

# A BRIEF HISTORY OF BICYCLE PLANNING IN CALIFORNIA

*by Ryan Snyder*

*September, 1998*

## INTRODUCTION

Since the 1970's California has been one of the leading states in planning for bicycles. Much of what has been developed in the state has been used as a model for efforts in communities in other states. This paper presents an overview of the California experience.

It is useful to break up planning efforts into three historical periods. The early period roughly parallels the start of the bicycle boom when adults began using bicycles in large numbers in the late 1960's and 1970's. The second period, hereafter called the years of "Separate Efforts to Improve Bicycling" saw many communities up and down the state take various steps to accommodate bicycles, though generally without overall coordination. The second period roughly paralleled the 1980's. The third phase, which we are now in, I will call "The Comprehensive Planning Phase." During this period bicycling has finally become an integral part of larger transportation planning efforts, rather than an unimportant add on.

## THE EARLY YEARS

Though the least discernible of the three periods in bicycle planning efforts in California, it is possible to identify what was done early on. In some respects the Early Years set the framework of what carried California to where we are now.

### The Davis Experience

Davis, home of a University of California campus, rose to the forefront of cities thinking of the bicycle as a mode of transportation. It planned for bicycles quite early on. A flat city, it put into place an entire network of bicycle lanes on surface streets and bicycle paths to the sides of streets. Moreover, they installed bicycle bridges, tunnels, traffic signals, and turning lanes for bicycles. Since then, the bicycle has come to symbolize the City of Davis. While Davis has been criticized for overemphasizing side paths and putting in unsuccessful projects, it led the way so that others could learn from its mistakes. A quick visit to Davis will convince nearly anyone that the effort has been extremely effective in attracting average people onto bicycles for transportation.

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### Funding Legislation

During the 1970's state legislation passed providing funds for bikeways. This was done primarily through Transportation Development Act (TDA) Article 3, which allocates a portion of state sales tax to counties and cities for capital improvements for bicycles and pedestrians. While bicycle projects have been eligible for other state and federal funds since the 1970's, few transportation agencies have spent any money on bicycles that wasn't specifically earmarked for them. Nevertheless, TDA funds have provided a continuous source of funds of a magnitude matched by few states. By 1998, the annual allocation has grown to roughly \$15 million statewide.

### Bicycle Routes

The availability of TDA funds caused cities and counties to build bikeways. Many of the early bikeways were ill-conceived and there was an overemphasis on side paths. Bike lanes were too narrow, or poorly placed. Paths to the sides of streets placed bicyclists in dangerous crossings with motorists at intersections. Additionally, most of the early bike routes were for recreational purposes. Not all of them were a failure and some bike paths, such as the beach bike path in Los Angeles County, were built early and are widely used today. Early mistakes led to the setting of design standards.

### Caltrans Bikeway Design Standards

In 1978, the California Department of Transportation produced the first edition of its Bikeway Planning and Design Criteria Manual. The manual set good design standards for planning bike routes. It was used as a model in developing national standards and today California remains one of the few states to have such a manual. This has brought much improvement to the design of bicycle routes.

### Caltrans Bicycle Coordinators

Beginning in the 1970's the California Department of Transportation had a statewide bicycle coordinator, as well as coordinators in every Caltrans district. The coordinators compiled data and researched possible bicycle routes on state highways. They were liaisons of information. The coordinators were lost in 1983 as one of Governor Deukmejian's first acts.

## THE NEXT PHASE: SEPARATE EFFORTS TO IMPROVE BICYCLING

Since the election of Governor Deukmejian, the state has been largely absent from the picture, but many cities and counties made various efforts on their own to plan for bicycles, often using TDA money. In many cases while well intended, projects have not been prioritized well. Following is a sketch of these efforts.

### Bike Routes

Most cities and counties in the state put in some bikeways. Using Caltrans design standards the quality of these bicycle routes has often been good, but cities were generally without thoughtful plans. Some routes came in the form of bike lanes on city streets, while many others have used flood control channels for bike paths. Some cities put in extensive networks of routes, such as Palo Alto which emerged as perhaps the most bicycle-friendly city in the state, if not the country. Palo Alto also opened the first bicycle boulevard, a street on which several physical barriers restrict the flow of through motor vehicle traffic with gaps to allow bicycles to pass. Of large cities, San Diego developed one of the best bike route systems. San Diego has also led the way on putting destination signs on their routes. Plans for the West LA Veloway, a proposed elevated bikeway leading into the University of California, Los Angeles (UCLA) campus, emerged during this period.

