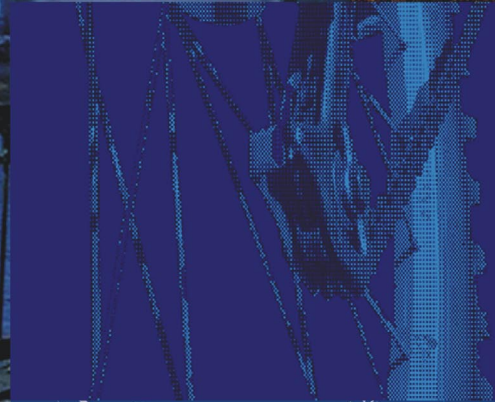


access BOSTON 2000-2010
BOSTON'S CITYWIDE TRANSPORTATION PLAN

Boston Bicycle Plan



City of Boston
Mayor Thomas M. Menino

Boston Transportation Department
Commissioner Andrea d'Amato

May 2001
First Edition

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BICYCLE PLAN

ACCESS BOSTON 2000-2010

The *Pedestrian Safety Guidelines for Residential Streets* report is a component of Boston' citywide transportation plan, *Access Boston 2000-2010*. Companion reports are listed below.

Summary Report

Overview of goals and objectives, key findings, recommendations and implementation, and funding strategies.

Boston Transportation Fact Book

Citywide and neighborhood demographic, economic, and transportation facts and trends that affect planning in Boston.

Parking in Boston

Guidelines to manage off-street parking and review transportation impacts of development projects using a district/neighborhood based approach and approaches to improve management of loading zones, metered parking, neighborhood commercial districts, and resident permit parking program.

Pedestrian Safety Guidelines for Residential Streets

Guidelines to implement operational and design strategies in residential neighborhoods that enhance pedestrian safety, calm traffic, and improve quality of life.

Boston Bicycle Plan

Policies, educational programs, and facility improvements to create a better environment for bicycling in Boston.

Boston's Public Transportation and Regional Connections Plan

Initiatives to improve existing public transportation service and create a priority list of future capital investment in the regional transit system in order to meet Boston's needs and recommendations for freight movement, transportation for tourism, intermodal centers, and future capital investment in the highway system that serves Boston.

BBAC AND THE ACCESS BOSTON 2000-2010 PUBLIC PROCESS

On November 17, 1999, Mayor Thomas M. Menino signed an executive order reestablishing the BBAC. While the City had bicycle committees in the past, in signing the executive order, Mayor Menino and the City of Boston made a renewed and formal commitment to improve bicycling conditions in the city. The BBAC played an integral role in the public process for the Access Boston 2000-2010 project. A special BBAC subcommittee met with BTB and their consultants seven times between February and May 2000 to discuss existing conditions and opportunities and to develop recommendations for improvements. The Access Boston 2000-2010 project devoted the May 2000 Public Workshop and two Discussion Group sessions to bicycle issues. The meetings were well attended by BBAC members and members of the bicycling community.



BBAC members meet to discuss bicycling conditions at a BBAC workshop.

SUMMARY OF ACTION PLAN

Today, bicyclists are a common sight on Boston streets. Those who bicycle frequently enjoy better than average health. The City of Boston is committed to encouraging and facilitating safe bicycling for utilitarian and recreational transportation. The City also recognizes the job growth and economic benefits that stem from bicycle-related industries and tourism. For these reasons, the Boston Transportation Department (BTD) developed the Boston Bicycle Plan. The plan was developed with guidance from the Boston Bicycle Advisory Committee (BBAC). The goal of the committee is to bring together bicyclists, neighborhood residents, advocacy groups and public agencies to encourage and promote safe bicycling, thereby enhancing the Boston business community, its neighborhoods and the environment.

The BBAC worked with BTD as part of a comprehensive public process (see box, page 3) to develop recommendations that would integrate on-road and off-road bicycle facilities for use by bicyclists with a range of skills and experience and to elevate the role of bicycling within the city. The context of the plan considered existing conditions, documented the local and regional context for bicycling and identified areas of concern. The Bicycle Plan provides a planning framework to pursue a range of initiatives from capital improvements to education and awareness to enforcement of regulations.

The following three recommendations are key to the implementation of the Bicycle Plan. BTD should:

1. Continue to use the **Boston Bicycle Advisory Committee** to advise and work with the City to develop, prioritize and implement the bicycling recommendations.
2. Create the position of a **Bicycle Program Manager** and regularly convene an **Interdepartmental Bicycle Task Force** to coordinate the implementation of the Boston Bicycle Plan among City departments.
3. Adopt a **bicycle parking ordinance** and update the **Transportation Access Plan Guidelines** to address bicycle issues.

Funding is an important issue for the successful implementation of the plan. BTD will pursue funding from various sources to implement the Bicycle Plan. City funding should be used for the recommended Bicycle Program Manager position, personnel training and future engineering studies for specific bicycle projects. The City should seek outside public and private funding sources including the creation of public-private partnerships to increase funding availability for recommended projects and offset City expenditures as appropriate.



BTD Commissioner Andrea d'Amato with Bicycle Advisory Committee outside Boston City Hall.

BICYCLE PLAN

The Bicycle Plan includes recommendations listed under the following general categories.

Safety Education, Training and Public Awareness

- Enhance existing programs and introduce new programs to educate bicyclists of different ages and skills.
- Increase awareness through a coordinated media campaign and greater distribution of information
- Increase participation in State-sponsored programs.
- Encourage bicycle education in schools.

Traffic Rules and Enforcement

- Improve enforcement of bicycle violations and traffic violations that endanger bicyclists,
- Continue the Police on Bikes Program.
- Modify traffic regulations to give more prominence to bicycling and clarify existing regulations.

Bicycle Transportation Facilities

- Create the position of a Bicycle Program Manager to manage BTD's bicycle initiatives and act as liaison and advocate for the City's bicycle policy.
- Form a Boston Interdepartmental Bicycle Task Force to coordinate implementation efforts among various departments.
- Implement planned projects in Figure 1 with a priority given to connecting existing facilities.
- Evaluate locations (Figure 2) to develop specific improvements to the local and regional bicycle network that serves Boston.
- Evaluate the traffic signal system to improve bicycle detection capabilities.
- Implement wide curb lanes and bicycle lanes as part of planned roadway reconstruction projects.
- Implement street maintenance and construction management approaches to improve bicycle safety.

Bicycle Parking and Support Facilities

- Create more sheltered bicycle parking in existing private buildings.
- Publish and distribute bicycle parking map.
- Develop a bicycle central concept with bicycle parking, shower and locker facilities for downtown commuters.
- Adopt a bicycle parking ordinance and update the Transportation Access Plan Guidelines to address bicycle issues.
- Develop bicycle rack design guidelines.

Transit and Intermodal Connections

- Increase awareness of "Bikes-on-the-T" Program.
- Encourage transit operators to carry bicycles on transit vehicles.
- Work with the MBTA to identify funding and to target stations for bicycle parking that have additional demand.

Bicycle Promotion and Tourism

- Support more Bike Week and Bike Festival activities, including car-free days on roadways that could be used by bicycles.
- Promote bicycle use by City of Boston staff.
- Encourage businesses to become more bicycle-friendly.
- Improve bicycle signage.
- Produce and distribute a Boston bicycling guide.
- Support Boston's bicycle tourism industry.

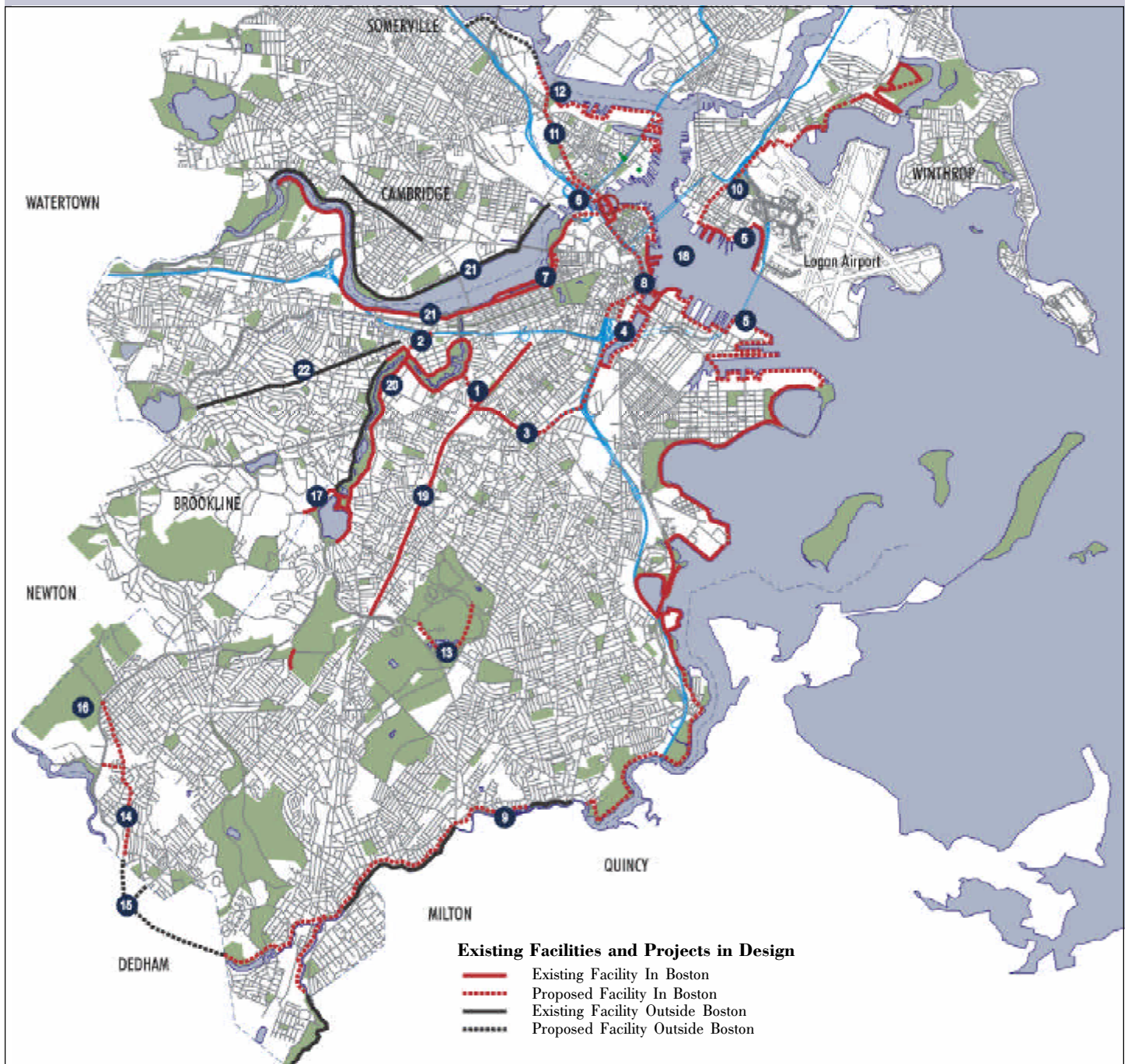


Figure 1:
Existing Facilities and Projects in Design

- | | | |
|--------------------------------------|------------------------------------|------------------------------------|
| 1 Forsyth Street | 9 Neponset River Greenway | 17 Perkins Street Bike Lanes |
| 2 Fenway Connector | 10 East Boston Greenway | 18 Ferry to East Boston |
| 3 South Bay Harbor Trail | 11 Rutherford Avenue Corridor | 19 Southwest Corridor Bike Path |
| 4 Channelwalk | 12 Mystic River Connector | 20 Emerald Necklace Greenway |
| 5 Harborwalk | 13 Franklin Park Path Improvements | 21 Dr. Paul Dudley White Bike Path |
| 6 Charles River Bike Path Extension | 14 Belle Avenue Corridor | 22 Beacon Street |
| 7 Charles Circle Connector | 15 Mother Brook Greenway | |
| 8 Central Artery Surface Restoration | 16 Millennium Park | |

