibility, design & construction
Fruitvale/Coolidge (East 12th St. to MacArthur Blvd.)	400	X	X	X	X		4,5	PWA	feasibility, design & construction
Market St/West St/Genoa Corridor (MacArthur to Berkeley border)	200	X	X	X	X		1,3	PWA	feasibility, design & construction
Oak St/Madison Corridor (Lakeside Dr. to 2nd St.)	150	X	X	X	X		2	PWA	feasibility, design & construction

FIGURE 25 PEDESTRIAN MASTER PLAN PRIORITY PROJECTS, 6-20 YEARS (CONTINUED)

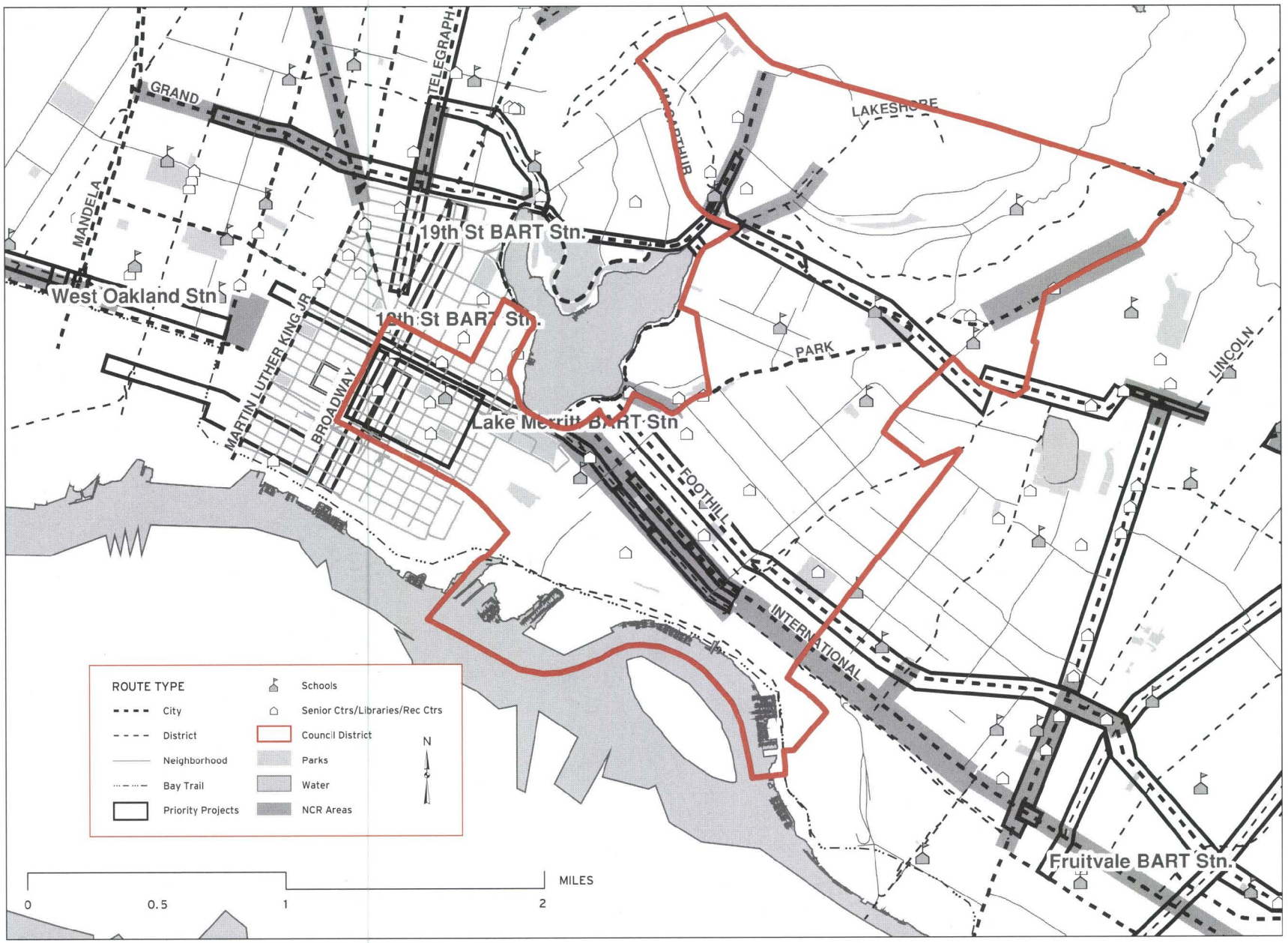
PROJECT NAME	ESTIMATED COST ($000)	BIKE	PED	GAP CLOSURE	INTERMODAL CONNECTION	ADA	COUNCIL DIST	SPONSOR AGENCY	COMMENTS SHORTFALLS ON FUNDED PROJECTS
Park Blvd/2nd Ave. (Bike Path and lane - Estuary to Shepherd Canyon)	2,000	X	X	X	X		ALL	PWA	feasibility, design & construction
4. Citywide Curb Ramp Program	750		X				ALL	PWA	$50K annual request (local match app. $400,000 Fed. Grants)
On-Call Curb Ramp Program	1,350		X			X	ALL	PWA	$90K annual request
5. Street Resurfacing Program			X	X	X	X	ALL	PWA	Backfills portion of st. resurfacing prog. costs
New Curb Cuts for Pedestrian Ramps	3,750		X	X	X	X	ALL	PWA	$250K annual request
Street Name & Traffic Sign Replacement	1,000								$200K annual request (5 years)
TOTAL Estimated Cost (Year 6-20 program)	49,793								

Pedestrian Route Network by District

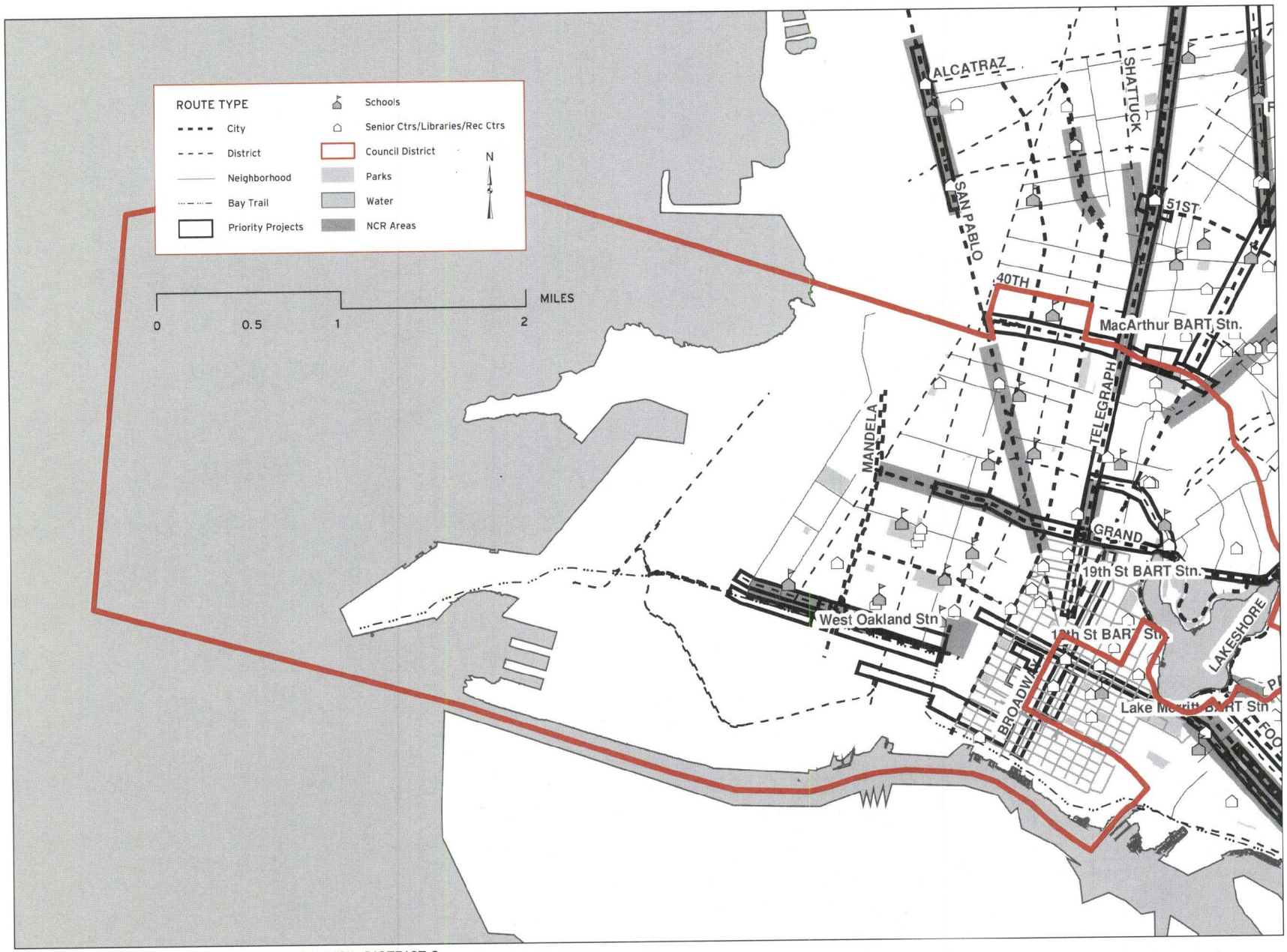
The following maps show the Pedestrian Route Network and priority projects within each Council District. For additional details, see the appendices on the Pedestrian Route Network Survey.



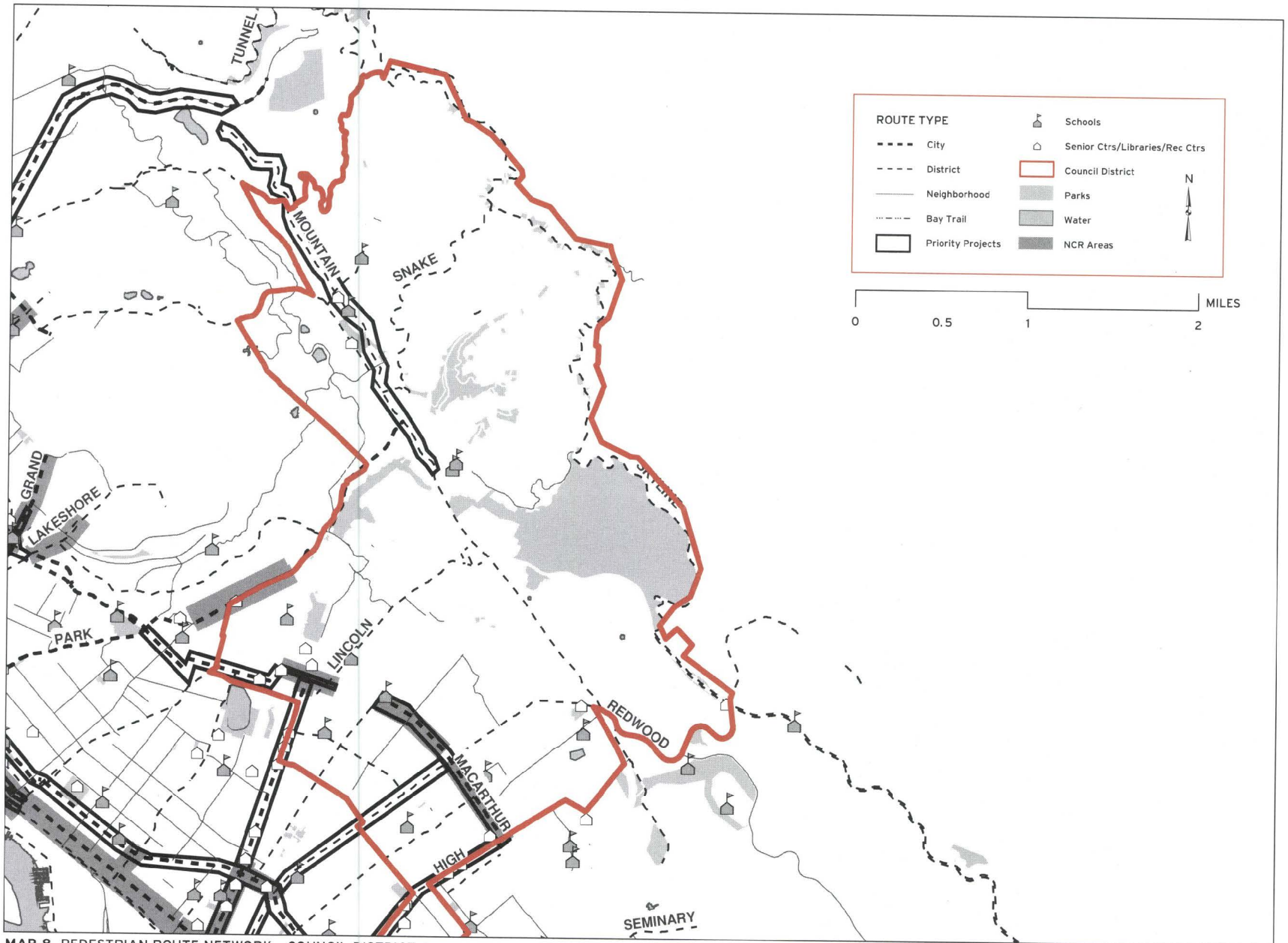
MAP 5 PEDESTRIAN ROUTE NETWORK COUNCIL DISTRICT 1



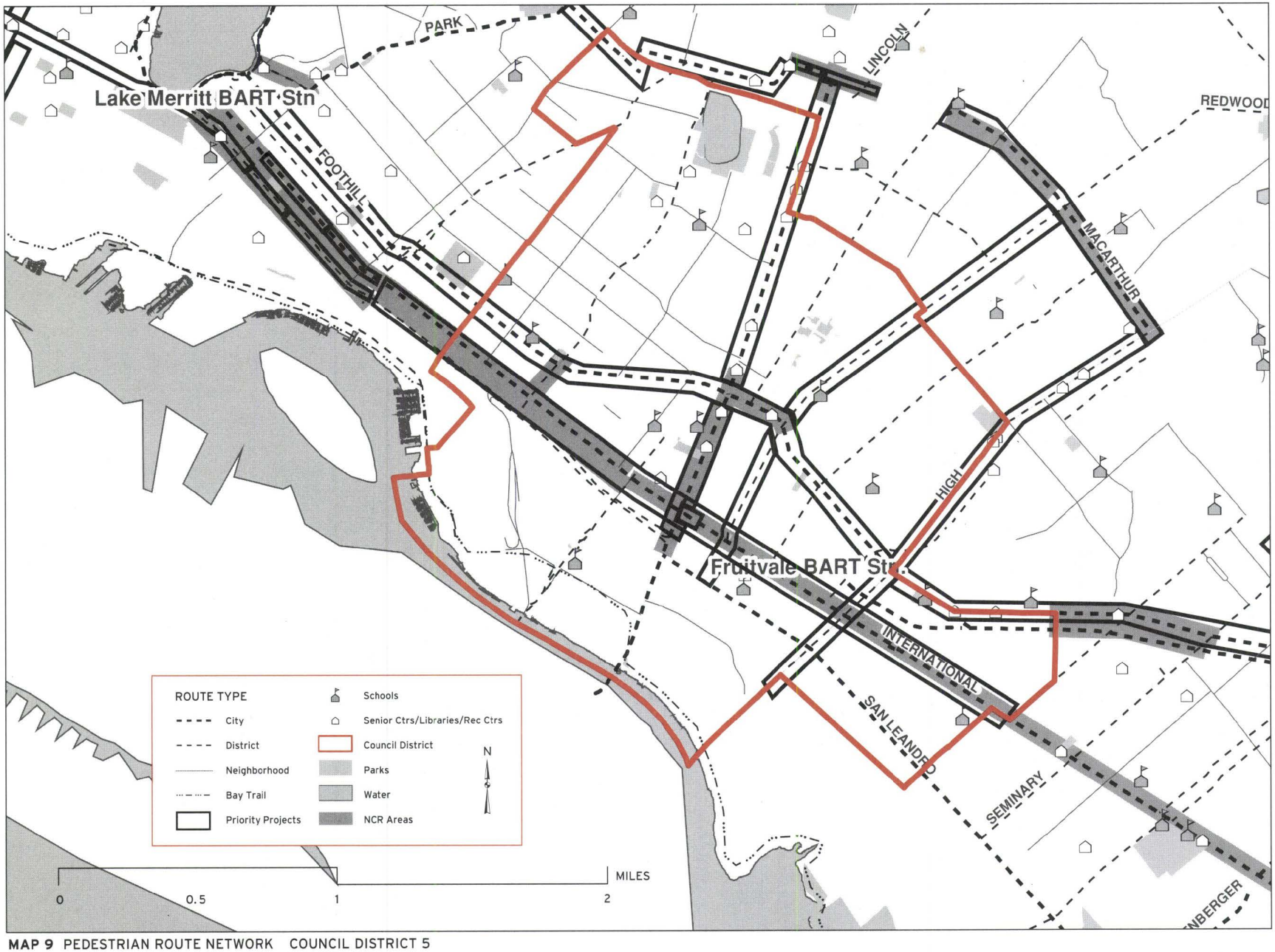
MAP 6 PEDESTRIAN ROUTE NETWORK COUNCIL DISTRICT 2