### Transit Links

Bicycle advocates increasingly lobbied for connections to public transit. In the San Francisco Bay Area, the Bay Area Rapid Transit (BART), put bicycle parking at many stations. Bicycles were permitted on the trains during certain hours. Palo Alto initiated two bicycle park-and-ride stations connecting with local bus service and a commuter rail. Los Angeles permitted bicycles on its only light rail line. San Diego placed bicycle lockers at train stations. Bicycle lockers were placed at a number of park-and-ride lots used by carpoolers, vanpoolers, and express bus riders. Several communities including Santa Barbara, Los Angeles, and San Diego put bike racks on the buses on selected bus lines.

### Safety Education

During the time when many bike routes were poorly designed, a strong school of thought emerged among bicycle advocates that believed bike routes were an attempt to get bicycles out of the way of motor vehicles. Educating people how to share the

streets properly with motor vehicles was promoted as a better alternative. While most advocates today favor specially designated bike routes, few will argue with the value of teaching safe riding habits and having access to all streets. Numerous safety education programs were started. To name a few, Palo Alto began providing on-street training for school students. Los Angeles started teaching safe riding habits in school classrooms and today reaches nearly every student passing through the public school system.

### Amenities Ordinances

In the early 1980's Palo Alto became the first city in the nation to require bicycle parking and showers in new commercial buildings. In 1991, Los Angeles passed a similar ordinance which also requires clothing lockers. Since then, many other cities have adopted bicycle amenities ordinances affecting new commercial development.

### Miscellaneous Bicycle Planning Efforts

- Bicycle Coordinators - Some cities hired personnel dedicated to overseeing all bicycle planning matters. Those cities have become some of the most successful. Again, Palo Alto and San Diego were early.
- Bicycle Advisory Committees - Numerous cities started citizen committees to advise public agencies and officials on bicycle matters. Some of the more active ones started in the San Francisco Bay Area and in the City of Los Angeles.
  - Bicycle Locker Loan-to-Own Program - The City of San Diego began a program that loans employers bicycle lockers for three months. If popular, employers may buy the lockers. They are installed for free by the regional ridesharing agency.

## **THE COMPREHENSIVE PLANNING PHASE**

While there is some overlap with the previous phase, California is now well into the "Comprehensive Planning Phase." Bicycle planning is coming into its own and is becoming integrated with other transportation planning. This is likely due to several factors:

- The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) made bicycles eligible for much more funding, and required that bicycle facilities must be part of plans before obtaining funds.
- ISTEA's replacement, the Transportation Equity Act for the 21st Century (TEA-21) provides even more funding while maintaining the requirements for projects to be in plans.

- Bicycle advocates have made inroads and are making their way to greater acceptability.
- Air quality regulations are calling for bicycles to be incorporated in transportation planning.
- Overall awareness of bicycles as transportation has risen.

### City and County Bicycle Plans

Several cities prepared new bicycle plans in the early 1990s. These were the first of a new wave of bicycle plans that took a more comprehensive look, and a more inclusive posture towards bicycles compared to those prepared in the 1970s. The City of Santa Monica prepared one of the most comprehensive bicycle plans ever produced in the United States. It included a complete network of numbered routes, public parking, amenities requirements in new work sites, park-and-ride links to transit, a comprehensive education program, traffic signal improvements, and other miscellaneous ideas to make the city more bicycle-friendly. The cities of San Jose, Escondido, Sacramento, and Santa Clarita also produced bicycle plans early, along with Los Angeles, San Bernardino and Orange Counties. The county plans generally serve as planning and funding documents and offer fewer specifics than city plans. Many other cities and counties prepared bicycle plans during the 1990s.

### Metropolitan Planning Organization Efforts

Metropolitan Planning Organizations (MPOs) are working closely with air quality management districts and regional transportation commissions to plan for transportation. The efforts combine measures to improve air quality with traffic reduction. The general thrust is in the direction of reducing the number of people driving alone by improving transit, encouraging ridesharing, and improving non-motorized transport. Regions which are out of compliance with federal air quality health standards (most American cities) must have comprehensive plans to meet the standards. Each region must have an Air Quality Management Plan (AQMP) and may mandate that cities have local AQMPs which are accepted by the regional air quality district. In parallel with air quality mandates, Proposition 111 requires Congestion Management Plans.