BICYCLE PLAN

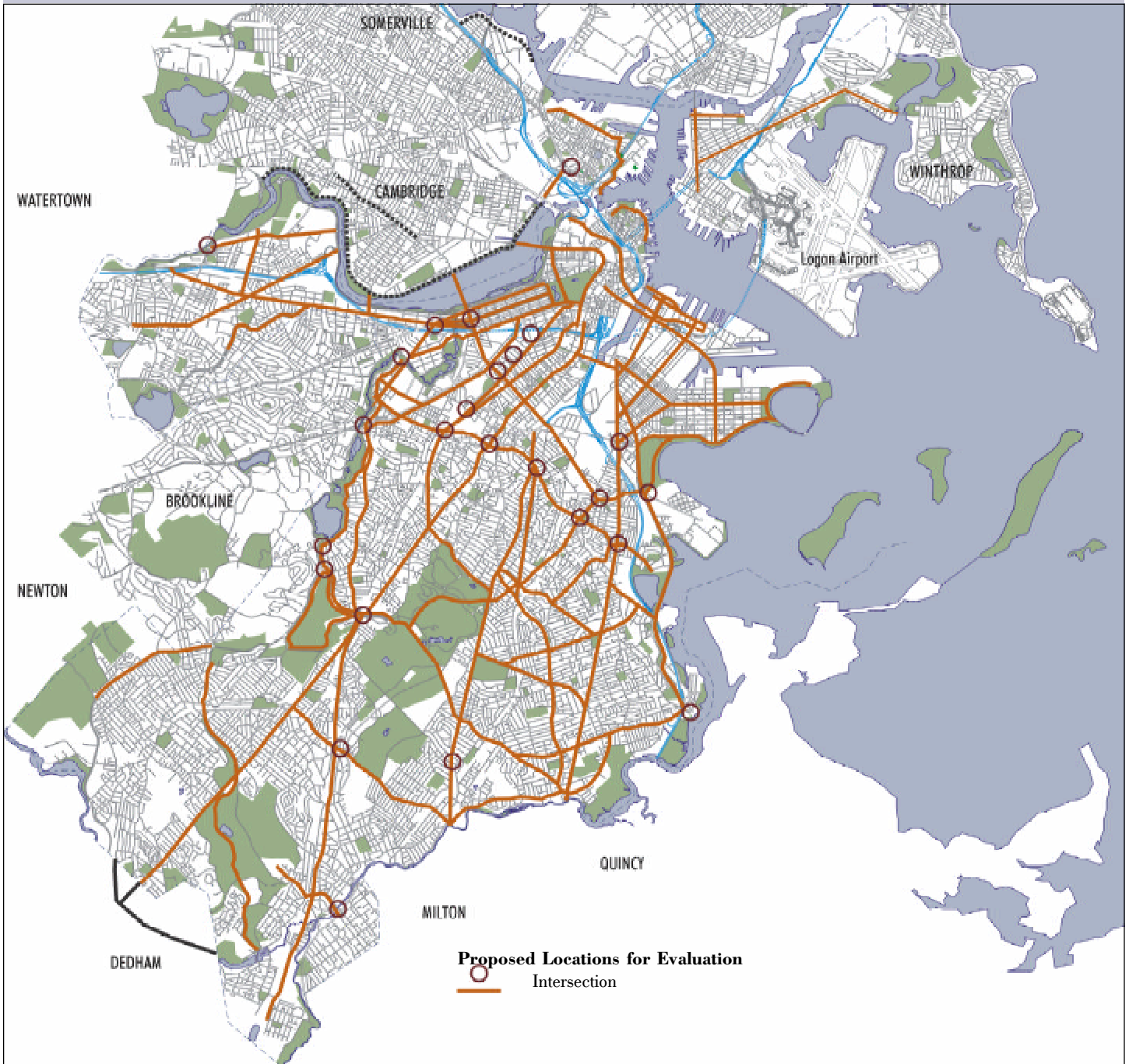


Figure 2:
Proposed Locations for Evaluation

Figure 2 illustrates locations that were selected by the Boston Bicycle Advisory Committee for future bicycle evaluation.

The map is the Committee's vision of an improved citywide bicycle network. The network could include bicycle lanes, wider shoulders, re-organized roadway lane widths, intersection improvements, signage or other recommendations.

In the coming years, the Bicycle Advisory Committee will prioritize locations in more detail and make recommendations to the City and other agencies to improve the on- and off-road bicycle accommodations and linkages in Boston.

1. INTRODUCTION



A bicyclist on Beacon Street takes advantage of a wide curb lane, which allows motorists to safely pass without encroaching on the adjacent travel lane.

The City of Boston is committed to encouraging and facilitating safe bicycling for utilitarian and recreational transportation. The City also recognizes the job growth and economic benefits that stem from bicycle-related industries and tourism. Over the years, the City has worked to improve bicycling conditions through improvements to its roads and paths and education efforts promoting bicycle safety.

On November 17, 1999, Mayor Thomas M. Menino signed an executive order reestablishing the Boston Bicycle Advisory Committee (BBAC). While the City had bicycle committees in the past, in signing the executive order, Mayor Menino and the City of Boston made a renewed and formal commitment to improve bicycling conditions in the city.

The goal of the BBAC is to bring together bicyclists, neighborhood residents, advocacy groups and public agencies to encourage and promote safe bicycling, thereby enhancing the Boston business community, its neighborhoods and the environment. The development of this plan reflects the cooperative effort between the BBAC and BTB.

History of Bicycling in Boston

Boston played a central role in the history of bicycling in the United States. A young French mechanic, Pierre Lallement, arrived in New England in 1865 and soon demonstrated a velocipede, a "hobby horse" to which pedals had been attached. Lallement spent his last years in Roxbury.

Mass popularity of the bicycle started in the 1870s, and its foremost proponent was Civil War veteran Colonel Albert A. Pope, a Boston native. The Pope Manufacturing Company, which was initially based in Boston, began marketing bicycles in 1878. Its successor, Columbia Bicycles, still exists in Westfield, Massachusetts. Pope developed a network of dealers throughout the country. He also was a chief supporter of successful efforts to promote bicycling, improve roads, and establish the rights of bicyclists, including the right to use all public roads and the right to take bicycles on railway carriages as ordinary baggage. Pope subsidized instruction in highway engineering at the Massachusetts Institute of Technology. Pope also supported the League of American Wheelmen (now the League of American Bicyclists) and magazines supporting bicycling.

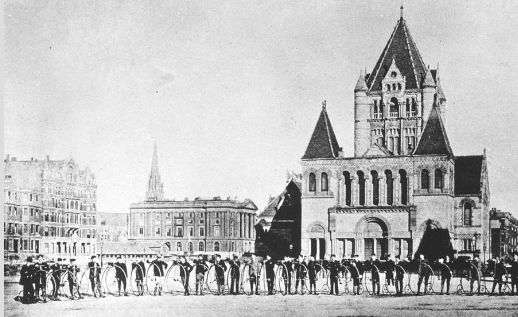
By the late 1890s, however, the well-to-do who had been early adopters of bicycle technology turned their attention to the latest travel innovation: the automobile. By 1915, the automobile was a mass consumer good, and the bicycle began to fade. Bicycles became predominantly a child's vehicle by the 1920s. The economic difficulties of the Depression brought a renewed interest in bicycling for transportation, as did the gasoline rationing during World War II. In the 1950s, however, it was rare to see an adult on a bicycle.

Perhaps the most famous bicycle advocate of the time was Dr. Paul Dudley White, a Boston cardiologist who was the personal physician to President Dwight D. Eisenhower. Dr. White advocated bicycling for its health benefits. His custom Schwinn bicycle hangs in the Museum of Science. American Youth Hostels (AYH, now Hostelling International) organized bicycle touring trips throughout this period. The Charles River Wheelmen, the major bicycling club in the Boston area, was founded in 1966.

Between 1972 and 1974, annual national bicycle sales were more than double what they were in previous years. This national fad, often called the "bicycle boom," marked more interest in bicycling than had been seen since the 1890s. The first section of the Paul Dudley White bicycle path along the Charles River was opened in 1975. The Boston Area Bicycling Coalition (BABC) was founded in 1977 and sponsored Bike Week or Bike Day events annually beginning in 1978.

BICYCLE PLAN

CYCLING IN NINETEENTH CENTURY BOSTON



Boston Bicycle Club in Copley Square (circa 1888).

The Boston Bicycle Club was one of 40 clubs that jointly founded the League of American Wheelmen in Newport, Rhode Island on May 31, 1880. The high-wheel bicycles of the 1880s were difficult and dangerous to ride. With the coming of the 'safety' bicycle around 1890, bicycling soared in popularity. On one Sunday in April 1895, for example, 25,000 bicyclists pedaled in Franklin Park (von Hoffman, p. 85).



Women bicycling on roadway next to Boston Harbor (1890s).

Photos: Harvard University Library Collection.

Bicycling Today

Today, bicyclists are a common sight on Boston streets. However, it is likely that many more people would bicycle if they felt more comfortable and secure on city streets. For example, the Charles River paths attract very high volumes of bicyclists on sunny weekends.

Unfortunately, few studies provide data estimating the number of bicyclists. The Central Transportation Planning Staff (CTPS) conducted a household survey of travel behavior in eastern Massachusetts in 1991. The weighted survey results showed that there were 34,000 daily bicycle trips ending in the City of Boston, 7,000 of which were for work purposes.