MAP 7 PEDESTRIAN ROUTE NETWORK COUNCIL DISTRICT 3

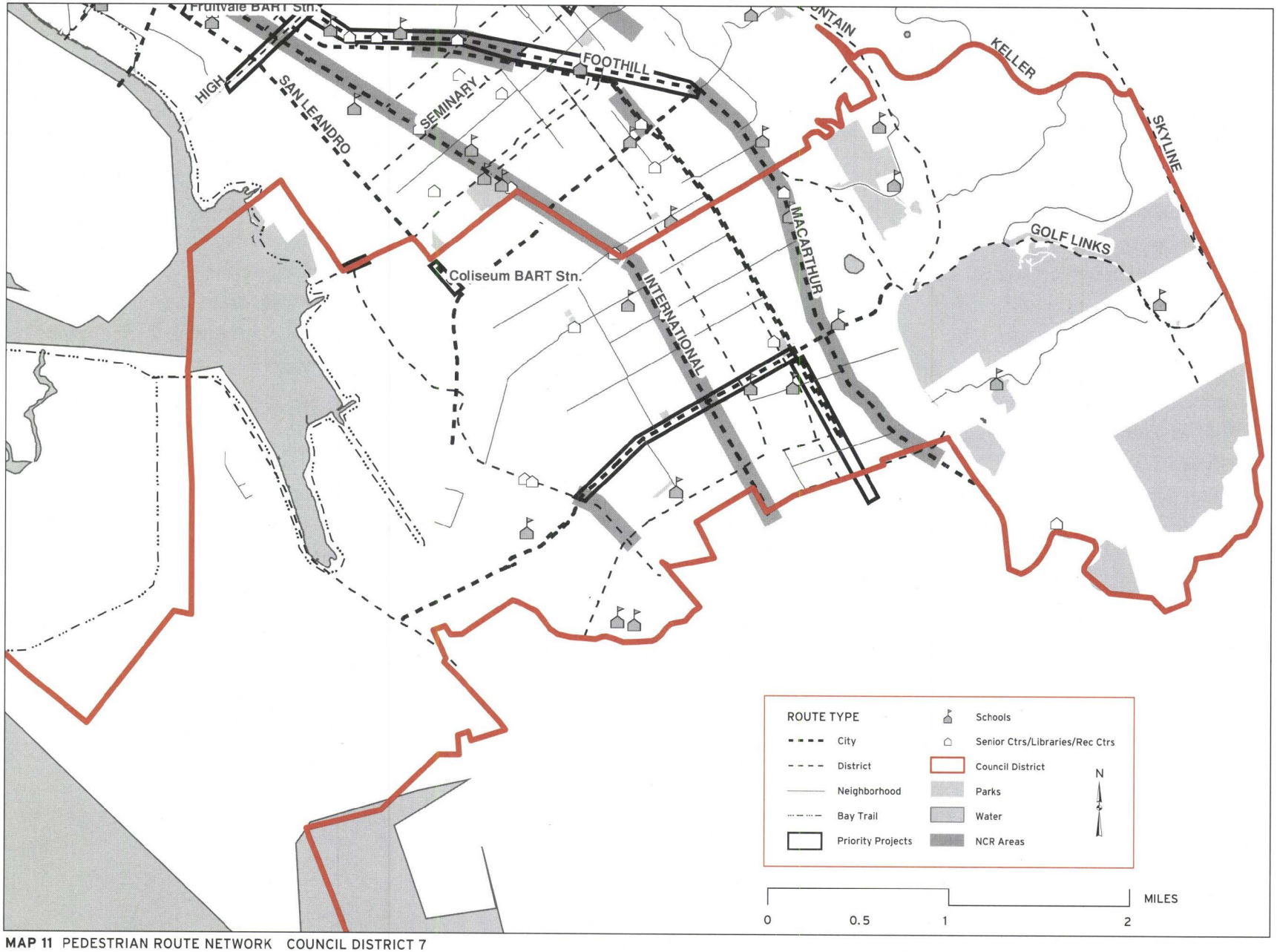


MAP 8 PEDESTRIAN ROUTE NETWORK COUNCIL DISTRICT 4



MAP 9 PEDESTRIAN ROUTE NETWORK COUNCIL DISTRICT 5

MAP 10 PEDESTRIAN ROUTE NETWORK COUNCIL DISTRICT 6



MAP 11 PEDESTRIAN ROUTE NETWORK COUNCIL DISTRICT 7

Staffing and Community Outreach

The Pedestrian Master Plan will require the dedicated efforts of city staff to fund, manage, and implement the policies and proposed projects. This plan recommends the creation of a full-time, managerial-level staff position. This person would provide expertise on pedestrian-related projects and policies to ensure the effective implementation of the Pedestrian Master Plan. Additional engineering, administrative, and traffic maintenance staff time will be required to support the realization of the Plan.

Those responsibilities will include staff support and coordination for the continuation of the Citizens Pedestrian Advisory Committee (CPAC). In addition to facilitating public participation by stakeholders, this committee will provide a regular forum for adapting the Plan through time and for reviewing other plans and projects in the City that are affected by the Pedestrian Master Plan. The continuing role of the CPAC should be clarified with respect to the Bicycle and Pedestrian Advisory Committee (BPAC) and the staff person should promote communication and coordination between the two advisory committees.

Major projects require community outreach processes to identify stakeholders, educate them on projects, and provide opportunities for comment and dialog. The education component is especially important given the wide range of pedestrian design treatments that may be unfamiliar to many people. These processes should promote consensus building between stakeholders and occur before City Council approval and grant funding are obtained. The community outreach process for particular projects should also build on the extensive community outreach process described in the chapter on "Existing Conditions."

Funding

In the City of Oakland, pedestrian infrastructure is financed through City programs and grant funding from county, regional, state, and federal agencies. Grants are likely the major source of current funding for pedestrian improvements in the City of Oakland and a growing pot of state and federal transportation funding is earmarked specifically for livable communities and pedestrian safety projects. For example, the City of Oakland received two "Safe Routes to School" grants for $450,000 and $499,000 in 2001 and 2002, respectively, to improve pedestrian safety and access around schools throughout the City. Furthermore, most state and federal funding for roadway improvements is now flexible enough to be used for pedestrian improvements.

The projects proposed by the Pedestrian Master Plan are formulated to be very competitive in attracting these grants. The Plan also capitalizes on the flexibility of current grant programs to fund pedestrian improvements as a part of larger transportation projects. The following list identifies existing City programs and promising sources for additional grant funding.

City Programs

- The On-Call Curb Ramp Program funded by the Americans with Disabilities Act Programs Division receives $90,000/year for on-demand projects.
- The In-Fill Curb Ramp Program administered by the Public Works Agency spends approximately $400,000/year of TEA, TDA, and Measure B funds for curb ramp in-fill projects.

Funding

- The Audible Signal Program funded by the Americans with Disabilities Act Programs Division receives $90,000/year for on-demand projects.
- The Speed Hump Program administered and funded by the Transportation Services Division evaluates and implements on-demand projects.
- Each Council District is allocated $225,000/year as a "pay-go" allowance that is sometimes used for pedestrian safety improvements.
- The Street Tree Program is financed by an assessment on property taxes that raises approximately $2.5 million/year.
- The municipal Capital Improvement Program (CIP) funds pedestrian improvements including traffic signals, sidewalk repair, and streetscaping. $1 million was dedicated to specific pedestrian safety projects in the 2001-2002 fiscal year.
- Community Development Block Grants (CDBG) provide $300,000/year to each community district for capital improvements in low-income neighborhoods.
- Other sources of City funding for pedestrian improvements may include local assessment districts, developer exactions, local bonds, and code enforcement.

Note: Depending on the cause of damage, sidewalk repairs are either the responsibility of the City or of the adjacent property owner. The Public Works Agency is responsible for fulfilling the city's obligations and their Sidewalk Master Plan is expected to make recommendations on funding sources.

Grants

Alameda County Transportation Improvement Authority (ACTIA)

- The Measure B non-motorized program provides $740,000/year to the City of Oakland for pedestrian and bicycle improvements.

Metropolitan Transportation Commission (MTC)

- TDA Article 3 provides $250,000 to $350,000 per year for pedestrian and bicycle facilities. Presently, $125,000 per year of this amount is earmarked for the City's curb ramp program to improve access for persons with disabilities.
- The Surface Transportation Program (STP) provides $21 million/year countywide in federal funds requiring an 11.5% match for infrastructure maintenance.
- The Congestion Mitigation and Air Quality (CMAQ) program provides $12-25 million/year countywide in federal funds requiring an 11.5% match for clean air projects including signal timing.
- Transportation Enhancement Activities / Transportation for Livable Communities (TEA/TLC) provides $27 million/year for the San Francisco Bay region requiring an 11.5% match for transportation

enhancements including pedestrian and bicycle facilities.

- Housing Incentive Program (HIP) provides between $500-$2,000/unit for streetscape improvements based on affordable housing densities from 25 units/acre to 60 units/acre. The program has a $9 million regional cap for 2001-2003.
- Statewide Transportation Improvement Projects (STIP) provide $20-25 million/year in state funds for capital projects included in the countywide plan.

Bay Area Air Quality Management District

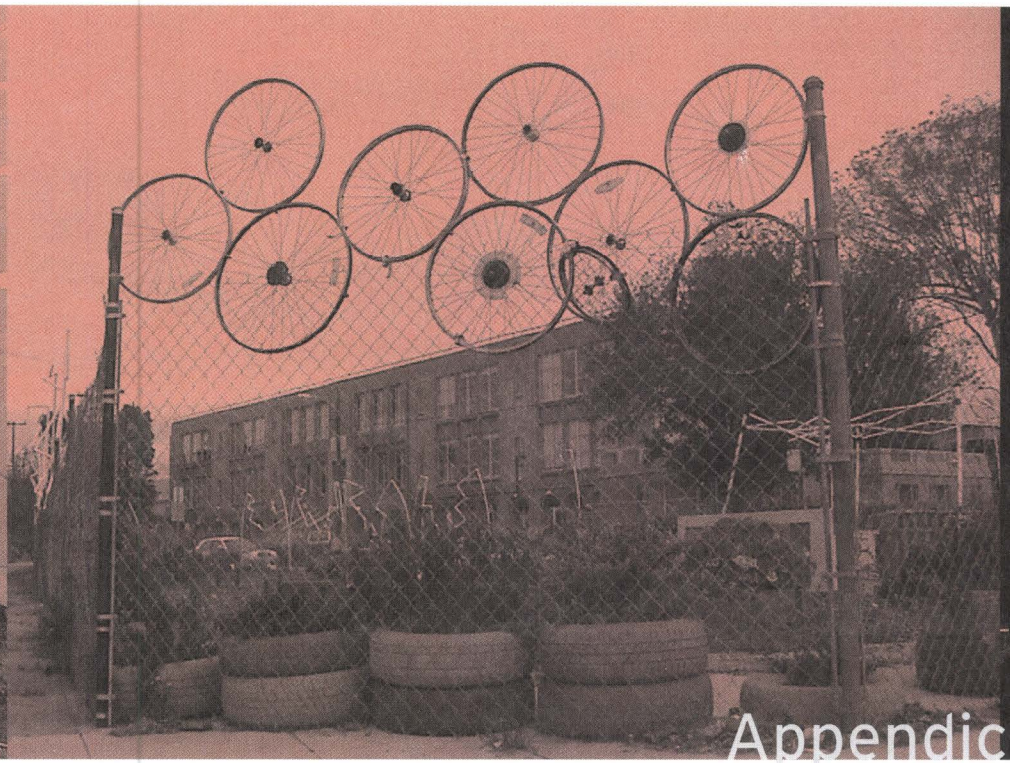
- TFCA provides $5 million/year region-wide in state funds requiring 25% local match for projects that improve air quality including pedestrian/bicycle improvements and signal timing.

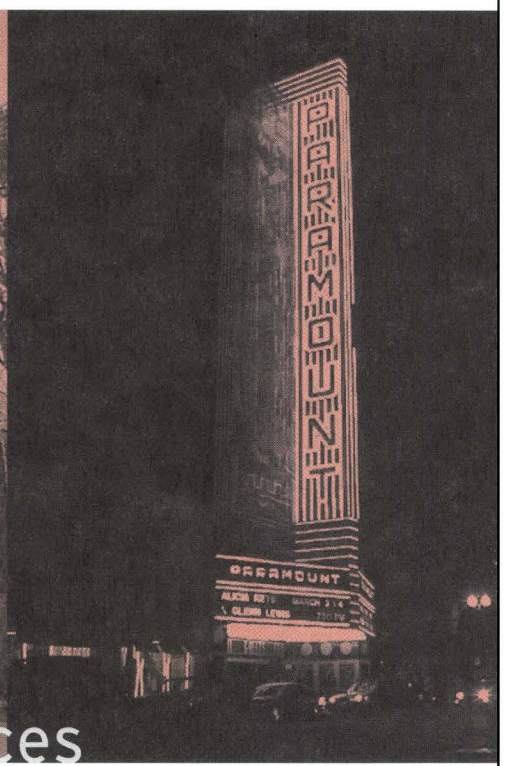
State Government

- Safe Routes to School provides $20 million/year in competitive grants for school-area pedestrian and bicycle improvements.
- Safe Passage provides $17 million/year statewide for traffic calming and pedestrian and bicycle facilities around schools.
- The Bicycle Transportation Account provides $5 million/year statewide for bicycle projects in approved bicycle plans (with $375,000 limit per project). While this funding cannot be used for pedestrian projects, bicycle projects are sometimes compatible with and reinforcing of pedestrian improvements.
- Hazard Elimination provides $360,000/project biannually with a 10% match to eliminate safety problems on public roads.
- Proposition 12 (Park Bonds) provides funds for trail segments, especially those linking the Bay and Ridge Trails.
- Proposition 13 (Water Bonds) provides funds for creek and watershed restoration associated with building along creeks.
- Jobs/Housing Balance provides $100 million/year for transportation, schools, and parks.
- The State Gas Tax is subvened through the Capital Improvement Program (CIP) for streets and roads.
- "Rails to Trails"-style projects are also sometimes eligible for state funding.

Federal Government

- The Federal Emergency Management Agency may be a funding source for walkways in the hills as emergency earthquake or fire routes.
- Transportation Enhancements are 10% of each state's Surface Transportation Program (STP) funds to be used for intermodal projects that promote transportation options.





Appendices

Appendix A: On-Street Routes

This appendix contains the Pedestrian Route Network Survey for on-street routes. All streets included in the route network are listed along with the end-points of the route on that street, the type of route, and the location of the route by council district. The Pedestrian Route Network Survey identified shortcomings in the pedestrian infrastructure along the route network. Potential project components were then applied to particular street segments to build a long list of potential pedestrian improvements throughout the City. These components and their associated abbreviations are explained in the figure titled "Potential Project Components and Cost Estimates."

Project Context Evaluation

Given the large number of streets in the Pedestrian Route Network, a simple scheme was developed for evaluating the respective contexts of potential projects. The evaluation allows for an initial comparison of the relative importance and impact of potential projects on streets dispersed throughout the City. This section explains the numbers listed under the column titled "Context" in the figure listing "On-Street Routes." The potential projects identified in the Pedestrian Route Network survey provide a comprehensive examination of pedestrian conditions in the City. Priority projects are identified in the Implementation Plan.

Criteria were developed as yes/no questions to address the issues of safety, pedestrian activity areas, transportation connections, feasibility, and equity. "Safety" addresses how well the potential project would improve safety and access for pedestrians on the street itself. "Pedestrian Activity Areas" identifies the relative importance of particular streets based on the activity centers and pedestrian volumes that those streets serve. "Transportation Connections" considers how well the project's pedestrian improvements also support train, bus, and bike ridership. "Feasibility" specifies the practicality and effectiveness of implementing the projects. And lastly, "Equity" addresses how the benefits of potential projects are distributed.

On its own, this context evaluation is not adequate for prioritizing future pedestrian projects. Differences of one or two points between potential projects may not be significant. All evaluation criteria are given equal weight. Because this evaluation does not take into account the length of street segments, longer segments tend to be evaluated more favorably. Professional judgment and citizen input should continue to shape project prioritization. For implementation, the proposed projects would require additional review by traffic engineering and under the California Environmental Quality Act (CEQA). Furthermore, engineering judgment is necessary to determine the specific locations and features of each project.

Appendix A: On-Street Routes

The following questions were asked of each potential project identified by the Pedestrian Route Network survey. Each "yes" answer was counted as one point. The results are listed under the "Context" column in the figure titled "On-Street Routes."

Safety

- ➔ Does the project improve a street with a history of pedestrian collisions?
- ➔ Does the project improve dangerous crossings?
- ➔ Does the project complete missing sidewalks?
- ➔ Does the project improve access for persons with disabilities?

Pedestrian Activity Areas

- ➔ Does the street serve a pedestrian-oriented commercial district?
- ➔ Does the street serve a school zone?
- ➔ Does the street serve a facility for seniors or people with disabilities?
- ➔ Does the street serve a park?
- ➔ Does the street carry a high volume of pedestrians?

Transportation Connections

- ➔ Is the street located within 1/2 mile of a BART station?
- ➔ Does the street have bus service or does it connect to a street with bus service?
- ➔ Does the project improve routes specified by the Bicycle Master Plan?

Feasibility

- ➔ Does the project have local support?
- ➔ Is the project compatible with current land uses?
- ➔ Do the project's benefits substantially outweigh its costs?
- ➔ Is funding readily available for this type of project?

Equity

- ➔ Does the project contribute to the mitigation of transportation problems caused by past projects?
- ➔ Does the project address resident concerns identified in outreach presentations?