The South Coast Air Basin 1991 AQMP mandated that all cities in the four-county region have ordinances requiring bicycle parking in new work sites. In the San Francisco Bay Area, the 1991 AQMP yielded the following:

- The Metropolitan Transportation Commission requires cities to have bicycle advisory committees and bicycle plans to qualify for TDA funds
- A policy was passed to allow more bridge access
- A policy was passed to create links with transit

- A policy was passed favoring wide curb lanes on city streets.

Meanwhile, TEA-21 continues ISTEA's practice of giving states and MPOs wide latitude in spending federal transportation money. In order to receive the money the projects requesting funds must be on plans. Much of the federal money has passed on to the MPOs. In 1997, California Senate Bill 45 passed on 75 percent of the transportation funds from Caltrans on to regional MPOs. (In some cases, MPOs have passed funding authority onto county and regional transportation commissions.) All of this has given MPOs significant power in deciding how much money to spend on bicycle projects, and what to spend the money on.

### Commute Program Requirements

In the early 1990s nearly all urban areas in California had requirements for employers to reduce the number of people driving alone to work in order to meet air quality goals. Employers were mandated to have formal programs with incentives to encourage carpooling, vanpooling, riding transit, walking, as well as bicycling, working from home and changed schedules. These regulations spawned some ambitious programs with bicycle parking, showers, financial incentives, and promotional events. Numerous companies saw up to seven or eight percent of their employees commuting to work on bicycles. This compares with a statewide average of about one percent. Unfortunately, the political winds at the federal, state and regional levels have eliminated these requirements in all but the South Coast Air Basin (Los Angeles, Orange, Riverside and San Bernardino Counties). And in the South Coast Air Basin, only employers with 250 employees or more at a work site must comply. Furthermore, these companies now have options other than ridesharing programs to choose from to meet their emissions requirements. This easing of the mandates has caused many bicycle commuter programs to dismantle. Nevertheless, much has been learned and some good programs continue.

### Advocacy

The 1990s have seen a major surge in bicycle activism. The California Bicycle Coalition (CBC) was formed and has grown into a force well known in the State Capitol. Since its formation, the CBC has initiated and passed laws through the state legislature to:

- Increase the State Bike Lane Account from \$360,000 per year to \$5 million per year
- Require that localities consider parking, safety education, links to transit and other comprehensive planning measures in order to be eligible for Bike Lane Account funds

- Make certain types of harrassment of bicyclists illegal
- Mandate the use of bicycle-sensitive loop detectors (pending 1998 legislative approval)

Local activist groups have sprung up in communities up and down the state to lobby city councils and funding agencies for more bicycle projects, safety education programs and miscellaneous bicycle-friendly policies.

### Miscellaneous Accomplishments

Much of the progress started earlier has expanded. More California cities today have bicycle plans than ever before. Much more funding for bicycle projects is available than ever before. Earlier bicycle links to transit have grown from pilot projects to widespread practices. Numerous transit systems have, or are installing bicycle racks on the fronts of all buses. Many rail stations now have bicycle lockers. The Long Beach Bikestation, at a Blue Line light rail station, has attendant bicycle parking, as well as bicycle rental. New similar stations are under development. More localities, including San Francisco, Los Angeles and Contra Costa County, have hired bicycle coordinators. And a growing number of cities are listening to bicycle advisory committees. As the demand for improvements increases, the attempts to meet the demand have accelerated.

### **CONCLUSION**

California has made significant progress in bicycle planning, yet has far to go. We have greater knowledge of bicycle planning than ever before. We need to spread the improvements that have been scattered in a few cities to all communities as standard items in the physical and programmatic transportation infrastructure. Transportation agencies are taking bicycling more seriously as a mode of travel than ever before. Current efforts to incorporate bicycle planning into other transportation planning brings hope for faster progress. Federal funding availability also has potential to speed progress. As our communities become more bicycle-friendly, more people will bicycle, thereby further increasing the demand for improvements.

Whether these opportunities realize their potential depends on follow through by the agencies. Advocates need to seize the opportunity and become more a part of the process to ensure a fair share.

As cities take various measures to improve the bicycling environment, more research is needed to document their success. Some funding agencies now require before-and-after monitoring, but the results are just beginning to trickle in. This is one void that has barely been filled, and will be necessary to convince more policy makers of the value of bicycle planning.

