
BERKELEY BICYCLE
PLAN
DRAFT FOR INCLUSION IN
THE GENERAL PLAN

Prepared for
City of Berkeley

by



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December 31, 1998

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EXECUTIVE SUMMARY

The goal of the Berkeley Bicycle Plan is to make bicycling safer and more convenient for bicyclists of all ages and skill levels. Since bicycling is non-polluting, and cost- as well as energy-efficient, it is the preferred mode for many individuals, ranging from cash-strapped students to environmentally conscious families. Making the bicycling improvements identified in the Plan should boost the number of people using a bike for both work trips and utilitarian trips. Berkeley already has the highest percentage of bike commuters in Alameda County, but there is great potential to increase it even further. Through the provision of more and safer bikeways and the use of effective education and promotion programs, the percentage could easily double or triple.

The Bicycle Plan is a policy document which will be incorporated into the updated General Plan, currently in progress. The policies and map of the bikeway network will be included in the Transportation Element of the General Plan. The policies cover five main areas of importance to bicycle transportation: Planning, Network and Facilities, Education and Safety, Promotion and Implementation.

Given the dense built-out nature of much of the city, the opportunities for providing new bike-only paths throughout the city are limited. Recently, however, the City has made efforts to expand and improve bike facilities. Examples of such projects include expanded bike parking, the planned I-80 Bicycle/Pedestrian Overcrossing, bike sensitive-detector loops, and the dedicated bike improvement fund.

The bikeway network described in this plan lays out several methods for improving the way bikes are accommodated within the existing roadway infrastructure. The City already has many bike lanes; additional bike lanes are proposed for analysis on a few select streets. Another type of bikeway is the “shared roadway” proposed for some streets with high traffic. On these streets, bike lanes are infeasible, and recommendations are limited to removing obstacles and using signs and pavement stencils to alert motorists to cyclists.

Seven “bicycle boulevards” are recommended that will form a skeletal network for those bicyclists who are intimidated by riding on the heavier trafficked streets. These streets are: Milvia Street, California Street, Ninth Street, Hillegass/Bowditch Streets, Virginia Street, Channing Way, and Russell Street. The exact measures to turn these streets into bicycle boulevards will be determined during the Bicycle Boulevard Design Phase, to begin in 1999. The intent of the bicycle boulevards is to improve the safety, convenience and attractiveness of bicycling by providing a route with low-traffic volumes, as few stops or delays as possible for bikes, traffic control to cross major streets, and a distinctive attractive ambiance.

It is estimated that the total construction cost to implement the bikeway network is \$7 million. This does not include the further planning studies which will determine the specific design

actions needed to implement the recommendations. There will also be costs and time associated with gathering public and neighborhood input to determine the appropriate actions to take.

Bicycle education and promotion programs are an integral part of a bicycle-friendly city. Some schools, such as Martin Luther King Jr. Middle School have developed pilot bicycle safety programs to teach students safe riding and bicycle maintenance. The Health and Human Services Department has two programs aimed at increasing helmet usage among children. Ideally there would be programs available for all children, with different curricula for elementary school children, middle school children and high-school aged students. Education of adults, both bicyclists and motorists, is key to increasing the safety of bicyclists on the roadway.

Lastly, bicycle promotion programs can help tremendously in increasing the number of bicyclists. Employer-based programs are the easiest way to spread the information, and the City, as a major employer, can be a model for other businesses. Policies and practices that encourage bicycle commuting are: secure parking, fleet bicycles, discounts and raffles, maps and other resource information.

Every new trip that can be made by bicycle improves air quality, congestion and the viability of local businesses. With the commitment of the City, and the cooperation and involvement of interested citizens groups, Berkeley can increase the number of bicyclists while reducing accidents. The passing and implementation of this Plan is a big step toward bicycling achieving its full potential in Berkeley's transportation system.

Chapter 1

INTRODUCTION

The City of Berkeley has long supported bicycling as an environmentally friendly, healthy, low-cost method of transportation and recreation. The purpose of this Bicycle Plan is to make Berkeley a model bicycle-friendly city where bicycling is a safe, attractive, easy, and convenient form of transportation and recreation for people of all ages and bicycling abilities. The Plan provides the City with a set of tools to begin this grand endeavor. The Plan includes goals, policies, and recommendations for bikeways, bicycle parking, promotion programs, and safety education programs. The bikeway costs, prioritization criteria, and list of funding sources in the Plan will help City staff, the City Council, and the community to determine where to focus our energy within the tremendous range of recommended bicycle projects and programs. Berkeley will not become a model bicycling city overnight, but this Plan is a key step toward getting us there.

Bicycling is one mode among the many that share the roadways of Berkeley. Frequently, roadway facility and funding decisions are made with little consideration for bicycling as a serious transportation mode. A goal of this Plan is to provide bicyclists with an equal chance to travel safely and conveniently around the City. At the same time, the needs of bicyclists must be integrated with the needs of the many other roadway users, including pedestrians, the disabled community, emergency service providers, transit and automobiles. There is already a circulation map for automobiles, and AC Transit has bus route planning documents that include Berkeley. The Bicycle Plan, as a statement of bicycling needs, will allow more comprehensive transportation planning in the city, complementing these other planning efforts.

On a more practical level, the Bicycle Plan will allow the City to access a significant grant funding source. The Bicycle Lane Account (BLA) funded \$360,000 of projects throughout the state in 1996, but by 2004 that amount will have grown to \$5 million per year. BLA funds are only available to jurisdictions with an adopted Bicycle Plan which contains the required elements. A list of these required elements and where they are contained in this Plan is presented in Appendix A. Additionally, any bicycle-related grant application will be strengthened if the project is contained in an adopted Bicycle Plan.

BACKGROUND

Berkeley is a bicycling community. Almost 4,000 people bike to work in Berkeley every day, in addition to those who use bikes for pleasure or errands, or children who ride bikes. Many of the more than 40,000 students at the University of California and other schools in Berkeley also use bicycles as their primary means of transportation. In addition, Berkeley is a center for urban recreational cyclists and home to one of the nation's few bicycle cargo delivery companies.

Despite the high level of cycling that currently exists in the City, conditions can and should be improved. As an older community that was largely built up before World War II, Berkeley's street system is composed mainly of 36-foot-wide streets. There is barely room on these streets for two lanes of traffic and parking on each side, let alone bike lanes. The City has only a few bicycle paths completely separated from the street system. While there are some opportunities for adding paths, the built-out nature of the City, like that of most urban areas, precludes easy development of a complete path system.

For these reasons, and because most bicyclists have the same origins and destinations as motorists, most bicycle traffic shares the roadway system with auto traffic. Consequently, the greatest opportunity for near-term improvements lies in repaving, restriping, and modifying traffic control on the city's many mixed-traffic streets to better accommodate bicyclists. There are already some trends in this direction. Beginning in the 1970s, residential traffic control has removed much auto traffic from residential streets, concentrating it on the City's major thoroughfares and commercial streets. Although this shift has improved many streets for cycling, it has made riding on and crossing major streets more difficult, and, for new or potential cyclists, more intimidating.

EXISTING BICYCLE USE

According to the 1990 census, 4.9 percent of Berkeley residents commute to work by bicycle.¹ (Relevant pages from the census are presented in Appendix B.) This is almost four times the Alameda County average of 1.3 percent and the Bay Area average of 1.1 percent, and is the highest rate in Alameda County. (See Table 1.) Conversely, 5.0 percent of Berkeley workers bike to work, also the highest in Alameda County. When broken down by Berkeley residents, fully ten percent of those who both live and work in Berkeley bike to work. Only one percent of those who live in Berkeley and work elsewhere bike to work, possibly due to the high number of jobs in more distant and/or less bike accessible locations such as San Francisco.² Three percent of those who work in Berkeley and live elsewhere bike to work. This could be the target of promotion efforts to increase bicycling in Berkeley. At UC Berkeley it is estimated that one in six students bikes to campus.

What the census does not measure is how many people use their bicycle for a non-commute trip such as shopping, errands, or visiting friends. The 1990 MTC Travel Survey³ revealed that in Alameda County, 1.3 percent of home-based shopping trips are made by bicycle, as are 2.5 percent of social/recreation trips and 3.8 percent of school trips. It seems reasonable to assume that these percentages are higher in Berkeley. Overall, only 22 percent of bike trips are work trips. Twelve percent of bike trips are shopping trips, 22 percent are social/recreation trips, 28

¹ *Working Paper #2, Bay Area Travel and Mobility Characteristics, 1990 Census*, MTC August 1992.

² However, this does not measure how many residents bike to a transit station in order to take BART or the bus to work.

³ *Working Paper #4, San Francisco Bay Area 1990 Regional Travel Characteristics, 1990 MTC Travel Survey*, MTC, December 1994.

percent are school trips and 16 percent are non-home based trips (e.g., trips between the work place and shopping). In addition, recreation bicycle trips have been increasing over the past twenty years. The National Bicycle Dealers Association estimates that nationwide there are 31 million adults who ride for recreation regularly (at least once a week). Many persons who begin bicycling by riding recreationally become regular bicycle commuters.

The pertinent factors in predicting how many persons will bicycle in the future include safe and convenient facilities but also the number of residents who live within a reasonable bicycling distance of their workplace. Regionally, 40 percent of commuters in the Bay Area live within five miles of their workplace.⁴ These data are not available at the city or superdistrict level. What is available from census data by city is the number of minutes workers spend commuting. A reasonable commute time regardless of mode is about 30 minutes. This translates into about two miles for walking and about six miles for a bike trip. The census data indicate that about 16 percent of Berkeley residents live within nine minutes of their workplace. A nine-minute car trip is approximately equivalent to a 30 minute bike ride. Therefore, it appears that in Berkeley, bicycling is already capturing 30 percent of those that live within easy bike riding distance. If 50 percent of those living within easy bike riding distance would bike to work, then bicycling's total mode share would increase to almost eight percent. Considering the many hardy souls who commute more than thirty minutes one-way, the total number of bike commuters could easily exceed ten percent. This would be double the existing bike commute rate. If one also considers people who bike to the bus, ferry or BART stations as bike commuters, (who are currently classified as transit commuters in census data), the bike mode share would be even higher, perhaps fifteen to twenty percent.

EXISTING COMMUTE TO WORK DATA BY RESIDENCE				
Place of Residence	Percent Bike to Work	Percent Live Within 9 Minutes*	Percent Live Within 19 Minutes*	Potential Percent of Bicycle Commuters
Berkeley	4.9 ⁽¹⁾	15.7 ⁽²⁾	40	7.85**
Alameda County	1.3 ⁽³⁾	10.7 ⁽⁴⁾	30	2.7***

⁴ Working Paper #7, *Detailed Commute Characteristics in the San Francisco Bay Area, 1990 Census*, MTC, March 1994.

* These commute times are regardless of mode, however, they are an indicator of how close a resident lives to his/her workplace. If we assume, as a worst case, that the commute is by car, then a nine minute car commute is approximately equal to a 30 minute maximum bike commute, while living within 19 minutes by car would be equivalent to a bike commute of between 30 and 60 minutes.

** 50 percent of those living within 9 minutes is 7.85 percent.

*** 25 percent of those living within 9 minutes is 2.7 percent.

Sources:

(1) Table C-2, Working Paper #2, 1990 Census, MTC 1992

(2) Table C-3, Working Paper #2, 1990 Census, MTC 1992

(3) Table C.1.3, Working Paper #5, 1990 Census, April 1993

(4) Table A.15, Working Paper #2, 1990 Census, MTC 1992

WHY PROMOTE BICYCLING?

Bicycling is the most efficient form of transportation in terms of energy expended per mile traveled. However, few bicyclists consciously ride for this reason. Bicyclists ride, in fact, for many reasons and the benefits are accrued by both the individual as well as society. Bicyclists have door-to-door mobility at the exact time they need it without having to rely on transit schedules. As shown in Table 2, almost 19 percent of households in Berkeley have no cars and 45 percent have only one car, resulting in a significant percentage of the adult population - not to mention children - who do or could use bicycles as their primary mode of transportation.

CAR OWNERSHIP BERKELEY AND ALAMEDA COUNTY		
	Zero-Car Household	One-Car Household
Berkeley ⁽¹⁾	19.0 %	45.1 %
Total Alameda County ⁽²⁾	12.2 %	34.4 %
Source: (1) Table C-1, Working Paper #2, 1990 Census, MTC 1992 (2) Table A.4, Working Paper #2, 1990 Census, MTC 1992		

Other bicyclists have or could afford a car but for environmental reasons choose to use their bikes for transportation. The environmental reasons range from the obvious one of air pollution to the more subtle, but just as real, problems of noise pollution, water pollution from roadway run-off, excessive paving resulting in reduced area for water drainage and loss of habitat, dependence on foreign oil, et cetera. Bicycling also produces benefits for society in general, many of which are the environmental benefits just described. Additionally, those bicyclists who do own, or could afford to own a car, are reducing traffic congestion and freeing-up auto parking spaces every time they choose to use their bike.

In addition to societal benefits, bicycling also has direct benefits for the individual. Bicycling is the second least costly transportation mode (after walking). When there is a fee for car parking, bicycling is even more cost-effective. At seven cents a mile (the calculated cost of bicycle

purchase and maintenance), a five mile bicycle trip is only 35 cents compared to an auto trip at \$1.50 per trip (30 cents per mile) or an AC transit one-way fare of \$1.25. Thus bicycling is chosen by people both with and without cars as the most cost-effective way to travel. Bicycling is particularly convenient when parking is scarce. Auto parking in Berkeley is in short supply at numerous locations including downtown, near BART stations, and all around campus. Finally, bicycling is popular among those who are concerned with health and fitness. Bicycling provides excellent cardio-vascular conditioning and studies have shown that employees who regularly bike to work are sick less than the average employee. Many bicycle commuters recognize that the time spent commuting to work is time that does not have to be spent at the gym or on a home treadmill.

From a public policy point of view, it is a worthy goal to provide safe and convenient personal mobility to those without cars. People without cars need access to employment, shopping and recreation just as those who can afford cars. In sum, investing in bicycling facilities is a fiscally and environmentally sound expenditure of public moneys. It is similar to recycling in that a win-win situation is achieved that improves the environment while saving public dollars in the long run. Just as recycling programs have become mainstream in the last ten years, both in homes and at institutions, it is hoped that in the next ten years, bicycling in Berkeley will be a daily or weekly event in the lives of an even larger number of residents.

COMMUNITY PARTICIPATION AND PROJECT HISTORY

The process of developing a city-wide Bicycle Plan began in 1992 and was envisioned as a two phase process. Phase 1 of the project was led by a consultant team headed by TJKM Transportation Consultants. This phase focused on an overall evaluation of existing bikeways and bicycling opportunities in Berkeley, including the identification of specific problems and preliminary suggestions for solutions and/or alternative routes.

Phase 1 was guided by suggestions and comments from interested members of the community, through an open-to-the-public advisory group, and the general public. Information on commonly used routes and ideas on existing problems and potential solutions were solicited during and after a February 1993 public workshop attended by nearly one hundred people. These findings are summarized in Chapter 3. The resulting strategies pointed toward correcting deficiencies in the existing system, rather than developing an entirely new network.

After a Draft Bicycle Plan was released on April 7, 1994, four public meetings were held to gather public input. Additionally over 40 individuals and groups submitted written comments on the Draft Plan. All of these comments were reviewed and taken into consideration during the next phase of the Bicycle Plan process.

Phase 2 of the project began in 1997, after the City received grant funds to hire a consultant to finalize the Draft Bike Plan. This phase, conducted by a consultant team led by Wilbur Smith Associates, focused on developing bicycle goals and policies, refining bikeway alignments,

developing cost estimates for route and infrastructure improvements, developing prioritization criteria to be used to rank bike improvement projects, and developing bicycle safety education and promotion programs.

Throughout Phase 2 of this project, the consultant and the City project manager met regularly with members of the community in the form of a Bicycle Plan Advisory Committee (BPAC). This committee was composed of the three member Transportation Commission Bicycle Subcommittee and two representatives of the Bicycle-Friendly Berkeley Coalition. A public meeting was held on April 30, 1998 to receive direct input on the draft bicycle network. A summary of the comments received at this meeting is presented in Appendix C. Over 50 individuals and groups submitted written comments on the draft bicycle network. The “Draft for Citizen Review” of the Berkeley Bicycle Plan was presented to the public at an October 22, 1998 public workshop. The meeting comments (summarized in Appendix C) and over 40 written comments were taken into consideration in the development of the final draft of the Bicycle Plan.

PLAN ADOPTION AND NEXT STEPS

The Bicycle Plan is being adopted by the City Council as a policy document to be incorporated into the updated General Plan. The bicycle policies and the bikeway network map will be included in the Transportation Element of the General Plan. Other sections will most likely be included as an appendix to the General Plan. The update of the General Plan is now taking place, and should be completed by late 1999.

Once the Bicycle Plan is adopted, implementation of the Plan can begin. Many of the specific actions described in this Plan will require further public review and input, detailed evaluation, identification of funding sources, and further approvals by the City Council and/or Transportation Commission. These implementation steps are outlined in Chapter 7.

The immediate next steps following adoption of the Bicycle Plan will be:

- 1 prioritizing the bicycle projects and programs, using the criteria contained in the Plan;
- 1 developing bicycle boulevard design plans with input from the community, (Bicycle Boulevards are described in Chapter 4); and
- 1 defining the staffing needed to implement the Plan and identifying the resources for that staffing level.

One of the City’s major challenges in implementing the Bicycle Plan will be finding the funding for staff and capital projects. The prioritization criteria presented in Chapter 7 will be a great aid in determining which projects are most important for improving bicycling conditions in Berkeley. The top-ranking projects and programs will then be the focus of funding requests and grant applications.