FIGURE 26 POTENTIAL PROJECT COMPONENTS AND COST ESTIMATES

	COMPONENT	UNIT COST*
CROSSING IMPROVEMENTS		
CI 1	4-foot wide minimum median with refuges for length of street	$135 (per linear foot)
CI 2	4-foot wide minimum refuge islands at regular intervals at intersections (includes improvement to existing median)	$2,525 (20 feet in length)
CI 3	6-foot bulb-outs onto Major Street with 2 curb cuts each at regular intervals at intersections (including inlet, manhole, & 50-foot drain pipe)	$24,200 (per corner)
CI 4	Signalized intersection with pedestrian signal heads at all approaches and audible pedestrian signals (per intersection)	$135,000
WIDEN SIDEWALKS		
WS 1	Replace existing sidewalk condition with minimum 10-foot sidewalk (6-foot through passage zone plus 4-foot utility zone) and add bulb-outs at major intersections (collector streets)	$135 (per linear foot)
WS 2	Replace existing sidewalk with minimum 12-foot sidewalk section (8-foot through passage zone plus 4-foot utility zone) and add bulb-outs at major intersections (arterial streets)	$155 (per linear foot)
WS 3	Tree bulb-outs, 4 X 6 curbed tree wells in the parking zone at regular intervals (approx. 30 feet)	$2,500 (per tree well)
TRAIL		
T1	Concrete 6-foot path	$50 (per linear foot)
T2	Wood staircase, 6-foot width, with wood handrails	$250 (per linear foot)
T3	Cement staircase, 6-foot width, with metal handrails	$1,000 (per linear foot)
STREETSCAPING		
L1	Pedestrian-scale historic-style lighting at 50-foot intervals on 14-foot post	$7,500 (per light standard)
S1	Rectangular pedestrian route sign indicating local destinations and posted at major decision points.	$100 (per location)

* The unit costs for potential project improvements listed in this table do not include the following additional expenses: Contingency: 25.0%, Design: 12.0%, Construction Management: 8.0%, Contract Compliance: 3.5%

Appendix A: On-Street Routes

FIGURE 27 ON-STREET ROUTES

NAME	LOCATION	ROUTE TYPE	DISTRICT	POTENTIAL PROJECT COMPONENTS	CONTEXT
105th Avenue		District	7		
106th Avenue		Neighborhood	7		
10th Avenue		Neighborhood	2		
13th Avenue		Neighborhood	2		
14th Avenue	E12th St to MacArthur Blvd	District	2,5	CI-2, CI-3	10
14th Street	Brush St. to Mandela Pkwy	City	3	CI-2, CI-3	11
16th Avenue		Neighborhood	2		
16th Street		Neighborhood	2		
17th Street		Neighborhood	3		
18th Street		Neighborhood	3		
19th Avenue		Neighborhood	2, 5		
20th Street		Neighborhood	3		
23rd Avenue	E12th to MacArthur	District	5	CI-3	10
27th Street	San Pablo Ave to Harrison	District	3	CI-2, CI-3	9
28th Avenue		Neighborhood	5		
29th Avenue		District	5		
29th Street		Neighborhood	3		
32nd Street/Brockhurst Street		Neighborhood	3		
34th Street		Neighborhood	3		
35th Avenue/Redwood Rd.	International Blvd to Redwood Rd	District	4, 5	CI-3	13
37th Avenue		Neighborhood	5		
38th Avenue	Foothill to MacArthur	District	4, 5		
38th Avenue	International to Foothhill, Spot: Mid-block	District	5	CI-3 (SPOT)	7
38th Street		Neighborhood	3		
39th Avenue		Neighborhood	4		
3rd Street	Union St to Mandela Pkwy	District	3	EXISTING PLAN: BAY TRAIL, T-1	9
40th Avenue		Neighborhood	5		
40th Street	Whole Street	District	1,3	CI-2, CI-3	10
42nd Street		Neighborhood	1		
45th Street		Neighborhood	1		
51st Street/Pleasant Valley Avenue	Shattuck Ave. to Rose Ave.	City	1	CI-2, CI-3	9
52nd Avenue		Neighborhood	5		
54th Avenue		Neighborhood	5		
54th Street		Neighborhood	1		
55th Avenue		District	6		
55th Street		Neighborhood	1		
59th Street/ Forest Avenue		Neighborhood	1		
5th Avenue		Neighborhood	2		
61st Street		Neighborhood	1		
62nd Avenue		Neighborhood	6		
63rd Street		Neighborhood	1		
64th Avenue		Neighborhood	6		
66th Avenue	San Leandro to Oakport	District	6	WS-2	9
66th Avenue/ Havenscourt Blvd.	Bancroft to Oakport	District	6	WS-1	
69th Avenue		Neighborhood	6, 7		
73rd Avenue/ Hegenberger	Highway 880 to International	City	7	CI-2, WS-2	12
73rd Avenue/ Hegenberger	International to MacArthur	City	6	CI-2, CI-3	10
77th Avenue		Neighborhood	6		
79th Avenue		Neighborhood	6		
7th Street	880 to Oakland Middle Harbor	City	3	WS-2	6
7th Street	Wood St. to Brush St.	City	3	CI-2, CI-3	13

FIGURE 27 ON-STREET ROUTES (CONTINUED)

NAME	LOCATION	ROUTE TYPE	DISTRICT	POTENTIAL PROJECT COMPONENTS	CONTEXT
81st Avenue		Neighborhood	6,7		
82nd Avenue	MacArthur to International	District	6,7	CI-3	10
85th Avenue		Neighborhood	7		
88th Avenue		Neighborhood	7		
8th Street	Union St to Pine St	District	3	EXISTING PLAN: ACORN-PRESCOTT PLAN	9
92nd Avenue		Neighborhood	7		
98th Avenue	Golf Links Road to Airport Drive	City	7		
98th Avenue	MacArthur to San Leandro	City	7	EXISTING PLAN: AIRPORT CONNECTOR, CI-3	10
9th Avenue		Neighborhood	2		
Acalanes Drive		Neighborhood	7		
Adeline Street	Whole Street	District	1, 3	WS-1	15
Aileen St		District	3		
Alameda Avenue		Neighborhood	5		
Alcatraz Avenue		District	1	CI-3	11
Alida Street		Neighborhood	4		
Apgar Street		Neighborhood	1		
Ascot Drive		Neighborhood	4		
Athol Avenue		Neighborhood	3		
Avenal Avenue		Neighborhood	6		
Bancroft Avenue	Camden to 106th	City	6,7	CI-2, CI-3	10
Bancroft Avenue	International to Camden	City	5,6	CI-3	12
Bay Pl.		District	3		
Bellvue Avenue		Neighborhood	3		
Bergedo Drive		Neighborhood	7		
Birch Street		Neighborhood	6		
Boulevard Way		Neighborhood	2		
Brann Street		Neighborhood	6		
Breed Street		Neighborhood	7		
Broadway Avenue	College to MacArthur	City	1	CI-1, CI-3	12
Broadway Avenue	Highway 13 to College	City	1	CI-2, CI-3	11
Broadway Terr.	Broadway to Highway 13 (Lake Temescal)	District	1	WS-1	7
Brookdale Avenue		Neighborhood	4, 5, 6		
Brooklyn Avenue		Neighborhood	2		
Brown Avenue		Neighborhood	4		
Cairo Rd.		Neighborhood	7		
California Street		Neighborhood	4		
Camden Street		Neighborhood	6		
Campbell Street		Neighborhood	3		
Campus Drive		Neighborhood	6		
Canon Avenue		Neighborhood	4		
Carlson Street		Neighborhood	4		
Carmel Street		Neighborhood	4		
Carrington Street/ Galindo Street		Neighborhood	5		
Carson Street		Neighborhood	4, 6		
Castle Drive		Neighborhood	4		
Chabot Rd./ Roble Rd.		Neighborhood	1		
Chetwood Street		Neighborhood	2		
Claremont Avenue	Whole Street	District	1	CI-3	10
Clarewood Drive		Neighborhood	4		
Clay Street		Neighborhood	3		
Cleveland Street		Neighborhood	2		

Appendix A: On-Street Routes

FIGURE 27 ON-STREET ROUTES (CONTINUED)

NAME	LOCATION	ROUTE TYPE	DISTRICT	POTENTIAL PROJECT COMPONENTS	CONTEXT
Clifton Street		Neighborhood	1		
Colby St		Neighborhood	1		
College Avenue	Whole Street	District	1	CI-3, WS-3	12
Columbian Drive		Neighborhood	6		
Congress Avenue		Neighborhood	4		
Coolidge Avenue	MacArthur to Foothill	District	4,5	CI-3	10
Courtland Avenue/42nd Avenue	International to High	District	5	WS-1	9
D Street		Neighborhood	7		
Davidson Way		Neighborhood	2		
Doolittle Drive		District	7		
Dover Street		Neighborhood	1		
Downtown Streetscape and Transportation Master Plans			2,3	EXISTING PLAN: DOWNTOWN STREETSCAPE AND TRANSPORTATION MASTER PLANS	
Durant Street		District	7		
E 12th Street	19th Ave to 13th Ave	District	2		
E Street		Neighborhood	7		
E. 10th Street		Neighborhood	5		
E. 12th Street	1st Ave. to 13th Ave.	District	2	EXISTING PLAN: EASTLAKE COMMUNITY PLAN	10
E. 15th Street	1st Ave. to 14th Ave	District	2		
E. 16th Street		Neighborhood	5		
E. 18th Street		Neighborhood	5		
E. 19th St		Neighborhood	2,5		
E. 21st Street		Neighborhood	2,5		
E. 23rd Street		Neighborhood	5		
E. 24th Street		Neighborhood	2		
E. 27th Street		District	5		
E. 27th Street		Neighborhood	2		
E. 28th Street		Neighborhood	2		
E. 31st Street		Neighborhood	5		
E. 38th Street		Neighborhood	2		
E. 9th Street		Neighborhood	5		
E12st Street	1st-13th Ave., 19th Ave. to Fruitvale	District	2		
E18th Street	Park Blvd to Lakeshore	District	2,3	CI-2, CI-3	11
Echo Street		Neighborhood	1		
Edes Avenue	whole street	District	7		
Edgewater Drive	Hegenberger to Damon Slough	Neighborhood	7	T-1	7
Elysian Fields		Neighborhood	7		
Embarcadero East		District	2,5		
Embarcadero West		Neighborhood	2,3		
Empire Rd.		Neighborhood	7		
Estepa Drive		Neighborhood	7		
Euclid Avenue		Neighborhood	3		
Excelsior Avenue		Neighborhood	2,4		
Fallon Street		Neighborhood	2		
Ferro Street		Neighborhood	3		
Filbert Street		Neighborhood	3		
Fleming Avenue		Neighborhood	6		
Fontaine Street		Neighborhood	7		
Foothill Blvd.	14th Ave to MacArthur	City	2,4,5,6	WS-2	14
Foothill Blvd.	Lakeshore to 14th Ave	City	2,3		
Ford Street		Neighborhood	5		

FIGURE 27 ON-STREET ROUTES (CONTINUED)

NAME	LOCATION	ROUTE TYPE	DISTRICT	POTENTIAL PROJECT COMPONENTS	CONTEXT
Forest Avenue		Neighborhood	1		
Fruitvale Avenue	Foothill to Alameda	City	5	CI-2, CI-3	14
Fruitvale Avenue	Macarthur to Foothill	City	4,5	CI-2, CI-3	13
Genoa Street		Neighborhood	1		
Glen Park Rd.		Neighborhood	4		
Glenfield Avenue		Neighborhood	4		
Golf Links/ Grass Valley		District	7		
Grand Avenue	580 to Jean St.	City	2	CI-2, CI-3	13
Grand Avenue	580 to Mandela Parkway	City	3	EXISTING PLAN: GRAND AVE. IMPROVEMENTS	13
Greenly Drive		Neighborhood	6		
Grizzly Peak Blvd.		District	1		
Grosvenor Rd./ LaSalle Avenue		Neighborhood	2		
Hampel Street		Neighborhood	4		
Harbor Bay Pkwy.		District	7		
Harbord Drive		Neighborhood	4		
Harrison Street	Bayo Vista to Oakland Ave	District	1,3	CI-3	8
Hearst Avenue		Neighborhood	4		
Hegenberger Loop		Neighborhood	7		
High Street	MacArthur to San Leandro	District	4,5, 6	CI-2, CI-3	13
High Street	San Leandro to Alameda Ave	District	5,6	CI-3, WS-1	8
Hiller Rd.		Neighborhood	1		
International Blvd.	whole street	City	2,5,6,7	EXISTING PLAN: INTERNATIONAL BLVD. MAIN ST.; CI-2, CI-3	15
John Street		Neighborhood	1		
Jones Avenue		Neighborhood	7		
Kansas Street		Neighborhood	4		
Keller Avenue		District	6,7		
Kennedy Street		Neighborhood	5		
Kingsland Avenue		Neighborhood	6		
Knight Street		Neighborhood	7		
Krause		Neighborhood	6		
La Cresta Avenue		Neighborhood	4		
Lake Merritt Master Plan			2,3	EXISTING PLAN: LAKE MERRITT MASTER PLAN	
Lake Park Avenue	Grand Ave. to Lakeshore Ave.	District	2	EXISTING PLAN: SPLSH PAD STRTSCP. IMPRV. PLAN	11
Lakeshore Avenue/ Lakeside Drive		District	2,3		
Laurel Street		Neighborhood	4		
Lawlor Street		Neighborhood	7		
Lawton Avenue		Neighborhood	1		
Lemert Rd./ Tiffin Rd.		Neighborhood	4		
Liggett Estates Drive		Neighborhood	4		
Lincoln Avenue/ Joaquin Miller Rd.	Near Head Royce School	District	4	WS-1 (SPOT)	9
Linda Avenue		Neighborhood	1		
Longridge Rd.		Neighborhood	2		
MacArthur Blvd.	Coolidge Ave to 35th Ave	City	4	CI-3, WS-3	10
MacArthur Blvd.	Fruitvale to Park Ave	City	2,4	CI-3	12
MacArthur Blvd.	High St to 35th Ave (Laurel District)	City	4	EXISTING PLAN: LAUREL DISTRICT STREETSCAPE PLAN	12
MacArthur Blvd.	Lakeshore to Park Blvd	City	2	CI-3	9
MacArthur Blvd.	San Leandro Border to 73rd Ave	City	6,7	EXISTING PLAN: MACARTHUR REDEVELOP. PLAN	12
MacArthur Blvd.	San Pablo Ave. to Piedmont Ave.	City	1,3	CI-2, CI-3	11
MacArthur Blvd.	Seminary to 580	City	6	WS-2 (1-SIDED)	7
Maddux Drive		Neighborhood	7		
Madeline Street		Neighborhood	4		

Appendix A: On-Street Routes

FIGURE 27 ON-STREET ROUTES (CONTINUED)

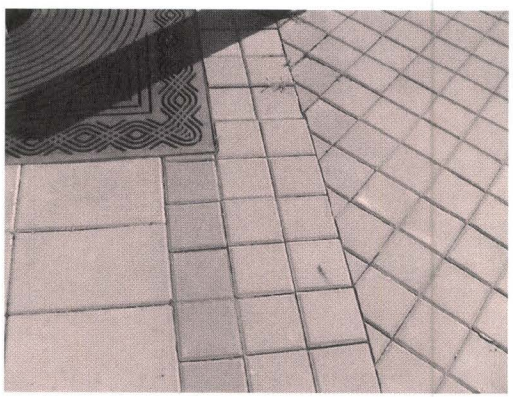
NAME	LOCATION	ROUTE TYPE	DISTRICT	POTENTIAL PROJECT COMPONENTS	CONTEXT
Malcom Avenue		Neighborhood	7		
Mandana Blvd.		Neighborhood	2		
Mandela Parkway	whole street	City	3	EXISTING PLAN: MANDELA PKWY	13
Maple Street		Neighborhood	4		
Maritime Street		District	3		
Market Street	6th St. to Alcatraz Ave.	City	1,3	WS-1	14
Middle Harbor Rd.		District	3		
MLK	47th St. to Downtown	City	1,3	WS-2	12
MLK	Alcatraz to 47th St.	City	1	CI-2, CI-3	9
Montana Street		Neighborhood	4		
Montecito Avenue/ Adams Street		Neighborhood	3		
Monteray Blvd.		Neighborhood	4		
Monticello Avenue		Neighborhood	4, 6		
Moraga Avenue	Piedmont Border to Mountain Blvd.	District	1,4	WS-1 (1-SIDED)	11
Mountain Blvd.	Whole Street	District	1,4,6,7	WS-1	10
Newton		Neighborhood	2		
Oakland Ave	Harrison to Bayo Visto	District	1,2,3	CI-3	10
Outlook Avenue		Neighborhood	6		
Park Blvd.	MacArthur to E 18th St.	City	2,3	CI-3	13
Park Blvd.	MacArthur to Highway 13	City	2, 4	CI-2, CI-3	13
Parker Avenue		Neighborhood	6		
Penniman Avenue		Neighborhood	4		
Peralta Street		District	3		11
Perkins Street		Neighborhood	3		
Picardy Drive		Neighborhood	6		
Piedmont Avenue	Whole Street	District	1,3	CI-3, WS-3	12
Plymouth Street/ Arthur Street		District	6, 7		
Redwood Rd.	Whole Street, Spot: Redwood @ Mountain	District	4,6	CI-3 (SPOT)	9
Richmond Blvd.		Neighborhood	1, 3		
Ritchie Street		Neighborhood	6		
Rudsdale Street		Neighborhood	7		
Salisbury Street		Neighborhood	5		
San Leandro	Fruitvale BART to Coliseum BART	City	5,6,7	T-1	12
San Pablo Avenue	Whole street	City	1, 3	EXISTING PLAN: SAN PABLO PLAN	13
Santa Clara Avenue	Grand Ave. to MacArthur Blvd.	District	2	CI-1, WS-1	11
School Street		District	4		
Seminary Avenue	San Leandro to Sunnymere	District	6	CI-3	12
Sequoyah Rd.		Neighborhood	7		
Shafter Avenue		Neighborhood	1		
Shattuck Avenue	Whole Street	District	1	CI-3, WS-3	12
Shepherd Canyon Rd.		Neighborhood	4		
Skyline Blvd.		District	4		
Snake Rd.		District	4		
Stanford Avenue	Whole Street, Spot: Stanford @ Powell	District	1	CI-2 (SPOT), CI-3 (SPOT) T-1	8
Steele Street		Neighborhood	4		
Sunnyhills Rd.		Neighborhood	2		
Sunnyside Street		District	7		
Suter Street		Neighborhood	4		
Telegraph Avenue	Whole Street	City	1,3	TELEGRAPH NORTHGATE PLAN; CI-2, CI-3, WS-3	13
The Uplands/ Alvarado Rd.		Neighborhood	1		
Thornhill Drive	Moraga to Alhambra	District	4	WS-1, T1	10