CTPS has also conducted periodic bicycle counts at selected locations between 1975 and 1997. These counts suggest that bicycle volumes grew by 30 to 50 percent between 1975 and 1980 and by an additional 10 to 30 percent between 1980 and 1985. There was little further increase in bicycling volumes between 1985 and 1997. Peak hour weekday volumes on major routes such as Massachusetts Avenue or the Longfellow Bridge are in the order of 100 to 250 bicyclists per hour.

Bicycle commuting is most popular for workers destined for downtown Boston or the Longwood Medical Area. Both of these areas have scarce and expensive automobile parking, providing a strong incentive to take an alternate mode. Bicycling is popular among the many college students in Boston.

Overview of Bicycle Plan

A special subcommittee of the BBAC met with BTB and their consultants seven times between February and May 2000 to discuss existing conditions and opportunities and to develop recommendations for bicycle-related improvements in the following areas:

- safety education, training and public awareness
- traffic rules and enforcement
- bicycle transportation facilities
- bicycle parking and support facilities
- transit and intermodal connections
- bicycle promotion and tourism

2. SAFETY EDUCATION, TRAINING AND PUBLIC AWARENESS

The Boston Bicycle Plan is organized around these six areas and recommendations are provided under each section. The final chapter of the plan addresses the proposed funding and implementation plan. The plan includes specific recommendations for implementation over the next two years, including measures to establish an institutional framework to promote bicycling in Boston.

Those who bicycle frequently enjoy better than average health. The Surgeon General and the Centers for Disease Control and Prevention both encourage exercise. Bicycling for transportation is one way people can get a daily workout without making time for exercise. From a broad perspective, therefore, including the effect of regular exercise on disease, more bicycling has the potential to improve both individual and public health.

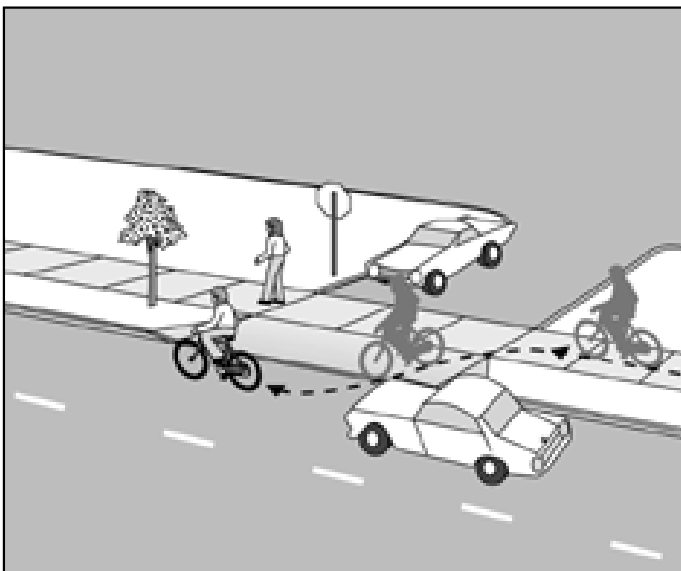
In spite of the clear health benefits, many people believe that bicycling in urban areas such as Boston is inherently dangerous. The evidence suggests that this belief is exaggerated because the risk of bicycling for proficient bicyclists using helmets and riding according to the traffic rules is not much different than the risk of motoring. However, some bicycling behavior such as traveling against traffic or on the sidewalk is much more dangerous.

Efforts to improve bicycle safety through education, training and awareness campaigns need to consider the differences among the bicycling population, as well as the relationship between bicyclists and motorists. The discussion of these issues begins with an overview of bicycling as it relates to different age groups and presents a review of injury types and the importance of experience and helmet use.

Bicycling by Different Age Groups

Increasing the level of public awareness and education among bicyclists and motorists is key to promoting a safe environment for bicycling. Safety promotion should focus on education programs that are suited to the different types of bicyclists and awareness efforts that convey the importance of sharing the road among different types of users. This section will address bicycle safety, education and public awareness, beginning with a discussion about bicycling behavior among different types of bicyclists. The sections that follow present an investigation into the nature and causes of bicycle accidents.

Figure 3
Bicycle Entering Street from Sidewalk



Child bicyclists are not familiar with the rules of the road and may dart out into traffic from sidewalks or from between parked cars.

BICYCLE PLAN

Young People

Even in a dense urban area such as Boston, bicycling is popular among young people. For younger children, bicycling is an enjoyable neighborhood activity. For older children, bicycling can be a useful way of getting around the city. Bicycling can be an important mode of travel for children to travel to and from school, to visit friends and to access local destinations such as libraries or parks. Bicycling also provides a healthy recreational activity.

Many bicycle crashes happen to children. The high level of bicycling by children and the lack of experience are contributing factors. Child bicyclists often commit violations because they are not familiar with the rules of the road (see Figure 3). For example, they may fail to yield at stop signs. Children must be taught how streets function and can be taught in stages depending on the age of the child.

There are several existing programs that educate young bicyclists. The Boston Transportation Department's Keep Boston Moving Safely Program has produced and distributed several excellent materials for children (see box). The Boston community group Bikes Not Bombs has offered various types of bicycle instruction programs for children since the late 1980s. The original program, Earn-a-Bike, focuses on bicycle repair skills and is open to children age 12 to 18. Bikes Not Bombs added a riding skills component to this program and offers a version of the program aimed for girls, Girls in Action.

Bikes Not Bombs also offers a Summer Youth Bicycle Safety and Mechanics Program, which focuses more on riding skills and basic maintenance. In 1999, the group adapted the Earn-a-Bike curriculum for use in a New Mission High School course that was taught by school faculty. There were about 400 graduates of Bikes Not Bombs several youth programs as of 1999.

Bicycle rodeos have been offered from time to time in Boston. Rodeos are held in a place where there is sufficient off-road pavement, such as an empty parking lot or playground. There are several stations teaching different skills. Children move from one station to the next. The Kiwanis Club provides information on bicycle rodeos and encourages interested persons to organize rodeos.

KEEP BOSTON MOVING SAFELY

BTD's Keep Boston Moving Safely Program has produced and distributed educational materials. The program has also provided some funding for Bikes Not Bombs programs and commissioned the group to write an on-street bicycle safety curriculum.

On-Street Bicycle Safety Curriculum



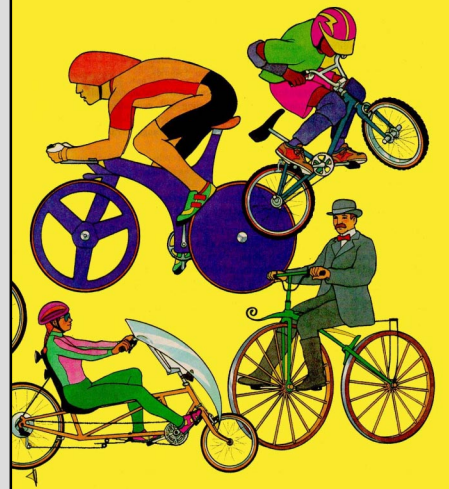
City of Boston
Thomas M. Menino, Mayor

Governor's Highway Safety Bureau
Nancy J. Latham, Executive Director

Boston Transportation Department
Andrea D'Amico, Commissioner

From A to Z by Bike

The comprehensive guide to safe bicycling
for kids and adults

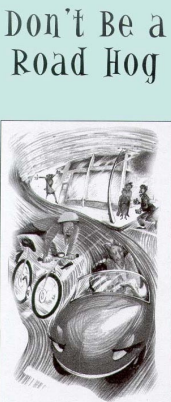


¡ DON'T BE A ROAD WARRIOR! DON'T BE A ROAD HOG!

Most motorists are able to safely navigate around bicyclists using the roads. At times, some motorists do not accept the presence of bicyclists on streets and roadways. These individuals express themselves in a manner that is disconcerting to bicyclists and can even discourage bicycling.

BTD produces and distributes two dual-sided brochures, ¡Don't be a Road Warrior! and ¡Don't be a Road Hog,¡ to increase bicycle safety awareness among motorists and bicyclists. BTD uses these brochures to spread the word that bicycles are vehicles and have a right to use the road.

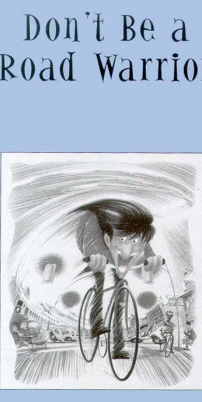
The brochures purposefully combine discussions about the responsibilities of bicyclists and motorists to stress the point that all roadway users are expected to behave in a courteous and respectful fashion,



Don't Be a Road Hog

Share the road.
Bicycles are vehicles too.

Thomas M. Menino, Mayor
Andrea d'Amato, Commissioner



Don't Be a Road Warrior

Bicycle safely.
Our reputation is riding on you.

Thomas M. Menino, Mayor
Andrea d'Amato, Commissioner

College Students

Boston is home to many colleges and universities. College students constitute one of the largest groups of bicyclists in Boston because many students find that bicycling is convenient to get across campus or around Boston. Although the college population changes very frequently, it is very easy to reach. Each university has security personnel, often in the form of deputized police. Campus police could provide riding safety information to university bicyclists and other information such as theft prevention tips. Many schools have campus police bicycle squads. Bicycle safety and promotional programs should be aimed at the entire college community through special events that can enlist their participation.

Adults

Bicycling provides many potential benefits for adults. Commuting by bicycle can be a timesaving, non-polluting option that provides health and recreational benefits. It is a way for adults to get a daily workout as part of their regular commute to work or trips around town.

As discussed earlier, bicyclists regularly use bicycle paths and streets. However, there is a potential group of new bicyclists that are afraid to ride in Boston traffic. These potential bicyclists could be attracted to a bicycling skills class that would encourage them to consider bicycling in Boston as a real option for travel and exercise.

The Massachusetts Bicycle Coalition (MassBike) offers Bicycle Driver Training. The 12-hour course covers basic riding skills, bicycle fit, and emergency maneuvers. The class includes parking lot practice and gradual introduction to more difficult on-road conditions. Students pass both a written and on-road examination to receive a certificate. Between four to six courses are offered each season. Graduates have ranged in age from 16 to 72 and include riders who have not been on a bicycle in years, riders interested in cycling to work, riders seeking improved fitness, and experienced riders looking to improve their skills.

Sources of Injuries

Bicycle crashes occur because of roadway conditions, bicycle operator error, or collisions with other vehicles (see Table 1). Bicyclists on streets and paths are sensitive to road surface quality. A gap large enough to grab the front wheel, and any vertical ridge along the road, such as a gutter seam or street-car track, could cause a serious fall. Collisions with fixed or moving objects are another source of crashes.