Chapter 2

GOALS AND POLICIES

MISSION STATEMENT

To create a model bicycle-friendly city where bicycling is a safe, attractive, easy, and convenient form of transportation and recreation for people of all ages and bicycling abilities.

GOALS

1. Planning

Integrate the consideration of bicycle travel into City planning activities and capital improvement projects, and coordinate with other agencies to improve bicycle facilities and access within and connecting to Berkeley.

Policies:

- 1.1 Coordinate the bikeway network plan with adjacent governmental entities, public service companies, coordinating agencies and transit agencies.
- 1.2 Establish clear roles and responsibilities for all affected City departments in the implementation of the Bicycle Plan, including the funding, construction, operation, and maintenance of the bikeways.
- 1.3 Ensure that all traffic impact studies, analyses of proposed street changes, and development projects address impacts on bicycling and bicycling facilities. Specifically, the following should be considered:
 - Consistency with General Plan and Bicycle Plan policies;
 - Impact on the existing Bikeway Network;
 - Degree to which bicycle travel patterns are altered or restricted due to the projects; and
 - Safety of future bicycle operations (based on project conformity to accepted design guidelines and standards).
- 1.4 Encourage the Congestion Management Agency (CMA) to include bicycle facilities in the list of exempt projects whose implementation may cause a project to exceed Congestion Management Program (CMP) and level of service (LOS) standards.
- 1.5 Integrate bicycle network and facility needs into all City planning documents and capital improvement projects.

- 1.6 Work with transit providers to increase accessibility on board transit vehicles to bicycle users, especially during peak commute hours, and to provide secure bike parking at stations.

2. Network and Facilities

Develop a safe, convenient, and continuous network of bikeways that serves the needs of all types of bicyclists, and provide bicycle parking facilities to promote cycling.

Policies:

- 2.1 Develop a citywide system of designated bikeways that serves both experienced and casual bicyclists. The network should serve all bicyclists' needs, especially for travel to employment centers, schools, commercial districts, transit stations, institutions, and recreational destinations.
- 2.2 Ensure that all city streets open to bicycles are safe for bicycling, while focusing bikeways primarily on streets with lower volumes of auto traffic.
- 2.3 Provide bikeway facilities that are appropriate to the street classification, traffic volume, and speed including the development of a new bikeway classification - the bicycle boulevard - such that the entire city is served by the bikeway network.
- 2.4 Design the street system to provide a safe network for bicyclists, pedestrians, the disabled community, and emergency response.
- 2.5 Adopt and adhere to citywide design standards for bikeways and bike rack placement. Ensure that standards for roadway maintenance meet bicyclists' needs for smooth, deterrent-free roads.
- 2.6 Maintain all streets, roadways, and designated bike routes to be free of deterrents to bicycling (such as pot holes, debris, and overgrown landscaping) to the greatest extent possible.
- 2.7 Incorporate bicyclists' needs into the City's guidelines and timetables for maintenance activities, including re-paving, and ensure proper funding levels for routine bicycle-related maintenance activities.
- 2.8 Ensure that roadway and pedestrian corridor designs do not include any actions that would compromise bicycle safety, such as the extreme narrowing of a curb lane.
- 2.9 Monitor bicycle parking supply within the City right-of-way and installed by private developers under the city ordinance to ensure that adequate bike parking is available.

3. Education/Safety

Improve the safety of bicyclists through education and enforcement.

Policies:

- 3.1 Support and expand safety education programs for adult bicyclists, child bicyclists, and motorists which increase knowledge and encourage individual behavior change.
- 3.2 Work with U.C. Berkeley and the Berkeley Unified School District (B.U.S.D.) to institute safety education programs for students.
- 3.3 Enforce motorist and bicyclist violations that are most likely to cause injury such as running red lights, speeding, wrong-way riding and riding on sidewalks where illegal.

4. Promotion

Increase bicycle mode share by increasing public awareness of the benefits of bicycling and of the available bike facilities and programs.

Policies:

- 4.1 Provide current and easily accessible information about the bicycle network, bicycle programs and bicycle parking.
- 4.2 Encourage major employers including U.C. Berkeley and the B.U.S.D. to develop bicycle promotion programs for their employees.
- 4.3 Enhance the City's own bicycle program for City employees so that the City is seen as a model employer.

5. Implementation

Secure sufficient resources from all available sources to fund ongoing bike improvements and education.

Policies:

- 5.1 Establish priorities for the allocation of public funds, balancing the needs of the diverse population of bicyclists.
- 5.2 Develop a phased and prioritized implementation plan that takes into consideration the available funding opportunities and availability of staff.
- 5.3 Continue the City's annual commitment of City funds for bicycle improvements.
- 5.4 Actively seek funding from grant sources.
- 5.5 Establish a staff bicycle coordinator position at a level sufficient to implement the Plan, including the necessary public process.
- 5.6 Create a broadly representative bicycle advisory committee to assist staff in the planning, design, and implementation of projects that directly or indirectly impact bicycle travel and safety.

- 5.7 Promote public/private partnerships in development, implementation, operation, and maintenance of bike facilities.
- 5.8 Provide an annual summary to the Transportation Commission and City Council on progress toward a more bicycle-friendly Berkeley.

BERKELEY'S GENERAL PLAN AND OTHER CITY PLANS

Berkeley's existing General Plan (the 1977 "Master Plan") includes the following bicycle policies:

Policy 2.70: Provide the opportunity for safe, convenient and pleasant bicycle travel throughout all areas of Berkeley.

Policy 2.71: Encourage the use of bicycles for both transportation and recreation.

Policy 2.72: Coordinate and develop inter-city routes and support additional opportunities to carry bikes on public transportation.

Policy 2.73: Promote the installation of covered, lockable bicycle storage for new or existing residential, commercial, industrial, civic, recreational and educational facilities, parking lots, parking garages and major transit stops to serve residents, shoppers and commuters.

Policy 2.74: Evaluate and complete the system of planned bikeways in Berkeley.

Policy 2.75: Locate bikeways on streets with lower volumes of automobile traffic for safety and reduced levels of harmful exhaust fumes and unpleasant noise.

Policy 2.76: Consider the inclusion of bikeways and/or bike storage in the design of all new or reconstructed streets, recreational areas or buildings.

The bicycle Goals and Policies in this Plan are consistent with, and expand upon, the above policies from 1977.

The City is currently in the process of updating its General Plan and expects to have a Plan ready for adoption by late 1999. For an explanation of how the Bicycle Plan will be incorporated into the City's new General Plan, see the end of Chapter 1.

Many other adopted city plans contain bicycle-related goals. Some policies are specific to a certain area, such as "Provide convenient, useable East-West pedestrian, bicycle and auto links between West Berkeley and the Waterfront" (*Waterfront Plan*, 1986). Other policies are more general, such Policy 4.1 from the *Berkeley Downtown Plan* (1990): "Actively promote the use of alternative means of transportation to the single occupant vehicle."

All of the City's adopted area plans were reviewed as part of the development of the Bicycle Plan. The following plans contain bicycle-related policies:

- 1 Berkeley Waterfront Plan, 1986
- 1 Berkeley Waterfront Specific Plan, 1986
- 1 Aquatic Park Master Plan, 1990
- 1 Berkeley Downtown Plan, 1990
- 1 South Berkeley Area Plan, 1990
- 1 West Berkeley Plan, 1993
- 1 University Avenue Strategic Plan, 1996
- 1 Civic Center Urban Design Plan, 1997
- 1 South Shattuck Strategic Plan, 1998

The Goals and Policies laid out in this Bicycle Plan are consistent with the bicycle-related policies in the above plans.

Chapter 3

SETTING

EXISTING BIKEWAY AND STREET SYSTEM

Berkeley established an extensive bikeway system in the 1970s. The 1977 Master Plan includes the “Berkeley Bikeways Complete Network” map, dated January 1971. This map, included as Appendix D, identifies a network of planned bikeways. Many of these bikeways have been implemented as can be seen in the map of the existing bikeway network, Figure 1. Berkeley now has more than 15 miles of designated bike routes, lanes, and paths, as well as over a hundred miles of low-traffic residential streets.

Although the City dedicated few resources to bike projects in the 1980s, in recent years the City has actively and successfully pursued grant funding, and has also committed some City funds to bike projects. The following significant bicycle improvement projects have been accomplished recently, or are currently underway:

1. I-80 Bicycle/Pedestrian Overcrossing

This over \$4.0 million link between Aquatic Park and the Berkeley Marina and Bay Trail will provide safe, easy travel over the I-80 freeway. The bridge is expected to be completed in the year 2000.

2. Bicycle Parking

A \$100,000 grant was used to install over 150 bike racks throughout the City, providing almost 600 new bike parking spaces. The city has been installing additional bike racks on an as-needed basis, as funds are available.

3. Bicycle Traffic Signal

A signal that allows bicycles and pedestrians to cross a busy street, while prohibiting autos from continuing straight, was installed with \$100,000 in grant funds at Channing and Martin Luther King Jr. Way. This signal enhances bike and pedestrian safety, while addressing the fear of neighborhood residents that a traffic signal will increase traffic on their cross street.

4. Bicycle Detector Loops

Bike sensors have been installed at all 18 intersections in the City that have traffic-actuated traffic signals at a cost ranging from \$500 to \$1,000 per loop. Bikes no longer need to use the pedestrian push button to make the light change or illegally cross these busy intersections against the red light. See Appendix D for a map of the detector locations.

5. Bicycle Improvement Fund

The City Council dedicated \$350,000 over a five year period (1997-2001) to fund small-scale bicycle improvement projects that are unlikely to be funded from grant sources.

In spite of these accomplishments, there is still much work to be done. Many of the existing bikeway facilities are poorly marked or suffer from deteriorated pavement. Many destinations still lack good bicycle access, and many of the most direct routes carry heavy vehicle traffic that competes with bicycle use. Bicycle travel on quieter routes is often impeded by frequent stop signs and uncontrolled crossings at collector and major (arterial) streets. Busy one-way streets complicate the area south of the U.C. campus. West Berkeley, the site of growing commercial activity, is also poorly served by bicycle facilities. In spite of the installation of additional bike parking, secure and convenient parking is still lacking in some areas.

In addition, although the City's decades-long commitment to residential traffic control has reduced the intrusion of auto traffic on residential streets, it has also created drawbacks for cycling. Diverters are not always easily traversed by bicycles — especially diagonal diverters, since turning motorists often overlook the possibility that a cyclist might pass through the barrier into their line of travel. Stop signs, a common tool in residential traffic control, are generally an anathema to cyclists, since stopping means loss of momentum as well as time.

OVERVIEW OF PROBLEMS

Phase I of this project included gathering the public's view of existing bicycling conditions. This information was compiled from the February 27, 1993 workshop and subsequent mail-ins, and a public survey conducted during Earth Day 1993. The following summary includes the most commonly cited problems. In subsequent workshops and in written public comments received since 1993, the below problems have been reiterated. While no formal tabulation has been made of these more recent comments, in general the frequency that a problem was cited roughly follows that of the problems listed below. This summary can be useful in prioritizing actions and projects during Bicycle Plan implementation.

The number of times a problem was cited is shown next to its description. Individual problems and suggestions are organized into subgroups. All subgroups and individual comments that were mentioned six or more times are summarized below, in descending order of frequency of response.

Lack of, or Problems with, Lanes on Key Routes (59 responses)

Problems included lack of bicycle access, especially through the U.C. Berkeley campus and to the Marina (8), and the lack of continuous routes through Berkeley (9). Good north-south, east-west, and diagonal main-line routes are needed. Street diverters are not comfortably permeable by cyclists and not safe either, since vehicles shoot by without expecting cyclists to appear through them (8). One-way streets are a problem, since two-way cyclists end up traveling in the


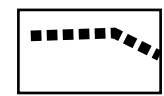




Berkeley Bicycle Plan

Figure 1 Existing Conditions



Legend

-  Class 1: Paths
(multi-use trail; non-motorized only)
-  Class 2: Lanes
(striped lane for bicycles only)
-  Class 3: Routes
(signed route - no special markings)
-  BART Station

Source: Proposed and Existing Bikeways Inventory, April 14, 1998



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11/12/98

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wrong direction, or are confused about how to react and continue on such a street after turning from another street (6). (There was dissent on this issue; a smaller group of respondents liked one-way streets.) "Slow" streets also present pros and cons, with the majority of cyclists against them. Two problems are that the wavy curves are hard to see or predict at night, and bumps encourage motorists to drive in the bicycle lanes to partially avoid them. A number of responses (14) pointed out problems along roadways without specifying the exact nature.

Intersections, Crossings, and Connections (54)

The most often cited problems were that a crossing is difficult or hard to follow (12 responses) and that there are too many stop signs (12). Problems ranged from lack of signs or signals to help cyclists cross, auto drivers cutting in too close to the curb, and drivers not heeding cyclists because of poor design (including bike lanes petering out), as well as bad attitudes or education. Juxtaposed or offset intersections are especially difficult to deal with and are dangerous. Handling them is unclear to both cyclists and drivers. The number of stop signs is a problem because it takes time and energy for a cyclist to pick up speed again.

Pavement (44)

Most complaints were related to potholes, ripples, and patchwork repairs on roadway pavements (38). Bikes suffer undue wear and tear, and there is personal danger when bike wheels run into wheel-sized ruts.

Dangerous Motorists (43)

Cyclists said that motorists act aggressive, dangerous, uneducated, and unaccustomed to cyclists (18).

Bike Parking (34)

Most often cited was the need for secure parking (19) and sufficient supply of parking (12).

High-Volume or Narrow Streets (21)

Most problems were generally cited as the heading suggests (17). The emphasis seems to be on safety problems. Roads are too narrow to comfortably accommodate parking on both sides as well as bike lanes. Problems are exacerbated where vehicles speed.

Car Parking (17)

The biggest problem was the hazard of car doors opening in cyclists' paths (6).

Local and Regional Access (14)

No specific problems were cited six or more times. The biggest problem was access to and from Berkeley from other regions via BART and buses during commute times, and via roads, bridges, and narrow tunnels at all times. Also cited were access from BART stations to other areas of Berkeley, and finally, access to Berkeley's parks and the Marina.

Crossing Arterials (13)

Most commonly cited was the need for access to the waterfront. (11)

Signal Timing and Actuation (12)

The biggest problem is that bicycles are not detected by traffic-actuated signals and must either wait for a vehicle or run the light. (9)

Poor Lighting (11)

Most responses did not provide more description.

The remaining problems with fewer than six total complaints were: orientation (of signs), crime, debris, inadequate city policies, disincentives for cycling (such as errands that require auto use), and others.

Chapter 4

BIKEWAY NETWORK AND BIKE FACILITIES

INTRODUCTION

This chapter presents the bikeway network for the City of Berkeley. First, the methodology used in selecting the network is described. Then the specific classifications of bikeways and roadway improvements that comprise the network are presented. Lastly, bicycle parking and other support facilities are discussed. The associated costs for each route or route segment, and a description of the implementation process are discussed in Chapter 7.

METHODOLOGY TO SELECT NETWORK

The bikeway network was developed keeping in mind the goals and policies presented in Chapter 2. The primary considerations were to serve major attractors and generators and to improve safety for all levels of users. The development of the bikeway network built upon the existing network established in the early 1970's (see Appendix D). Opportunities and constraints for additional bikeways were determined from input from the public, analysis of attractor and generator locations and via field reviews conducted primarily by bicycle. Phase 1 of the Bike Plan process collected public input and accident locations. Phase 2 refined this information, examined the Bicycle Plans of adjacent cities, selected the types of bikeways to serve the needs of Berkeley, and developed an integrated bicycle network addressing the needs of the users, while acknowledging the many existing constraints, such as street width.

Types of Bicyclists

This plan recognizes that there are many types of bicyclists with varying skills and levels of comfort in terms of riding in traffic. While bicyclists can be loosely categorized as experienced adult, casual adult and child cyclists, there are many gradations of cycling competency and just as many opinions as to what makes an ideal bike route. Some experienced cyclists eschew bike lanes, some cyclists will ride on busy roads only if bike lanes are provided, some will ride in bike lanes all the time and some will ride in bike lanes only if parallel residential roads are unavailable. The vast variation in the skills and comfort levels of bicyclists was the major factor in developing several bikeway types for the bikeway network, as discussed on the next page.

BIKEWAY DEFINITIONS

Bike paths (Class I), lanes (Class II), and routes (Class III) are the most commonly used bikeway types and are defined by Caltrans in the Highway Design Manual. One of the major conclusions of Phase I of this project was that these three bikeway types were not sufficient for Berkeley given the many narrow streets and the high degree of bicycle riding in the City. This led to the creation of two more bikeway types: the Bicycle Boulevard and Class 2.5, described below. The

traditional bikeway types and their role in the Berkeley Bikeway Network are also described below.

Bike Path (Class 1)

A Bike Path provides a completely separated right of way for the exclusive use of bicycles and pedestrians with cross-traffic minimized. Few new bike paths are proposed in Berkeley due to the lack of adequate space in this built-out city.

They are appropriate where there is adequate right-of-way to provide a car-free environment for a large portion of a bicycling trip. They are also effectively used to close gaps in a route such as connecting two dead-end roads or traversing parks.

Due to their popularity with pedestrians, roller bladers and other non-bicyclists, the utility of bike paths to bicyclists is often limited. Serious bicyclists can rarely ride as fast on a bike path as they can on city roads. This is due both to the design of the bike path and also due to the high numbers of slower users: walkers, joggers, people with dogs, and/or strollers, etc. The width of the bike path should be increased depending on the stratification of the users.

Bicycle Boulevard

A bicycle boulevard is a roadway that has been modified, as needed, to enhance bicyclists' safety and convenience. It provides better conditions for bicycles while maintaining the neighborhood character and necessary emergency vehicle access.

The bicycle boulevards are intended to serve as Berkeley's primary bikeways, or "bike arterials." The seven bicycle boulevards included in this Plan will serve as the backbone of the bikeway network, providing safe, direct, and convenient routes across Berkeley.