# **A Unique Bicycle Signing Program for the East Bay**

By Julie Noh<sup>1</sup> and Rob Rees<sup>2</sup>

## **Introduction**

The cities of Albany, Berkeley, and Emeryville boast a variety of features that make them ideal for bicycle enhancements. Situated in the “East Bay” of the San Francisco Bay Area, these communities enjoy a temperate climate, level terrain, a grid pattern of roads, and many bicycle attractors. Most importantly, the cities share a commitment to increasing the bicycle mode share through well-defined existing and planned bicycle facilities and implementation strategies.

In 1997, the three cities were awarded a grant under the Transportation Development Act (TDA) to develop a bicycle sign system. The project presented a rare opportunity for neighboring jurisdictions to coordinate their bicycle facilities. The study goals were to 1) identify regional and cross-town routes serving major destinations, 2) develop a cohesive and visible signing system that stands out from other road signs, and 3) develop a routing system to assist bicyclists access their destinations. This paper presents the process, methodology, and results of this unique project.

## **The Setting**

The City of Berkeley is the largest of the three cities and borders Albany to the north and Emeryville to the south. Berkeley is home to the University of California campus and many recreational facilities (Marina, Aquatic Park, and Tilden Park) that attract bicyclists. The high-density land use pattern and proximity of the downtown and employment and retail cores to residential areas makes for a large bicycle mode share in Berkeley. The City of Albany, to the north, consists mostly of residential units and is the gateway to the East Bay communities of El Cerrito, Richmond, and San Pablo.

In the past two years, Albany adopted a Bicycle Master Plan that includes key connections to transit, the Ohlone Greenway Trail, and the thriving shopping district on Solano Avenue. The planned redevelopment of UC Village, a 600-unit housing complex for UC Berkeley staff and students, is expected to increase bicycle commuting between Albany and Berkeley.

The City of Emeryville has undergone a major transformation in the past five years, from a manufacturing center to a major employment and retail hub. In addition to jobs, Emeryville’s compact size makes bicycle commuting an attractive transportation option.

The three neighboring cities are tied together by the Bay Area’s light rail system, Bay Area Rapid Transit (BART) and the Bay Trail, a system of multi-use trails in the East Bay, San Francisco, and Marin County.

## **Regional and Cross Town Route Development**

Key staff from the three cities and a representative from the City of Oakland convened in a half-day workshop to review existing bicycle plans for continuity and gaps between jurisdictions. Based on the natural geographic layout and the grid system of roads, six north-south regional routes and six east-west cross-town routes were selected as the bicycle corridors to be signed. The routes were also designed to connect to key destinations, transit hubs, and other bicycle routes.

## **Development of Numbered Routes**

A numbered route system enables a bicyclist to better plan longer cross-town and regional trips (i.e., “from Oakland, take Route 15 north to Route 40 east to UC Berkeley”). Regional or cross-town bicycle routes were numbered based on the Federal Highway Administration (FHWA) assignment of odd numbers for north south routes and even numbers for east-west routes. All north-south routes end in the numeral five (5) and all east-west routes end in the numeral zero (0), with the exception of the Bay Trail which is designated as Route 1. The numbered regional and cross-town routes are illustrated in Figure 1.

## **Sign Design and Placement**

The California Traffic Control Devices Committee (CTCDC) has approved bicycle route signs that are already in use in San Francisco.<sup>3</sup> Designated as SG45, these signs identify numbered routes, destinations, and directional arrows with a unique design in the top third of the



sign. The SG45 signs were ideal for the East Bay bicycle-signing project because the signs conform to existing national and state standards and allow jurisdictions to maintain their local identity while identifying the regional routes as part of one system of bicycle routes. A prototypical sign is illustrated in Figure 2.

SG45 signs are used with other Caltrans signs where bike facilities end or begin (G93A “BEGIN” and G93B “END”). Caltrans signs are mounted above or below the route sign, adding an additional 6 inches. The combination of SG45 sign and Caltrans sign requires a 10-foot pole.

The SG45 signs are placed on designated regional and cross-town routes at the far side of intersections, one every 6 blocks or 3,000 feet, and where regional routes change direction or intersect. Caltrans G93 Bike Route Signs or R81 Bike Lane Signs are placed at interim block locations between the SG45 signs depending on existing sign locations.