BICYCLE PLAN

Table 1 ñ Breakdown of Bicycle Crash Types

Study	Cyclist Population	Crash Type					Total
		Simple Fall	Fixed Object	Moving Motor Vehicle	Bicycle	Other ¹	
1	Bicycle Club Members	59%	14%	11%	9%	7%	100%
2	General Population	50%	29%	15%	-	6%	100%

Sources : 1. Survey of League of American Bicyclists members, Moritz, 1998
 2. Emergency room visits for bicycle injuries from a study of Seattle-area hospitals, Rivera et al, 1996.

Notes : 1. Includes crashes with animals (3 percent), pedestrians (2 percent), stationary motor vehicles (1 percent) and other (1 percent) for the Moritz study and other moving object (6percent for the Rivera et al study.

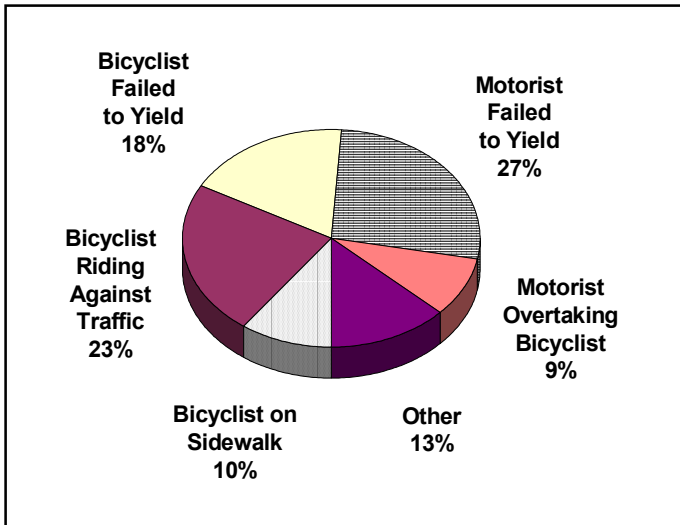


Roadway maintenance is important for the safety of bicyclists. Hitting a pothole can cause a serious fall or result in a crash with a motor vehicle.



Bicyclists must ride far enough from parked cars to avoid colliding with an open door.

Figure 4
Collision Types for U.S. Bicyclists Age 16 and Older



Source: Paul Schimek, unpublished tabulation from the 1998 General Estimates System, National Highway Traffic Safety Administration, US Dept. of Transportation.



Bicycling against traffic is one of the most dangerous bicyclist behaviors.

Simple falls (not preceded by a collision) are the cause of 50 to 60 percent of emergency room visits by bicyclists. The next most common type of crash is a collision with a fixed object. These two types together account for 75 to 80 percent of all bicycle crashes. Falls and collisions with fixed objects happen because of problematic surface conditions and/or bicycle operator error. Only a minority of bicycle crashes, 10 to 15 per-cent, are due to collisions with motor vehicles.

Types of Car-Bicycle Collisions

Most urban car-bicycle collisions, about 80 or 90 percent, happen when either the bicyclist or motorist is turning or crossing, usually at an intersection or driveway (Hunter et al 1996). Although they are the most feared of all bicycle crashes, fewer than five percent of urban car-bicycle collisions occur when a motorist is overtaking a bicyclist.

A study of car-bicycle collisions in the Boston metropolitan area (Plotkin and Komornick 1984) revealed a high incidence of bicycle hitting car door crashes. Motorist overtaking bicyclist crashes represented only 3.5 percent of the total. The high rate of car-door collisions and the low rate of overtaking collisions can be attributed to the fact that the studies analyzed crashes that were all in urban areas inside Route 128. The types of crashes, therefore, may be related to the narrow travel and parking lanes common on many urban roads in the area.

Wrong-Way Bicycling

Bicycling against traffic is one of the most dangerous bicycle behaviors. Bicyclists riding against traffic accounted for approximately 25-30 percent of car-bicycle collisions. The relative risk of riding against traffic was 3.6 times as high compared to bicyclists riding with traffic according to a California study (Wachtel and Lewiston 1994).

Sidewalk Bicycling

The crash rate per mile of sidewalk riding was 1.8 times greater than the rate for road riding on the same roads (Wachtel and Lewiston 1994). Riding on the sidewalk opposite the flow of traffic is 4.3 times more likely to result in a car-bicycle collision than riding on the road with the flow of traffic. There is also heightened risk of colliding with a pedestrian.

BICYCLE PLAN

Improper Motorist Turns

A motorist turning left into an intersection or driveway hitting a bicyclist coming from the opposite direction is the most common motorist-caused car-bicycle collision, accounting for 8-10 percent of urban car-bicycle collisions. The motorist right-turn collision accounted for 4.8 percent of collisions in the Cross and Fisher study and 6 percent in the Boston area study. It can occur when the motorist has overtaken too close to the intersection, when a bicyclist passes on the right, or when the two are parallel, with the bicyclist in the motorist's blind spot.

Traffic Light Violations

The Plotkin and Komornick study of Boston crashes found that 6.5 percent of car-bicycle collisions were caused by bicyclists entering the intersection on a red signal. Motorists ran a stop sign or red light in only 2 percent of the crashes in the study.

Bicycling at Night

Certain types of car-bicycle collisions are more likely to occur at night, including motorists entering from side street or on-street parking, motorists turning left, motorist overtaking, and wrong-way bicyclist hit head-on (Forester 1994 based on Cross and Fisher 1977). None of the crash studies have information on the use of required night-time equipment. However, the contribution of this behavior to the bicycle crash problem is likely to be high because very few of those bicycling at night use lights. In a Boston study, 15 percent of bicyclists were observed using either a headlight or taillight at night (Osberg, Stiles, and Asare 1998). The headlight is required in Massachusetts and every other state, although a rear reflector alone meets legal requirements.

HELMET PRESCRIPTION PROGRAM

At the Boston Medical Center, pediatric staff write i helmet prescriptionsi and educate patients and parents about bike and skate safety. A parent may take the prescription to the BMC gift shop and purchase a quality sport helmet for just \$5.00.

Helmet Rx

This prescription could save your child's life!
Bring it to the Boston City Hospital Gift Shop to purchase
a quality bike helmet for just \$5.00

A health provider must fill in the following important information:

Child's head circumference in inches _____ Date _____
age _____

Provider's signature _____

Print provider's name _____

Site of visit _____

Has patient been counselled about helmet safety? yes no

Guardian Pledge :
I understand the importance of helmet safety. I pledge
that my child will wear his/her helmet every time he/she bikes or skates.
Guardian's signature _____

See back for helmet safety tips

For more information about the Helmet Rx Program
and bike safety, call (617) 534-5197

The Helmet Rx Program is sponsored by: The Boston Childhood Injury Prevention
Program, BCH Pediatrics, Volunteer Services, and the BCH Gift Shop

Helmet Safety Tips

Broken bones heal, but brain injury can cause death or permanent damage
80% of bike-related deaths are caused by head injuries.
Helmets are almost 90% effective in reducing brain injury, but...

Your helmet won't keep you safe unless it fits right!



The Massachusetts Bicycle Helmet Law states that
all children under 13 years old must wear helmets while biking.

Always follow traffic rules: ride on the right, obey all traffic signs.

Don't ride or skate after dark.

Wear wrist guards, knee and elbow pads, and a helmet while in-line skating

There is no "safe" place to ride or skate. Most bicycle crashes occur in parks
on bike paths, driveways and "quiet" residential streets.

Wear your helmet every time you ride a bike or in-line skate!

The Effect of Experience on Crash Rates

In his analysis of the Cross and Fisher data, Forester (1994) found that bicyclists were riding in the roadway in the direction of traffic in only 37 percent of all car-bicycle collisions. In the majority of cases, the bicyclist was entering the roadway, riding against traffic, turning or swerving from the curb lane, or riding on the sidewalk. This suggests that nearly two-thirds of car-bicycle collisions can be avoided if bicyclists follow the basic rules for motorists.

The more years and miles of bicycling experience, the lower the crash rate (see Table 2). College students have a lower crash rate than elementary school students, but not by that much considering that college students are adults and typically licensed drivers. Bicycle club members, on the other hand, have a dramatically lower crash rate than both other groups (and their crash rates were essentially the same in 1975 and 1996 surveys). Crash rates decline with years of experience, but more rapidly if bicyclists participate in club rides where they may learn from the examples of other more experienced riders.

Helmets

The first defense against reducing injuries is to reduce crashes. If a crash does occur, a bicycle helmet can protect against head (including brain) and facial injuries. These are the injuries most likely to be permanently disabling or fatal. There is a 70 percent reduction in risk of head and brain injury associated with helmet use (Rivara et al. 1996).



Children must wear helmets properly to ensure safety. Massachusetts General Law Chapter 85 section 11 states that children 12 years or under must use a bicycle helmet.

Properly fitted helmets must be snug and low against the forehead for maximum effectiveness. Bicyclists who reported their helmets fit poorly were almost twice as likely to suffer head injury as bicyclists whose helmets fit best (Rivara et al. 1996). Bicyclists whose helmets came off during a crash were three times more likely to have head injuries than bicyclists with properly fitted helmets (Rivara et al. 1996). Helmets should be used at all times, when bicycling in any location, even where there is no motor traffic. Any fall can result in head injury, and falls are by far the most common cause of injury.

Table 2 - Mean Annual Miles of Bicycling and Mean Crash Rates from Five Studies

Study	Cyclist Population	Miles per Year	Crashes per Million Miles	Miles between Crashes
1	Elementary School Students	580	720	1,389
2	College-associated Adults	600	510	1,961
3	Commuters	814	340	2,941
4	Bicycle Club Members (1975)	2,400	113	8,850
5	Bicycle Club Members (1996)	2,758	103	9,683

Sources : 1: Chlapecka et al 1975; 2: Schupack and Driessen 1976; 3: Aultman-Hall and Kaltenecker 1998; 4: Kaplan 1976; 5: Moritz 1998

BICYCLE PLAN

Recommendations:

Safety Education, Training and Public Awareness

Educate Young Bicyclists

The City of Boston should introduce a traffic safety component with instruction on bicycle safety to Boston elementary, middle and high schools. The City should offer bicycling as a subject in the summer sports program, to be taught by trained and certified instructors. The program could be taught at rotating sites around the city to increase accessibility for participants. The City should provide assistance to Bikes not Bombs and similar programs that educate young bicyclists. The City should produce an improved and modified rodeo program and provide training for rodeo instructors.

Educate College Bicyclists

BTD should convene a meeting of colleges campus police and representatives from residential programs. The group would provide BTD with an information distribution and training network. BTD should provide them with bicycling information such as BTD's "Don't be a Road Warrior" brochure. BTD should provide Bicycle Driving Instructor training for interested Campus Police and provide assistance to organize Bicycle Driving Training classes on campus.