The Berkeley City Council designated five streets as bicycle boulevards on Earth Day 1995. These five streets - Ninth, California, Milvia, Delaware/Hearst corridor, and Channing - were proposed in the 1994 Draft Bicycle Plan. This Plan proposes two additions to the list, and one alteration. To complete the desired "spine" of bicycle boulevards; Hillegass/Bowditch and Russell are proposed as additional bike boulevards. The Delaware/Hearst bike boulevard has been replaced with Virginia Street, a quieter street that covers a larger area of the City. As noted on Figure 2, the exact alignment of each bicycle boulevard may change during the design planning phase as each street is studied more closely.

While there is no standard Caltrans definition for a bicycle boulevard, they have been tried in other communities, including Palo Alto; Portland, Oregon, and Vancouver, British Columbia. A brief description of the development of the bicycle boulevard in Palo Alto is contained in Appendix E.

On a Bicycle Boulevard, bicycle safety and circulation is improved compared to other streets by creating (or in many cases already having) one or more of the following conditions:

- 1 low traffic volumes (or installing bike lanes where traffic volumes are medium);
- 1 discouragement of non-local motor vehicle traffic;
- 1 free-flow travel for bikes by assigning the right-of-way to the bicycle boulevard at intersections wherever possible;
- 1 traffic control to help bicycles cross major streets (arterials); and
- 1 a distinctive look and/or ambiance such that cyclists become aware of the existence of the bike boulevard and motorists are alerted that the roadway is a priority route for bicyclists.

The specific treatment of each bicycle boulevard will differ, depending on the street characteristics, the desires of the surrounding residents and businesses, and the funding available. The bicycle boulevards will be designed with extensive public input, including from neighbors, businesses, bicyclists, the disabled community, and the City's emergency service providers. There are Fire Stations on two of the bicycle boulevard streets (Ninth and Russell Streets), a fact which will affect the location of any traffic calming devices in these areas. The needs of all user groups will be taken into consideration as much as possible in the bike boulevard design phase.

Many of the proposed bicycle boulevards already have some of the qualities described above for creating a bicycle boulevard. Additional treatments would likely include distinctive and informative signage and perhaps pavement markings to indicate to cyclists that they are on a bike boulevard. Where major streets (arterials) cross bike boulevards, some type of traffic control device (in many cases a traffic signal) would probably be installed so that the arterial could easily be crossed. Where appropriate, STOP signs would be rotated so that the bicycle boulevard would have the right of way. In some cases, traffic calming measures such as traffic circles or semi-diverters might be installed. If needed, on-street parking may be reduced to create more room for bicyclists.

Bicycle Boulevards are appropriate on streets that generally meet the following conditions:

- 1 local street or low-volume collector;
- 1 not a transit or truck route;
- 1 very little commercial frontage;
- 1 roadway is within 0.25 mile of a major street or a high-traffic collector street;
- 1 bicycle boulevard is spaced between 0.75 and 1.5 miles from another Bicycle Boulevard, i.e. approximately the traditional spacing of major streets, to replicate for bicyclists the same access that major streets provide to automobiles;
- 1 roadway is reasonably continuous, i.e. it extends over half of the cross-section of the City; it should have few jogs with main segments at least 0.5 miles long.

The seven bicycle boulevards included in this Plan all meet the above conditions.

Bicycle boulevards will provide many benefits, not only for cyclists, but also for Berkeley residents.

- 1 Bicycleist safety will be improved by reducing motor vehicle volumes which reduces the incidence of potential conflicts and collisions. Traffic control devices at busy intersections will improve bicyclists' safety by protecting their crossing and reducing the incidence of bicyclists' attempts to cross when there is not an adequate gap in traffic.
- 1 Bicycleist convenience and comfort will be improved by reducing the passing of bikes by motor vehicles, reducing the speeds of passing traffic, vastly improving the bicycle travel times due the elimination of unwarranted STOP signs, and reducing bicyclists' delay in crossing heavy streams of motor vehicle traffic.
- 1 Bicycle boulevards will promote bicycling by increasing the visibility and the perceived and actual safety of bicycling in Berkeley. By creating a visible spine of bikeways, bike boulevards will promote cycling to those who would like to try it, but don't know what roads to ride on. The reduced and slowed traffic will hopefully also induce many adults and children to ride who are intimidated by automobile traffic.
- 1 Residents living on a bicycle boulevard will benefit as the traffic on their street is "calmed", thus making it a more livable place.

Bike Lanes (Class 2)

A bike lane is a striped lane on a roadway for the exclusive use of bicyclists (with certain regulated exceptions).¹ The lane provides additional width where bicyclists typically ride in order to better accommodate bicyclists.

Bike lanes are appropriate on streets that generally meet the following conditions:

- 1 collector streets or major streets
- 1 streets with medium to high traffic volumes (greater than 3000 to 4000 vpd);
- 1 higher speed traffic; and
- 1 streets with few commercial driveways.

Bike lanes are generally not appropriate on streets that have the following conditions:

- 1 angled parking;
- 1 high on-street parking turnover;
- 1 steep downgrades;

¹ For example, the California Vehicle Code allows the use of bike lanes by pedestrians when there is not adjacent sidewalk. Also right-turning vehicle are required to enter the bike lane prior to their turn to avoid cutting off a bicyclist riding in the lane.

- 1 surface or pavement interruptions, e.g. more than one utility cover or drainage grate within the travel path of the cyclist per block; and/or
- 1 short blocks or many designated right turn lanes where the majority of the bike lane would be dashed or dropped.

Minimum design criteria for bike lanes are contained in the Caltrans Highway Design Manual Chapter 1000. Where possible, these minimum criteria should be exceeded and American Association of State Highway Transportation Officials (AASHTO) guidelines should also be considered. Given that many of Berkeley's two-lane streets have widths of 36 feet, even substandard width bike lanes could not be implemented without removing parking or converting the street to a one-way one-lane street. For this reason, very few new bicycle lanes are being proposed. For those that have been proposed, detailed studies will need to be done to determine how the lanes will affect the roadway and traffic congestion. Neighborhood input will be solicited on any proposal before it goes to Council for the required approval. It is possible that the City may decide not to install bike lanes on these streets, once the study is complete. Chapter 7 of this Plan further outlines the implementation steps for bicycle projects.

Class 2.5 Bikeway - Shared Roadways

A Shared Roadway is a roadway that is signed and improved as a bikeway because it provides direct access and connections to major destinations in Berkeley. This bikeway is appropriate on streets that meet the conditions described above for bike lanes, but bike lanes are not physically or politically feasible.

The exact improvements will vary depending on street conditions. A menu of improvement options will be available to the city to make these streets as safe and as convenient for bicyclists as possible. This menu will include removal of unsafe drainage grates, restriping for wider curb lanes, repaving to create a smoother surface, signal retiming for safe bicycle clearance intervals, "Share the Road" signs, pavement stencils, and increased enforcement of the posted speed limit.

Bike Routes (Class 3)

A Bike Route is a roadway that is signed as a bikeway because it provides continuity in the overall bikeway network or it identifies a route which is somehow preferable to immediately adjacent streets.

Bike routes are appropriate on streets that do not warrant bike lanes and that generally meet the following conditions:

- 1 local streets;
- 1 streets with low traffic volumes (less than 3000- 4000 vpd);
- 1 lower speed traffic;

- 1 streets with existing or planned traffic control devices that facilitate bicyclists crossings of collectors and major streets;
- 1 serves attractors and generators; and
- 1 provides continuity between other bikeways.

BIKEWAY NETWORK

The recommended bikeway network for Berkeley is depicted in Figure 2. The route network is summarized in Table 3, and a more detailed inventory of the network is presented in Appendix F.

It should be noted that this is a master plan, not an implementation plan or a detailed feasibility analysis. As such the bikeways depicted in this map and in Table 3 are conceptual. The exact routing could be modified during the course of more detailed studies of specific projects. Additionally, the bikeway designation may change as the routes are evaluated in further detail. In many cases, implementation of these bikeways will require further analysis, public input, identification of funding sources, and further approvals. The implementation steps for bikeways are outlined in Chapter 7.

Some routes on the University of California campus are shown on the network map. Currently, all campus roads and paths are open to bicyclists, with some restrictions on speed, except for signed dismount zones near the Telegraph entrance to campus. A north-south bicycle route is under construction on the western side of campus, and a second north-south route is planned for the eastern side of campus.

Arrows are used on the map to show connections to existing and proposed routes in adjacent cities. Emeryville's adopted Bicycle Network Map is included in Appendix D. Oakland and Albany both have draft bicycle plans which were consulted during the preparation of Berkeley's network.

Study Areas

There are several planning efforts underway in Berkeley which will include examining bicycle circulation and access needs at a higher level of detail than is possible in this Plan. The larger of these planning efforts are identified in Figure 3. A brief description of these four study areas is presented below, along with general comments on bike access, safety and circulation which have arisen during the Bicycle Plan planning process. These comments and the bikeway network map can inform the bicycle planning for these areas.

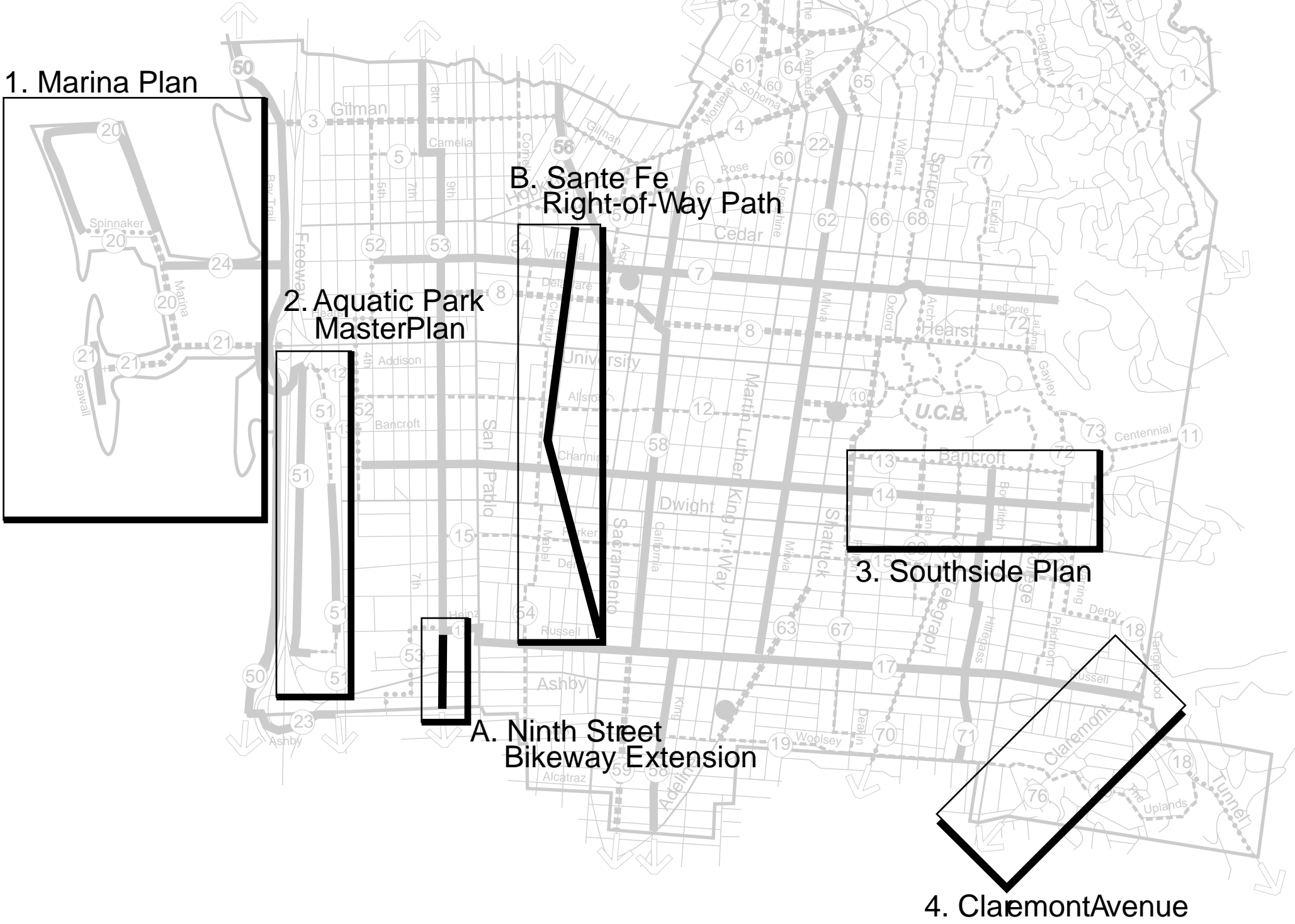
1. Marina Plan - Anticipated completion date: June 1999 - This Plan seeks to enhance the existing uses, make circulation and access improvements, improve landscaping, and increase access via public transportation in the Marina.

THIS MAP IS NOT A BICYCLE ROUTE GUIDE
 This map is conceptual and for general planning purposes only. Map information, location of existing and proposed bikeways and other program information shown are subject to change.




Berkeley Bicycle Plan

Figure 3
Study Areas & Large Capital Projects



This map shows major planning efforts that are currently underway, and large capital projects that involve acquiring right-of-way. The planning processes for these areas will include evaluating bicyclists' needs at a more detailed level than is possible in the Bicycle Plan. Information on these projects is included in Chapter 4.

- Sources:
- Proposed and Existing Bikeways Inventory, April 14, 1998
 - Wilbur Smith Associates
 - City of Berkeley Staff

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 11/12/98

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The main issue identified during the Bike Plan process for this area has been safe bicycle access to the Marina. The building of the I-80 Bicycle/Pedestrian Bridge will greatly improve bike access.

Table 3 BIKEWAY NETWORK						
Number	Street	From	To	Existing	Proposed	Comments and Potential Improvements
East-West Routes						
1	Marin Circle to Tilden Park via Los Angeles, Spruce, Keith, Cragmont & Shasta					
1a	Los Angeles	Marin Circle	Spruce		Class 3	
1b	Spruce	Los Angeles	Keith		Class 3	
1c	Keith	Spruce	Euclid		Class 3	
1d	Euclid	Keith	Cragmont		Class 3	
1e	Cragmont	Euclid	Shasta		Class 3	
1f	Shasta Rd.	Cragmont	Grizzly Peak		Class 3	
1g	Shasta Rd.	Grizzly Peak	Tilden		Class 3	
2	Marin Ave. from City of Albany to Monterey St.					
2a	Marin Ave.	City of Albany	Monterey St.	Class 3	Class 2	
3	Gilman from West Frontage Rd. to Hopkins					
3a	Gilman	West Frontage	Ninth	Class 3	Class 2	Repave. Interchange at I-80 needs improvements.
3b	Gilman	Ninth	San Pablo		Class 2	Repave.
3c	Gilman	San Pablo	Hopkins		Class 2.5	
4	Hopkins from Acton to Sutter, Sutter from Hopkins to Del Norte, and Del Norte from Hopkins to Marin Circle					
4a	Hopkins	Acton	California	Class 3	Class 2.5	
4b	Hopkins	California	Sutter	Class 2		Directional signs
5	Camelia from Fifth St. to Ninth St.					
5a	Camelia	Fifth St.	Ninth St.		Class 3	
6	Rose from Hopkins to Spruce					
6a	Rose	Hopkins	California		Class 2.5	Stop sign at Ohlone Greenway
6b	Rose	California	Spruce	Class 3	Class 2.5	Directional signs
7	Virginia from Fifth to La Loma					
7a	Virginia	Fifth	La Loma		BB	Need signals at major intersections
8	Delaware/Hearst					
8a	Delaware	Ninth	Sacramento	Class 2		
8b	Ohlone Greenway	Sacramento	California	Class 1		
8c	Hearst	California	Shattuck	Class 2	Class 2	Improve lighting;
8d	Hearst	Shattuck	Arch		Class 2	
8e	Hearst	Arch	Gayley		Class 2.5	
9	(unused)					
10	Center from Milvia to Oxford					
10a	Center	Milvia	Shattuck	Class 2		Directional signs
10b	Center	Shattuck	Oxford		Class 2.5	Directional signs
11	Centennial Dr. from Rim Rd. to City of Oakland					
11a	Centennial Dr.	Stadium Rim	City of Oakland		Class 3	Mainly U.C. Berkeley
12	Addison/Allston from Aquatic Park to Shattuck Ave.					
12a	Addison	Aquatic Park	Fourth		Class 2.5	Distinctive signage to bike bridge
12b	Allston	Fourth	Shattuck		Class 3	Directional signs
13	Bancroft from Aquatic Park to Fourth St and from Fulton to Gayley					
13a	Bancroft	Aquatic Park	Fourth St.	Class 3	Class 3	
13b	Bancroft	Fulton	Gayley		Class 2.5	Signal or stop signs at Dana
14	Channing from Fourth St. to Prospect					
14a	Channing	Fourth St.	Ninth		BB	Repave all segments; directional signs
14b	Channing	Ninth	MLK	Class 3	BB	Move stop signs to cross streets. Need signals at major intersections.
14c	Channing	MLK	Prospect	Class 2	BB	