To complement regular route signs, kiosks that identify the regional facilities in its entirety can be placed at key locations. These locations include transportation hubs and large bicycle attractors such as the University of California at Berkeley, and the planned Interstate 80 pedestrian and bicycle over-crossing. Other bicycle information (i.e., rules of the road) and educational materials could also be posted.

Geographic Information System (GIS) software was used to identify the location and placement of signs. The methodology involved selecting an intersection as a datum point within the regional system. Sign placement specifications were coded into the GIS database and included parameters for distance of signs from the intersections, distance from existing signs and driveways, distance from the curb, vertical clearances, pole placement and size, and guidelines for sharing or replacing existing signs and/or sign poles. Sign placement specifications also identify which existing signs to remove or replace and which destination signage to install. Detailed guidelines for the installation of the SG45 signs are presented below and illustrated on Figure 3.

- Route signs should be placed frequently to keep bicyclists informed of route changes and remind motorists of the presence of bicyclists.
- Route sign placement in an urban area should be about 250 feet. Route identification markers should be placed within 100 feet of intersections with route changes.
- Route sign placement should be at least 20 feet from other signs, 10 feet from driveways and 20 and 100 feet from intersections.
- Route signs shall be mounted on 10-foot steel poles and the vertical clearance between the bottom of the sign panel and the ground should be at least 7 feet.
- Bicycle signs should not be shared with other warning and regulatory signs (i.e., stop signs, speed limit signs, railroad crossing).
- Bicycle signs are commonly placed with “no parking” signs. Although this is a common practice, placing the SG45 sign under a parking sign may violate the 7-foot vertical clearance guideline.

#### **Sign Fabrication and Cost Estimates**

The GIS database provides an efficient and accurate way to estimate the number of new signs and poles. Based on a four-color scheme and non-reflectorization, the average cost per sign including a 10-foot steel pole is approximately \$85 (not including installation).

#### **Conclusions**

The bicycle signing program for the Cities of Albany, Berkeley, and Emeryville represented a forward-looking process that incorporated bicycling as a viable mode of transportation in the region. Other jurisdictions can also coordinate similar programs at relatively low cost.

A unique bikeway-signing program is a cost-effective way to enhance existing or proposed bikeway systems and is eligible to compete for bicycle-related improvement funds.

- 2) The methodology described above can be easily adapted by other local jurisdictions.
- 3) Use of tools like GIS simplify management of the sign placement database. The database can be easily maintained and updated as signs are mounted or replaced due to age and wear.