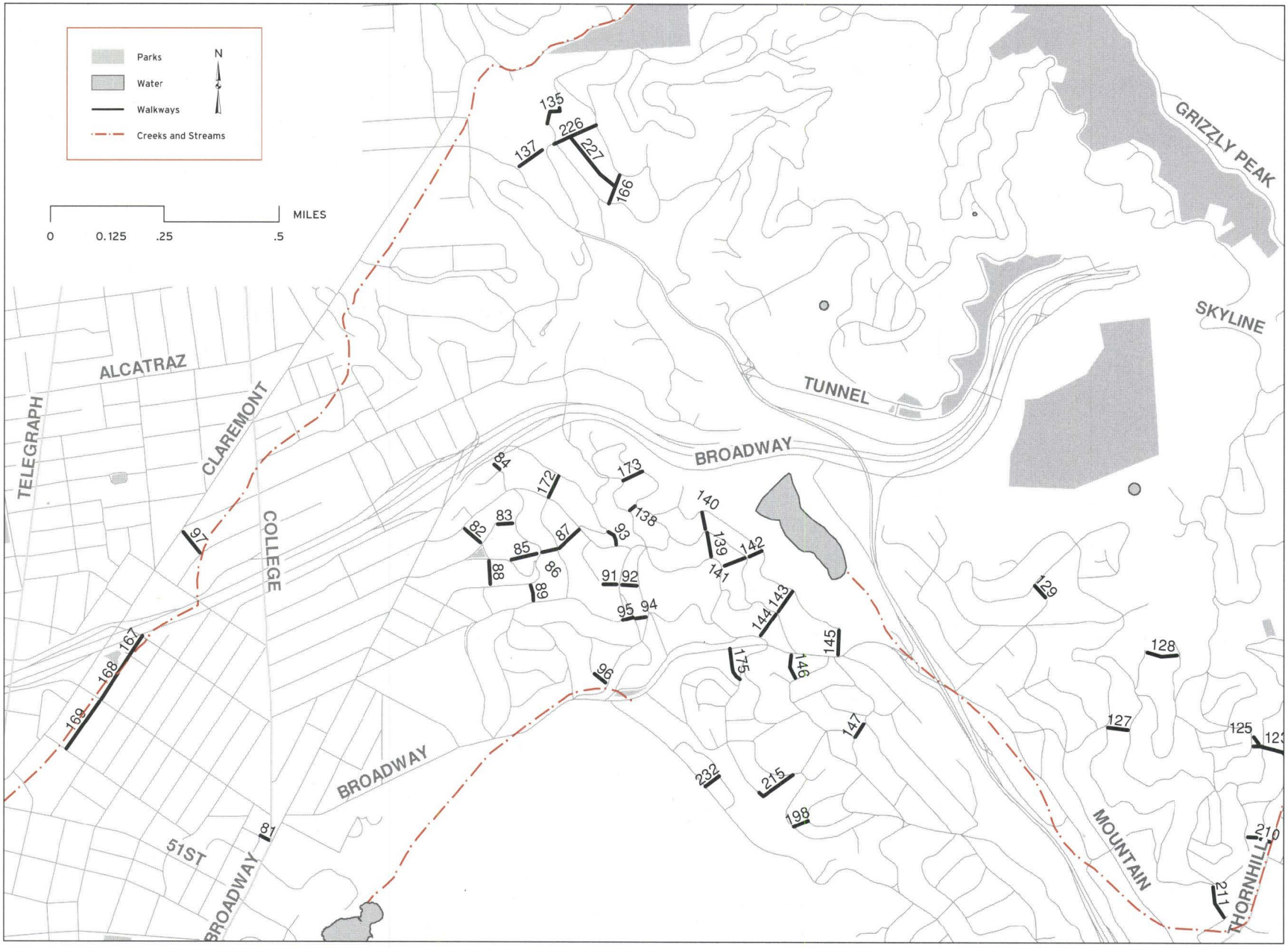
FIGURE 27 ON-STREET ROUTES (CONTINUED)

NAME	LOCATION	ROUTE TYPE	DISTRICT	POTENTIAL PROJECT COMPONENTS	CONTEXT
Tompkins Avenue		Neighborhood	4,6		
Topanga Drive		Neighborhood	7		
Trestle Glen		District	2		
Tunnel Rd.		District	1		
Union St		Neighborhood	3		
Van Dyke Avenue		Neighborhood	1		
Vicksburg Avenue		Neighborhood	4,6		
Webster Street		Neighborhood	2,3		
Wellington Street		Neighborhood	4		
West Street	MLK to 14th St.	District	1,3	WS-1, T-1	13
Wilshire Boulevard		Neighborhood	4		
Wood Street		Neighborhood	1,3		
Woodruff Avenue		Neighborhood	4		

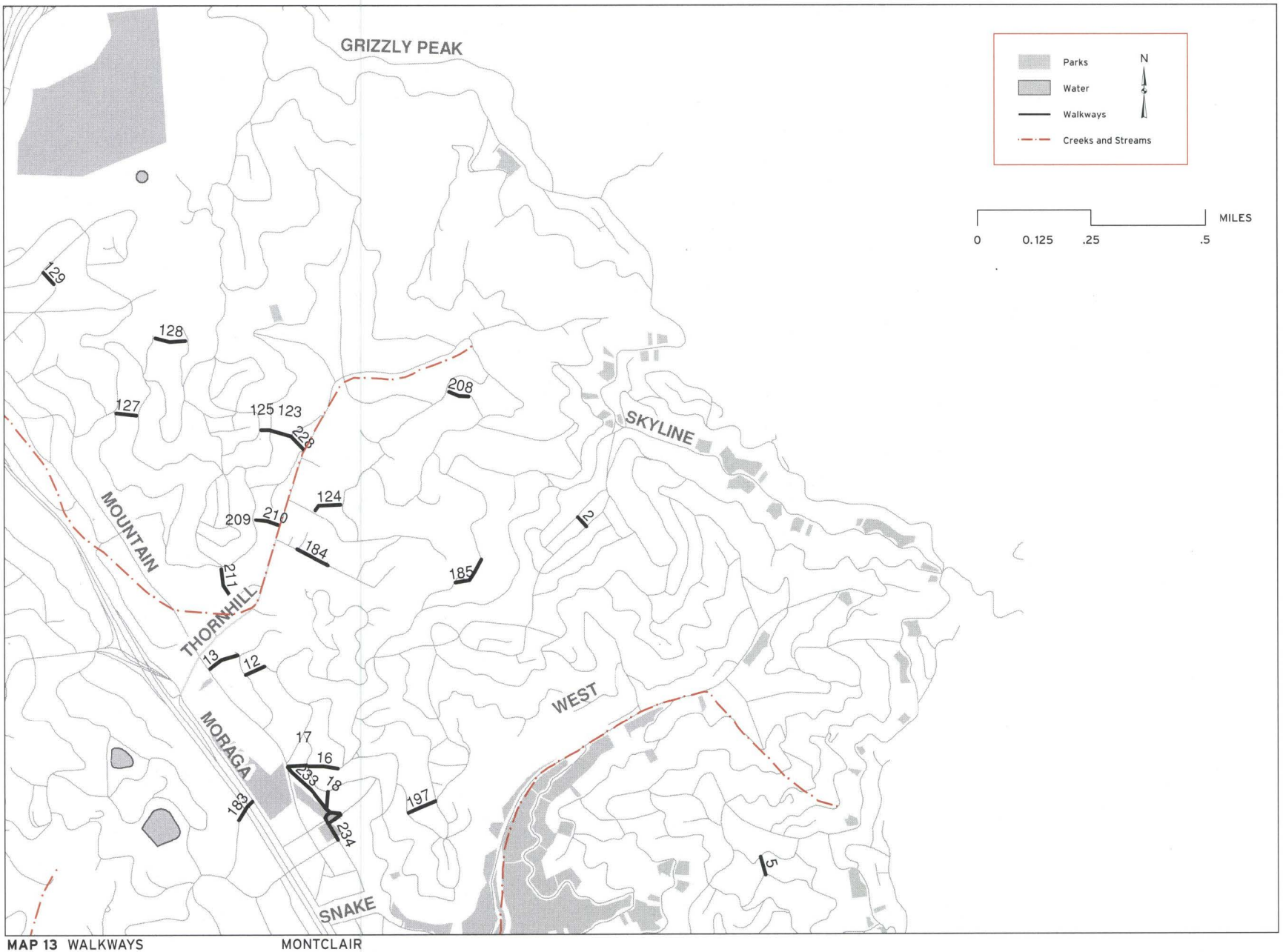
Appendix B: Walkways

This appendix contains the Pedestrian Route Network Survey for walkways. Eight maps show walkway locations throughout the City and an accompanying table provides detailed survey information for each walkway.