Table 3 Cont'd BIKEWAY NETWORK						
Number	Street	From	To	Existing	Proposed	Comments and Potential Improvements
15	Parker St. from Ninth St. to Warring St.					
15a	Parker St.	Ninth	Warring		Class 3	Long-term route. Needs signals at major intersections. Derby is the route in the short-term. Parker from 8th to 9th St.: remove RR tracks.
16	(not used)					
17	Heinz Ave. from Ninth St. to San Pablo Ave., San Pablo from Heinz to Russell & Russell from San Pablo to Claremont					
17a	Heinz	Ninth	San Pablo		BB	Directional signs; lighting
17b	San Pablo	Heinz	Russell		Class 1 or Class 2	Directional signs; lighting; improve crossing
17c	Russell	San Pablo	Claremont	Class 3	BB	Directional signs; 5 signals at major streets, lighting; curb cut at San Pablo Park
18	Warring/Derby/Belrose/Tunnel Rd. from Dwight Way to City of Oakland					
18a	Warring	Dwight	Derby		Class 2.5	
18b	Derby	Warring	Belrose		Class 2.5	
18c	Tanglewood	Belrose	Claremont		Class 3	
18d	Claremont	Tanglewood	Russell		Class 3	Directional signs to Tunnel Road
18e	Domingo	Claremont	Tunnel		Class 2.5	
18f	Tunnel Rd.	Domingo	City of Oakland		Class 2.5	
19	Woolsey from California to Claremont, then The Uplands to Tunnel					
19a	Woolsey	California	Adeline	Class 3		Problem crossing Ashby BART
19b	Woolsey	Adeline	Claremont	Class 3		
19c	The Uplands	Claremont	Tunnel		Class 3	
20	Marina Boulevard/ Spinnaker from University Ave. and North Waterfront Bike Path					
20a	Marina Blvd.	University	Spinnaker Wy.		Class 2	
20b	Bike Path	Spinnaker Wy.	Spinnaker Wy.	Class 1		
20c	Spinnaker Way	Marina Blvd	Breakwater Dr.		Class 2.5	
21	University from Eastshore Hwy. to Recreational Pier					
21a	University	Second St.	I-80	Class 1	Bike bridge	
21b	University	I-80	West Frontage	Class 3	Bike Bridge	Overcrossing
21c	University	West Frontage	Marina Blvd.	Class 2		
21d	University	Marina Blvd.	Rec. Pier		Class 2	
21e	Seawall	North	South		Class 1	Path on waterfront.
23	Ashby Overcrossing					
23a	Ashby Overcrossing	Bay St.	Bay trail		Class 2	Reconfigured freeway interchange
24	Virginia St. Extension					
24a	Virginia St. Extension	Bay Trail	Marina Blvd.		Class 1	
North-South Routes						
50	Bay Trail and Western Frontage Road from City of Albany to City of Emeryville					
50a	Bay Trail	Albany	Gilman		Class 1	
50b	Bay Trail	Gilman	University	Class 1		
50c	Bay Trail	University	City of Emeryville		Class 1	
51	Aquatic Park					
51a	West Path	NW parkng lot	S. parking lot	Class 1		
51b	S. parking lot	West Path	East path	Class 3		
51c	East Path	S. parking lot	Bolivar	Class 1		Improve drainage
51d	Bolivar	East Path	NW parking lot	Class 3		
51e	Bay Street	Aquatic Park	Emeryville		Class 2	
52	Fifth St. from Gilman to Hearst and Fourth St. from Hearst to Dwight					
52a	Fifth	Gilman	Virginia		Class 3	
52b	Fifth	Virginia	Hearst		Class 2.5	Need distinctive signing to bike bridge

Table 3 Cont'd BIKEWAY NETWORK						
Number	Street	From	To	Existing	Proposed	Comments and Potential Improvements
52c	Hearst	Fifth	Fourth		Class 2.5	
52d	Fourth	Hearst	Channing		Class 2.5	
53	Ninth St., Murray St., Seventh St., Folger Ave., & Hollis St. From City of Albany To City of Emeryville					
53a	Eighth	C. of Albany	Camelia		BB	
53b	Ninth	Camelia	Delaware	Class 3	BB	
53c	Ninth	Delaware	Dwight	Class 2	BB	
53d	Ninth	Dwight	Heinz		BB	
53e	Ninth	Heinz	City of Emeryville		Class 1	Long-term route
53f	Heinz	Ninth	Seventh		Class 2.5	Short-term route. Need directional signs.
53g	Seventh	Heinz	Folger		Class 2.5	Short-term route. Need directional signs.
53h	Folger	Seventh	Hollis		Class 2.5	Short-term route. Need directional signs.
53i	Hollis	Folger	City of Emeryville		Class 2.5	Short-term route. Need directional signs.
54	Cornell/Chestnut/Bonar/Mabel St. from Albany to Emeryville					
54a	Cornell	City of Albany	Delaware		Class 3	Long-term route is the
54b	Chestnut	Delaware	Hearst		Class 3	Santa Fe Right of-way
54c	Chestnut St.	Hearst	University	Class 3	Class 3	"
54d	Bonar	University	Dwight		Class 3	"
54e	Mabel	Dwight Way	66th/Emeryville		Class 3	"
55	(not used)					
56	Ohlone Greenway					
56a	Ohlone Greenway	City of Albany	California	Class 1		Widen to 8-10 ft; pave north of Gilman; straighten near Cedar-Rose Park; stop signs on Cedar, Rose, Hopkins/Peralta, Gilman, Santa Fe; raised intersections at street crossings; cross-street signing for path users.
						Enhance connection through North Berkeley BART.
57	Acton from Hopkins to Delaware					
57a	Acton	Hopkins	Delaware	Class 3		
58/59	California from Hopkins to City of Oakland					
58a	California	Hopkins	Buena	Class 3	BB	
58b	California	Buena	Russell	Class 2	BB	Signal at Dwight; remove or reverse stop signs.
	California	Russell	City of Oakland	Class 2		
58c	King St.	Russell	City of Oakland		BB	Signal at Alcatraz.
60	Colusa Ave. from city limit to Sonoma Ave., Sonoma from Monterey to Josephine St., Josephine from Sonoma to Rose St.					
60a	Colusa	City of Kensington	Solano Ave.		Class 2.5	Need intersection improvement for northbound traffic on Colusa at Solano.
60b	Colusa	Solano Ave.	Monterey	Class 2	Class 2	
60c	Colusa	Monterey	Sonoma		Class 3	
60d	Sonoma	Colusa	Josephine		Class 3	Make intersection with Hopkins bike-accessible.
60e	Josephine	Sonoma	Rose		Class 3	
61	Monterey from Marin Circle to Hopkins					
61a	Monterey	Marin Circle	Hopkins	Class 2		
62	Milvia from Hopkins to Russell					
62a	Milvia	Hopkins	Allston	Class 3	BB	Restripe at University for better circulation; directional signs at Berryman
62b	Milvia	Allston	Dwight	Class 2	BB	Directional signs at Allston, Center. Remove free right-turn at Allston.
62c	Milvia	Dwight	Russell	Class 3	BB	Directional signs at Oregon, Russell

Table 3 Cont'd BIKEWAY NETWORK						
Number	Street	From	To	Existing	Proposed	Comments and Potential Improvements
63	Adeline Ave. from Shattuck Ave. to Woolsey St.					
63a	Adeline	Shattuck	Woolsey/BART		Class 2	Study Woolsey intersection.
64	The Alameda from Hopkins to Tacoma, and Tacoma from The Alameda to Colusa Ave.					
64a	The Alameda	Hopkins	Tacoma		Class 3	Study feasibility of Class 2.
64b	Tacoma	The Alameda	Colusa		Class 3	Directional signs
65	The Arlington from City of Kensington to Marin Circle /Sutter					
65a	Arlington	City of Kensington	Marin Circle		Class 2.5	
65b	Del Norte	Marin Circle	Sutter		Class 2.5	Directional signs
65c	Sutter	Del Norte	Eunice	Class 2	Class 2	Directional signs. Improve access through Solano tunnel
66	Shattuck/Walnut from The Arlington to Hearst					
66a	Shattuck	Los Angeles	Walnut		Class 3	
66b	Walnut	Shattuck	Hearst		Class 3	Repave. Consider substituting Walnut north of Rose with turn at Rose to Oxford to Los Angeles
67	Oxford/Fulton from Hearst Ave. to Prince St., & Deakin St. to City of Oakland					
67a	Oxford	Hearst	Kittredge		Class 2	Signal or caution sign at Allston. Remove free right turn at Hearst.
67b	Fulton	Kittredge	Durant		Class 2	Repave entire length of Fulton
67c	Fulton	Durant	Dwight		Class 2	Fulton one-way in this segment
67d	Fulton	Dwight	Prince		Class 3	
67e	Prince	Fulton	Deakin		Class 3	Directional signs
67f	Deakin	Prince	City of Oakland	Class 3	Class 3	Directional signs
68	Spruce / Arch St. from Grizzly Peak Blvd. To Hearst					
68a	Spruce	Grizzly Peak	Virginia		Class 2.5	Repave
68b	Arch	Virginia	Hearst		Class 2.5	Need "Caution- Downhill" signs.
69	Dana from Bancroft to Derby					
69a	Dana	Bancroft	Dwight	Class 2	Class 2	Make two-way or add contraflow bike lane; signal or stop sign at Bancroft and Dana; modify barrier at Dana and Dwight
69b	Dana	Dwight	Derby	Class 3	Class 3	
69c	Derby	Dana	Telegraph		Class 3	
70	Telegraph from Bancroft to Woolsey					
70a	Telegraph	Bancroft	Woolsey	Class 3	Class 2.5	
71	Bowditch from Bancroft to Dwight and Hillegas from Dwight to Woolsey					
71a	Bowditch	Bancroft	Dwight	Class 2	BB	Make Dwight two-way, add contraflow lane, or route to Benvenue
71b	Hillegass	Dwight	Woolsey	Class 3	BB	Repave. Add signal or stop sign @ Ashby and Alcatraz
72	Le Conte/La Loma/Gayley Rd./Piedmont Ave. to Russell St.					
72c	Gayley	Hearst	Bancroft		Class 2.5	U.C. Berkeley road. Repave.
72d	Piedmont Ave.	Bancroft	Dwight		Class 2.5	Difficult intersection at Dwight
72e	Piedmont	Dwight	Russell		Class 3	Bulbed-out STOP signs a problem
73	Stadium Rim Way from Gayley Rd. to Canyon, Bancroft and Prospect					
73a	Stadium Rim Way	Gayley	Canyon		Class 3	Mainly U.C. Berkeley
73b	Canyon	Rim	Bancroft		Class 3	
73c	Bancroft	Canyon	Prospect		Class 3	
73d	Prospect	Canyon	Channing		Class 3	
74	Grizzly Peak from City of Kensington to City of Oakland					
74a	Grizzly Peak	City of Kensington	City of Oakland		Class 3	
75	Wildcat Canyon Rd. from Grizzly Peak Blvd. to Tilden Park					
75a	Wildcat Cyn.	Grizzly Peak Rd.	County border		Class 3	

Table 3 Cont'd BIKEWAY NETWORK						
Number	Street	From	To	Existing	Proposed	Comments and Potential Improvements
76	Claremont Ave. from Tunnel Rd. to Oakland border					
76a	Claremont Ave.	Tunnel Rd.	Oakland border		To be determined	Some bike improvement needed. Study street as part of neighborhoods planning process. (See Figure 3 for further explanation.) Cost estimate is planning level estimate for unidentified improvements and is included as a placeholder only.
Key:						
Route #	East-West routes = (1-23), North-South Routes = (50-77). Numbers generally increase from North to South and from East to West .					
	Numbers are for planning purposes only. A separate process will be used to decide if and how to assign route numbers to street signs					
Status	Ex = Existing bikeway, Pr = Proposed bikeway. Class 1- bike path, Class 2 = bike lane, Class 3 = signed bike route					
From/To	Cross streets or locations where section begins/ends, based on changes in Class, proposed improvements & existing conditions					
Street	Name of street(s) which route follows					
Existing Class	1 = bike paths, 2 = lanes, 3 = bike routes,					
Zone	A = Downtown, B = N. West, C =South, D = S. Central, E = N. Central, F = West					
Length	in feet, proposed routes only					
Parking	0 = neither side of street, 1 = one side, 2 = both sides					
Existing Cond.	Additional infrastructure (e.g. traffic barriers, bike signals) and observed problems/obstructions					
Proposed Class	1 = bike paths, 2 = bike lanes, 2.5 = shared roadway, 3 = bike routes, BB = Bicycle Boulevard					
Comments & Potential Improvements	Partial list of most likely improvements needed to implement bikeways on this street that were identified during the planning process.					
Improvements	The implementation phase of the Bike Plan will identify and further evaluate all potential improvements before they are made.					
Traffic Volumes:	Existing Average Daily Traffic volumes where available					
Bike	Number of through bikes at busiest intersection on route, 1997 Downtown Signal Retiming data.					
Car	24 hr. vehicle count, 1987 data					
Rd. Type	M = Major, C = Collector, L = Local. From Circulation Plan of 1977 Berkeley Master Plan					
Width	Curb-to-curb, in feet					
Lanes	Total number of travel lanes in both directions (unless noted otherwise)					
Connections	Indicates city, park, regional bikeway, etc. that section connects to					

2. Aquatic Park Master Plan - Anticipated completion date: March 1999 - This Plan seeks to protect the park's natural resources while enhancing recreational use. Its basic goals include mitigating noise and negative visual impacts; improving circulation within the park, especially for pedestrians, bicyclists and wheelchair users; improving park habitat for wildlife; increasing the number of recreational uses and users while protecting habitat for wildlife; and improving park safety and security.

The public has identified the need for an increased number of bicycle access points into the Park, improvement of the eastern path, and improving the paving quality along the Bay Street connection to Emeryville. More recently, with the planning for the I-80 Bridge, the public has expressed a need for improving the appearance and safety of the Addison Street entrance to the Park and the need to connect this entrance with the rest of the City's bikeways.

3. Southside Plan - Anticipated completion date: Winter 1999 - The purpose of the Southside Area Plan is to improve the quality of life in the neighborhood for all people who live, work, visit, and play in the Southside. Among other things, the Plan will address traffic, circulation, and bicycle improvements.

The Southside contains many of the more significant "problem areas" identified during the bicycle planning process. Of all areas in the City, this is certainly one of the most critical for bicycling due to the high concentration of bicyclists and the major destination of the University. One-way streets have been brought up many times as a problem: they create access problems since bicyclists can be forced out of their way to get to their destination and they create safety problems when bicyclists ride the wrong way on a one-way street. Other issues that have been raised include the offset intersections along Dwight at Hillegass/Bowditch and at Piedmont, and the inadequacy of the bicycle parking in the Telegraph area.

4. Claremont Avenue - Anticipated discussion at Transportation Commission: By early 1999. Final decision date unknown - At the request of a group of residents, the City has begun to examine options for calming traffic on Claremont Avenue. One of the options which has been proposed and is being studied is the elimination of one travel lane in each direction. This option would allow for a center left turn lane and bicycle lanes along Claremont Avenue. The City will present its study findings to the Transportation Commission, which will allow for a full neighborhood discussion of the pros and cons of the different options. Bicyclists will be able to participate in this discussion. A final decision will be made by the City Council.

Bicyclists have identified the need to improve bicycling conditions on Claremont Avenue. The high speeds on Claremont discourage bike use, make bicyclists feel unsafe, and increase the severity of collisions. As a diagonal street, Claremont often serves as the shortest route through the area, which makes it key for bicycling.

Neighboring residents and businesses are very concerned that a reduction in traffic lanes or parking will increase traffic congestion, make conditions worse for businesses and/or negatively impact emergency response to and through this area. The City's Fire Department has expressed serious concern about lane reduction on Claremont Avenue. As a primary response route, they believe reducing traffic lanes could have a tremendous adverse effect on emergency response time for both the Berkeley and Oakland Fire Departments.

Large Capital Projects

Several large capital projects that will involve acquiring right-of-way are also included in Figure 3. These projects are not necessarily long term, but because they are unique in that they will require right-of-way negotiations which could take substantial amounts of time and resources, they have been placed on a separate map.

A. Ninth Street Bikeway Extension - The City would like to build a bicycle path on the current railroad right-of-way that extends Ninth Street south to the Emeryville border. This would allow

bicyclists to avoid the dangerous intersection of Seventh Street and Ashby Avenue. Emeryville's adopted Bicycle Plan shows the path extending southwest and connecting to a bike route proposed for Doyle Street. This project is categorized as short-term in Emeryville's Plan. Berkeley and Emeryville staff agree on the importance of this project and hope to work together on grant applications to implement the project.

B. Santa Fe Right-of-Way Path - Building a bicycle path at this location would require right-of-way acquisition and might present problems at crossings of streets. Nevertheless, as it is one of the few opportunities for a grade-separated bicycle path in Berkeley, it should continue to be considered as a future project requiring further evaluation.

Areas for Future Study

There are many areas of the City, problem issues, and opportunities which could not be addressed in detail in this Plan, but are worthy of further study. These items could be explored in the next revision of the Bicycle Plan, or as a grant-funded study. Several particularly significant areas are:

Access to Ashby BART - This BART station is bordered by high-traffic streets, and has dead-end and non-continuous streets nearby that make it difficult for bicyclists to easily get to and from the station. Options should be studied for improving access.

Scenic Bike Route Network - There are many historical and recreational sites in Berkeley that could be connected to the recommended bicycle routes, with directional signage and/or short bikeway spurs. Major recreational destinations, such as the Marina and Tilden Park, are served by the recommended bicycle network, but smaller neighborhood parks, for example, are not necessarily connected to the bikeways. The need for such a network and the feasibility of the project should be explored.

BICYCLE PARKING

Analysis

The shortage of on-street automobile parking in Berkeley is widely recognized, and may even discourage a certain number of automobile trips. Similarly, lack of parking is a deterrent to bicycle travel, since bicyclists need more than a space to deposit the bicycle: ideally they need facilities that can also provide security against theft, vandalism, and weather.

The City recently installed over 150 bike racks in commercial areas and has been installing additional bike racks on an as-needed basis, as funds are available. (See Appendix D.) BART is completing a project to upgrade their bike parking and to add high security on-demand bicycle parking at its three Berkeley stations and MacArthur Station. The University has, over the last several years, significantly increased their bicycle parking and continues to do so as funds are available. Still a lack of bike parking remains.