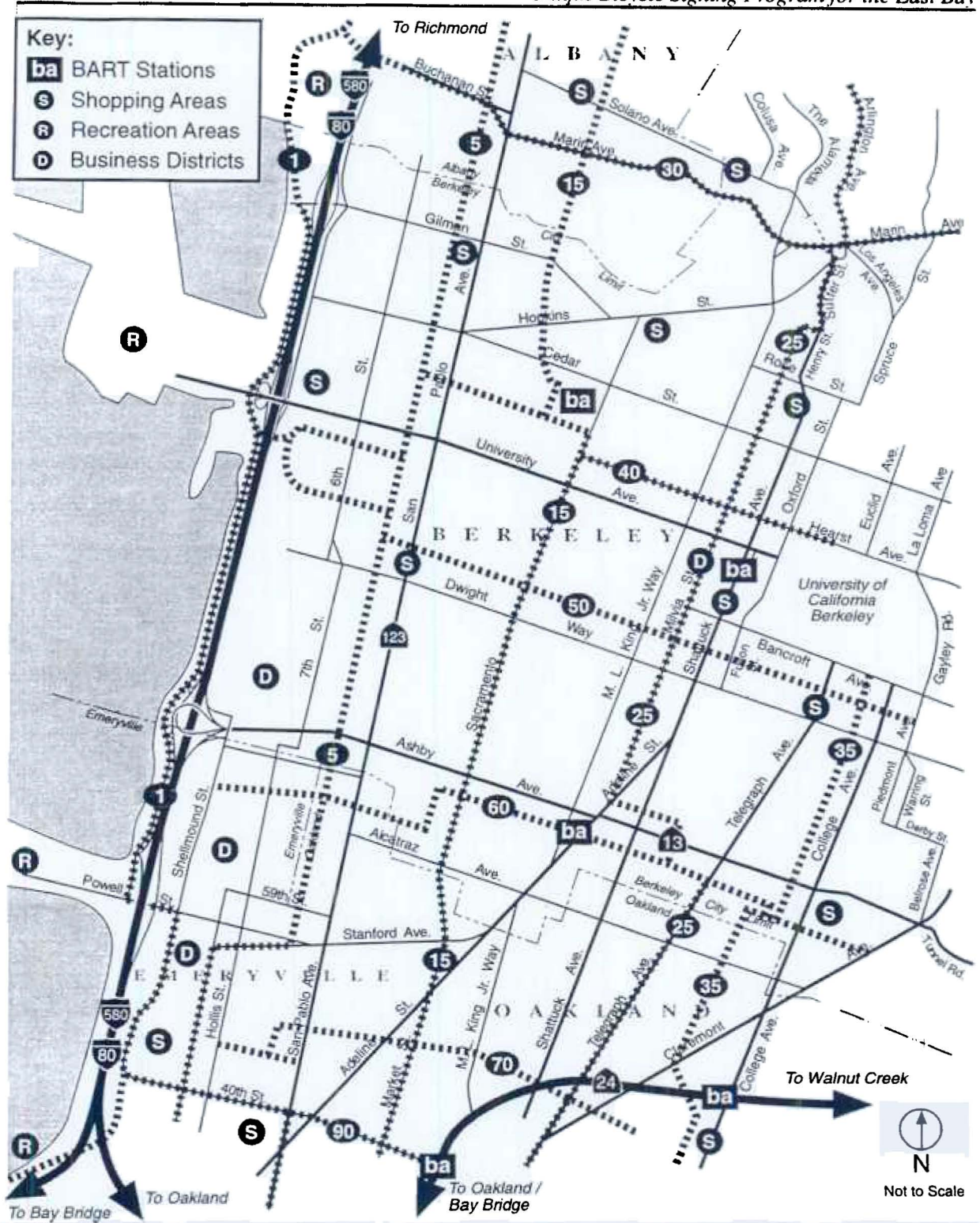
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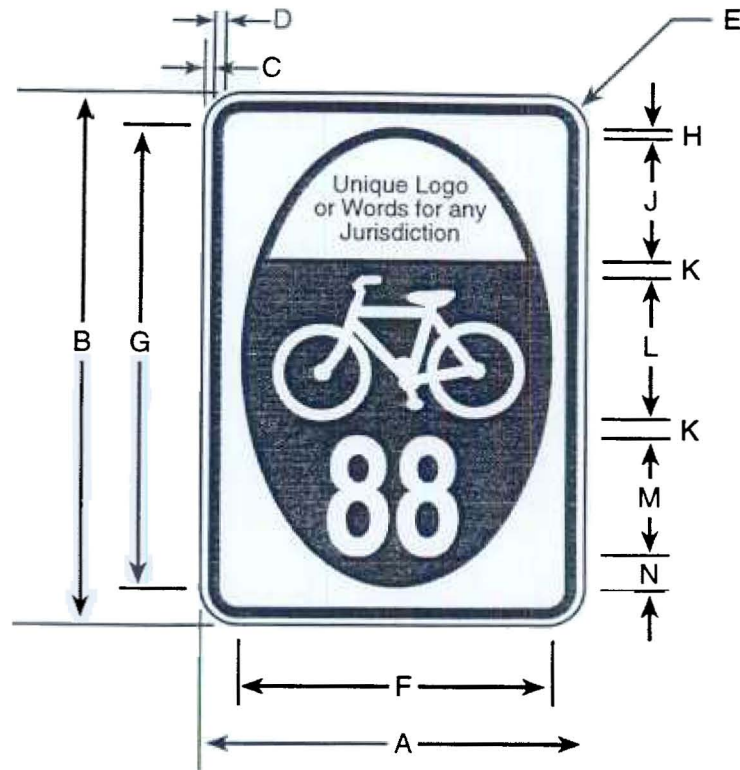
<sup>3</sup> Scott Broady and Manito Velasco with the City of San Francisco Department of Parking and Traffic were largely responsible for the design and CTCDC approval of SG45 signs.