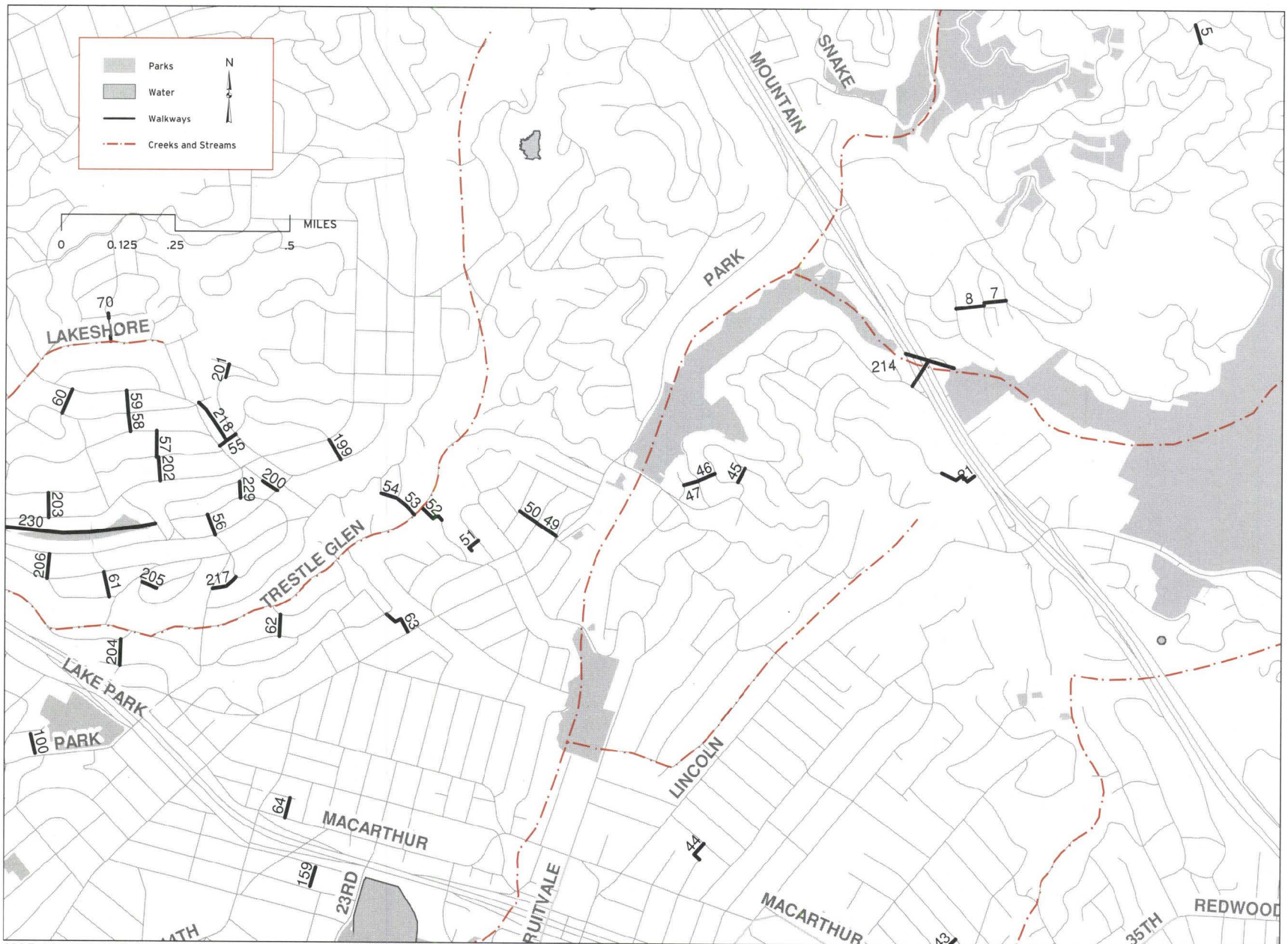




MAP 12 WALKWAYS UPPER ROCKRIDGE

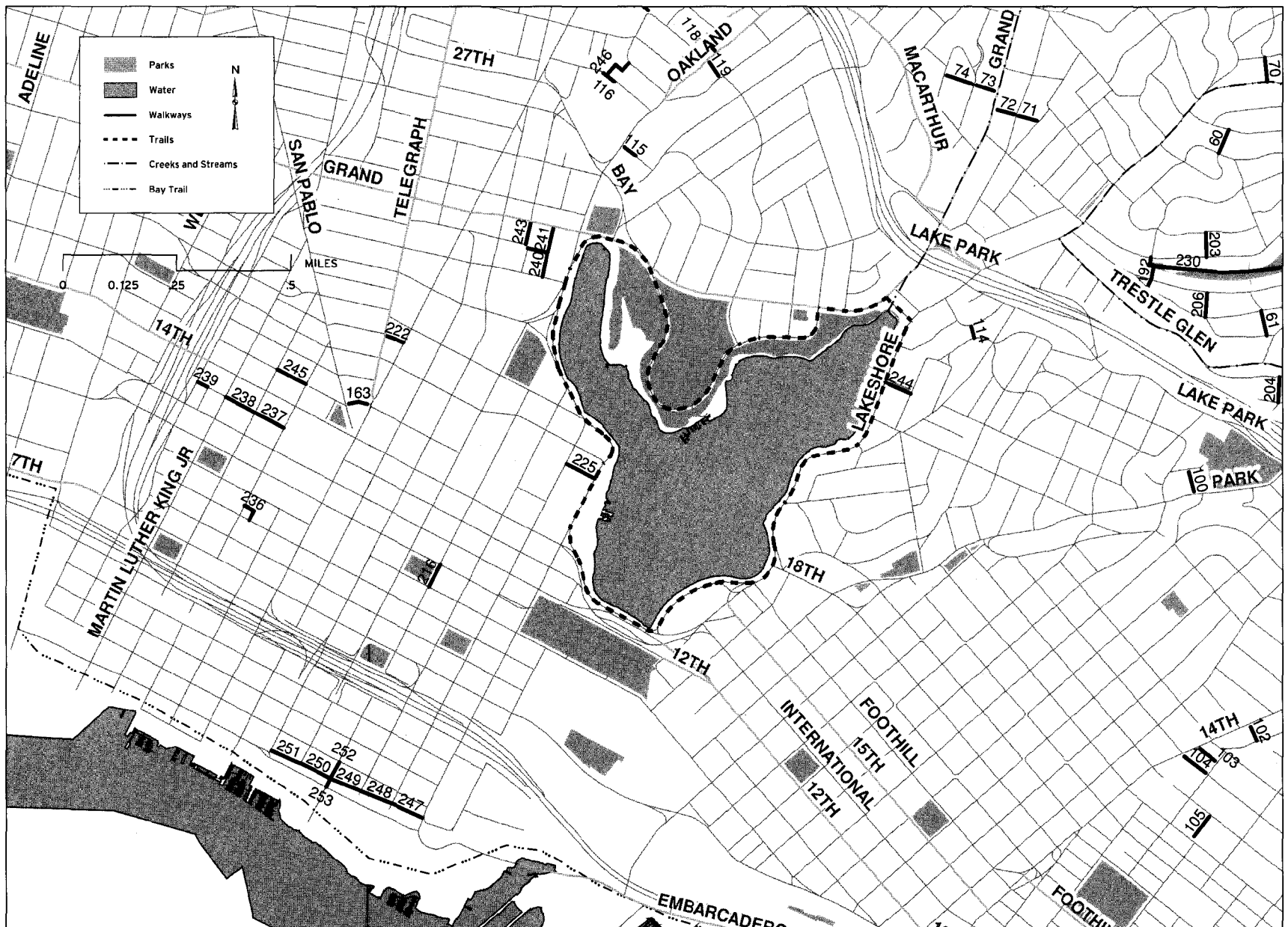


MAP 13 WALKWAYS MONTCLAIR

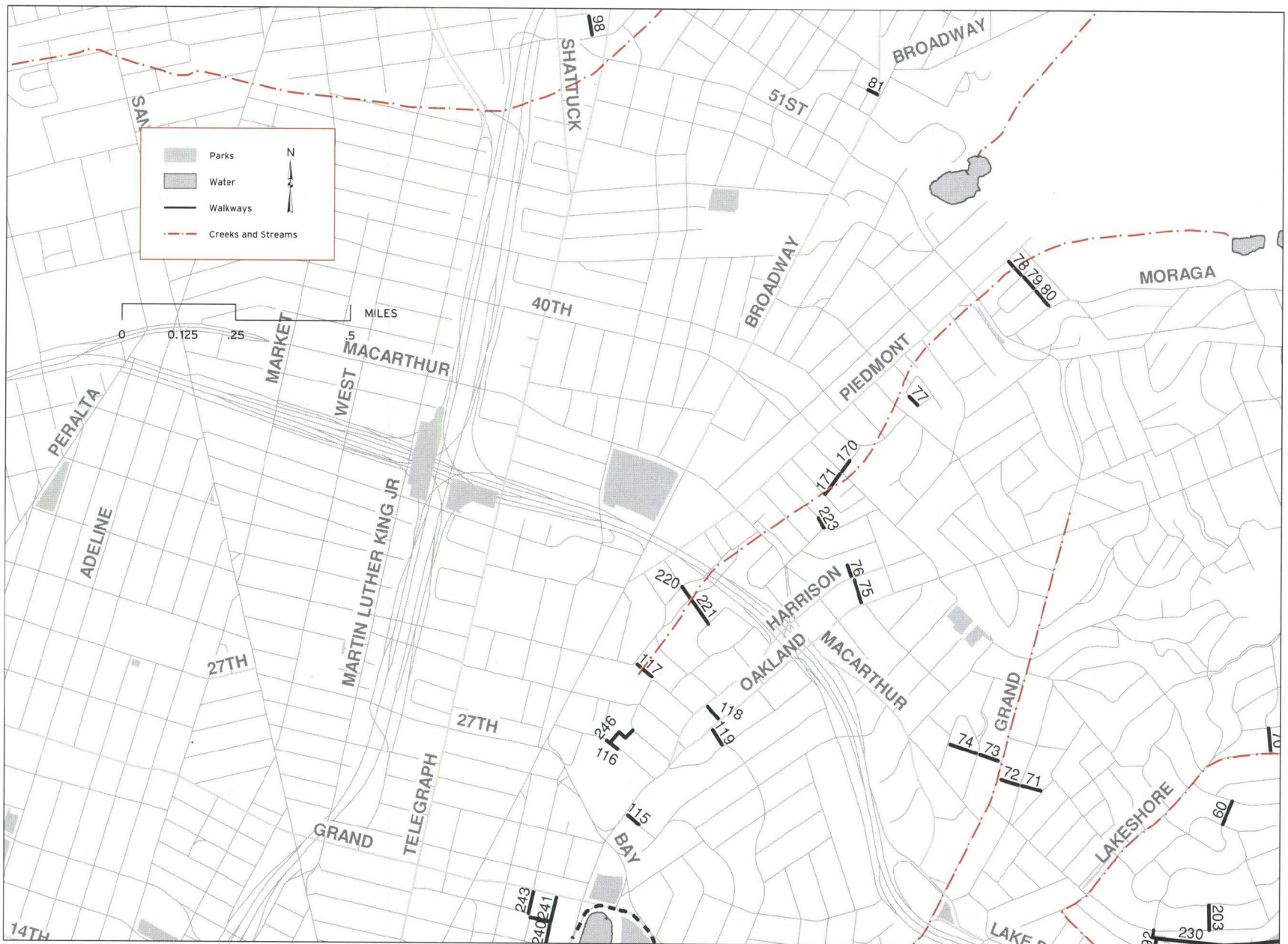


MAP 14 WALKWAYS

TRESTLE GLEN AND OAKMORE

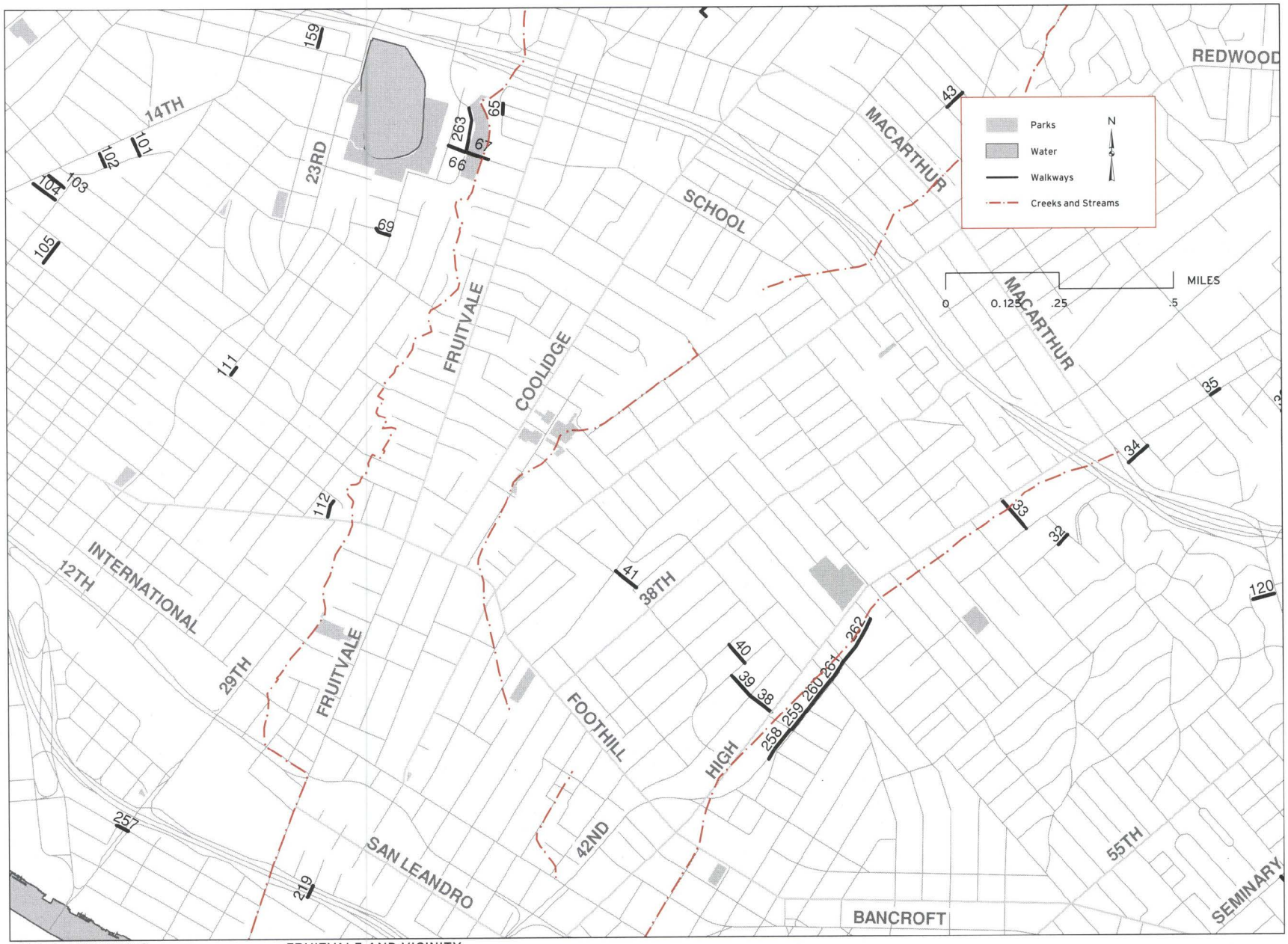


MAP 15 WALKWAYS LAKE MERRITT AND VICINITY



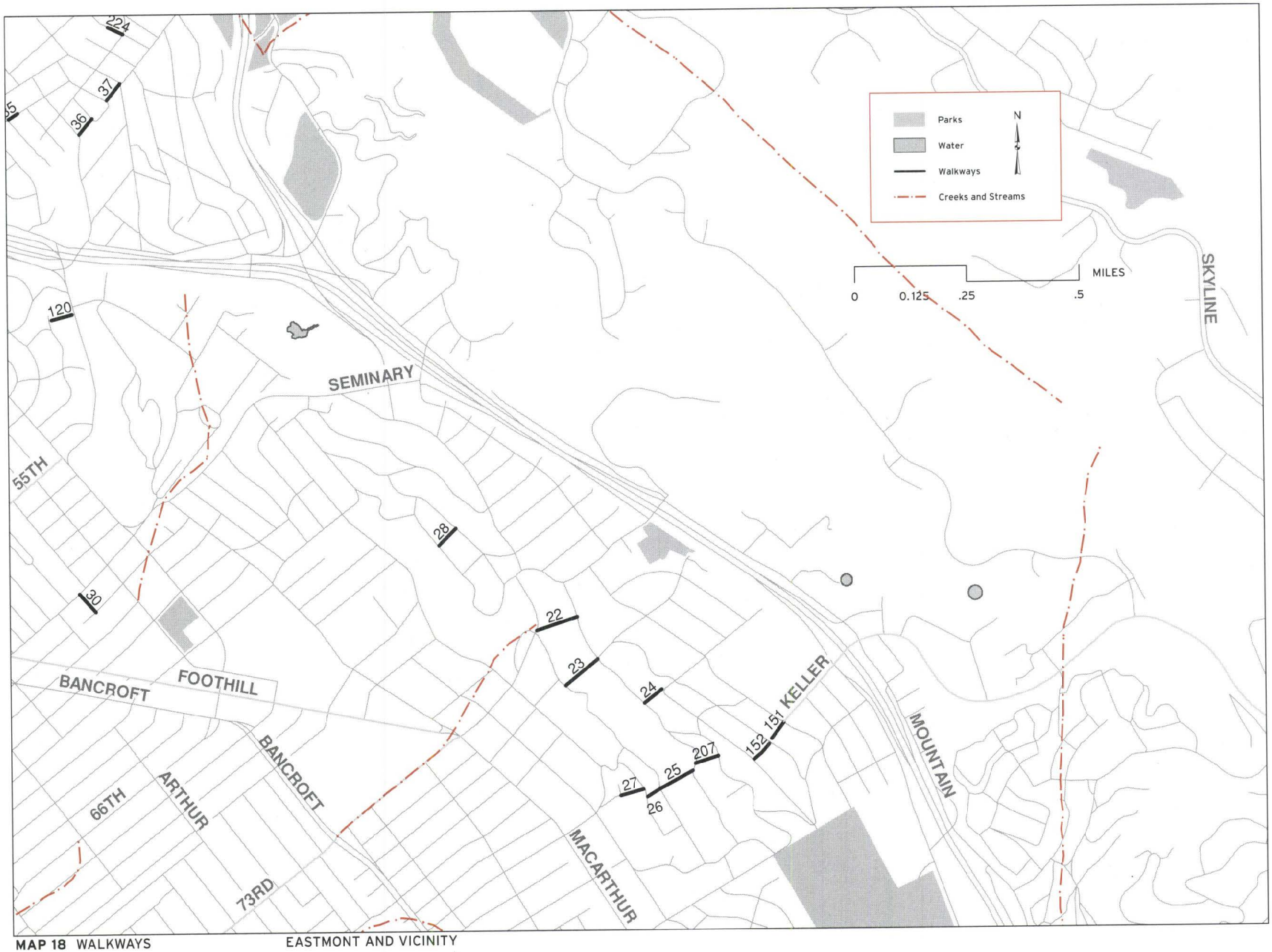
MAP 16 WALKWAYS

GLEN ECHO CREEK AND GRAND LAKE

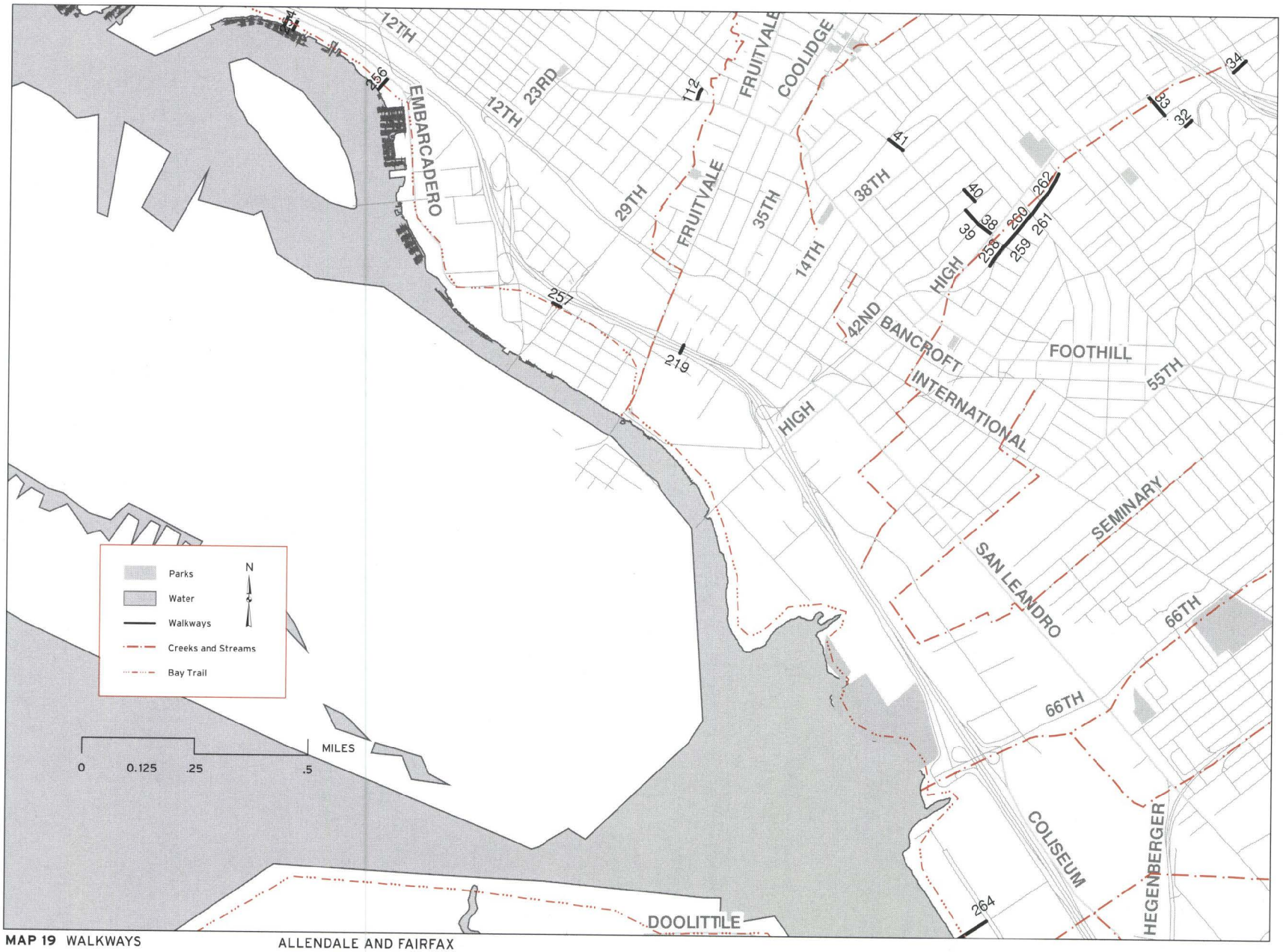


MAP 17 WALKWAYS

FRUITVALE AND VICINITY



MAP 18 WALKWAYS EASTMONT AND VICINITY



MAP 19 WALKWAYS

ALLENDALE AND FAIRFAX

Appendix B: Walkways

WALKWAY NUMBER	FROM	TO	WALKWAY NAME	LENGTH	WIDTH	PUBLIC/PRIVATE (B/P)	PASSABLE/IMPASSABLE (P/I)	STAIRS (Y/N/NUMBER)	HAND RAIL (Y/N)	MATERIALS (CONCRETE, ASPHALT, DIRT, WOOD, GRAVEL, BRICK, STONE)	NUMBER OF SIGNS	LIGHT (Y/N/NUMBER)	NUMBER OF RESIDENCES/BUILDINGS	NEAR SCHOOL (Y/N)	NEAR TRANSIT (Y/N)	SLOPE (NONE, MODERATE, STEEP)	PLANTS (LIGHT, MODERATE, HEAVY)	CONDITION (GOOD, OK,
2	6947 Colton	2 Lodge Ct.		110	5	B	P	0	N	A	0	0	2	N	Y	N	M	G
5	6259 Clive	2751 Darnby		200	3	B	P	11	N	CA	0	0	4	N	Y	M	L	OK
7	2700 Las Aromas	2701 Mountain Gate @ Castle		245	6	B	P	8	N	A	0	0	4	Y	N	S	L	OK
8	2646 Camino Lenada	2700 Las Aromas		320	6	B	P	16	Y	AS	0	0	4	Y	N	S	L	OK
12	15 Diaz Pl.	5680 Cabot		200	4	B	P	98	Y	C	0	0	4	Y	Y	M	L	G
13	1670 Mountain	5707 Cabot		250	4	B	P	180	Y	C	0	0	3	Y	Y	M	M	OK
16	1844 Magellan	Gaspar (dead end)		300	4	B	P	187	Y	C	0	0	4	Y	Y	S	L	G
17	5600 Colton	1833 Magellan		250	4	B	P	143	Y	C	0	0	4	Y	Y	S	L	G
18	1893 Magellan	Cortereal (dead end)		300	4	B	I	0	N	D	0	0	2	Y	Y	M	H	B
21	2220 Braemar	driveway of Beehive Center (2735 Monterey)		300	3	B	P	52	Y	DWC	0	0	3	N	Y	S	M	OK
22	3601 73rd	7209 Sunkist	Mayfield Path	400	10	B	P	13	Y	ADW	1	Y	6	Y	Y	S	M	B
23	7500 Hillmont	7501 Sunkist		400	10	B	P	0	N	D	0	0	4	Y	Y	S	M	OK
24	7695 Crest	7640 Sunkist		250	10	B	I	0	N	D	0	0	4	N	N	S	M	B
25	7864 Hillmont	7879 Michigan		300	8	B	I	0	N	D	0	0	4	N	N	M	H	B
26	7852 Outlook	7852 Hillmont	Cumberland Way	250	8	B	I	0	N	D	1	0	4	N	N	M	M	B
27	7835 Outlook	2920 Parker		400	5	B	I	0	N	D	0	0	4	N	Y	M	L	B
28	6624 Simson	6625 Mokelumne		300	10	B	I	0	N	DA	0	0	4	Y	Y	M	M	B
30	2848 Seminary	2851 60th		225	6	B	P	0	N	C	1	0	4	Y	Y	N	L	G
32	3226 Herriott	4511 Camden		150	4	B	P	0	N	A	0	0	3	N	N	S	L	OK
33	3151 Courtland	3150 High St.		350	6	P	I	0	N	D	0	Y	20	N	Y	N	L	B
34	4415 Masterson	4412 MacArthur	Madrone Path	200	5	B	P	0	N	C	2	0	4	N	Y	N	L	G
35	4400 Pampas	3811 Madrone		100	5	B	P	11	N	C	0	0	3	N	N	M	L	G
36	4500 Steele	4451 Worden		175	5	B	P	0	N	C	0	0	4	Y	N	M	L	G
37	4445 Tompkins	4456 Hyacinth		175	5	B	P	0	N	C	0	0	4	Y	Y	N	M	G
38	2198 42nd	2185 High	San Carlos Walk	250	5	B	P	8	Y	C	2	0	4	Y	Y	M	M	OK
39	2190 41st	2195 42nd		250	5	B	P	26	Y	C	0	0	5	Y	Y	N	M	OK
40	2215 41st	2201 Rosedale		200	5	B	P	0	N	C	0	0	4	Y	N	M	M	G
41	2102 Harrington	2141 Ransom	Carrington Way	250	5	B	P	73	Y	C	2	Y	5	Y	Y	S	M	B
43	3136 Madeline	3111 California		250	6	B	P	0	N	C	0	0	4	N	N	M	M	G
44	3579 Wilson	2511 Damuth		200	5	B	P	7	N	AC	0	0	4	N	Y	N	M	OK
45	1921 Oakview	1745 Leimert		200	5	B	P	93	N	AW	0	0	4	N	Y	S	L	B
46	1774 Leimert	4350 Bridgeview	Bridgeview Path	250	5	B	P	87	N	C	0	0	4	N	Y	S	M	OK
47	4326 Arden Pl.	4341 Bridgeview	Bridgeview Path	200	5	B	P	36	Y	C	1	0	4	N	Y	S	L	G
49	4645 Park Blvd.	4658 Edgewood Ave.	Elsinore Walk	175	4.5	B	P	0	N	C	2	0	4	N	Y	N	L	G
50	4630 San Sebastian	4639 Edgewood Ave.		200	4.5	B	P	12	Y	C	0	0	4	N	N	M	L	G
51	1075 Glendora	dead end walkway	Glendora Path	325	4	B	P	3	N	C	1	0	10	N	N	M	M	G
52	1601 Trestle Glen	1000 Elbert		400	3	B	P	42	Y	C	0	1	3	N	N	M	M	OK
53	1586 Trestle Glen	4 Bowles		250	4	B	P	97	N	CAW	0	0	4	N	N	S	H	B
54	5 Bowles	2 Van Sicklen Pl.		150	4	B	P	31	N	AW	0	0	4	N	N	S	H	B
55	920 Carlston	839 Portal		250	2.5	B	P	0	N	CA	0	1	4	N	N	M	H	OK
56	1000 Longridge	853 Paramount		200	5	B	P	10	N	C	0	0	4	Y	Y	M	M	G
57	805 Calmar	800 Santa Ray		300	5.5	B	P	141	N	C	0	0	4	N	N	S	M	G
58	4117 Balfour	786 Calmar		250	6	B	P	63	N	C	0	0	4	N	N	S	H	B
59	4117 Balfour	713 Wala Vista		250	6	B	P	104	N	C	0	0	4	N	N	S	H	G

WALKWAY NUMBER	FROM	TO	WALKWAY NAME	LENGTH	WIDTH	PUBLIC/PRIVATE (B/P)	PASSABLE/IMPASSABLE (P/I)	STAIRS (Y/N/NUMBER)	HAND RAIL (Y/N)	MATERIALS (CONCRETE, ASPHALT, DIRT, WOOD, GRAVEL, BRICK, STONE)	NUMBER OF SIGNS	LIGHT (Y/N/NUMBER)	NUMBER OF RESIDENCES/BUILDINGS	NEAR SCHOOL (Y/N)	NEAR TRANSIT (Y/N)	SLOPE (NONE, MODERATE, STEEP)	PLANTS (LIGHT, MODERATE, HEAVY)	CONDITION (GOOD, OK, BAD)
60	3879 Balfour	647 Wala Vista		250	6	B	P	75	N	C	0	2	4	N	Y	M	M	G
61	500 Rosemount	872 Northvale		300	5	B	P	22	N	C	0	0	4	Y	N	M	M	G
62	1329 Barrows	1332 Holman		300	5	B	P	78	Y	CWA	0	0	4	N	Y	S	H	G
63	4168 Greenwood	4187 Park Blvd		500	5	B	P	83	Y	C	0	4	30	N	Y	M	L	G
64	1443 E 36th	1442 MacArthur		200	5	B	P	16	Y	CA	0	1	5	Y	Y	M	M	G
65	2441 Castello	2543 Pleasant		100	5	B	P	0	N	C	0	0	2	N	Y	N	H	G
66	3020 Sheffield	3021 McKillop		150	3	B	P	0	N	AD	0	0	3	Y	N	M	H	B
67	2600 School	2906 McKillop		500	5	B	P	0	Y	A	0	0	3	Y	Y	S	M	OK
69	2745 25th	2397 Grande Vista Pl.		150	5	B	P	15	Y	C	0	0	8	Y	N	M	M	G
70	4079 Lakeshore	1052 Annerley Rd.	Portsmouth Walk	200	5	B	P	8	N	C	2	0	5	N	Y	M	M	G
71	853 Walker	847 Vermont	Davidson Way	250	8	B	P	146	N	C	1	Y	20	N	Y	M	M	OK
72	853 Walker	3560 Grand	Davidson Way	200	7	B	P	60	Y	C	1	Y	4	N	Y	M	L	G
73	564 Valle Vista	3629 Grand	Bonham Way	250	5	B	P	Y	N	C	1	0	6	Y	Y	M	M	G
74	538 Mira Vista	564 Valle Vista	Bonham Way	400	5	B	P	20	N	C	1	0	6	Y	Y	M	M	G
75	3800 Harrison	601 Oakland		300	5	B	P	9	Y	C	1	0	50	N	N	N	M	G
76	602 El Dorado	Harrison St.	Oscar's Alley	250	5	B	P	0	N	C	1	0	75	N	N	M	M	G
77	4200 Entrada	4215 Glen		130	5	B	P	0	N	C	0	0	3	N	N	N	L	OK
78	4507 Pleasant Valley	4466 Piedmont		230	8	B	P	13	Y	CW	0	0	0	N	Y	M	L	OK
79	4486 Pleasant Valley	4507 Pleasant Valley		185	8	B	P	0	N	C	0	0	0	N	Y	N	L	OK