Lacking convenient and secure bicycle parking, determined bicyclists will make do with what they can find—street signs, parking meters, lampposts, even trees. These alternatives are undesirable for the bicyclist, because they may be substantially less secure; for pedestrians, because they may interfere with movement; and for the City, because they can damage street furniture or trees. Bike parking is an efficient use of scarce commercial district land; on average 20 bike parking spaces can fit in the area required by one auto space. Bicycle parking facilities that are conveniently located and adequate in both quantity and quality can thus benefit everyone.

The City's current Zoning Ordinance requires the installation of one bicycle parking space for each 2,000 square feet of new construction in most commercial districts. In the West Berkeley commercial, manufacturing, and mixed-use districts, bike parking in excess of the requirement may replace up to 10 percent of the required auto parking.

Other cities require bicycle parking as a function of auto parking or of the number of employees. Some cities, including Palo Alto, Davis, and Santa Cruz, tie bicycle parking to the type of use. For instance, a school or a commercial recreation facility has a greater need for bicycle parking than an animal care facility or an auto service center. In addition, the ratio of employees to visitors, and therefore of long-term to short-term parking, also varies according to use.

Most bicycle parking ordinances divide the required parking between long-term parking (a full working day or longer) and short-term parking (a few minutes to a few hours). Long-term parking is typically used by employees or residents, has low turnover, and requires a high level of security. Short-term parking is typically used by visitors or customers, has a higher but variable turnover (depending on use), should be conveniently located, and requires a lower level of security.

Recommendations

Berkeley should revise its ordinance to prescribe different amounts of bicycle parking for different land uses, to ensure appropriate levels of security, and to provide for both short-term and long-term parking. The City should also consider developing standards for the size of bicycle parking spaces, clearance, aisles, convenient and visible location, barriers to prevent damage, paving, signs, anchoring, non-interference with pedestrian circulation, and weather protection.

Because Berkeley is a built-out city, there are relatively few opportunities to substantially increase bicycle parking through developer requirements for new commercial spaces. When older buildings are reused, it can be physically difficult to include bicycle parking. It might be preferable instead to establish a fund that would use in-lieu fees to provide and maintain bicycle parking in the public right-of-way, and to explore incentives for adding bike parking to existing buildings. Bike parking could also be required for a change-of-use or when substantial tenant

improvements are made. These issues should be investigated as changes are considered to the Zoning Ordinance.

Even without authority to compel retrofit of existing installations, the City has the ability—budget permitting—to install suitable bicycle parking facilities for its own employees, at public buildings for visitors, in city-owned garages, at parks and libraries, near transit stops, and on-street at popular destinations, such as shopping areas. Adequate funding should be set-aside to gradually add the needed bike parking in the public right-of-way.

Bike theft at schools and on the U.C. campus is particularly high and as such, is a deterrent to biking. The City should strongly encourage the B.U.S.D. and U.C. Berkeley to meet the demand for secure bike parking.

Ample bike parking at large public events, especially those that take place in City parks, would promote cycling and provide a convenient alternative to driving to the event. The City should consider ways to provide the parking itself, or to require the event sponsors to provide bicycle parking.

ANCILLARY FACILITIES

Showers and Lockers

Some cities require new office and retail construction and renovations over a specified size to provide showers and lockers for employees, so that bicyclists can change into work clothes at their destinations. Such a requirement might drive development costs in Berkeley, already among the highest in the East Bay, even higher in comparison to neighboring cities. The benefits of this proposal will have to be weighed against its costs and its potential harmful effects in determining whether or not to support this possible requirement. A more feasible alternative might be to require developers to subsidize their employees' use of a nearby gym that already contains showers, as is done in Portland, Oregon.

Support Facilities

The City should explore providing support facilities for bicyclists that include air for tires and tools for repair at the Civic Center, local libraries, and other public locations.

Bicycles on Transit

Carrying bicycles on transit increases the range and convenience of both modes of travel. The City should support and encourage efforts by Amtrak, AC Transit, BART, and other agencies to accommodate bicycles on transit. The F-Transbay line now has bike racks on some buses. AC Transit plans to expand bike racks to all buses as funding becomes available.

BIKEWAY MAPS

The City should create a map of all bikeways and bicycle parking facilities in Berkeley, keeping it up-to-date as improvements are made. The map should be reproduced in a high-quality format and distributed to the public through City offices, schools, employers, community organizations, bike shops, and bike clubs. It should also be placed on the City's website. The map might also include numbered routes, if the City adopts them. The City should post network maps at key points along bikeways.

Chapter 5

BICYCLE EDUCATION AND SAFETY

INTRODUCTION

Unfortunately, too many bicyclists in the United States lack the basic skills or knowledge to safely ride a bicycle in traffic. Many people are, quite simply, afraid of bicycling on streets. Bicycle education programs are designed to increase bicycle safety by improving the ability to ride with traffic as well as heighten motorist awareness. The difficulties faced in helping people develop this skill and knowledge stems from the wide range of age groups that require this training and the necessity to tailor the programs to each one. Additional challenges to developing education programs are the different languages spoken and the different cultural backgrounds found in Berkeley. Bicycle education programs should be directed at the following groups:

- 1 Child Bicyclists
- 1 Adult Bicyclists
- 1 Motorists
- 1 Law Enforcement Officials

Young children should be taught the basic rules of the road in conjunction with hands-on bicycling instruction. Programs directed at children are best handled by the schools or day care centers, but they are often compromised by the demands of school curriculum and the capability of instructors. Adult cyclists benefit most from a program designed to impart the responsibilities of bicycle riding, demonstrate how to safely share the road with motor vehicle traffic, and provide tips on the benefits and methods of bicycle commuting. However, programs aimed at adults typically only reach those that are interested in learning about bicycling. Motorist-oriented programs generally reach their intended audience at specific points, i.e. during driver's training courses, driver's licensing exams and traffic school courses for violators.

TYPES AND TARGETS OF EDUCATION PROGRAMS

In general, bicycle education programs can be described as those that develop awareness and provide information, such as posters, brochures and videos; and those that change behavior and/or develop skills, such as programs with on-bike instruction. Programs can take many forms including hands-on riding instruction for adults and children, curriculum for adults who supervise children (i.e. teachers, day care persons), public awareness programs aimed at the whole community, instruction for motorists, law enforcement and community events. Key to any bicycle education program is engaging the target audience; in other words, getting people to participate. Bicycle promotion programs, discussed in Chapter 6, are intended to increase the

community's awareness of the benefits of bicycling and can also serve to improve safety for bicyclists.

As previously mentioned, bicycle education programs can take many forms and can be directed at (1) child bicyclists; (2) adult bicyclists; (3) motorists; (4) law enforcement officials; or (5) the community at-large. Children are at the greatest risk for injury due to bicycle-related collisions. Therefore, children tend to receive the most attention with bicycle education strategies to the exclusion of adults, motorists and law enforcement officials. The following sections include discussions of the characteristics of the bicycle education programs most suitable for each group listed above.

EXISTING BICYCLE EDUCATION PROGRAMS IN BERKELEY

Several bicycle and pedestrian education programs have been developed in Berkeley recently in response to the City's high rate of traffic collisions involving bicyclists and pedestrians.¹ These data reveal that, in Berkeley, pedestrian fatal and injury collisions account for 15.0 percent of all fatal and injury collisions. The statewide average is 10.1 percent. Bicycle-involved fatal and injury collisions account for 19.5 percent of all fatal and injury collisions compared to the statewide average of 8.3 percent. Of the 39 cities in California with populations equal to Berkeley, Berkeley ranks first for both the proportion of pedestrian and bicycle collisions. Several reasons may account for this high rate. They are:

1. Large numbers of people bicycling and walking in Berkeley;
2. Dense urban environment of Berkeley;
3. High percentage of young adults attending UC Berkeley who are at a prime age for risk taking;
4. High percentage of transient student population who are unfamiliar with Berkeley;
5. Ignorance of safe bicycling and walking practices perhaps due to the fact that many bicyclists and pedestrians in Berkeley do not own or drive cars; and
6. Streets were not designed to accommodate current volumes of automobile, bicycle and pedestrian traffic.

The current bicycle education programs coordinated by the City of Berkeley Health and Human Services (HHS) Department are directed at children and adults; bicyclists and motorists. They have been funded through grants from the California Office of Traffic Safety. A brief description of these programs is included in the next paragraphs.

"Safe Ways to Schools Program" - A pilot bicycle safety program, under the "Safe Ways to Schools Program," is being conducted at Martin Luther King Junior Middle School in conjunction with

¹ Based upon research using Statewide Traffic Record System (SWITRS) for City of Berkeley grant application to Office of Traffic Safety, 1996.

the Alameda County Office of Education. This program includes after school rides, instruction on bicycle maintenance and bicycle derbies. In addition, a nine-session curriculum on traffic safety has been taught to sixth graders.

The “Walk and Wheels Traffic Safety Program” is directed primarily at adults and includes the following strategies:

- 1 Low cost helmet program and bicycle safety education with community groups and at events;
- 1 Thirteen-minute bike safety video, “Beyond the Bike Lane,” which is used for workshops and has been broadcast on Channel 25, Berkeley’s public access television station;
- 1 Bike and traffic safety banners to be placed in high collision areas reading “Slow Down,” “Wear a Helmet,” “Ride with the flow of traffic,” “Obey Traffic Laws,” “Watch for Cyclists,” and “Be Alert;” and
- 1 Media campaign.

Helmet Distribution Programs - The Health and Human Services Department has developed two programs to increase helmet usage among children.

- 1 The Citation Alternative Program, in conjunction with the Berkeley Police Department, allows children who have been cited for not wearing a helmet the opportunity to attend a one-hour cyclist traffic school. At the end of the session they receive a free, fitted helmet.
- 1 A monthly bike safety workshop is targeted at low-income families. At the end of the one-hour program, the children receive a free, fitted helmet.

Approximately 3,000 helmets have been distributed since 1995 through the various HHS bike safety programs.

PROGRAMS FOR CHILD BICYCLISTS

Analysis

Most bicycle safety efforts target elementary school-aged children and their parents. Programs for parents of beginning bicyclists, between the ages of five and eight, focus on the role the parent plays in selecting the proper size and type of equipment, in supervising their child's use of that equipment, and in teaching the basic mechanical skills needed to start, balance, steer, and stop a bicycle. Parents may be reached through parent-teacher associations and children through programs sponsored by the schools, day care centers, summer camps and boys and girls clubs.

Children pose a special safety problem as they learn to ride bicycles. Learning to ride by the rules, look for traffic and use hand signals are not second nature - these skills must be taught. Bicycle education programs should start early as children learn to ride and be modified as the years go by to focus on the needs of the particular age group. There is a critical juncture when

children migrate from riding on the sidewalk to riding on the street. Although this age varies from child to child, children between the ages of nine and ten are generally old enough to learn street cycling skills. They can learn how to enter and exit the roadway; scan ahead, behind and to the side while riding straight; and communicate and cooperate with other road users and pedestrians.

One proposal² is that the current one-shot method of Driver's Education provided at some high schools be replaced with a curriculum that spans most of their primary and secondary school career. Four major areas of instruction would be taught at four stages of the students' development. In grades K-3, students would learn basic pedestrian skills, stranger danger, crossing residential streets, using pedestrian push buttons, taking a school bus, etc. Older students in Grades 4 to 5 are ready to learn bike safety and handling skills, including bike operation on streets with supervised bike rides on neighborhood streets. (These programs for K-5 graders are being conducted in many states including Hawaii, Montana, Florida, and North Carolina.) Later, in Grades 7-9, they would learn basic mobility skills of how to get around town including using transit for utilitarian and recreational trips (e.g., how to read a bus schedule, execute a transfer, take rapid transit), and more on safe bicycling practices. By the time students reach Grade 10, they will have already become transit-independent and would be able to go places without having to be driven by someone. In tenth grade, students would take driver's education, as many do now. But driver's education would include focused instruction on how motorists should interact with pedestrians and bicyclists, how to predict their movements, pass safely, learn when different modes have the right-of-way, etc.

Recommendations

Bicycle Helmets - Helmet distribution programs and the Citation Alternative Program, described above, should be continued to encourage the purchase and use of bicycle helmets. Bicyclists under the age of 18 are required by state law to wear a properly fitted and fastened bicycle helmet. Before 1994 when this law went into effect, over 25% of bicycle collisions involved head injuries. Of these, more than one-half were life threatening.

Bicycle Education Programs - Bicycle education programs should be developed for several age groups and should include the below elements. The City should work with the Berkeley Unified School District to incorporate these programs into school curriculums.

Kindergarten through Third Grade - Pedestrian and bicycling safety education/safety training. *Effective Cycling* curriculum (a new course developed by the League of American Bicyclists for child bicyclists) or other classroom/on-bike/transportation safety program.

Fourth and Fifth Grades - *Basics of Bicycling* curriculum (developed by Bicycle Federation of America) or other classroom/on-bike program to teach bike-handling skills.

Middle School and High School - Can cover commuting as well as recreational uses, touring, racing; conducted by volunteer cycling advocates. High School - include bicycle education as part of driver's training courses.

² Professor William Moritz at the University of Washington (per a phone conversation, October 29, 1996).

In addition, the following selection of education strategies are intended as a representative cross-section of the programs that have been developed in communities around the country to target the special needs of various age groups. Some are more suitable for the younger bicyclists (K-6) and others are more effective for junior high, high school and university students.

- 1 Develop programs with local bike shops to distribute bicycle helmet safety information and reduced price coupons for helmet purchase and other safety gear, such as lights.
- 1 Incorporate bicycle education programs into day camp and day care programs.
- 1 Conduct “bicycle rodeos.”
- 1 Develop a program of free bicycle safety checks at schools, fairs, community events, or other events where bicyclists congregate. Sometimes a local business can be persuaded to sponsor an event.

Youth Bicycle Programs - There are many programs available for linking our youth with bicycles. These programs, usually organized by non-profit organizations, or sometimes Police Departments, have been very successful in involving teenagers and giving them something constructive to do with their time. While teaching bicycle safety and proper riding practices, these programs have had favorable results in keeping kids away from drugs, gangs and crime while instilling in them a sense of purpose and worth. Some of the highlights of these programs are:

- 1 After school bicycle maintenance and repair.
- 1 Recycle a bike program - kids fix up bikes and keep them.
- 1 Earn-a-bike program through community service.
- 1 Drop-In repair classes-also good for adult bicyclists.
- 1 Bicycle trips for kids programs.

PROGRAMS FOR ADULT BICYCLISTS

Analysis

There are few materials and programs that focus on the adult rider. Most adult bicyclists have not had any formal bicycle education in childhood outside of learning the basic mechanical skills. At the same time, there are misconceptions, myths and outdated advice that further challenge adult bicyclists' safety. For instance, some believe a bicyclist should ride facing traffic, and it is still common to see a bicyclist at night not using the required lights and reflectors. Bicycle education programs developed for the adult cyclist need to educate cyclists about bicyclists' rights and responsibilities on the road, about techniques for sharing the road with motorists and about secure bike locking techniques. Adults should also be educated about pedestrian rights and the need to be aware of people with mobility, hearing, and/or vision impairments.

Recommendations

- 1 Conduct a public awareness campaign focused on responsible road behavior and directed to bicyclists and motorists alike. Make use of public service space from newspapers, television, radio, bus advertising, posters and flyers mailed in utility bills.
- 1 Promotional events such as Bike to Work Day enhance bicycle education.
- 1 Community events such as charity bike rides, costume rides, bike fairs and bicycle rodeos are useful in attracting adults and families in more recreational surroundings. Include bicycle safety checks and helmet giveaways as part of these rides.
- 1 Bicycle commuting programs sponsored by employers, such as those suggested in Chapter 6, can be successful in educating adult bicyclists and creating new bicycle commuters.
- 1 Educate parent groups and adult groups that supervise children, like PTAs, day care centers, and youth camp operators, on safe bicycling practices.
- 1 Conduct a public awareness campaign emphasizing the individual and community benefits of using a bicycle for daily trips. As part of this campaign have a city-wide contest for number of miles bicycled, oldest bicyclist, farthest commuter, etc.
- 1 Since most adult cyclists are also motorists, they can also be reached through programs discussed in the next section.
- 1 Work with bicycle shops to provide incentives for adults to purchase helmets and safety gear, such as lights.
- 1 Develop informational materials and programs specifically addressing the cycling needs of seniors, such as a tricycle program.
- 1 The City should work with and encourage U.C. Berkeley to educate students about proper, effective cycling in Berkeley. Also, the University could introduce effective cycling as a physical education course (similar to racquetball, tennis, etc.), and distribute city-specific bike safety pamphlets to incoming/returning students as part of registration packets.
- 1 The adult-targeted *Effective Cycling* course by the League of American Bicyclists (LAB) would serve the public need for cycling education and can be offered at bike shops and community centers.

PROGRAMS FOR MOTORISTS

Analysis

Motorists are probably the most difficult group to reach with bicycle education. Existing motorist-oriented programs typically reach their intended audience only at specific points. Some amount of bicycle education is distributed during driver education courses, driver licensing exams and traffic schools for violators. While these methods can be improved upon, for most motorists,

these events will only occur once every several years. Additionally, programs targeted to children can benefit motorists as children bring home information to their families.

Recommendations

- 1 Public awareness campaigns are most useful for educating the motorist on how to safely share the road with bicyclists and overall awareness of bicyclists' rights and responsibilities. Media campaigns including bumper stickers and banners, could be developed. Community events and family activities can be useful in raising awareness of bicycle/motorist safety. Parents who attend bicycle education events with their children may learn something themselves about bicycle/motorist safety.
- 1 Make use of public service space from newspapers, television, radio, bus advertising, posters and flyers mailed in utility bills. The City should consider including an educational flyer in its mailings to residents, particularly for parking permits.
- 1 Incorporate "sharing the road" training into driver's education programs.
- 1 Signage on roadways, such as "Share the road" signs and bicycle stencils on the street, both of which are proposed for Class 2.5 bikeways, are also an educational tool which alert motorists to the presence of bicyclists.