Educate Adult Bicyclists

BTD should provide employers with information about Bicycle Driving Training classes for distribution to employees. BTD should distribute "Don't Be a Road Warrior" and other informational brochures more widely in bicycle shops and at benefit rides. BTD should provide Bicycle Driving Training information to benefit rides that attract large numbers of new bicyclists such as the Boston-New York AIDS Ride or the Pan Mass Challenge. BTD should work with adult education programs such as the Boston Adult Education Center, Roxbury Community College and sports clubs such as the Boston Ski and Sports Club to offer bicycle training classes.

Increase Bicycle Awareness through Public Service Announcements

The City of Boston should broadcast and print public service announcements informing motorists and bicyclists how to safely share the roads with each other. The City should sponsor traffic reports on the radio on a regular basis and include the "Share the Road" message.

Increase the Visibility and Distribution of "Share the Road" and "Bicycles are Vehicles" Information

The City of Boston should place "Share the Road" bumper stickers on city fleet motor vehicles, starting with BTD vehicles. All driving schools in the city should be contacted to ensure that they include material on sharing the road with bicyclists, and to ensure that such material is consistent with city and state law. The Bicycle Program should put "Share the Road" and "Bicycles are Vehicles" messages in all materials issued by the Program and on information distributed to motorists, such as on parking violations or included with excise tax bills.

Coordinate City Efforts with the State's "Share the Roads" Program

BTD, through the Keep Boston Moving Safely program, should work with the Massachusetts Highway Department (MassHighway) and the Registry of Motor Vehicles on the state's Share the Road Campaign, currently in the planning stages.



Bicycle education and training creates a lifetime of safe bicycling.

3. TRAFFIC RULES AND ENFORCEMENT

Bicyclists are subject to the Massachusetts traffic laws. In Massachusetts, bicycling is permitted on all public roads with the exception of divided, limited-access express highways where there are signs prohibiting bicyclists. The City of Boston Traffic Rules and Regulations include "bicycle" within the definition of a vehicle. Therefore, bicyclists are subject to the same traffic laws as operators of motor vehicles. Bicyclists should keep a safe distance away from obstacles at the edge of the road, including doors of parked vehicles. In addition, bicyclists generally use the right side of a lane that is wide enough to be safely shared by motorists in order to facilitate overtaking. However, if the lane is not wide enough, or if the bicyclist is approaching a place where right turns are permitted from the right lane, the bicyclist rides in the middle of the lane and the motorist uses part or all of the next lane over to overtake.

Conformance with the Uniform Vehicle Code

The Massachusetts General Laws (MGL) clearly state that all traffic rules and regulations apply to bicyclists. Unfortunately the MGL traffic laws have never been brought into conformance with the Uniform Vehicle Code (UVC), a recommended model vehicle code promulgated by the National Committee on Uniform Traffic Laws and Ordinances (NCUTLO). For example, MGL lacks the rules concerning the meaning of traffic lights, the requirement to follow at a safe distance, and the requirement that passing vehicles must not return to the right side of the road until they are safely past the vehicle they are overtaking.

There are other regulations that apply only on certain roads. MassHighway traffic regulations only apply on state highways. The Metropolitan District Commission (MDC) traffic regulations only apply on MDC parkways and boulevards. Local ordinances apply in cities or towns.

Traffic Violations by Bicyclists

Some bicyclists in Boston violate traffic laws, such as failing to stop for red signals or bicycling the wrong way on one-way streets. There are several important reasons for bicyclists to obey the traffic rules:

- It's safer. Many car-bicycle collisions (and some bicycle-bicycle collisions) are the result of the bicyclist's failure to behave in a predictable manner, that is, according to the rules. Bicyclists who don't follow the rules are a danger to pedestrians and other bicyclists.
- It's the law. Obeying the law is important. If bicyclists get in the habit of violating red lights when bicycling, they may do the same when motoring.
- The bicyclist will not be negligent in the event of a collision. This will make it much easier to recover medical and other costs.
- It says to motorists, "I follow the rules and I belong on the road."
- It sets a good example for other bicyclists, including children.

Traffic Violations by Motorists

Although bicyclist traffic violations are a major threat to bicyclist safety, motorist violations of the traffic rules that threaten bicyclists are regrettably common. The most important violations are described below and are illustrated in Figure 5.

Improper Right Turn

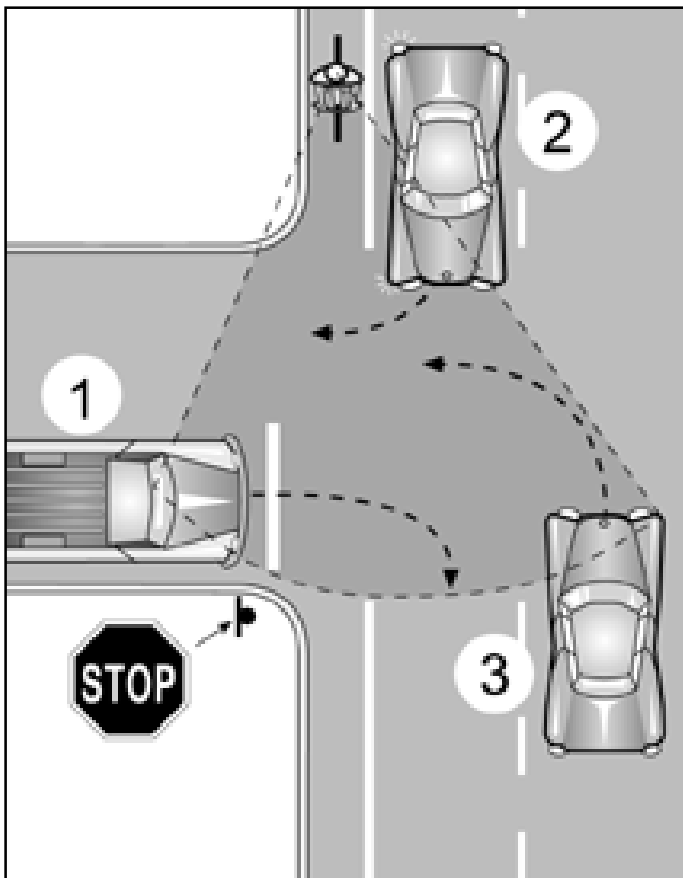
In this violation, the motorist cuts in front of the bicyclist to turn right. Since the motorist must slow to make the turn, the bicyclist has no easy escape route, except to brake hard or to make a sharp right turn inside the motorist's turn, an emergency maneuver taught in Bicycle Driver Training, but is not known by most bicyclists. The motorist has violated the state law which requires that a right turn be made from as near to the right curb or edge of the roadway as possible.

Failure to Yield on Left Turn

Motorists sometimes try to turn in front of a bicyclist approaching from the opposite direction. The motorist may assume a bicyclist is moving slowly, even though a bicyclist on a downgrade may be traveling 25 or 30 mph or more. A variation is the jump-out left turn on a new green, sometimes followed by the second car. These actions are all clear violations of state law which requires that left turners yield to opposite-direction vehicles in the intersection or approaching so close as to be a danger. Motorists sometimes fail to yield to bicyclists at stop or yield signs, or when entering the roadway from a driveway or parking place.

BICYCLE PLAN

Figure 5
Potential Motorist Violations



Traffic violations by motorists can threaten the safety of bicyclists. Examples include:

- Motorist #1, at a stop sign, could fail to yield to the bicyclist.
- Motorist #2 is about to make an improper right turn across the path of a bicyclist.
- Motorist #3 might fail to yield to the bicyclist

Unsafe Passing

Although most motorists try to give bicyclists a wide berth (an average of 6 feet according to one study), some motorists squeeze by with little clearance room. Since it is impossible to travel in a perfectly straight line on a bicycle, and since a bicyclist may need to make a small adjustment in position to avoid a road surface problem, such passing is clearly unsafe and is also unsettling to the bicyclist and discourages bicycling. The state law requires that operators drive a safe distance to the left when passing and specifically requires motorists to pass bicyclists at an appropriate speed.

Harassment by Motorists

At times motorists honk and shout at bicyclists to get off the road or out of their way. This situation can occur when a bicyclist is keeping a safe distance from parked vehicles, overtaking or preparing for a left turn, avoiding a right-turn only lane, or riding in the center of a lane that is too narrow to be safely shared by a car and a bicycle at the same time. In each of these situations, some motorists believe that the bicyclist is encroaching into their space and causing them delay. Because of this perception, the motorist may follow too closely,



The Boston Police have been doing police work on bicycles since about 1993 (left photo). BTM uses bicycle patrols for parking enforcement (right photo).

pass too closely, or stop short in front of the bicyclist. In addition to these encounters, sometimes bicyclists are the subject of "unprovoked" attacks, that is, when the motorist is not delayed at all by the bicyclist. This harassment can include shouts, deliberately close passes, thrown objects, and attempts to grab the bicyclist. Sometimes these events lead to a collision or fall, but usually they do not. Nevertheless, they should be taken seriously.

Boston Police Training

Bicycle laws (Mass. General Law Chapter 85) are taught at the Police Academy as part of the vehicle laws. In addition, all Boston Police Officers have 2-3 days every year of in-service training to reinforce laws, introduce new laws, or discuss changes in existing laws. Any bicycle education or changes to laws will be considered as part of the in-service curriculum.

Various precincts within the Police Department and individual police officers have been doing police work on bicycles since about 1993. All officers assigned to bicycle patrol are trained, some through Cops on Bikes With Education for Bicyclists (COBWEB). Good riding habits by police officers set a good example for other bicyclists.

Several districts conduct bicycle training for children. Bicycle patrols will continue in the districts, however, how they are used varies from district to district. District Commanders have the option for assignment.

The Boston Transportation Department Bicycle Patrol started as a pilot program in 1998, and after demonstrating success and receiving an award as finalists in the City Excellence Awards for the Customer Service Category was continued and expanded. Today, the bicycle patrol has 25 officers and about 15 bicycles. Three bikes are also powered by electricity, which is a pollution-free method of getting around some of the hilly areas of the city. Bicycle patrols have shown to increase officer visibility and public safety as well as changed the image of the typical "Meter Maid."

POSITION OF BICYCLISTS ON THE ROAD



Despite the popular view that bicyclists should always be out of traffic, the rules say that bicyclists, as well as motorists, should:

- use the right half of the roadway (MGL Ch. 89 Sec. 1 and Sec. 4)
- use the right-most lane except when passing or preparing a left turn (MGL Ch. 89 Sec. 4b)
- move right when being overtaken, where there is sufficient road width to permit overtaking (MGL Ch. 89 Sec. 2.)
- overtake on the left (MGL Ch. 89 Sec. 2)
- use a lane appropriate for one's destination when approaching

REGULATION OF BICYCLE MESSENGERS

In 1991 the City of Boston adopted regulations affecting bicycle messengers. The regulations were amended in 1998. The regulations require that messenger companies be registered and that bicycle couriers be licensed. Messengers are subject to a criminal record check and must carry liability insurance. Messengers must display a license plate on their bicycle and a number on their back or on their courier bag. They must also carry their license at all times. Failure to carry the license, to display the number, or to have the plate on the bicycle each carry a \$100 fine. Businesses should employ only registered bicycle messenger services.