80	4463 Moraga	4486 Pleasant Valley Ct. S.		230	8	B	P	17	Y	C	0	0	1	N	N	N	L	OK
81	Broadway at College	318 Hemphill		100	10	B	P	0	N	C	0	Y	1	Y	Y	N	M	G
82	6098 Rockridge Blvd.	N. 6001 Ocean View	Ridgeview Path	250	6	B	P	47	Y	C	1	0	0	N	N	M	M	OK
83	6041 Margarido	6135 Rockridge Blvd. N.		170	6	B	P	72	N	C	0	0	4	N	N	M	M	OK
84	6132 Margarido	Freeway @ Broadway		150	6	B	P	111	Y	C	0	0	0	Y	Y	N	M	OK
85	6128 Rockridge Blvd S.	5972 Margarido	Prospect Steps	350	6	B	P	47	N	C	2	0	4	N	N	M	M	OK
86	5972 Margarido	5975 Manchester	Prospect Steps	165	6	B	P	76	N	C	2	0	4	N	Y	M	M	OK
87	6141 Ocean View	6000 Manchester	West Lane	320	8	B	P	31	Y	C	2	0	2	N	Y	S	L	OK
88	5361 Margarido	6101 Rockridge Blvd. S.		270	5	B	P	56	N	C	0	0	4	N	Y	M	M	OK
89	5000 Acacia	5918 Margarido	Quail Lane	200	6	B	P	42	Y	C	1	0	4	N	Y	M	H	G
91	101 Alpine Terrace	6247 Acacia	Locarno Path	160	10	B	P	62	N	C	2	0	0	N	N	M	M	OK
92	6247 Acacia	245 Cross Rd.	Locarno Path	220	8	B	P	88	N	C	1	0	4	N	N	M	M	OK
93	6188 Oceanview	6394 Brookside	Brookside Lane	180	6	B	P	63	Y	C	2	0	3	Y	N	M	M	G
94	200 Cross	6196 Mathieu	Verona Path	150	6	B	P	52	Y	C	1	0	0	N	N	M	M	G
95	6196 Mathieu	6190 Acacia	Verona Path	115	6	B	P	21	Y	C	2	0	3	N	Y	M	M	G
96	5850 Romany	59 Yorkshire Dr.	Andeer Path	210	5	B	P	43	Y	CA	2	Y	2	N	Y	M	M	G
97	5766 Claremont	5651 Oak Grove	Pedestrian Way	300	7	B	P	0	N	C	2	Y	4	N	Y	N	M	G
98	516 52nd St.	517 53rd St.		200	6	B	P	0	N	C	0	1	5	N	Y	N	L	G
100	3101 Park Blvd	33 Home Place		200	10	B	I	Y	Y	CA	0	0	17	Y	Y	M	M	G
101	2622 14th Ave	2573 Wallace	E. 26th St. Way	150	6	B	P	61	Y	C	2	0	8	N	Y	M	M	G
102	2505 Wallace	2510 14th Ave.	E. 25th St. Way	150	6	B	P	5	N	C	2	0	10	N	Y	M	L	G
103	2315 17th Ave	2342 14th Ave	Comstock Way	200	6	B	P	52	Y	C	2	1	6	N	Y	M	M	OK
104	2300 14th Ave.	2301 17th Ave.		250	6	B	P	90	Y	C	0	1	10	N	Y	S	L	G
105	1747 22nd Ave	1740 21st Ave		200	6	B	P	0	N	DA	0	Y	4	Y	Y	M	H	B
111	2350 E. 22nd	2216 Inyo		100	6	B	P	Y	N	C	0	0	3	Y	Y	M	M	OK

Appendix B: Walkways

WALKWAY NUMBER	FROM	TO	WALKWAY NAME	LENGTH	WIDTH	PUBLIC/PRIVATE (B/P)	PASSABLE/IMPASSABLE (P/I)	STAIRS (Y/N/NUMBER)	HAND RAIL (Y/N)	MATERIALS (CONCRETE, ASPHALT, DIRT, WOOD, GRAVEL, BRICK, STONE)	NUMBER OF SIGNS	LIGHT (Y/N/NUMBER)	NUMBER OF RESIDENCES/BUILDINGS	NEAR SCHOOL (Y/N)	NEAR TRANSIT (Y/N)	SLOPE (NONE, MODERATE, STEEP)	PLANTS (LIGHT, MODERATE, HEAVY)	CONDITION (GOOD, OK
112	2777 21st	2784 Foothill		175	6	B	P	0	N	C	0	Y	5	Y	Y	N	L	OK
114	627 Beacon St.	569 Merritt Ave.		150	8	B	P	Y	Y	C	0	0	13	N	N	S	M	G
115	Harrison	171 Vernon Terrace		250	5	B	P	56	Y	C	0	2	4	Y	Y	S	M	G
116	128 Hamilton	251 28th St.		250	4	B	P	86	Y	C	0	Y	100+	N	Y	S	L	G
117	261, 269 Fairmont Ter.	3000 Richmond Ave.		250	5	B	P	76	Y	C	0	4	50	N	Y	M	M	OK
118	309 Oakland Ave	3020 Harrison	Frisbie Way	175	5	B	P	14	Y	C	1	2	4	N	Y	M	L	G
119	243 Orange	264 Oakland Ave.	Perkins Way	150	10	B	P	17	Y	C	1	2	4	N	Y	N	M	G
120	14 Wyman	MacArthur at Richards Rd.		300	10	B	I	9	N	WD	0	0	3	Y	Y	S	H	B
123	5500 Doncaster	6086 Valley View	Merriewood Stairs	250	5	B	P	168	Y	WG	0	0	3	N	Y	S	L	G
124	drvy of 1716 Gouldin	6067 Aspinwall		300	4	B	P	0	N	D	0	0	3	Y	Y	M	M	B
125	6086 Valley View	5921 Merriewood	Merriewood Stairs	150	5	B	P	122	Y	W	0	1	4	N	Y	M	N	G
127	7007 Broadway Ter.	151 Taurus		200	3	B	I	35	Y	DW	0	0	4	N	Y	M	M	B
128	Virgo (dead end)	Taurus (dead end)		500	2	?	I	0	N	D	0	0	2	N	N	M	M	B
129	6150 Pinewood	6106 Fairlane Dr.		150	4	B	P	62	Y	C	0	0	2	N	N	M	L	G
135	1 Evergreen Ln	50 Alvarado Pl	Evergreen Path	400	5	B	P	128	Y	CA	2	0	3	N	N	S	L	G
137	73 Alvarado	Claremont Hotel parking lot		250	6	B	P	45	N	CAS	0	0	1	N	Y	S	M	OK
138	5859 Buena Vista	5501 Golden Gate	Gondo Path	75	5	B	P	31	Y	C	1	0	2	Y	N	S	L	G
139	6000 Buena Vista	5232 Golden Gate	Chaumont Path	275	6	B	P	48	N	C	2	0	4	N	Y	M	M	OK
140	5991 Contra Costa	6000 Buena Vista	Chaumont Path	220	6	B	P	76	N	C	2	0	4	N	Y	M	M	OK
141	5176 Golden Gate	6105 Buena Vista	Belalp Path	250	6	B	P	58	Y	C	2	0	2	N	Y	M	H	OK
142	6105 Buena Vista	6100 Contra Costa	Belalp Path	160	6	B	P	71	Y	C	2	0	4	N	Y	M	M	OK
143	6190 Buena Vista	6192 Contra Costa	Arbon Path	250	6	B	P	111	Y	C	2	0	2	N	Y	M	M	OK
144	6190 Buena Vista	6190 Broadway Terrace	Arbon Path	290	6	B	P	67	Y	C	2	0	4	N	Y	M	M	OK
145	6370 Broadway Ter.	6353 Contra Costa	Erba Path	295	5	B	P	80	Y	C	2	0	0	Y	Y	M	L	G
146	6261 Broadway Ter.	155 Florence	Ratondo Path	250	6	B	I	0	N	DC	1	0	4	Y	Y	S	M	B
147	5891 Morpeth	4905 Proctor		175	5	B	P	83	N	C	0	0	3	N	N	M	M	G
151	7873 Greenly	7886 Sterling		250	10	B	I	0	N	D	0	0	4	Y	Y	S	M	B
152	7887 Sterling	7920 Crest		300	10	B	I	0	N	D	0	0	4	Y	Y	S	M	B
153	8901 Seneca	8900 Burr		375	5	B	I	90	Y	CAWD	0	0	4	Y	Y	S	H	B
154	8500 Thermal	8522 MacArthur		450	6	B	P	164	Y	C	0	2	8	Y	Y	S	L	OK
155	3239 Blandon	9110 Fontaine		160	5	B	P	0	N	C	0	0	4	Y	Y	N	M	G
159	Palmer Ave (dead end)	1647 E 33rd St		50	5	B	P	17	N	C	0	Y	6	N	Y	M	L	G
163	Frank Ogawa Plaza	Broadway	Kahn Alley	175	35	B	P	0	N	C	0	Y	0	N	Y	N	L	G
166	169 Alvarado	277 Alvarado	Willow Walk	300	5	B	P	77	Y	CSA	2	0	4	N	N	S	L	OK
167	Hudson St at freeway	482 Hardy St		150	6	B	P	0	N	A	0	0	1	N	Y	N	M	G
168	485 Hardy St.	482 Clifton St.		600	6	B	P	0	N	AC	0	0	25	N	Y	N	M	G
169	485 Clifton St	Cavour St at Redondo		400	6	B	P	0	N	A	0	0	10	N	N	N	M	OK
170	2020 Panama Ct.	109 Monte Vista		150	6	B	P	0	N	C	0	0	4	N	Y	M	M	G
171	109 Monte Vista	72 Montel		270	4	B	P	0	Y	A	0	0	2	N	Y	M	M	OK
172	6142 Ocean View	6245 Brookside Ave	Claremont Path	250	6	B	P	65	Y	C	2	0	4	Y	Y	M	M	G
173	5600 Golden Gate Av.	5747 Buena Vista Rd.	Arollo Path	140	6	B	P	64	Y	C	2	0	4	Y	Y	S	L	G
175	2001 Broadway Ter.	50 Mandalay		200	2	B	I	0	N	D	0	0	1	Y	Y	S	M	B
183	6025 Bruns	Montclair Park	Bruns Overcrossing	300	6	B	P	65	Y	C	0	5	1	Y	Y	M	L	G
184	Alhambra Ln at Thornhill Elementary	1715 Alhambra Ln		250	3	B	I	0	N	D	0	0	3	Y	Y	S	H	B