PROGRAMS FOR LAW ENFORCEMENT OFFICIALS

Analysis

Bicycle safety education and promotion programs will hopefully reduce the need for heavy investments in enforcement. Nonetheless, the Police Department must enforce traffic regulations for both children and adult bicyclists, and motorists. Police officers are generally hesitant to cite bicycle offenders, especially children, because they believe it will result in negative publicity for the department. As a result, some bicyclists are under the impression that they can do whatever they want while on a bicycle. However, roughly half of bicycle/automobile accidents are caused by the bicyclist who is NOT following the rules of the road, i.e. riding on the wrong side of the street or riding without lights at night.³ Bicyclists who are unpredictable by driving standards are a hazard. Consequently, enforcement should be viewed as another component of a bicycle education program and as a most effective way to reduce the number of bicycle accidents and injuries.

Recommendations

- 1 Police officers and departments need to be convinced that enforcing traffic regulations for bicyclists is a good idea. Officers also need some education on the laws regarding bicyclists' rights and responsibilities, on how best to approach the bicyclist offender, and on what offenses should be earmarked for enforcement. Any bicycle enforcement program

³ Source: Federal Highway Administration, "Pedestrian and Bicycle Crash Types of the Early 1990's, Publication No. FHWA-RD-95-163, June 1996.

should start first with a citation alternative program and warnings, and then move to giving citations.

- 1 In 1994, California made it easier to use enforcement as a bicycle education and safety tool by allowing local authorities to reduce fines for bicycle offenses. Previously, bicyclists were fined at the same rates as motor vehicle offenders. Most police officers and departments felt that these fines for a bicyclist, especially a child, were excessive and were hesitant to impose them. The City should develop its own bicycle fine structure so that bicycle fines will not be excessive and officers will be more willing to impose them.
- 1 A citation alternative program, such as those developed for children not wearing a helmet, should be developed for adults. Attendance at an education program, similar to auto traffic school, would allow fees to be waived. Motorists involved in a bicycle collision could also be required to attend, to learn how to safely share the road.
- 1 Posted speed limits should be enforced. High auto speeds make bicyclists feel unsafe, discourage people from trying out cycling, and increase the severity of collisions.
- 1 The City should expand opportunities for people to register their bikes by either increasing the hours for bike registration or allowing bike shops to register bikes when they are sold.

IMPLEMENTATION

Bicycle education programs face serious challenges; they must compete for funds, and for public interest and participation with school, work, family and all the usual daily distractions. Attempts by a community to provide all these programs can put stress on a system that is already overloaded; money and staff are in short supply in every jurisdiction. For this reason, a community must explore all possible avenues in designing and implementing a bicycle education strategy and prioritize which programs are the most important. School districts and city departments such as Planning, Public Works, Police, and Health and Human Services must be brought into the effort. Community and civic organizations, employers, local businesses, and cycling clubs should also be tapped as resources. Some of the most successful programs are a result of coalitions of public agencies and private groups working together towards a common goal.

Chapter 6

BICYCLE PROMOTION PROGRAMS

Bicycling has gained significant publicity, both positive and negative, in the San Francisco Bay Area over the past few years due in great measure to the efforts of bicycle activists and coverage by the media. Attention grabbing events such as Critical Mass in San Francisco, conflicts with bike messengers, and protest rides for better bicycle access on Bay Area bridges have gained national attention. Bicyclists have received a vote of confidence from the general public with the recent decision to include a bicycle path on the new eastern span of the San Francisco-Oakland Bay Bridge. AC Transit has added new buses with front loading bicycle racks to many of its local and transbay routes. In addition, bicycle access to the BART system was improved this July by the relaxing of some commute-hour restrictions. The most notable of these was the opening of the Fremont-Richmond line, which serves the Berkeley area, to bicyclists at all times. Through this exposure, both good and bad, bicycling is becoming more visible in the Bay Area. The question now is: What else can be done to promote bicycling as a viable transportation mode, and in particular what can the City of Berkeley do?

Implementing many of the infrastructure and education elements of this Plan will itself promote bicycling in Berkeley. A basic first step towards encouraging people to bike is providing them with safe and convenient bicycle facilities.

This Chapter focuses on promoting bicycle use for commute trips, since commute trips cause much of the traffic congestion and are a group of trips that can be easily targeted with employer programs. It is acknowledged that there are many other types of trips, such as shopping and entertainment. In the future, the City can explore ways to be involved in promoting bicycle use for these types of trips as well.

GUIDELINES FOR A BICYCLE PROMOTION PROGRAM IN BERKELEY

In the present climate of concern over the crowded conditions of our roads and the lack of adequate parking, a variety of Transportation Demand Management (TDM) programs have been implemented by state and local governments and private industry. These programs have focused on education and incentives to get people away from the SOV (single occupant vehicle), with carpools, vanpools, and transit being the most popular alternative modes. Bicycle commuting is often an overlooked or underutilized opportunity for attaining trip reduction goals.

Like the rest of the San Francisco Bay Area, Berkeley suffers from congestion on its streets and highways; parking is at a premium in the commercial and residential neighborhoods. The following section provides the City of Berkeley with the tools to develop an effective bicycle promotion program to increase bicycle commuting and alleviate some of the demand on the overcrowded transportation infrastructure.

The following bicycle promotion program for Berkeley is based on research of existing bicycle commute programs in the Bay Area and around the country sponsored by both government agencies and private industry. Although any city, company, university or other organization can implement a bike commute promotion program, the most successful programs result from collaboration between the public and private sectors. The City of Berkeley's primary role will be to serve as the "model employer" for the bicycle commute promotion program. With the City setting the example, other employers in Berkeley can be more successfully persuaded to institute programs of their own.

Whether the bicycle commute program is sponsored by the City or by a local company, an effective bicycle commuting promotion program must do the following:

Identify benefits of bicycle commuting - Before bicycling will be considered as a commute alternative, the feasibility and benefits of bicycle commuting must be made known to the potential cyclist. Many people are unaware of the opportunities that bicycle commuting can provide. Bicycle commuting reduces the costs of commuting to the employee; bicycle commuting improves health through exercise and can lower employer costs through a reduction in health insurance costs and better performance by employees; bicycle commuting can save time for the employees during the actual commute and can replace time and money spent in lengthy workouts in a gym; bicycle commuting reduces the demand on overcrowded streets and highways and the need for parking; bicycle commuting does not pollute the air. In sum, bicycle commuting is an enjoyable, low cost and healthy alternative to the traditional commute.

Provide an incentive to use bicycle commuting - Many of the existing TDM programs use monetary or other incentives to lure the prospective participant out of their single-occupant-vehicle and into a carpool or transit. These TDM programs should be expanded to include incentives for bicycle commuting.

Support and applaud bicycle commuting - Endorsement of bicycle commuting by those in charge is a significant aspect of a promotion program. Prospective bicycle commuters are more apt to try out this underutilized mode if it is accepted and supported by elected officials and city department heads. Endorsement from "the people in charge" of city government will go a long way towards persuading individuals to bicycle commute, and companies to establish bicycle commute programs of their own.

IMPLEMENTATION OF A BICYCLE PROMOTION PROGRAM

The implementation of bicycle promotion programs, typically part of an overall trip reduction program, is usually staff intensive. Currently, minimal staff resources are dedicated to the City's trip reduction program, due to funding constraints. This section proposes many possible programs and activities which are appropriate for the bicycle promotion program in Berkeley. However, the amount of funding available for staff and programs will determine how many of the following programs can be implemented. Programs targeting the entire Berkeley community

could be developed and implemented by Berkeley TRiP, if they are provided adequate funding for this task. Local bicycle merchants are natural allies in any effort to promote cycling, and their participation should be solicited.

The bicycle promotion program has been divided into two segments; one directed at city employees and the other geared for the general population of Berkeley.

Elements of a City Employee Campaign to Identify Benefits of Bicycle Commuting

- 1 **Info Flyer** - Publish a "Bicycle Commute Info sheet" with information on bicycles and other needed equipment, where the safe and secure bicycle parking is located, where bike shops are located, and the available transit-access options.
- 1 **Informational Materials** - Make available bicycle route maps, safety information, effective-cycling pamphlets and flyers of upcoming bicycle events.
- 1 **Bicycle Club** - Start a bicycle commuter club and information network to advise the potential bicycle commuter of their best commute routes, to locate experienced bicycle commuters in their area ("Bicycle Buddies") who are willing to assist and escort them during their first bicycle commutes, and to find out what events and activities are coming up. RIDES for Bay Area Commuters provides this service for potential bicycle commuters, including information about bicycle access on bridges and transit throughout the area.
- 1 **Bicycle Safety Demonstrations** – Hold demonstrations during the lunch hour on safe-riding, how to bicycle commute, and bicycle repair. The City, local businesses, local bicycling clubs or advocacy groups can sponsor these events.
- 1 **Bicycle Commute Competition** – Hold a competition between city departments and agencies to determine which has the most bicycle commuters during a week.

Elements of a Citywide Campaign to Identify Benefits of Bicycle Commuting

- 1 **Media Campaigns** – Television and radio public service announcements can help reach a broad audience. A weekly bicycle newspaper column that can discuss local bicycling news as well as advertise upcoming events.
- 1 **Bicycle Hot Line** – Telephone Hot Line for reporting potholes, missing bike route signs or other bicycle related hazards. The system could also be expanded to provide bicycle news on upcoming events. Also provide comparable service on the World Wide Web.
- 1 **Bicycle safety demonstrations** – Expand the program of demonstrations discussed above to include presentations at schools, fairs or other city events. Get the Police Department involved in developing and presenting these programs.
- 1 **"Berkeley Bicycle Safety Week"** – Develop a week-long event to promote the benefits of bicycling to the citywide audience. Include activities in the schools as part of the

program. This event can culminate in a "Berkeley Fun Ride" one evening bringing together all the participants.

- 1 **City Bicycle Rides** - To maintain interest and attention on bike commuting after the "Bicycle Safety Week" is over, a monthly or quarterly City ride could be organized. These rides should be supervised and designed with clear safety guidelines and a pre-determined route. Or a Bike Day could be instituted once a month when everyone is encouraged to use a bicycle for that day's trips. Or, a ride could be organized with a popular Berkeley personality, like a writer or U.C. athlete.

Elements of a City Employee Bicycle Commuting Incentive Campaign

- 1 **Parking** – Secure and protected long-term parking must be provided. Options include bicycle lockers, bicycle storage rooms, locked cages, attendant parking or allowing bicycles into the workplace.
- 1 **Cash Incentives** – There are many types of cash incentives which can be used to encourage bike commuting. The cost of these programs can be mitigated by soliciting sponsorships from stores, restaurants and other retailers. They include:
 - Cash dividends for each day of bicycling, similar to a transit subsidy;
 - Monthly drawings for prizes;
 - Mileage reimbursement for city business travel by bike;
 - Discount coupons or credit at bike stores, restaurants or other retail businesses;
 - Bike purchase financing;
 - Parking cash-out program.
- 1 **Convenience Incentives** – One of the major obstacles to bicycle commuting is the perceived inconvenience factor. The following list of programs addresses these concerns.
 - 'Guaranteed Ride Home' (the City currently participates in a program organized by Alameda County)
 - Fleet bicycles for business travel (the City has instituted this program)
 - Trial commute bikes
 - On-site bicycle repair kits
 - On-call bicycle repair services
 - Flex hours
 - Showers and locker rooms (or gym membership)
 - Relaxed dress codes

Elements of a Citywide Bicycle Commuting Incentive Campaign

- 1 **Bikeways** - Implementation of the bicycle network in this Plan will be critical to a successful encouragement program. Bicycle route maps and identifiable route signage systems are also necessary to support the route network.
- 1 **Parking** - The provision of secure, protected, convenient and inexpensive bicycle parking, as identified in this Plan, is crucial to lure the commuter to the bicycle.

Elements of a City Employee Campaign to Support and Applaud Bicycle Commuting

- 1 **"Ride with an Elected Official"** – Sponsor a ride for city employees with an elected official and/or department heads to demonstrate their support and enthusiasm for bicycle commuting.
- 1 **Special Programs** – Organize Berkeley bicycle commute events for city employees to coincide with regional and national events such as Bike to Work Day, Beat the Backup Day, Earth Day and Transit Week.

Elements of a Citywide Campaign to Support and Applaud Bicycle Commuting

Efforts to support and applaud bicycle commuting to the general population of Berkeley will be primarily accomplished through the media campaigns, education programs and special events discussed above. In addition, the City of Berkeley can choose to encourage other Berkeley employers to organize bicycle commute programs of their own. In particular, the City should encourage U.C. Berkeley and B.U.S.D., two of the largest employers in Berkeley, to promote bicycling to their staff, faculty, students, and parents.

With the City's Bicycle Commute Program firmly established, the City can provide valuable assistance to the employers willing to undertake this important task. An employer resource kit, most likely put together by Berkeley TRiP, could be provided to each interested employer. The kit should include:

- 1 Text for a letter from the CEO/President explaining the Bicycle Commute Program and urging his/her employees to consider the bicycle when making commute choices;
- 1 Articles about bicycling as a great commute alternative. These stories can be used in company newsletters, as all-staff memos, bulletin board fliers or any other outreach method in place at the company.
- 1 A list of programs and events for use in the company's program. The list will provide details of existing events as well as new programs that could be implemented. City-sponsored events should be included in this list.
- 1 A resource list detailing sample bicycle promotion programs, resource centers for bicycle promotion assistance, and local bicycle coalitions. This list will be invaluable for the companies that may not be aware of the benefits of bicycle commuting.
- 1 Route maps showing the best bike commute routes in Berkeley to be distributed and posted. Many potential bike commuters could find the option more appealing with information about the fastest, safest and easiest routes to use.
- 1 Bicycle Safety and Road Sharing Brochures developed through the education program discussed in Chapter 5.
- 1 Sample bicycle promotional items such as T-shirts, water bottles, etc.
- 1 Listing of local bicycle stores for employees to find the correct equipment for their bicycle commute.

Chapter 7

IMPLEMENTATION

INTRODUCTION

The numerous projects and programs recommended in this plan will take many years to implement given the funding limitations, and also the time required to work through the public process. The prioritization criteria explained below will be a useful tool to focus the City's efforts and to develop a phased implementation program. Prioritizing the recommendations in the Bicycle Plan, along with establishing a bicycle coordinator position, will be the immediate next steps taken after the Plan is adopted. One already-funded project, bicycle boulevard design, will also take place soon after the adoption of the Bicycle Plan.

IMPLEMENTATION STEPS

Many of the projects in the Bicycle Plan will require further study, more neighborhood input, and additional City Council approvals before being constructed. This is particularly true for projects that might affect traffic patterns and/or might require the removal of parking, such as new bike lanes and bicycle boulevards. As further evaluations are made of the projects in this Plan, the projects may be modified. The following steps will need to be taken before completion of significant bicycle projects:

Further Studies - More detailed traffic engineering studies will need to be done to determine the impact of the proposed bikeways. In some cases, such as for bicycle boulevards, the exact alignment and design details will need to be determined before final traffic engineering studies can be completed.

Neighborhood Input - When planning for a specific bikeway begins, neighboring businesses and residents will be contacted to solicit their input. Public workshops will be held to gather input from the public at large.

Identify Funding - Any significant project will most likely require outside funding. As the project is refined, costs will become clearer and staff can begin to apply for funding.

Further Approvals - Many simple changes to the roadways require City Council approval. Striping bike lanes, changing stop signs on major or collector streets, and altering angled parking all require Council approval. Major changes to the roadway, such as adding diverters or traffic circles, would also require Council approval.

BIKEWAY COSTS

The cost to implement the projects presented in Chapter 4 were developed in conjunction with the City Public Works staff. They are based on the unit costs as presented in Appendix G. It

should be recognized that unit costs vary considerably depending on the size of the job and the location. For example, the unit cost of striping only 1,000 linear feet can easily cost two to three times that of a 15,000 foot project. The cost estimate for each route segment is presented in the table in Appendix F.

PRIORITIZATION CRITERIA

The prioritization criteria in Table 4 will be used to determine the order in which the many projects contained in this Plan will be implemented. The criteria give priority to those projects that will serve the most people and will improve the safety of bicyclists. Staff will work with the Transportation Commission's Bicycle Subcommittee, a Bicycle Advisory Committee, or some other equivalent group, to apply the criteria and also to adjust the criteria if they systematically leave out projects that are believed to be important.

It is very difficult to create prioritization criteria that can rank both capital projects and programs, such as safety education. The prioritization criteria in Table 4 are not intended for bicycle programs. Therefore, the group assigned responsibility for advising the City on bicycle issues will also make recommendations on which bicycle programs to implement first.