BICYCLE PLAN

Recommendations:

Traffic Rules and Enforcement

Develop and Distribute Informational Brochures to Bicyclists and Motorists

BTD should commission the production of targeted brochures discussing the problems of wrong-way bicycling, bicycling on sidewalks, night time equipment, and trucks at intersections (one brochure on each topic). They should be distributed through police, hospitals, bicycle shops, advocacy groups, and other means. Boston Police officers should carry "Don't be a Road Hog/Road Warrior" pamphlets and distribute them to bicyclists and motorists as appropriate. These brochures should be distributed to bicycle messengers and taxi drivers at the time of licensing.

Change Traffic Ticket to Facilitate Enforcement of Bicycling Violations

The City of Boston currently has an ordinance violation citation book which covers bicycle incidents. The City of Boston may seek Legislative approval to change the law so that bicyclists can be cited under the same ticket book as motorists, with a check box identifying the violator as a bicyclist. This would indicate to the RMV that the violation is not to be counted in the point system used for motorists. These legislative changes are included as part of the Bicyclists Bill of Rights and Responsibilities, introduced in 2001. The City should support this bill.

Change the Traffic Regulations Relative to Bicycles

BTD Traffic Rules and Regulations include "bicycle" in the definition of "vehicle." Therefore, motorists and bicyclists are equally drivers of vehicles and the same rules of operation apply to both. There is no separate section on bicycles. This approach is generally good, since very few special rules are needed. However, there are a few items in the rules that could be changed. Presenting the City Council with a package of recommended traffic regulation changes could give more prominence to bicycling, especially the rule explicitly giving bicyclists the same rights and responsibilities as motorists. BTD traffic regulations should be changed in

the following way:

1. A new section on bicycles should be added. It should specify that bicyclists have the same rights and duties as motorists when operating on the roadway or shoulder, but the same rights and duties as pedestrians when operating on the sidewalk. Restrictions on sidewalk operation should be included. The equipment requirements in state law should be referenced (brakes, lights, helmets for children).
2. Business districts should be defined.
3. The rule prohibiting driving on sidewalks should exempt bicyclists under certain conditions.
4. The sentence saying "slow moving vehicles keep right" should be modified to the standard language in the Model Traffic Ordinance (Under state law, the term "slow moving vehicle" does not include bicycles.)

Enforce the Rules of the Road Evenly among All Users

The Police should enforce traffic violations among all motorists and bicyclists. Enforcing the rules of the road evenly among all bicyclists should be more effective in reducing the number of bicycle accidents.

Increase Enforcement of Traffic Violations that Endanger Bicyclists

The Boston Bicycle Advisory Committee should advise the Police Department of violations that endanger bicyclists. The Police can issue a Police Commissioners Special Order advising officers to take notice of those violations that endanger bicyclists.

Continue the Police on Bikes Program

The Police Department should continue its police on Bikes Program and provide training to all police bicycle officers under the International Police Mountain Bicycle Association's (IPMBA) or equivalent program. Police bicycle squads should cooperate closely with the Boston Bicycle Advisory Committee on bicycle-related matters including enforcement, education, and bicycle theft prevention.

4. BICYCLE TRANSPORTATION FACILITIES

It is the policy of the City of Boston to "encourage the creation of an urban environment where different modes of travel can co-exist, providing seamless connections, and reinforcing each other to develop balanced and efficient transportation systems." (Boston Transportation Department, Streetscape Guidelines for Boston's Major Road.) Just as the City of Boston seeks balance among travel modes in its overall transportation system, it also seeks to improve both its streets and its paths to better accommodate bicyclists.



The Dr. Paul Dudley White Bicycle Path along the Charles River Esplanade provides local and regional connections for bicyclists.



Family bicycling on neighborhood streets.

The regional network of bicycle facilities includes roadways and paths. Paths are important to attract the general public to bicycling. Paths typically traverse parks and other scenic areas and often operate as shared bicycle-pedestrian facilities. Roadways provide access to a vast number of destinations and are very efficient for commuting purposes. Roadways can include striped bicycle lanes or wide curb lanes.

Most bicycle travel occurs on the street system because streets provide connections to a vast number of destinations and are very efficient for commuting. Most Boston streets are much narrower than those found in suburbs and cities developed since the 1940s. As a result, traffic moves fairly slowly on Boston streets. This makes bicycling a time-competitive alternative to motoring.

Many bicyclists also travel on an extensive off-road system of paths in the city and surrounding area. Bicycle paths are attractive to bicyclists because they are free of motor traffic. Most of these paths are shared by bicyclists, pedestrians, persons in wheelchairs, joggers, skaters, people pushing baby carriages, and others. Some, like the extensive Dr. Paul Dudley White Bicycling Paths constructed in the 1970s along the Charles River in Boston and Cambridge sometimes have separate tracks for bicycles and pedestrians.

The Emerald Necklace, a park system in Boston and Brookline designed in the late nineteenth century by Frederick Law Olmsted, has an extensive path system that is used by bicyclists and other non-motorized users. When constructed, the park included continuous and separate walking paths and bridle trails from Franklin Park to Commonwealth Avenue.

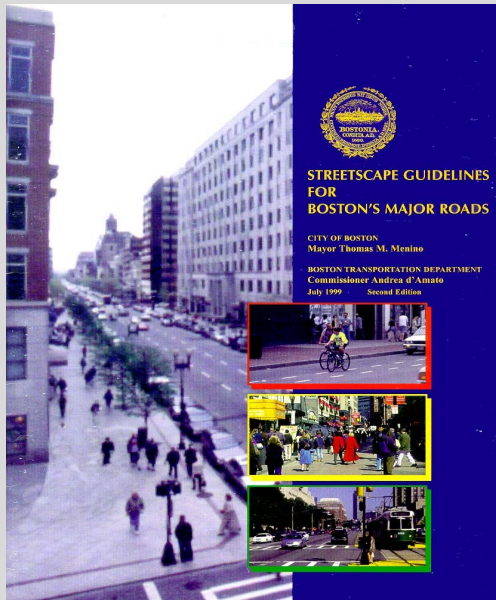
In the late 1980s, the Boston Parks and Recreation Department re-constructed an unused bridle path in both the Olmsted Park and Jamaica Pond Park, transforming it into a paved path for bicycle use. Along with paved paths in the Back Bay Fens and the Brookline section of the Riverway, this new bicycle path helped to make the Emerald Necklace suitable for continuous bicycling and has become a mainstay for commuters to downtown, the Back Bay business district and the Longwood Medical Area. The path also provides pleasure-riding opportunities and potential connections with other bicycle paths, such as the Dr. Paul Dudley White Bicycle Path.

Planning

Planning for improvements to bicycle transportation facilities in Boston is primarily carried out by BTM, the Boston Parks and Recreation Department, MDC, and MassHighway based on facility ownership. In an effort to better direct scarce

BICYCLE PLAN

STREETSCAPE GUIDELINES FOR BOSTON'S MAJOR ROADS



BTD's Streetscape Guidelines include key bicycle-related policies:

- "Major roads" are defined as arterial and collector streets (p. 7)
- "Designated and marked lanes should be the preferred means of accommodating bicycles" (p. 13)
- "Lanes should be continuous to the extent possible" (p. 13)
- "Drain grate crossings should be bicycle-safe and flush with the pavement" (p. 13)
- "At an absolute minimum, along all major arterials, when it is not possible to provide a bicycle lane, bicycles should be accommodated by sharing the curb lane of 15 feet (4.6 meters)" (p. 14)
- "Loop detectors which are able to detect bicycles should be installed where bicycle lanes are present at intersections" (p. 26)
- "All [lane] approaches [at signalized intersections] should contain sensors, where appropriate, to detect vehicles [includes bicycles]" (p. 26)

public resources to improve the bicycling infrastructure, the BBAC conducted several meetings in 2000 to identify and prioritize bicycle-related improvements to roads, streets, paths, and intersections in the city and on bridges connecting Boston to adjoining municipalities.

Consultants hired by the City to prepare Access Boston 2000 - 2010 interviewed staff of the City's transportation and parks departments, the MDC, and CTPS to identify planned and programmed bicycle improvement projects. This information was then compiled in a database and mapped (see Figure 1).

The Boston Parks and Recreation Department received three federal transportation grants for bicycle improvement projects. The first project, "Connecting Jamaica Pond," is scheduled for completion in 2001. This project includes the first designated bicycle lanes in Boston, a half-mile segment along Perkins Street connecting two bicycle paths in Olmsted Park with Prince Street and Parkman Drive.

The second project to be completed in 2001 will be the first segment of the East Boston Greenway, a one-half mile path from the waterfront to the vicinity of East Boston Memorial Stadium. It involves the re-use of a grade-separated abandoned railroad corridor.

The third project, "Linking the Corridors," will link the Emerald Necklace bicycle path to the Southwest Corridor bicycle path. A bicycle path will be developed on the alignment of the former bridle path in the Back Bay Fens, and bicycle lanes will be constructed on Forsyth Street. Signage will direct users from the Southwest Corridor path to the Melnea Cass Boulevard bicycle path.

In addition to the Parks and Recreation projects, BTD is currently analyzing the feasibility of developing the South Bay Harbor Trail. This bicycle and pedestrian path link between Roxbury and the Fan Pier project would continue the Melnea Cass bicycle/pedestrian corridor to the Fort Point Channel and South Boston waterfront. BTD is administering a federal transportation grant and is working closely with the South Bay Harbor Trail Coalition and Save the Harbor/Save the Bay on the project (Figure 6).

Two other potential bicycle projects were reviewed by the BBAC. These projects are provided as examples of the planning effort and coordination that should be carried out over time. The first project was a path improvement, the Emerald Necklace Greenway, which would link Franklin Park and the Charles River (Figure 7). In a study commissioned by BikeBoston, a MassBike affiliate, improvements were identified at a conceptual level along the five-mile long Emerald Necklace to improve bicycle and pedestrian access at roadway intersections and create a continuous signed path for bicycle travel through the necklace. Further review by appropriate Boston and Brookline agencies is needed for approval and to ensure that the plan is consistent with the Boston Park and Recreation Department's Emerald Necklace masterplan.