Unique Bicycle Signing Program for the East Bay



**Figure 1** REGIONAL AND CROSTOWN BICYCLE ROUTES

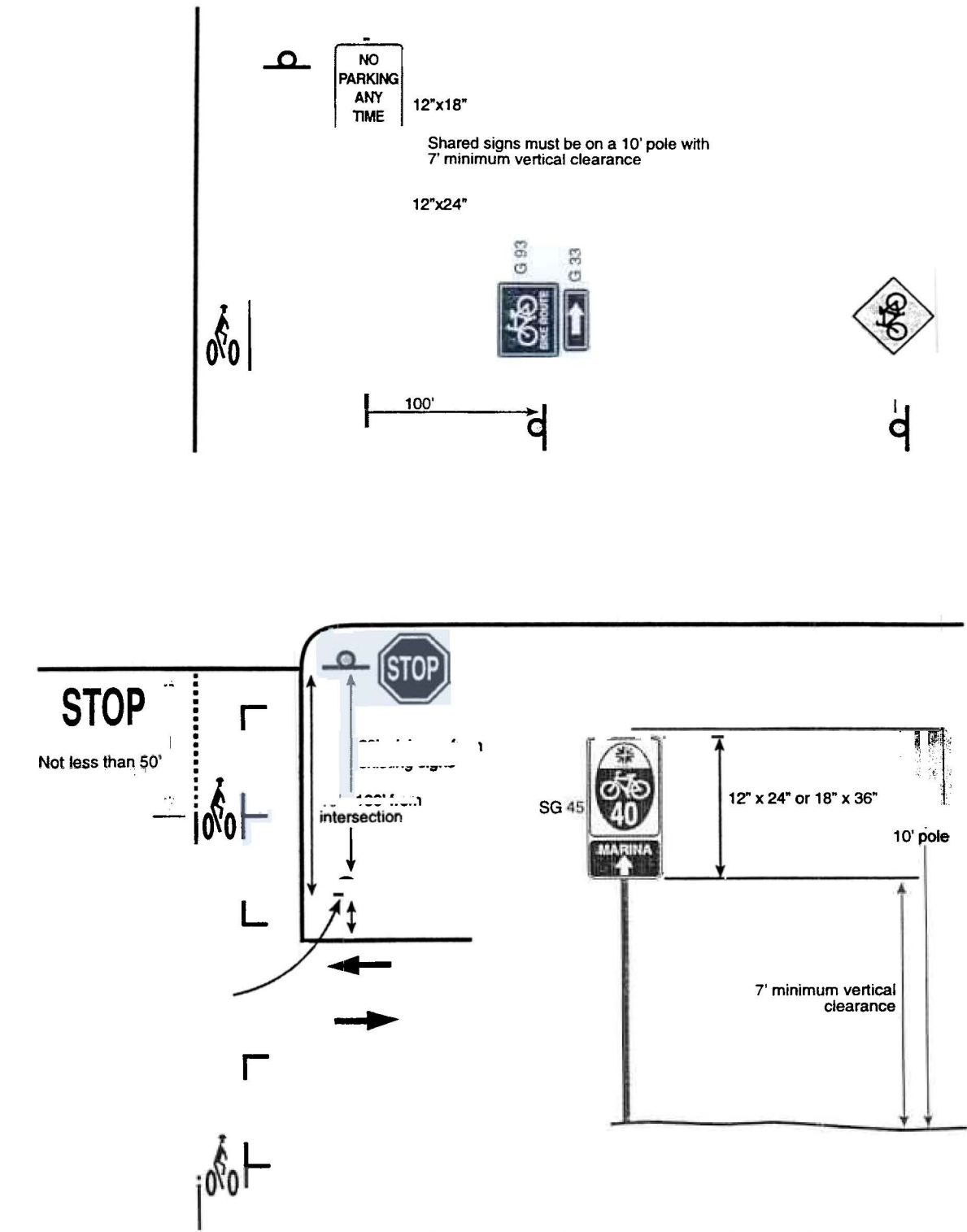
Bike Signing Paper-12-01




SIGN SIZE	DIMENSIONS (INCHES)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
12 x 18	12	18	1/4	1/4	1-1/2	10	16	1/4	4	3/4	4-1/2	4D	1-3/4
18 x 24	18	24	3/8	1/2	1-1/2	15	21	1/2	5	1	6	5D	2-1/2

COLORS  
 BORDER & LEGEND - GREEN (Reflective)  
 BACKGROUND - WHITE (Reflective)

<p><b>Figure 2</b>  <small>Bike Signing Paper-12-01</small></p>	<p><b>PROTOTYPICAL                  SG45 SIGN PANEL</b></p>	
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<p><b>Figure 3</b></p> <p><small>Bike Signing Paper-11-01</small></p>	<p><b>SIGNAGE LOCATION GUIDELINES</b></p>	
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## **Bikeway Planning Innovations**

by Michael G. Jones

The field of bikeway and pedestrian planning is evolving fast. After a brief spurt during the 1970s oil-crisis, planning for bicyclists and pedestrians took off again in the early 1990s partially as a result of the multi-modal emphasis of ISTEA. By 1998, virtually all cities and many towns had completed some type of bicycle system planning and implemented at least a partial network of bike lanes and paths. Based on the observations of the author starting back in 1986 in Annapolis, Maryland, through to 1998 and including more than 40 bikeway master and corridor, the sophistication and usefulness of the plans has gotten appreciably more sophisticated as transportation planning documents.