Table 4
PRIORITIZATION CRITERIA

MOBILITY AND ACCESS (TOTAL OF 20 POINTS)

1. Volume of existing or potential bicycle traffic.....0 - 10
Rationale - *All other things being equal, the route with the most or that would have the most use by bicyclists should have priority.*
2. Provides access to major traffic generators/attractors/transit stations or hubs.0 - 5
Rationale - *Routes which connect major activity centers should be ranked higher.*
3. Closes gap in significant route.....0 - 5
Rationale - *Routes that provide continuity and directness should be ranked higher.*

SAFETY (TOTAL OF 15 POINTS)

4. Remedies or improves specific obstacles.....0 - 5
Rationale - *Projects that eliminate an existing obstacle or hazard should have priority.*
5. Improves locations where bicycle accidents have occurred0 - 5
Rationale - *Locations that have had higher than normal bike accident rates (either bike-motor vehicle, single bike, bike-bike or bike-pedestrian) should have priority.*
6. Improves routes with high vehicular traffic volumes0 - 5
Rationale - *Routes with high motor vehicle volumes have greater potential safety conflicts and thus should have priority.*

ABILITY TO IMPLEMENT (TOTAL OF 10 POINTS)

7. Route or project has full or partial funding, or is likely to be funded0 - 5
Rationale - *Routes that have the funds to be implemented should have priority.*
8. Route or project is supported by a neighborhood group and/or is contained in a neighborhood plan.....0 - 5
Rationale - *Routes that complement community plans and goals should have priority.*

MAXIMUM POSSIBLE SCORE.....45

Note: After projects are rated, it will be important to look at all routes and their ratings one last time. Two routes may score within five points of each other, but one may cost \$20,000 and one may cost \$200,000. Thus the cost of each route should be a consideration. If all things are equal, the lower cost route should have priority. Thus, the routes should be placed in priority order, and costs should be compared. If two routes score within 5 points of each other, and there is a cost differential of more than 30 percent, the lower cost route can move ahead of the higher cost route.

Routes should be re-rated periodically to take into consideration new information, new funding sources, set-asides, updated accident statistics, etc. The ratings of most routes will not change but new circumstances may affect the ratings of some routes, and these should be taken into account.

FUNDING SOURCES

City Funding Source

In 1996, the City Council dedicated \$350,000 over a five year period (1997-2001) to fund small-scale bicycle improvement projects that are unlikely to be funded from grant sources. This money is coming from the City's General Fund. To date, the funds have been allocated for installing additional bicycle racks throughout the City, installing a stop sign at a busy bicycle intersection, and improving landscaped diverters to allow through bicycle access. The funds are programmed with the input of the Transportation Commission's Bicycle Subcommittee.

Traditional Funding Sources

This section outlines the most probable funding sources to implement the recommended bikeway projects. While some funding sources are dedicated to the City, most are competitive. Although there are many grant sources, many are small pots of funds, are for specific types of projects, and/or are highly competitive.

The City also receives funding for roadway projects that could be used to implement some of the bikeway projects presented in this Plan. However, funds for street rehabilitation are extremely limited and given Berkeley's large backlog of needed street repairs, it is unlikely that a large amount of funds will be diverted to strictly bike projects. On the other hand, almost all re-paving projects do benefit cyclists.

The following lists some of the most common funding sources that can be used to fund the projects in this Plan. Appendix H presents a more comprehensive list of the various local, regional, statewide, and federal funding sources that can be used for roadway, trail or traffic safety (including bicycle safety) projects. The most likely funding opportunities for the City of Berkeley are:

- 1 Transportation Development Act Article 3 funds

The City receives an allocation each year of varying amounts.

- 1 Transportation Fund for Clean Air - Bay Area Air Quality Management District funds

A portion of these funds (40%) are distributed as an allocation to cities. The remaining 60% is allocated regionally on a competitive basis.

- 1 Bicycle Lane Account

Senate Bill 1095, approved in 1993 and now section 891.2 of the Streets and Highways Code, requires that projects be included in bicycle transportation plans in order to be eligible for Bicycle Lane Account funds and that these plans contain specific elements. To be eligible, the local agency board must adopt the plan or certify that it has been updated. For Fiscal Year 1998/99, whose funds must be distributed by June 1999, the plan must have been adopted after July, 1996.

1 TEA-21 (various programs)

This is used to fund stand alone bicycle projects as well as projects with bicycle components. In fact, bicycle facilities enable the project to score higher.

1 Office of Traffic Safety

This funding source is often used for bicycle and pedestrian safety projects, and can be used for traffic calming programs as well.

Non-Traditional Funding Sources

In addition to the programs itemized in Appendix H, there are several non-traditional funding sources that might be available for the long-term implementation of project and program recommendations. The following paragraphs briefly describe several of the unusual and innovative ways that communities have found to fund parts of their bicycle program.

Grant and Foundation Opportunities - Private foundations provide excellent opportunities for funding specific capital projects or single event programs. To qualify for these types of funds, a Bicycle Advisory Committee or non-profit group must be established. It also might be possible to work with existing non-profit organizations. According to the 1994 "Foundation Directory", there are over 650 foundations within the State of California, many of them located in the Bay Area. The Directory only includes those organizations which held assets of \$2 million or more, or gave \$200,000 or more in grant awards in the previous year. In general, private foundations are initially established for specific purposes, e.g. children and youth needs, promotion of certain professional objectives, educational opportunities, the arts, and community development.

A description of several foundations that favor environmentally-related projects is presented in the report *Guide to Bicycle Program Funding in California*.¹ In general, private foundations prefer to fund programs that are special in nature such as conferences or children's education events, rather than programs viewed as city responsibilities such as constructing and maintaining roadways.

Adopt-A-Trail/Path Programs - Modeled upon the Southern California program of highway maintenance contributions, this program would post signs to indicate which individual or group has contributed to either the development, installation or maintenance of a particular bike facility.

Memorial Funds - These programs are advertised as potential donor projects to be funded via on-going charitable contributions or funds left to a particular project through a will. Most memorial projects include the location of a memorial plaque at a location specific to the improvement or a scenic vista point.

Revenue Producing Operations - As part of the development of a trail or bike path, plans can specifically include the location of a revenue producing operation adjacent to the proposed

¹ Payne, Gail, Planning and Conservation League Foundation, April, 1993.

improvement. For example, bicycle rental facilities, food and drink establishments, and/or bike storage facilities and equipment centers would be appropriate operations. The on-going lease revenues from these operations could then be used for trail/path maintenance.

Funding Strategy

Some funding sources do not provide more than one or two hundred thousand dollars per year. To fund a million dollar or more project with these sources would commit this one funding source for about ten years or more. This would be to the neglect of many other smaller projects in the city that may be as beneficial. Although the prioritization criteria take into account the cost-benefit ratio, it still does not make sense to commit one source of funds for many years to only one project. Rather, smaller sources of funding such as TDA Article 3 and TFCA should be used for funding the less costly projects and larger pools of funding should be sought for the more expensive projects.

ADDITIONAL IMPLEMENTATION ACTIONS

In addition to the bikeway network, and the education and promotion programs described in Chapters 5 and 6, there are numerous day-to-day or occasional actions that if incorporated into city staff routine or developed as policy, would improve bicycling safety and establish bicycling as a legitimate transportation mode. Many of these action steps will take staff time to evaluate and develop. Some will involve substantial costs. For this reason, these action steps will need to be prioritized for implementation, just as the bikeway network development will be prioritized. Some of these actions would ideally be implemented in the near future, while others would be developed in the long-term, depending on the prioritization they receive. The actions listed below are keyed to the goals listed in Chapter 2. Each numbered action step, however, does not coincide with its matching numbered policy in Chapter 2.

Planning Action Steps

- 1.1 Conduct regular counts of bicycle traffic, including when doing all turning movement counts. Incorporate counts of bicycle traffic into EIRs and traffic studies for development projects.
- 1.2 Collect comprehensive information about police- and hospital-reported bicycle accidents to identify causes and remedies.
- 1.3 Establish procedures for cooperating with adjacent cities, U.C. Berkeley, BART and AC Transit on bicycle-related issues.
- 1.4 Include bicycling criteria in the project check list used for reviewing proposed developments.

Network and Facilities Action Steps:

- 2.1 Establish local standards for intersection design and traffic barrier design and placement to accommodate bicycles.
- 2.2 Examine ways to limit the use of stop signs on bikeways without endangering pedestrian safety, such as:

- 2.2.1 Using two-way rather than four-way stops.
- 2.2.2 Using one-way stops at T-intersections.
- 2.2.3 Where stop signs are used for traffic calming purposes, exploring alternatives.
- 2.3 Adjust traffic signals to accommodate bicyclists.
 - 2.3.1 Provide adequate minimum green time for side streets at actuated signals.
 - 2.3.2 Provide adequate clearance time for bicyclists who enter intersection at end of green phase.
 - 2.3.3 Ensure that traffic-actuated signals detect cyclists in a lawful position on the road. Identify sensitive points with a standard marking.
- 2.4 Sweep streets regularly, with priority given to designated bikeways and streets with higher bicycle traffic.
- 2.5 Trim overhanging and encroaching vegetation.
- 2.6 Repair surface defects such as potholes and ruts, giving priority to the right-hand portion of the outside lane.
- 2.7 Ensure that standards for new and replacement pavement quality meet the needs of bicyclists. Inspect work done by contractors, and have it replaced if defective.
 - 2.7.1 Asphalt pavement overlays should be flush with the concrete gutter.
 - 2.7.2 Utility covers should be flush with the pavement.
- 2.8 Establish a spot improvement program for low-cost, small-scale improvements, such as pavement maintenance, hazard removal, or bike rack installation.
 - 2.8.1 Provide a postcard, voice-mail, or e-mail program for bicyclists to report hazards and suggest spot improvements.
- 2.9 Evaluate and revise the City's Zoning Ordinance to require adequate bicycle parking for commercial and residential uses.
- 2.10 When temporary street repairs are made, ensure that provisions are made for maximum safety, comfort, and convenience to bicyclists.

Education/Safety Action Steps:

[specific recommendations are included in Chapter 6.]

Promotion Action Steps:

[specific recommendations are included in Chapter 5.]

Implementation Action Steps:

- 5.1 Maintain a local capital improvement program that provides regular funding for the bicycle program to construct new facilities, retrofit inadequate facilities, and refurbish older facilities.
- 5.2 Include funding for regular facility evaluation, maintenance, and repair, as well as funding to review development and zoning proposals for effect on bicycle mobility, in the annual staff, operations, and maintenance budgets.
- 5.3 Assign staff the responsibility and authority to carry out bicycle-related policies, and to coordinate the city's planning, capital improvement programming, budgeting, and maintenance.

Appendix F - Proposed & Existing Berkeley Bikeways Inventory - December 1998

Rte. #	Status	Street	From:	To:	Class	Zone	Length	Parking	Existing Conditions	Proposed Class	Comments and Potential Improvements	Traffic Volumes		Rd. Type	Width	Lanes	Connections	
												Bike	Car					
East-West Routes																		
1 Marin Circle to Tilden Park via Los Angeles, Spruce, Keith, Cragmont & Shasta \$3,800																		
1a	Pr	Los Angeles	Marin Circle	Spruce		B	800	2		Class 3			7000	C	30	2		
1b	Pr	Spruce	Los Angeles	Keith			830			Class 3			4300	C				
1c	Pr	Keith	Spruce	Euclid			1510			Class 3				C				
1d	Pr	Euclid	Keith	Cragmont			220			Class 3			4400	C				
1e	Pr	Cragmont	Euclid	Shasta			3200			Class 3				L				
1f	Pr	Shasta Rd.	Cragmont	Grizzly Peak			2930			Class 3			1400	L				
1g	Pr	Shasta Rd.	Grizzly Peak	Tilden		B	900	0		Class 3			1900	C		2		Tilden
2 Marin Ave. from City of Albany to Monterey St. \$18,600																		
2a	Ex	Marin Ave.	City of Albany	Monterey St.	Class 3	E	2060	2		Class 2			15300	C		3,4		Albany
3 Gilman from West Frontage Rd. to Hopkins \$114,100																		
3a	Ex	Gilman	West Frontage	Ninth	Class 3	F	2975	2		Class 2	Repave. Interchange at I-80 needs improvements.		19000	M	44?	2		Bay Trail
3b	Pr	Gilman	Ninth	San Pablo		E	3950	2		Class 2	Repave.		13400-17400	M	36	2		Bay Trail
3c	Pr	Gilman	San Pablo	Hopkins		E	3260	2		Class 2.5			13400-17400	M	36	2		Bay Trail
4 Hopkins from Acton to Sutter, Sutter from Hopkins to Del Norte, and Del Norte from Hopkins to Marin Circle \$2,800																		
4a	Ex/Pr	Hopkins	Acton	California	Class 3	E	1200	2		Class 2.5			3500	C		2		
4b	Ex	Hopkins	California	Sutter	Class 2	E	3850	2			Directional signs		3800-6900	C		2		
5 Camelia from Fifth St. to Ninth St. \$700																		
5a	Pr	Camelia	Fifth St.	Ninth St.		E	1300			Class 3				L	?			
6 Rose from Hopkins to Spruce \$4,500																		
6a	Pr	Rose	Hopkins	California		E	3200	2 or 3		Class 2.5	Stop sign at Ohlone Greenway		2900	L	36	2		
6b	Ex/Pr	Rose	California	Spruce	Class 3	E	4390	2		Class 2.5	Directional signs		3300-5000	C		2		
7 Virginia from Fifth to La Loma \$848,700																		
7a	Pr	Virginia	Fifth	La Loma		E	12000	2,1	private right of way from 6th to 5th	BB	Need signals at major intersections			L	48	2		
8 Delaware/Hearst \$15,600																		
8a	Ex	Delaware	Ninth	Sacramento	Class 2	E	3770	2	barriers at ninth					C		2		
8b	Ex	Ohlone Greenway	Sacramento	California	Class 1	E	670											
8c	Ex/Pr	Hearst	California	Shattuck	Class 2	E	3330	2	poorly signed	Class 2	Improve lighting;		6500	C		2		
8d	Pr	Hearst	Shattuck	Arch		B	600	2		Class 2		181	10000	C	60	4		
8e	Pr	Hearst	Arch	Gayley			2410	2		Class 2.5								
9 (unused)																		
10 Center from Milvia to Oxford \$700																		
10a	Ex	Center	Milvia	Shattuck	Class 2	A	660				Directional signs	57				2		UC
10b	Pr	Center	Shattuck	Oxford		A	570			Class 2.5	Directional signs	57				2		UC
11 Centennial Dr. from Rim Rd. to City of Oakland \$800																		
11a	Pr	Centennial Dr.	Stadium Rim	City of Oakland		B	1380	0		Class 3	Mainly U.C. Berkeley			L		2		Oakland/Tilden
12 Addison/Allston from Aquatic Park to Shattuck Ave. \$5,300																		
12a	Pr	Addison	Aquatic Park	Fourth		F	800	2		Class 2.5	Distinctive signage to bike bridge			L	36	2		
12b	Pr	Allston	Fourth	Shattuck		F,D	8950	2	Short section goes through park between Bonar and West	Class 3	Directional signs	71	1900-4800	L	36	2		
13 Bancroft from Aquatic Park to Fourth St and from Fulton to Gayley \$146,600																		
13a	Ex	Bancroft	Aquatic Park	Fourth St.	Class 3	F	720	2		Class 3				L		2		
13b	Pr	Bancroft	Fulton	Gayley		C	3990	2	one way (westbound)	Class 2.5	Signal or stop signs at Dana	71	6700-13000	C		4		
14 Channing from Fourth St. to Prospect \$686,000																		
14a	Pr	Channing	Fourth St.	Ninth		F	2200	2		BB	Repave all segments; directional signs			L	36	2		
14b	Ex/Pr	Channing	Ninth	MLK	Class 3	D	5870	2	branch in south lane btwn. MLK & Milvia	BB	Move stop signs to cross streets. Need signals at major intersections.			L		2		
14c	Ex/Pr	Channing	MLK	Prospect	Class 2	A	6520	2		BB		175		L		2		