The second sample project that was reviewed by the BBAC was a series of proposed on-road improvements in South Boston that would link the new Boston Convention and Exhibition Center (BCEC) with the improved Surface Artery down-town. Bicycle lanes and wide curb lanes are proposed for portions of Summer Street and D Street as part of the BCEC project (Figure 8). Further review will occur as part of the BCEC project.

General Design Guidance

Existing guidance on the design of bicycle transportation facilities is provided in local, state and national resources. These documents, which are listed below, are used to guide transportation engineers in the design process and should not be considered absolute or a substitute for engineering judgement.

- *Streetscape Guidelines for Boston's Major Roads*, City of Boston Transportation Department, 1999.
- *Engineering Directive E-98-003: In Response to MGL CH 87 Acts of 1996, Bicycle and Pedestrian Accommodation*, Massachusetts Highway Department, May 5, 1998.
- *Bicycle Detection at Signalized Intersections*, Massachusetts Highway Department, June 1998.
- *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Facilities (AASHTO), 1999.
- *A Guide for the Geometric Design of Roadways*, AASHTO, 1994.
- *Manual of Uniform Traffic Control Devices (MUTCD)*, Federal Highway Administration, 1988.



Upgrading the old bridge path along the Riverway is recommended to create a continuous bicycle path through the Emerald Necklace.



The City plans to connect the Interim Harborwalk path in South Boston to Ruggles Station in Roxbury with the South Bay Harbor Trail.

BICYCLE PLAN

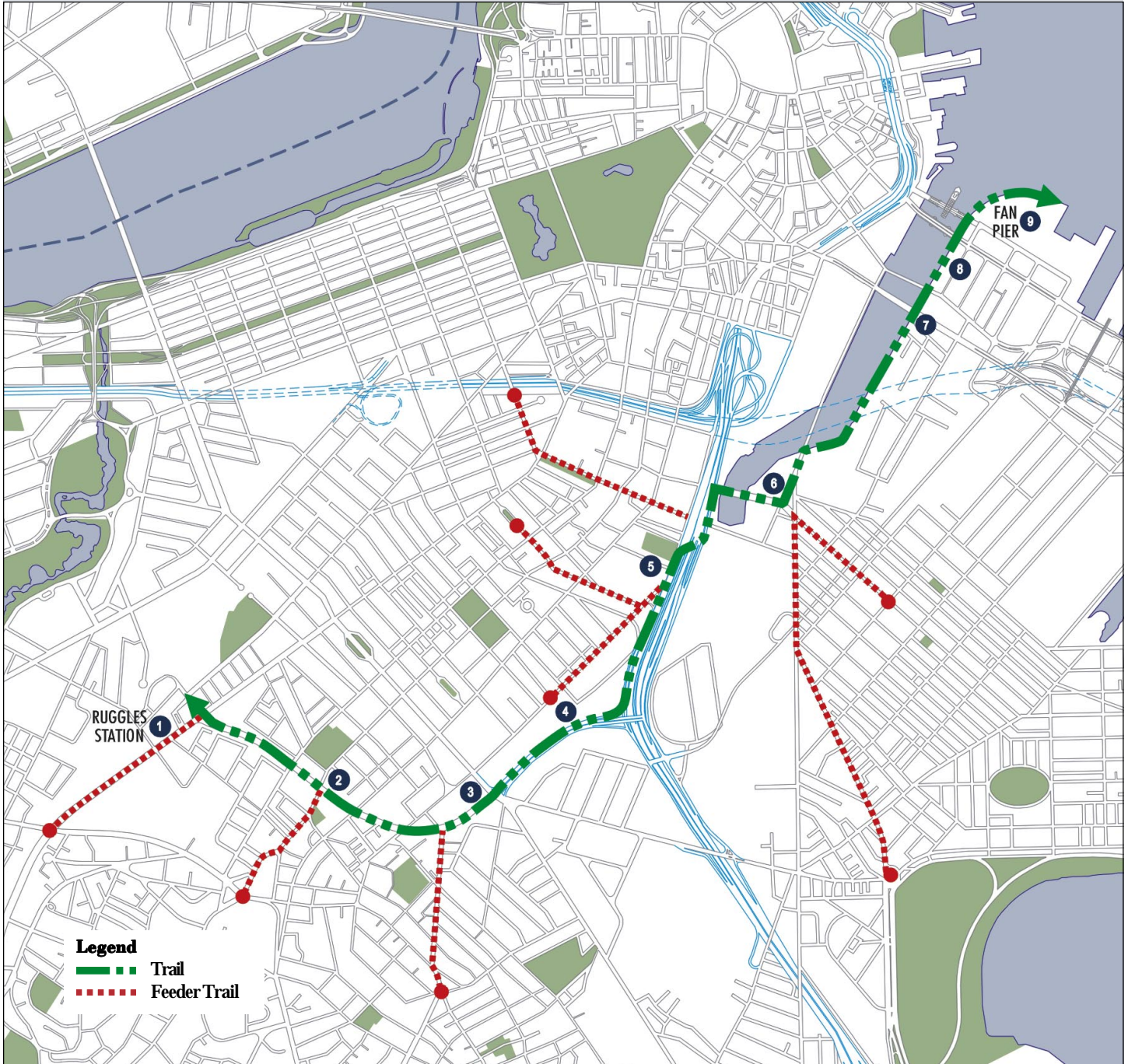


Figure 6:
Proposed South Bay Harbortrail Improvements

- 1 Ruggles Station
- 2 Boston Water and Sewer/Rice Field
- 3 Crosstown Development
- 4 Biosquare Development
- 5 Rotch Park
- 6 Broadway Bridge/Fort Point Channel
- 7 Boston Wharf Company
- 8 Museum Wharf
- 9 Fan Pier



Mayor Menino announces a \$2 million state grant for the South Bay Harbor Trail, which will connect Roxbury and the South End with Boston Harbor and South Boston. He is joined by elected officials from those neighborhoods.

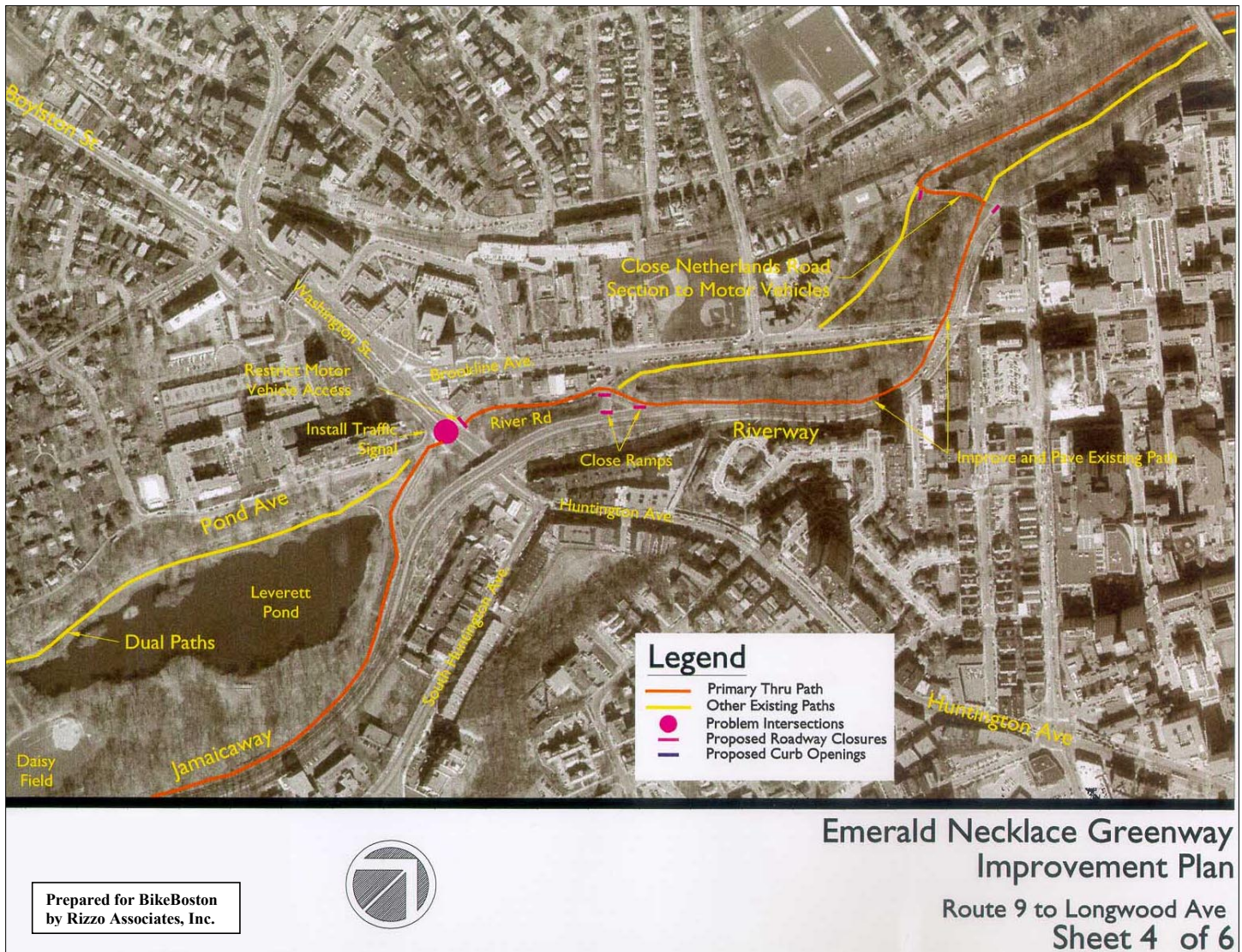


Figure 7
Emerald Necklace Greenway
Improvement Plan (Conceptual)

Rizzo Associates, Inc. developed this plan for BikeBoston. Further review by appropriate Boston and Brookline agencies is needed for approval and to ensure that the plan is consistent with the Boston Park and Recreation Department's Emerald Necklace masterplan.

Overview

This section utilizes the original bridle path alignment adjacent to Riverway between Route 9 and Netherlands Road. At Netherlands Road the through bike path crosses to the Brookline side of the Muddy River to use the existing paved path and to improve the path alignment at the proposed Park Drive underpass.

Intersection Improvements

Install a mid-block traffic signal for pedestrian/ bicycle crossing as recommended by the MDC and designed by Bruce Campbell Associates

at Washington Street (Route 9)/Huntington Ave., Brookline and at River Road/Riverdale/Pond Avenue, Boston.

Roadway Changes

Restrict motor vehicle access on River Road by closing south end to motor vehicles or converting to one-way travel southbound.

Close ramps connecting Riverway and Brookline Avenue at River Road.

Close northeast section of Netherlands Road to motor vehicles.

Path Improvements

Develop bicycle path along River Road or restrict motor vehicle access and sign as shared roadway

Improve (widen and pave) existing path on east side of park from northern end of River Road to Netherlands Road.