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185	Armour Dr (N)	S) Armour Dr.		300	3	B	I	0	N	D	0	0	1	Y	Y	S	H	B
192	Calmar at Mandana	704 Longridge		250	5	B	P	96	N	AC	0	0	4	N	Y	M	M	OK
197	5945 Zinn	Drake/Asilomar		200	3	B	I	33	N	DW	0	0	4	N	Y	M	M	B
198	4900 Harbord	72 Sonia		200	3	B	P	18	N	CDB	0	0	4	Y	N	M	M	OK
199	1096 Clarendon	1099 Mandana		200	5	B	P	7	Y	C	0	0	4	Y	Y	M	M	OK
200	1116 Longridge	32 Mandana Circle		250	5	B	P	41	N	C	0	0	4	Y	Y	M	M	OK
201	903 Wawona	939 Portal		150	5	B	P	77	Y	C	0	0	3	N	N	M	M	G
202	801 Santa Ray	800 Mandana		200	5	B	P	6	N	C	0	0	4	N	Y	M	M	OK
203	700 Mandana	689 Santa Ray		200	5	B	P	16	N	AWD	0	0	4	N	Y	M	M	OK
204	1085 Brookwood	850 Alma		250	5	B	P	148	Y	AW	0	0	4	N	Y	S	L	OK
205	906 Hillcroft	924 Larkspur Rd		175	5	B	P	58	N	CWA	0	0	4	N	N	S	M	OK
206	796 Rosemount	801 Longridge		200	6	B	P	27	N	C	0	0	4	N	Y	M	M	OK
207	7867 Sunkist	7872 Michigan		300	6	B	I	Y	Y	DW	0	0	4	N	N	M	M	B
208	1837 Indian	25 Overlake Ct.		250	4	B	P	107	N	AW	0	1	5	Y	Y	M	N	OK
209	5607 Merriewood	5901 Marden Ln		100	4	B	P	110	Y	WA	0	1	4	Y	Y	M	N	G
210	5901 Marden Ln	5925 Thornhill		100	4	B	P	72	Y	WA	0	0	4	Y	Y	M	N	OK
211	Florence & Merriewood	5733 Grisborne Ave.		175	3	B	I	0	N	D	0	0	5	Y	Y	M	M	B
214	Leimert @ Monterey	Joaquin Miller Ct. 6 @ Mountain	Dimond Canyon Trail	170	8	B	P	0	N	C	2	0	0	N	Y	N	L	G
215	Morpeth & Harbor	30 Mandalay (backside of St. Theresa Church)		250	10	B	P	0	N	A	0	0	8	Y	Y	M	L	G
216	10th & Alice	11th and Alice		200	6	B	P	0	N	A	0	0	0	Y	Y	N	L	OK
217	1011 Hubert	982 Grosvenor		200	4	B	P	9	N	A	0	0	6	N	N	M	M	G
218	849 Walavista	walkway 55		800	5	B	P	0	N	CAD	0	Y	20	N	N	N	M	OK
219	3331 E 8th St	E. 9th St. & 34th Ave.		100	5	B	P	0	N	C	0	0	0	Y	Y	N	L	B
220	Croxton & Richmond	3084 Richmond		100	6	B	P	Y	Y	C	0	0	20	N	N	M	L	OK
221	3084 Richmond	3287 Kempton		250	6	B	P	159	Y	C	0	Y	20	N	N	M	M	OK
222	1733 Broadway	1720 Telegraph		125	10	B	P	0	N	C	0	Y	0	N	Y	N	L	G
223	78 Rio Vista	645 Fairmount		175	2x5'	B	P	Y	Y	C	0	0	7	N	N	S	M	OK
224	4305 Harbor View	4069 Huntington		175	5	B	P	0	N	D	0	0	4	N	N	M	L	G
225	1568 Madison	1547 Lakeside		300	4	P	P	0	N	C	0	6	80	N	Y	M	L	G
226	81 Alvarado	681 Alvarado	Eucalyptus Path	400	5	B	P	139	Y	CA	2	3	10	N	N	S	M	G
227	mid. of Euc. Path	middle of Willow Walk	Sunset Trail	900	4	B	P	0	N	A	1	0	20	N	N	N	L	OK
228	6101 Thornhill	5500 Doncaster	Merriewood Stairs	200	5	B	P	98	Y	WG	0	0	3	N	Y	S	L	G
229	780 Carlston	910 Paramount		200	5	B	I	101	N	C	0	0	3	Y	Y	S	H	OK
230	walkway 192	619 Paloma		1700	10	B	P	0	N	D	0	0	30	N	N	N	L	G
231	717 Longridge	707 Rosemount		50	5	B	P	7	N	CG	0	0	1	N	Y	M	M	G
232	1 Clarewood Mall	7 Clarewood Mall	Clarewood Mall	150	5	V	P	2	N	C	3	3	8	N	N	N	M	G
233	1900 Mountain	Cortereal (dead end)		300	6	B	P	15	Y	CDA	0	0	1	Y	Y	M	L	G
234	LaSalle (dead end)	Medau (dead end)		150	4	B	P	0	N	C	0	0	1	N	Y	N	L	G
235	Cortereal (dead end)	walkway 234		100	3	B	P	0	N	C	0	0	1	N	Y	N	L	G
236	Swan's Market	Swan's Market		200	10	V	P	0	N	C	0	Y	25	N	Y	N	L	G
237	Clay St.	Jefferson St.		250	20	V	P	8	Y	SB	0	Y	1	N	Y	N	L	G
238	Jefferson St.	MLK Jr Way		250	25	B	P	0	N	C	0	Y	1	N	Y	N	L	G
239	Castro St.	13th at Preservation Park Way		50	5	V	P	0	N	C	0	0	3	N	Y	N	L	G
240	21st St	walkway 241		200	30	V	P	8	Y	SB	0	0	1	N	Y	M	L	G

Appendix B: Walkways

WALKWAY NUMBER	FROM	TO	WALKWAY NAME	LENGTH	WIDTH	PUBLIC/PRIVATE (B/P)	PASSABLE/IMPASSABLE (P/I)	STAIRS (Y/N/NUMBER)	HAND RAIL (Y/N)	MATERIALS (CONCRETE, ASPHALT, DIRT, WOOD, GRAVEL, BRICK, STONE)	NUMBER OF SIGNS	LIGHT (Y/N/NUMBER)	NUMBER OF RESIDENCES/BUILDINGS	NEAR SCHOOL (Y/N)	NEAR TRANSIT (Y/N)	SLOPE (NONE, MODERATE, STEEP)	PLANTS (LIGHT, MODERATE, HEAVY)	CONDITION (GOOD, OK
241	walkway 240	Grand Ave		150	15	V	P	12	Y	C	0	0	1	N	Y	M	L	G
242	walkway 240	Kaiser Plaza		150	15	V	P	0	N	C	0	0	2	N	Y	N	L	G
243	Grand at Valdez	21st at Kaiser Plaza		150	15	V	P	0	N	C	0	Y	2	N	Y	N	L	G
244	Lakeshore Ave	Merritt Ave at Cleveland St	Cleveland Cascade	250	8	B	P	135	Y	C	1	0	40	N	Y	S	M	G
245	Clay St	Jeferson St		250	25	V	P	0	N	C	0	Y	1	N	Y	N	L	G
246	walkway 116	111 Fairmount (into church parking lot)		150	5	B	P	43	Y	CW	0	0	100+	N	Y	M	L	G
247	Oak St	Madison St		250	10	V	P	0	N	C	0	Y	1	N	Y	N	L	G
248	Madison St	Jackson St		250	10	V	P	0	N	C	0	Y	1	N	Y	N	L	G
249	Jackson St	Alice St		250	10	V	P	0	N	C	0	Y	2	N	Y	N	L	G
250	Alice St	Harrison St		250	10	V	P	0	N	C	0	Y	0	N	Y	N	L	G
251	Harrison St	Webster St		250	6	V	P	0	N	C	0	Y	3	N	Y	N	L	G
252	Alice at 2nd St	Amtrak Station		200	60	V	P	0	N	B	0	Y	1	N	Y	N	L	G
253	Alice at Embarc. W	Amtrak Station		150	10	V	P	120	Y	C	0	Y	100+	N	Y	N	L	G
254	1103 Embarcadero E	Bay Trail		150	10	B	P	0	N	C	1	Y	2	N	N	N	L	G
255	1103 Embarcadero E	Bay Trail		150	10	V	P	0	N	C	1	Y	1	N	N	N	L	G
256	1755 Embarcadero E	Bay Trail		150	10	B	P	0	N	C	1	2	2	N	N	N	L	G
257	E 7th at 29th Ave	E 7th at 29th Ave		100	6	B	P	0	N	C	4	0	0	N	N	N	L	OK
258	Courtland at Thompson	Courtland at San Carlos		250	10	B	P	0	N	G	0	0	20	Y	Y	N	L	G
259	Courtland/San Carlos	Courtland at Tyrell		250	6	B	P	0	N	G	0	0	20	Y	Y	M	L	G
260	Courtland at Tyrell	Courtland at Congress		325	5	B	P	0	N	G	0	0	20	Y	Y	N	L	G
261	Courtland at Congress	Courtland at Fairfax		200	5	B	P	0	N	AG	0	0	15	Y	Y	M	L	OK
262	Courtland at Fairfax	Courtland at Brookdale		550	10	B	P	0	N	AD	0	5	20	Y	Y	N	M	OK
263	3186 McKillop	2600 School		500	4	B	P	43	Y	A	0	0	2	Y	Y	M	L	OK

Appendix C: Street Transformations

The following examples of street transformations are offered as visions for progressive pedestrian planning. These projects are only conceptual, serving as illustrations of ideas. However, they illustrate the extent of possible changes that may begin with a greater emphasis on designing and planning for pedestrians.

City Route Before and After

City routes connect multiple districts and define the city as a whole. They are busy commercial and residential streets lined with storefronts and apartment buildings. Large numbers of pedestrians, drivers, transit riders, and bicyclists use city routes. Existing conditions often include wide lanes, large intersections, limited traffic signals and crosswalks, and dedicated turn lanes that create an inhospitable environment for pedestrians.

In contrast, consider a city route with the following improvements: wide sidewalks, pedestrian-scale lighting, high visibility crosswalks with curb ramps, pedestrian refuge islands, bike lanes, and street furniture including bike racks and bus shelters with signage for riders. On-street parking, planter boxes, and street trees help buffer the sidewalk from motor vehicle traffic. The result is boulevards that promote social and economic activity and define the character of the city.

ILLUSTRATION 47 CITY ROUTE BEFORE

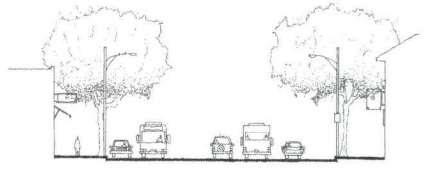


ILLUSTRATION 48 CITY ROUTE SECTION BEFORE

ILLUSTRATION 49 CITY ROUTE AFTER

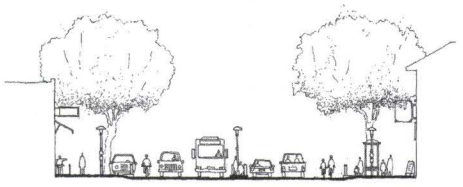


ILLUSTRATION 50 CITY ROUTE SECTION AFTER

District Route Before and After

District routes serve districts of the city by connecting schools, community centers, and neighborhood shops. They commonly have cross-town bus routes that connect residential neighborhoods to commercial districts and transit hubs. A typical district route might include four travel lanes and narrow sidewalks that are interrupted by utility poles, broken concrete, and driveway curbcuts.

In contrast, consider a district route after a "road diet" from two travel lanes in each direction to one travel lane in each direction plus a center turn lane. The extra room makes way for wider sidewalks, street trees, and bike lanes. Pedestrian route signs provide guidance to important neighborhood destinations and pedestrian-scale lighting improves safety by providing continuous illumination of the sidewalks. Proposals for lane reductions require careful study and City Council approval because such reconfigurations may create motor vehicle congestion.

Appendix C: Street Transformations

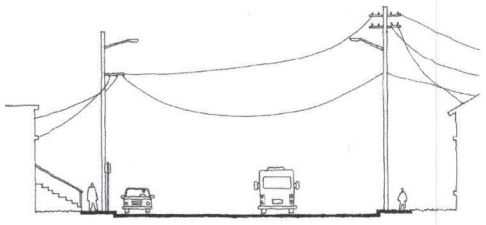


ILLUSTRATION 51 DISTRICT ROUTE SECTION BEFORE

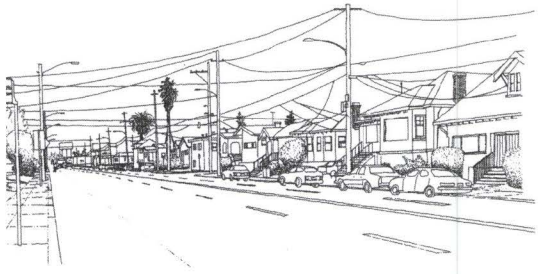


ILLUSTRATION 52 DISTRICT ROUTE BEFORE

Neighborhood Route Before and After

Neighborhood routes are residential streets with one travel lane in each direction plus on-street parallel parking. At their best, they have sidewalks that are continuous, unobstructed, and well-maintained. Motor vehicles move slowly because of speed humps and stop signs. The illustration shows the addition of street trees, slow points, pedestrian-scale lighting, and signage for an exemplary pedestrian neighborhood route. The speed humps and slow points reinforce each other in slowing traffic while the lighting and trees create a vertical buffer between the sidewalk and the street.

Trail Route Before and After

Underused areas beneath BART lines and along railroad tracks provide opportunities for mixed-use paths and greenways in the City's most urbanized neighborhoods. Existing conditions may include underutilized rail tracks, no sidewalks or trails, and poor connections to the neighborhood. By adding mixed-use paths, ball fields, playgrounds, dog runs, and other public facilities, these kinds of projects could be as successful as the Ohlone Trail in Berkeley, Albany, and El Cerrito. While rights-of-way may not currently exist, natural features like creeks, ridges, and shorelines may also define routes for such trails. The continuing development of the Bay Trail and the Ridge Trail attest to the importance of long range planning and the value of natural features in bringing such trails to fruition.