Appendix F - Proposed & Existing Berkeley Bikeways Inventory - December 1998

Rte. #	Status	Street	From:	To:	Class	Zone	Length	Parking	Existing Conditions	Proposed Class	Comments and Potential Impairments	Traffic Volumes		Rd. Type	Width	Lanes	Connections	
												Bike	Car					
15 Parker St. from Ninth St. to Warring St. \$726,600																		
15a	Pr	Parker St.	Ninth	Warring			12080	2		Class 3	Long-term route. Needs signals at major intersections. Derby is the route in the short-term. Parker from 8th to 9th St.: remove RR tracks.							
16 (not used)																		
17 Heinz Ave. from Ninth St. to San Pablo Ave., San Pablo from Heinz to Russell & Russell from San Pablo to Claremont \$1,042,400																		
17a	Pr	Heinz	Ninth	San Pablo		F	600	2		BB	Directional signs; lighting			L	36	2		
17b	Pr	San Pablo	Heinz	Russell		F	300	2		Class 1 or Class 2	Directional signs; lighting; improve	24000		M	85	4		
17c	Ex	Russell	San Pablo	Claremont	Class 3	D.C	12440	2		BB	Directional signs; 5 signals at major streets; lighting; curb cut at San Pablo			L		2		
18 Warring/Derby/Belrose/Tunnel Rd. from Dwight Way to City of Oakland \$4,900																		
18a	Pr	Warring	Dwight	Derby			1260			Class 2.5								
18b	Pr	Derby	Warring	Belrose			1200			Class 2.5								
18c	Pr	Tanglewood	Belrose	Claremont		C	900	2	barriers at Milvia, bike signal at MLK, landscaped barriers at Park St.	Class 3				L	26	2		
18d	Pr	Claremont	Tanglewood	Russell		C	1450	2	barriers at Hazel	Class 3	Directional signs to Tunnel Road			L	40	2	Oakland	
18e	Pr	Domingo	Claremont	Tunnel			490			Class 2.5								
18f	Pr	Tunnel Rd.	Domingo	City of Oakland		C	3600	2.0	high speed traffic	Class 2.5			39000	M	36.48		Oakland	
19 Woolsey from California to Claremont, then The Uplands to Tunnel \$120,200																		
19a	Ex	Woolsey	California	Adeline	Class 3	D	1690	2	median in Adeline obstructs through bikes		Problem crossing Ashby BART			L		2		
19b	Ex	Woolsey	Adeline	Claremont	Class 3	C	6325	2	barriers at Hillegas, Traff. Cir. at Regent, Bike Sig. at Tel., barriers at Wheeler					C,L		2		
19c	Pr	The Uplands	Claremont	Tunnel		C	300	2	Bike sign at Claremont	Class 3				L	56	2		
20 Marina Boulevard/ Spinnaker from University Ave. and North Waterfront Bike Path \$3,600																		
20a	Pr	Marina Blvd.	University	Spinnaker Wy.		F	1800	1	no route signs, shown as existing on maps	Class 2			3700	L		2		
20b	Ex	Bike Path	Spinnaker Wy.	Spinnaker Wy.	Class 1	F	720	n/a								n/a		
20c	Pr	Spinnaker Way	Marina Blvd	Breakwater Dr.			800			Class 2.5				L		2		
21 University from Eastshore Hwy. to Recreational Pier \$173,100																		
21a	Ex	University	Second St.	I-80	Class 1	F	2160	n/a	extremely dangerous xing under overpass, ends w/stairs	Bike bridge						n/a		
21b	Ex	University	I-80	West Frontage	Class 3			n/a	stairs, walk bike on sidewalk	Bike Bridge	Overcrossing	40000				n/a		
21c	Ex	University	West Frontage	Marina Blvd.	Class 2	F	2160	0				9300	L			4		
21d	Pr	University	Marina Blvd.	Rec. Pier		F	1500	0		Class 2		8400				2		
21e	Pr	Seawall	North	South			3000			Class 1	Path on waterfront.							
22 Berryman from Milvia to Josephine \$500																		
22a	Pr	Berryman	Josephine	Milvia		E	950			Class 3	Directional signs			L		36		
23 Ashby Overcrossing \$900																		
23a	Pr	Ashby Overcrossing	Bay St.	Bay trail			500			Class 2	Reconfigured freeway interchange					36		
24 Virginia St. Extension \$14,800																		
24a	Pr	Virginia St. Extension	Bay Trail	Marina Blvd.			500			Class 1								
North-South Routes																		
50 Bay Trail and Western Frontage Road from City of Albany to City of Emeryville by others																		
50a	Pr	Bay Trail	Albany	Gilman			1800			Class 1								
50b	Ex	Bay Trail	Gilman	University	Class 1	F	4500	n/a								n/a		
50c	Pr	Bay Trail	University	City of Emeryville		F	700	n/a		Class 1		8700	C		2	Emeryville		
51 Aquatic Park \$7,900																		
51a	Ex	West Path	NW parking lot	S. parking lot	Class 1	F	3600	n/a	some car usage									
51b	Ex	S. parking lot	West Path	East path	Class 3	F	800	2	not signed, so technically not a route									
51c	Ex	East Path	S. parking lot	Bolivar	Class 1	F	3500	n/a			Improve drainage							
51d	Ex	Bolivar	East Path	NW parking lot	Class 3	F	3800	2	not signed, so technically not a route					L				
51e	Pr.	Bay Street	Aquatic Park	Emeryville			1080			Class 2								
52 Fifth St. from Gilman to Hearst and Fourth St. from Hearst to Dwight \$4,800																		
52a	Pr	Fifth	Gilman	Virginia		F	1750	2		Class 3				L	36	2		
52b	Pr	Fifth	Virginia	Hearst		F	1750	2		Class 2.5	Need distinctive signing to bike bridge			L	36	2		
52c	Pr	Hearst	Fifth	Fourth		F	300	2		Class 2.5				L	36	2		
52d	Pr	Fourth	Hearst	Channing		F	4150			Class 2.5				C	36			
52e	PR	Fourth	Channing	Dwight			800			Class 3								
53 Ninth St., Murray St., Seventh St., Folger Ave., & Hollis St. From City of Albany To City of Emeryville \$247,500																		
53a	Pr	Eighth	C. of Albany	Camelia		F	1810	2		BB				L		2		
53b	Ex/Pr	Ninth	Camelia	Delaware	Class 3	F	2640	2	barriers at Delaware	BB				L		2		
53c	Ex/Pr	Ninth	Delaware	Dwight	Class 2	F	3980	2		BB				L		2		

Appendix F - Proposed & Existing Berkeley Bikeways Inventory - December 1998

Rte. #	Status	Street	From:	To:	Class	Zone	Length	Parking	Existing Conditions	Proposed Class	Comments and Potential Improvements	Traffic Volumes		Rd. Type	Width	Lanes	Connections
												Bike	Car				
53d	Pr	Ninth	Dwight	Heinz			2400	2	Diag. park. btwn. Dwight & Carleton	BB				L	48	2	
53e	Pr	Ninth	Heinz	City of Emeryville			1050	0	Abandoned RR right of way, no through traffic	Class 1	Long-term route			L	80 (right of way)	n/a	
53f	Pr	Heinz	Ninth	Seventh			650	2		Class 2.5	Short-term route. Need directional signs.			L	30	2	
53g	Pr	Seventh	Heinz	Folger			250	0		Class 2.5	Short-term route. Need directional signs.	17300		C	36	2	
53h	Pr	Folger	Seventh	Hollis			1200	1		Class 2.5	Short-term route. Need directional signs.			L	46	2	
53i	Pr	Hollis	Folger	City of Emeryville			450	1		Class 2.5	Short-term route. Need directional signs.			C		2	Emeryville
54 Cornell/Chestnut/Bonar/Mabel St. from Albany to Emeryville \$6,600																	
54a	Pr	Cornell	City of Albany	Delaware		E	3460	2		Class 3	Long-term route is the			L		2	Albany
54b	Pr	Chestnut	Delaware	Hearst			430	2		Class 3	Santa Fe Right-of-way						
54c	Ex	Chestnut St.	Hearst	University	Class 3	E	510	2	Not on any bike facility map	Class 3	"			L		2	
54d	Pr	Bonar	University	Dwight			2960	2		Class 3	"						
54e	Pr	Mabel	Dwight Way	66th/Emeryville			4750	2		Class 3	"						
55 (not used)																	
56 Ohlone Greenway \$166,600																	
56a	Ex/Pr	Ohlone Greenway	City of Albany	California	Class 1	E	5800	n/a			Widen to 8-10 ft; pave north of Gilman; straighten near Cedar-Rose Park; stop signs on Cedar, Rose, Hopkins/Peralta, Gilman, Santa Fe; raised intersections at street crossings; cross-street signing for path users.					n/a	
							2590				Enhance connection through North Berkeley BART.						
57 Acton from Hopkins to Delaware \$1,400																	
57a	Ex	Acton	Hopkins	Delaware	Class 3	E	2590	2	no signs at Hopkins, barrier at Virginia					L		2	
58/59 California from Hopkins to City of Oakland \$589,700																	
58a	Ex/Pr	California	Hopkins	Buena	Class 3	E	1230	2	no sign at Hopkins, barriers at Ada,	BB				L		2	
58b	Ex/Pr	California	Buena	Russell	Class 2	E,D	8520	2	Bad striping from Univ. To Allston. Bike Signal at University.	BB	Signal at Dwight; remove or reverse stop signs.			L		2	Oakland
58c	Pr	King St.	Russell	City of Oakland			3470			BB	Signal at Alcatraz.						
59	Ex/Pr	California	Russell	City of Oakland	Class 2		3440		bike lanes								
60 Colusa Ave. from city limit to Sonoma Ave., Sonoma from Monterey to Josephine St., Josephine from Sonoma to Rose St. \$9,300																	
60a	Pr	Colusa	City of Kensington	Solano Ave.		E	3250	2	offset intersection at Solano	Class 2.5	Need intersection improvement for northbound traffic on Colusa at Solano.	8800		C	36	2	Kensington
60b	Ex	Colusa	Solano Ave.	Monterey	Class 2	E	1500	2	Bike Signal at Marin, labels and stripes btwn. Marin & Mont. In W. Lane faded, gone.	Class 2		2700		C		2	
60c	Pr	Colusa	Monterey	Sonoma		E	450	2		Class 3				L	36	2	
60d	Pr	Sonoma	Colusa	Josephine		E	700	2		Class 3	Make intersection with Hopkins bike-accessible.			L	36	2	
60e	Pr	Josephine	Sonoma	Rose		E	1400	2		Class 3				L	36	2	
61 Monterey from Marin Circle to Hopkins \$2,400																	
61a	Ex	Monterey	Marin Circle	Hopkins	Class 2	E	4420					6000		L		2	

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Rte. #	Status	Street	From:	To:	Class	Zone	Length	Parking	Existing Conditions	Proposed Class	Comments and Potential Improvements	Traffic Volumes		Rd. Type	Width	Lanes	Connections
												Bike	Car				
62 Milvia from Hopkins to Russell																	
62a	Ex/Pr	Milvia	Hopkins	Allston	Class 3	E,A	6650	2	barriers at Yolo, semi-diverter at Cedar	BB	Restripe at University for better circulation; directional signs at Berryman			L		2	\$256,100
62b	Ex/Pr	Milvia	Allston	Dwight	Class 2	A	1980	1		BB	Directional signs at Allston, Center. Remove free right-turn at Allston.	55		L		2	
62c	Ex/Pr	Milvia	Dwight	Russell	Class 3	C	2640	2	barriers at Blake	BB	Directional signs at Oregon, Russell			L		2	
63 Adeline Ave. from Shattuck Ave. to Woolsey St.																	
63a	Pr	Adeline	Shattuck	Woolsey/BART		C	2700	2		Class 2	Study Woolsey intersection.		15700	M	144	6	\$4,700
64 The Alameda from Hopkins to Tacoma, and Tacoma from The Alameda to Colusa Ave.																	
64a	Pr	The Alameda	Hopkins	Tacoma		E	3400			Class 3	Study feasibility of Class 2.		5200-5600	C		60	\$2,400
64b	Pr	Tacoma	The Alameda	Colusa		E	1080			Class 3	Directional signs			L		36	
65 The Arlington from City of Kensington to Marin Circle /Sutter																	
65a	Pr	Arlington	City of Kensington	Marin Circle		B	5500	2	lanes separate by landscaped median, southbound is 2-way btwn Mendo. & Yosemite, poor concrete pavement road	Class 2.5		12500		C	24.5 (each direction)	2	Kensington
65b	Pr	Del Norte	Marin Circle	Sutter		E	600	1,2		Class 2.5	Directional signs			L	30	2	
65c	Pr	Sutter	Del Norte	Eunice	Class 2	E	200	1		Class 2	Directional signs. Improve access through Solano tunnel		16700	L	60	3	
66 Shattuck/Walnut from The Arlington to Hearst																	
66a	Pr	Shattuck	Los Angeles	Walnut		E	600	2		Class 3				L	30	2	\$24,500
66b	Pr	Walnut	Shattuck	Hearst		E	800	2		Class 3	Repave. Consider substituting Walnut north of Rose with turn at Rose to Oxford to Los Angeles.			L	30	2	
67 Oxford/Fulton from Hearst Ave. to Prince St., & Deakin St. to City of Oakland																	
67a	Pr	Oxford	Hearst	Kittredge		A	1950	2		Class 2	Signal or caution sign at Allston. Remove free right turn at Hearst.	151	26000-27300	M	32 (each direction)	4	
67b	Pr	Fulton	Kittredge	Durant		A	600	2		Class 2	Repave entire length of Fulton		27300	M	33 (SB) 27 (NB-Bancroft to Durant)	4	
67c	Pr	Fulton	Durant	Dwight		A	1050	2	one-way; no through cars at Dwight	Class 2	Fulton one-way in this segment	144	9500	M	36	2	
67d	Pr	Fulton	Dwight	Prince		C	3950	2	barriers at Blake, barriers at Ashby. Bike Sig. at Ashby.	Class 3				L	36	2	
67e	Pr	Fulton	Prince	Deakin		C	300	2		Class 3	Directional signs			L	36	2	
67f	Ex	Deakin	Prince	City of Oakland	Class 3	C	300	2		Class 3	Directional signs			L	36	2	Oakland
68 Spruce / Arch St. from Grizzly Peak Blvd. To Hearst																	
68a	Pr	Spruce	Grizzly Peak	Virginia		B	9900	2	Very poor concrete pavement, dangerous cracks in road	Class 2.5	Repave		3200-4300	C	36	2	\$299,400
68b	Pr	Arch	Virginia	Hearst			500	2		Class 2.5	Need "Caution- Downhill" signs.			L		2	UC
69 Dana from Bancroft to Derby																	
69a	Ex	Dana	Bancroft	Dwight	Class 2	C	1330	1	one-way, bike lane on E. Side, dangerous at Dwight where autos turn left	Class 2	Make two-way or add contraflow bike lane; signal or stop sign at Bancroft and Dana- modify barrier at Dana and Dwight			L		2	\$12,900
69b	Ex	Dana	Dwight	Derby	Class 3	C	1300	2	barriers at Dwight, no signs until Carleton	Class 3				L		2	
69c	Pr	Derby	Dana	Telegraph			280			Class 3							
70 Telegraph from Bancroft to Woolsey																	
70a	Ex	Telegraph	Bancroft	Woolsey	Class 3	C	5790	2	one way from Bancroft to Dwight	Class 2.5			20000-26000	M		2,4	\$3,200
71 Bowditch from Bancroft to Dwight and Hillegas from Dwight to Woolsey																	
71a	Ex/Pr	Bowditch	Bancroft	Dwight	Class 2	C	1330	2	Offset, discontinuous connection w/Hillegas	BB	Make Dwight two-way, add contraflow lane, or route to Benvenue			L		2	\$724,700
71b	Ex/Pr	Hillegas	Dwight	Woolsey	Class 3	C	4325	2	first signs not until Webster	BB	Repave. Add signal or stop sign @ Ashby and Alcatraz			L		2	
72 Le Conte/La Loma/Gayley Rd./Piedmont Ave. to Russell St.																	
72a	Pr	Le Conte	Euclid	LaLoma			950			Class 3	Needs further study						\$66,400
72b	Pr						690			Class 3	Needs further study						
72c	Pr	Gayley	Hearst	Bancroft		B	1700	0		Class 2.5	U.C. Berkeley road. Repave.		20400	C		2	
72d	Pr	Piedmont Ave.	Bancroft	Dwight		B	1350	2	divided road from Dwight to Stadium Rim, barrier at Dwight is problem	Class 2.5	Difficult intersection at Dwight		18800-22000	C	23 (each direction)	2	
72e	Pr	Piedmont	Dwight	Russell		C	2700	2	barriers at Derby, Parker	Class 3	Bulbed-out STOP signs a problem			L	36	2	
73 Stadium Rim Way from Gayley Rd. to Canyon, Bancroft and Prospect																	
73a	Pr	Stadium Rim Way	Gayley	Canyon		B	1900	0,1		Class 3	Mainly U.C. Berkeley			L		2	\$1,400
73b	Pr	Canyon	Rim	Bancroft		B	200	0,1,2		Class 3				L		1,2	
73c	Pr	Bancroft	Canyon	Prospect		B	100	0		Class 3				L		2	
73d	Pr	Prospect	Canyon	Channing		B	450	2		Class 3				L	36	2	
74 Grizzly Peak from City of Kensington to City of Oakland																	
74a	Pr	Grizzly Peak	City of Kensington	City of Oakland		B	11700	0,1,2		Class 3			2400-4200	C	32	2	\$6,400
75 Wildcat Canyon Rd. from Grizzly Peak Blvd. to Tilden Park																	
75a	Pr	Wildcat Cyn.	Grizzly Peak Rd.	County border		B	9200	0	multiple mudslides	Class 3			1500-2500	L		1,2	\$5,000

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Rte. #	Status	Street	From:	To:	Ex.	Class	Zone	Length	Parking	Existing Conditions	Proposed Class	Comments and Potential Improvements	Traffic Volumes		Rd. Type	Width	Lanes	Connections
													Bike	Car				
76 Claremont Ave. from Tunnel Rd. to Oakland border \$600,000																		
76a	Pr	Claremont Ave.	Tunnel Rd.	Oakland border				1050			To be determined	Some bike improvement needed. Study street as part of neighborhoods planning process. (See Figure 3 for further explanation.) Cost estimate is planning level estimate for unidentified improvements and is included as a			L		4	Oakland
77 Euclid from Hearst to Grizzly Peak \$6,500																		
77a	Pr	Euclid	Hearst	Grizzly Peak Rd.				11850			Class 3						2	Tilden Park

TOTAL COST: \$7,041,400

Key: **Route #** East-West routes = (1-23), North-South Routes = (50-77). Numbers generally increase from North to South and from East to West . Numbers are for planning purposes only. A separate process will be used to decide if and how to assign route numbers to street signs

Status Ex = Existing bikeway, Pr = Proposed bikeway. Class 1- bike path, Class 2 = bike lane, Class 3 = signed bike route

From/To Cross streets or locations where section begins/ends, based on changes in Class, proposed improvements & existing conditions

Street Name of street(s) which route follows

Existing Class 1 = bike paths, 2 = lanes, 3 = bike routes,

Zone A = Downtown, B = N. West, C =South, D = S. Central, E = N. Central, F = West

Length in feet, proposed routes only

Parking 0 = neither side of street, 1 = one side, 2 = both sides

Existing Cond. Additional infrastructure (e.g. traffic barriers, bike signals) and observed problems/obstructions

Proposed Class 1 = bike paths, 2 = bike lanes, 2.5 = shared roadway, 3 = bike routes, BB = Bicycle Boulevard

Comments & Potential Improvements Partial list of most likely improvements needed to implement bikeways on this street that were identified during the planning process. The implementation phase of the Bike Plan will identify and further evaluate all potential improvements before they are made.

Traffic Volumes: Existing Average Daily Traffic volumes where available

Bike Number of through bikes at busiest intersection on route, 1997 Downtown Signal Retiming data.

Car 24 hr. vehicle count, 1987 data

Rd. Type M = Major, C = Collector, L = Local. From Circulation Plan of 1977 Berkeley Master Plan

Width Curb-to-curb, in feet

Lanes Total number of travel lanes in both directions (unless noted otherwise)

Connections Indicates city, park, regional bikeway, etc. that section connects to