Despite these advances, it is a sad fact that bicycle and pedestrian facilities are still the most under-developed infrastructure in most communities. This is astonishing considering that bicycle and walking commute modes are almost the same as bus, light rail transit, subway, and commuter railroad modes. If you are to add trips made for health or pleasure, bicycling and walking are many times as popular as those modes. And yet investment in bicycle and pedestrian improvements remains a small fraction of other modes, partially due to the fact that bike and pedestrian improvements don't benefit any large organized lobbying group and partially because it is not entirely clear how to accommodate and encourage bicyclists.

How do we build a better bikeway system? One of the first steps is to conduct an analysis of bicycle needs and conditions. Alta Consulting employs a Bikeway Evaluation Model that utilizes a variety of data such as existing roadway conditions, accident statistics, number and type of destinations, and observed bicycle activity to illustrate the major bicycle corridor opportunities and constraints. The model output uses a GIS format which color codes each route with the most constrained showing in red.

The potential demand for bicycle facilities has also been the subject of much research, partially to justify the expenditure on bikeway improvements in lieu of high numbers of existing commuters. A Bikeway Demand Model has been developed utilizing efforts from around the country which projects bicycle demand for cities and specific corridors using a variety of demographic, geographic, climate, and travel factors.

The greatest shortfall of most planning efforts is the failure to ensure that proposed improvements can actually be constructed, that lines on a map can be translated into pathways and bike lanes.

Over the years bikeway specialists such as Alta Consulting have increased the amount of field work performed on bicycle master plans to ensure that a proposed bike lane can be built on a street. This often involves the collection of hundreds of street cross sections and traffic and parking data. Alta Consulting has developed a Bike Lane Implementation System with criteria for how travel lanes can be re-stripped or eliminated based on travel volumes, when parking lanes can be eliminated, and how bike lanes can be carried through busy intersections. This effort requires close coordination with local traffic engineers who must have a comfort level with the process.

In Sunnyvale, California, Alta Consulting has been exploring ways of placing bike lanes on streets throughout the City and discovered that planners can manipulate the existing striping on many corridors to provide bike lanes. In other cases, on-street parking is so low that it can be eliminated or prohibited during the daytime. The major constraint on all corridors is at the signalized intersections, where turn lanes consume width and lane capacity limited by green time. In most cases bike lanes must be dropped prior to the intersection, with bicyclists forced to ride between through and right turn lanes or in shared right/through lanes. Dual right turn lanes, especially at freeway ramps, is the absolute worst case for most bicyclists and should be closely reviewed for safety. In Sunnyvale, we are considering constructing bicycle bridges over two freeways rather than try and force bicycles through these busy and constrained areas.

The desire for more off-street pathways has led to plans for paths along active railroad right-of-ways, farms and ranches, utility corridors, and waterways. In some cases the actual implementation will be difficult if not impossible, mostly out of concerns about crime, privacy, liability, and safety. There are efforts to resolve some of these issues, such as the ITE Trails-with-Rails Best Practices Technical Committee that includes representatives from the railroads, Federal Railroad Administration, FHWA, and trails groups. Unless an agency is prepared to condemn and pay market price for a private corridor, it must be prepared to address all of these private property concerns and provide assurances that the adjacent owners will not be adversely impacted. This can come in the form of liability indemnification, enforcement and fines and fencing.

Finally, there is a distinct need for a compilation of bikeway and pedestrian facility design standards that can be used by planners and designers for a variety of conditions not covered by the state highway design manuals. This should include pathway grade crossings, travel and parking lane thresholds, interchange and intersection treatments, and over- and under-crossing designs. This could also include the tremendous work by ITE, AASHTO, and other groups.

Detailed information on the Bike Lane Implementation Process and ITE Trails-with-Rails Best Practices Technical Committee is available by contacting the author.

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