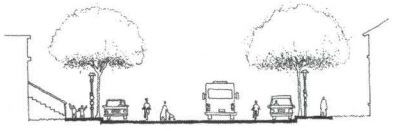


ILLUSTRATION 53 DISTRICT ROUTE SECTION AFTER

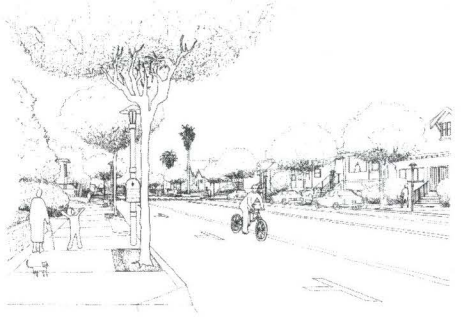


ILLUSTRATION 54 DISTRICT ROUTE AFTER

Appendix C: Street Transformations

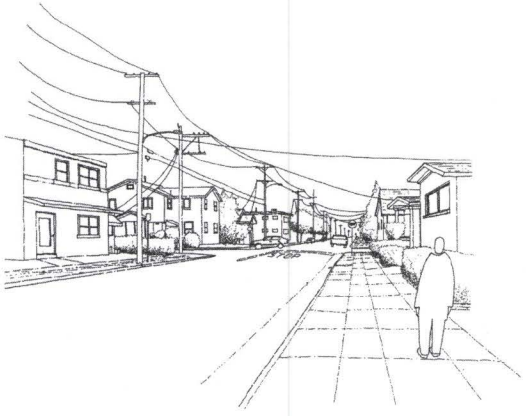


ILLUSTRATION 55 NEIGHBORHOOD ROUTE BEFORE

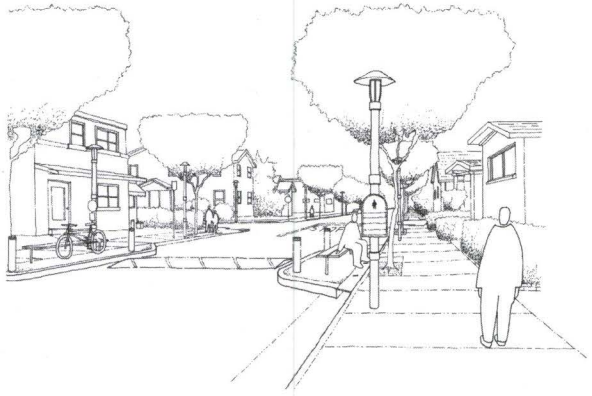
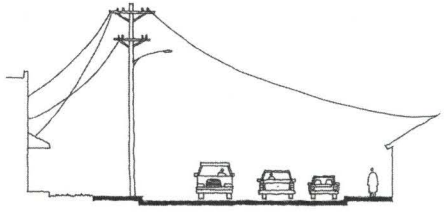


ILLUSTRATION 56 NEIGHBORHOOD ROUTE AFTER



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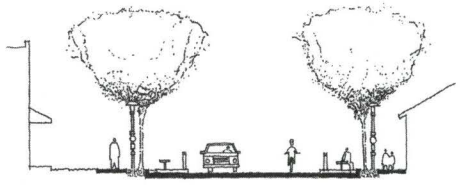

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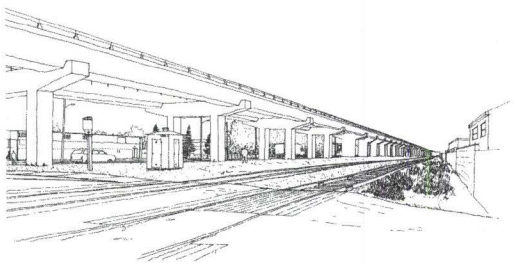


ILLUSTRATION 59 TRAIL ROUTE BEFORE

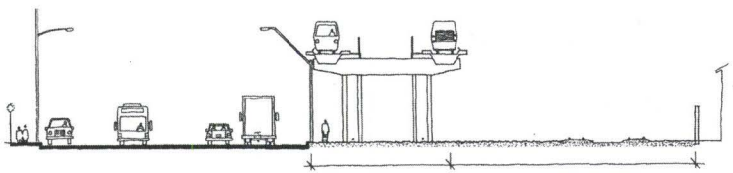


ILLUSTRATION 61 TRAIL ROUTE SECTION BEFORE

ILLUSTRATION 60 TRAIL ROUTE AFTER

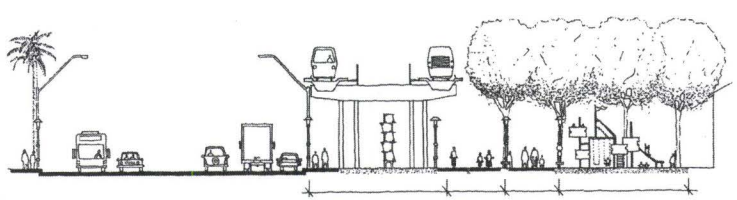


ILLUSTRATION 62 TRAIL ROUTE SECTION AFTER

Appendix D: FHWA Crosswalk Guidelines

The following table is from "Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines" by the Federal Highway Administration (FHWA 2002a, p. 19).

ROADWAY TYPE (NUMBER OF TRAVEL LANES AND MEDIAN TYPE)	VEHICLE ADT <9,000			VEHICLE ADT >9000 TO 12,000			VEHICLE ADT <12,000 - 15,000			VEHICLE ADT >15,000		
	SPEED LIMIT**											
	≤30 MPH	35 MPH	40 MPH	≤30 MPH	35 MPH	40 MPH	≤30 MPH	35 MPH	40 MPH	≤30 MPH	35 MPH	40 MPH
2-LANES	C	C	P	C	C	P	C	C	N	C	P	N
3-LANES	C	C	P	C	P	P	P	P	N	P	N	N
MULTI-LANE (4 OR MORE LANES) WITH RAISED MEDIAN	C	C	P	C	P	N	P	P	N	N	N	N
MULTI-LANE (4 OR MORE LANES) WITHOUT RAISED MEDIAN	C	P	N	P	P	N	N	N	N	N	N	N

TABLE 29 RECOMMENDATIONS FOR INSTALLING MARKED CROSSWALKS AND OTHER NEEDED PEDESTRIAN IMPROVEMENTS AT UNCONTROLLED LOCATIONS.

These guidelines include intersection and midblock locations with no traffic signals or stop sign on the approach to the crossing. They do not apply to schoolcrossings. A two-way center turn lane is not considered a median. Crosswalks should not be installed at locations which could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex or confusing designs, substantial volumes of heavy trucks, or other dangers, without first providing adequate design features and/or traffic control devices. Adding crosswalks alone will not make crossings safer, nor necessarily result in more vehicles stopping for pedestrians. Whether marked crosswalks are installed, it is important to consider other pedestrian facility enhancements, as needed, to improve the safety of the crossing (e.g., raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic calming measures, curb extensions). These are general recommendations; good engineering judgment should be used in individual cases for deciding where to install crosswalks.** Where speed limit exceeds 40 mph, marked crosswalks alone should not be used at unsignalized locations. Candidate sites for marked crosswalks. Marked crosswalks must be installed carefully and selectively. Before installing new marked crosswalks, an engineering study is needed to show whether the location is suitable for a marked crosswalk. For an engineering study, a site review may be sufficient at some locations, while a more in-depth study of pedestrian volumes, vehicle speeds, sight distance, vehicle mix, etc. may be needed at other sites. It is recommended that a minimum of 20 pedestrian crossings per peak hour (or 15 or more elderly and/or child pedestrians) exist at a location before placing a high priority on the installation of a marked crosswalk alone. Possible increase in pedestrian crash risk may occur if crosswalks are added without other pedestrian facility enhancements. These locations should be closely monitored and enhanced with other pedestrian crossing improvements, if necessary, before adding a marked crosswalk. Marked crosswalks alone are not recommended, since pedestrian crash risk may be increased with marked crosswalks. Consider using other treatments, such as traffic signals with pedestrian signals to improve crossing safety for pedestrians. The raised median or crossing island must be at least 4 ft wide and 6 ft long to adequately serve as a refuge area for pedestrians in accordance with MUTCD and AASHTO guidelines.

Appendix E: Future Directions in Pedestrian Planning

This appendix provides a brief overview of two emerging tools of significant importance to pedestrian planning. Current research on pedestrian level of service is developing algorithms to analyze the safety and comfort – as well as capacity – of pedestrian facilities. Space-syntax uses modeling to compute pedestrian volumes based on a street grid's connectivity and its accompanying land uses. While insufficiently developed for the completion of this Plan, these tools are identified here as potential resources for future pedestrian planning.

Pedestrian Level of Service

Level of service (LOS) is a standard measure for evaluating the performance of street segments and intersections based on motor vehicle traffic flow with a simple ranking system of "A" through "F." LOS A signifies a facility where each motor vehicle's movement is minimally impeded by the presence of other motor vehicles. LOS B, C, and D signify an increasing volume of motor vehicles and increasing impediments to any particular driver by the presence of other motor vehicles. LOS E indicates maximum use of a facility with a large number of motor vehicles still moving at reasonable speeds. LOS F indicates the breakdown of traffic flow where large numbers of motor vehicles are moving at inefficient speeds. The Highway Capacity Manual also specifies an analogous system of evaluation that measures the capacity of a sidewalk in relation to the number of pedestrians using the facility (Transportation Research Board 2000). In this case, LOS A signifies a sidewalk where pedestrian movement is not impeded by the presence of other pedestrians. At the other extreme, LOS F indicates a crowded sidewalk where pedestrians cannot take full steps and are likely bumping into each other.

For pedestrian planning, existing LOS poses two significant problems. First, while the pedestrian level of service measures sidewalk capacity it does not address the safety or quality of the pedestrian's experience. Streets with adequate sidewalk capacity may also be unpleasant places to walk and dangerous places to cross. Second, there are no accepted methodologies for measuring the inadequacies of a pedestrian facility, quantifying the benefits of pedestrian improvements, or weighing how service "improvements" for one transportation mode impact service for other modes. Consequently, service improvements for motor vehicles may be identified and justified in precise terms whereas service improvements for pedestrians often are limited to qualitative justifications on the benefits of "alternative" transportation.

The Florida Department of Transportation is developing a multimodal level of service analysis to address these and other concerns with existing LOS. The analysis applies to areas designated as multimodal transportation districts that are characterized by mixed-use development, tran-

sit service, and street priority for non-automobile modes. This research identifies the following most significant street factors shaping the pedestrian experience:

- presence (or absence) of a sidewalk
- distance between pedestrians and motor vehicles
- presence of physical barriers in the buffer space separating pedestrians and vehicles
- volume and speed of motor vehicles

A number of other inputs characterizing street geometry, traffic signalization, and vehicle flow are also used to compute pedestrian LOS. This output is also used as an input for computing transit LOS.

For future pedestrian planning, such a methodology would be useful for identifying inadequacies in existing pedestrian facilities and specifying the benefits of potential pedestrian improvements. A significant shortcoming of this methodology is that it does not include an analysis of pedestrian crossings. At a broader level of criticism, pedestrian level of service does not account for contextual factors like residential and commercial densities, street level activity, and connectivity of the street grid that are crucial factors to overall walkability.

For additional information, see Guttenplan (2001) and the Florida Department of Transportation (http://www11.myflorida.com/planning/systems/sm/los/default.htm).

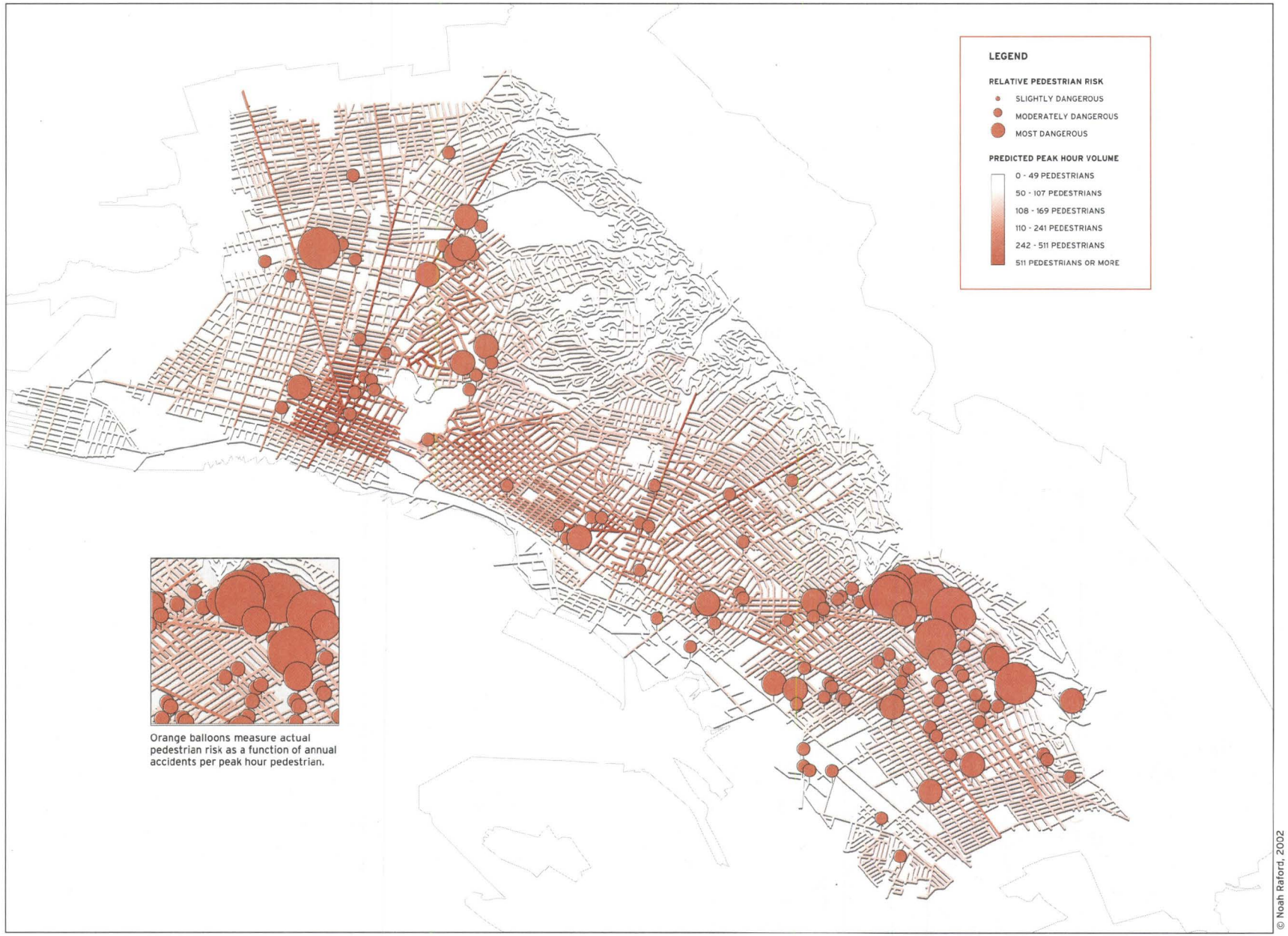
Space-Syntax

Space Syntax is a suite of modeling tools and simulation techniques used to analyze pedestrian movement and to predict pedestrian volume. Space Syntax uses the layout and connectivity of urban street grids to generate "movement potentials" which it compares to sampled pedestrian counts at key locations and land-use indicators such as population density. The resulting correlations are used to predict pedestrian volumes on a street by street level for an entire city. Space Syntax was created at the University College of London in the mid-1980's and is widely used throughout Europe and Asia.

Despite these uses, Space Syntax is largely unknown in the United States. The National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA) recently identified pedestrian exposure data as the least understood and most important area of research for pedestrian planners and decision-makers (NHTSA 2000). Space Syntax addresses this need by providing pedestrian volume predictions that may be analyzed with pedestrian collision data. The resulting risk index provides planners with an intersection by intersection list, normalized by volume, of a city's most dangerous intersections.

To predict pedestrian volumes in the City of Oakland, GIS centerline files were used to construct a model network of the City's approximately 7,000 streets. This network was fed into the

MAP 20 CITY OF OAKLAND PEDESTRIAN VOLUMES–SPACE SYNTAX MODEL



Volume estimates are accurate +/- 23% (R=0.7713, p<0.0001). Values should be taken as estimates only. Thanks to the Space Syntax Laboratory, the UC Berkeley Traffic Safety Center, Urbitran Associates, and the Oakland Pedestrian Safety Project.

Appendix E: Future Directions in Pedestrian Planning

Ovation Space Syntax processing engine for processing. The model's initial output was weighted with 2000 Census population density at the block group level and calibrated with pedestrian counts. Ninety-four pedestrian counts were used spanning 42 different intersections. The preliminary model produced a .56 correlation coefficient between predicted pedestrian volumes, population density, and observed pedestrian counts. A second round of calibration including population density modifiers to the central business district resulted in a .77 correlation coefficient.* This model was used to estimate pedestrian volumes for streets throughout the City. These data were segmented by intersection and compared to SWITRS pedestrian collision data to establish the risk index.

Map 20 shows predicted pedestrian volumes by street segment where darker shades represent higher volumes. The pedestrian volume map displays peak hour pedestrian flow in shades of orange. White colored streets equal low volume, while orange equals high volume. Orange balloons of varying size represent the level of pedestrian risk for the city's most dangerous intersections. This was determined by dividing the annual number of collisions by the peak hour pedestrian flow to create a Pedestrian Risk Index.

This innovative approach allows decision makers to include city-wide pedestrian exposures in their safety analysis for the first time, a key factor in determining actual pedestrian risk. The highest pedestrian volumes are predicted in downtown with other high volume predictions for the north and east of Lake Merritt and the area surrounding the intersection of Fruitvale Avenue and Foothill Boulevard. Downtown streets account for nearly 5% of the City's total pedestrian volume yet comprise only 1% of total street area. The mean peak hour pedestrian flow for downtown was 245 pedestrians per peak hour with several streets including Broadway exhibiting much higher predictions.

Despite its limitations as a model, Space Syntax is effective for predicting pedestrian volumes in great detail. Unlike traditional travel demand models analyzing traffic by Traffic Analysis Zone (TAZ) or census tract, Space Syntax provides fine detail by modeling street segments and intersections. The model is also less complicated than other pedestrian modeling packages (such as Paramics) which use micro-simulation, cellular automata, and other "agent-based" approaches. However, the Space Syntax interface is complicated and requires advanced knowledge of GIS, spatial projections, and database manipulation. In terms of the modeling, little work has been done to integrate more sophisticated land-use measures into the analysis.

*Very few people live in Oakland's central business district, resulting in very low estimates of daytime population density from the 2000 Census. Density modifiers were derived from 2000 employment statistics provided by the State of California's Economic Development Department

For example, the Space Syntax model for Oakland under-predicted several key intersections in the downtown because it does not include mass transit as a source of pedestrian activity. Similarly, recreational activity on the streets surrounding Lake Merritt was not included in the model. Space Syntax also does not address behavioral factors such as street preferences, perceptions of safety, aesthetics, and the like.

For additional information, see the Space Syntax Laboratory (http://www.spacesyntax.com/).

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