BICYCLE PLAN

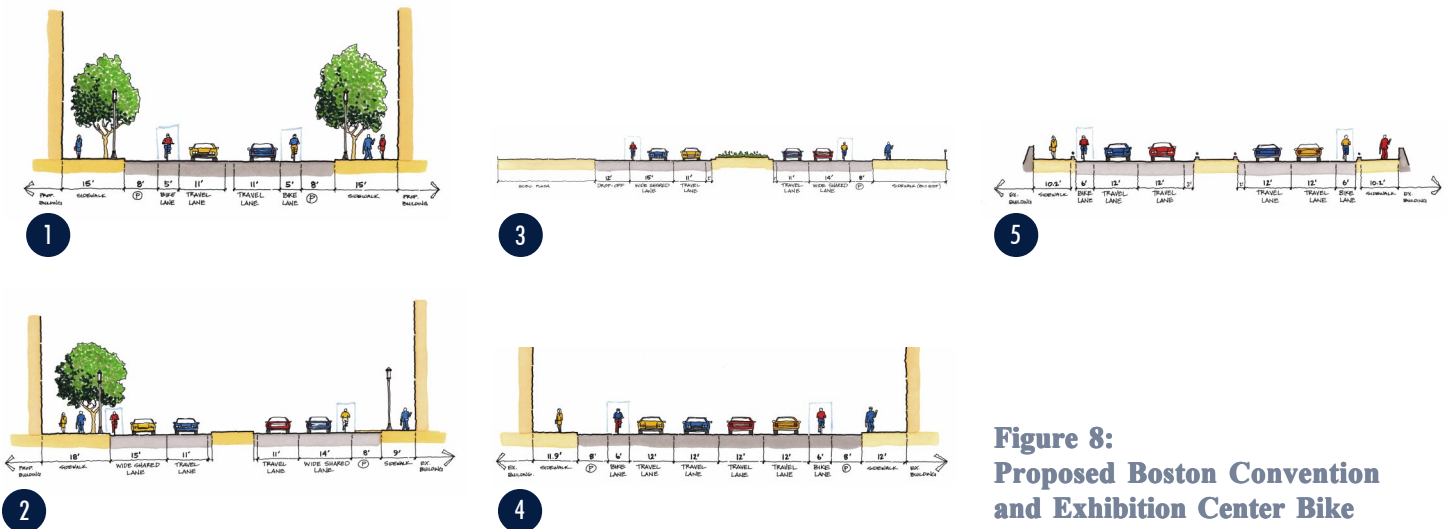
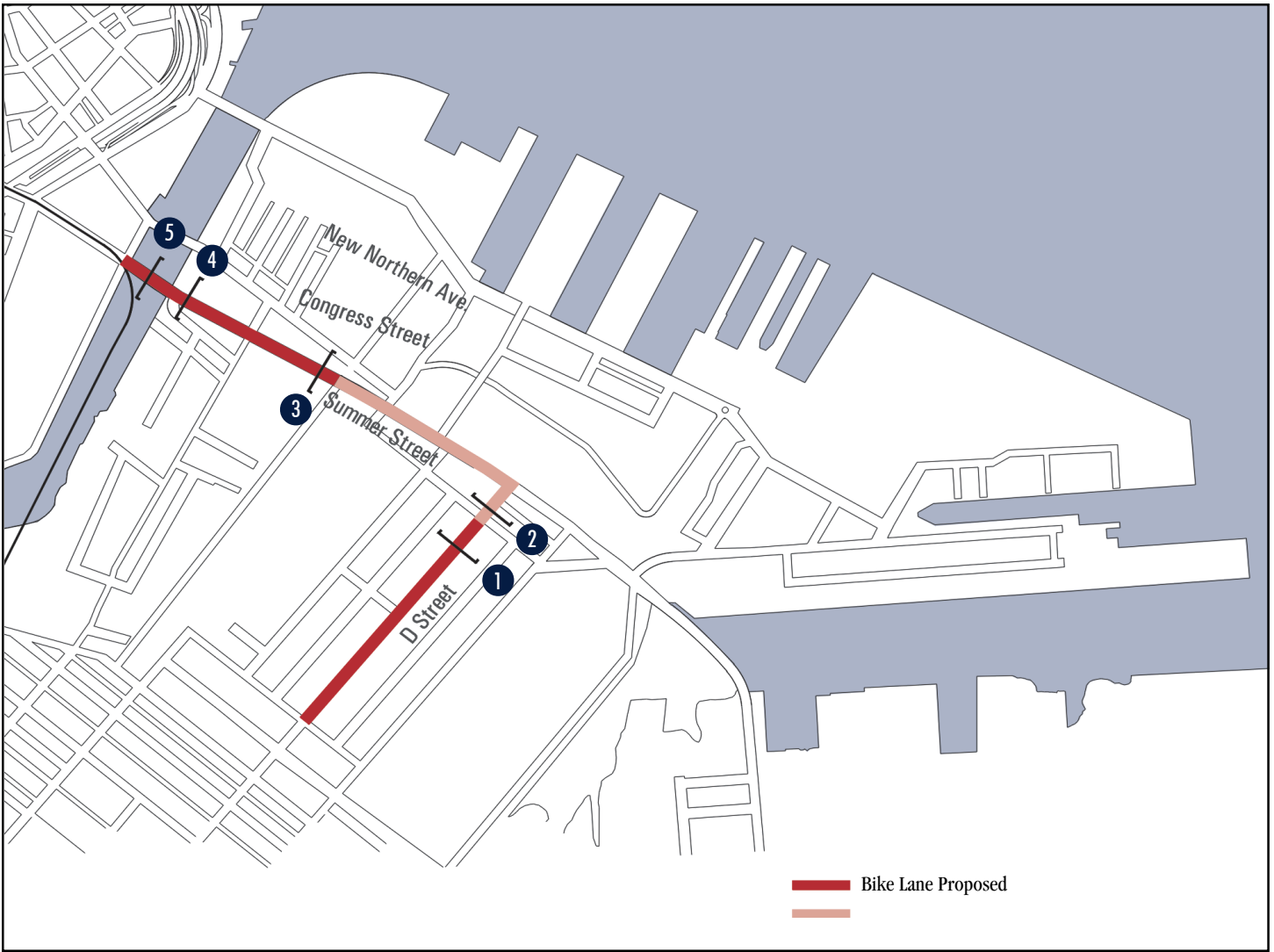


Figure 8:
Proposed Boston Convention and Exhibition Center Bike Improvements (Conceptual) (Congress Street, D Street)

Developed for BTB by Rizzo Associates

MAINTENANCE OF TRAFFIC PLANS DURING ROADWAY CONSTRUCTION

As in most cities, the streets of Boston are continually undergoing construction associated with utility work, pavement resurfacing, and roadway reconstruction. Construction of new or improved roads, such as the Central Artery/Tunnel, affects major roads either directly or through construction-related detours. Safe and convenient passage of bicycles is needed on city streets during construction. This includes provision for through bicycle movements, a reasonably clean riding surface without excessive bumps and maintenance of adequate lateral clearance from obstructions.



The steel plate and lip at the edge of pavement grinding operations make cycling difficult from riding over it, to potentially banging against it with a bicycle tire.

Roadway Design Considerations

All roads in Boston, with the exception of I-90, I-93, and portions of Storrow Drive, are bicycling roads. Therefore, the needs of bicyclists should be considered in the design, maintenance, and policing of all roads. If a road is wide enough to accommodate a motor vehicle, it is wide enough to accommodate a bicyclist.

Major through roads, however, should be designed so that motorists can overtake bicyclists without changing lanes. Following this design principle makes roads more comfortable and attractive to bicyclists and reduces potential delay caused by bicyclists. The Highway Capacity Manual considers a bicyclist on a lane of less than 12 feet to be the equivalent of one passenger car unit. Therefore, under these conditions, a bicycle would have the same operational impact as an automobile. A bicycle in a lane with an effective width of 14 feet or more takes up no passenger car units and would not affect roadway operations.

On many residential roads, however, it is neither possible nor desirable to provide width for motorists to overtake without waiting. Motorists must therefore understand that waiting behind a bicyclist momentarily is a reasonable and legal requirement. In addition, on some through roads it may not be possible to provide sufficient width for lane-sharing without changes that are undesirable such as removing on-street parking. Such situations are good candidates for the posting of Share the Road reminder signs, which are like other common reminder signs such as Right Turn on Red After Stop or Yield to Pedestrians On Turns.

BICYCLE PLAN

Road and Path Maintenance

Maintaining a smooth roadway-paving surface, which is critical to safe and comfortable bicycle travel, is a challenge in Boston. Freezing and thawing of the paving causes potholes and uneven surfaces. Bicycle paths in general are not plowed as often as city streets. Roadway sanding during snow, sleet and freezing rain events builds up in curb lanes where bicycles commonly travel. This sand impedes bicycle travel and commonly is not swept away until the snow season ends. Once the snow and ice period is over, it takes time to sweep all the streets

Broken glass in the roadway edge is also an impediment to bicycle travel and removal can take time with 800 miles of streets to maintain. Paving markings for lanes and crossings need to be maintained on a regular basis. Maintenance of path surfaces and shoulders can also be a problem due to inadequate funding. These problems are not unique to Boston.

Bicycle Repair Shops

Boston and surrounding cities and towns are fortunate to have a number of privately owned and operated bicycle shops. Many people do not think of bicycle shops as a bicycle facility. However, in addition to sales, these shops support the maintenance needs of the network of bicyclists in the region, not unlike maintenance facilities for other modes. Bicycle shops are also a gathering place for bicyclists and, as such, provide a useful network for information distribution. The City has worked in the past with operators, like Ferris Wheels of Jamaica Plain, to distribute safety information and event announcement brochures. The City should work with all neighborhood bicycle shops to encourage bicycling and foster local businesses.



Repairs to this section of failed pavement and removal of debris from this roadway shoulder will improve bicycling conditions on these bridges.

Recommendations:

Bicycle Transportation Facilities

INTERAGENCY MEETING FOR BICYCLE COORDINATION

BTD convened an interagency meeting on February 7, 2001 to coordinate City and State efforts on bicycle issues. Participants included representatives from Boston Transportation Department, Boston Police Department, Boston Public Works, Boston Parks and Recreation Department, Boston Environment Department, Boston Redevelopment Authority, Massachusetts Bay Transportation Authority and the Executive Office of Transportation and Construction. The group will form the Interagency Bicycle Task Force and will meet regularly to discuss bicycle issues and efforts.



Create the Position of Bicycle Program Manager within BTD

BTD is the logical lead agency to plan bicycle-related improvements to roads and paths in Boston, including coordination with other city departments and state agencies. The City of Boston should create the position of Bicycle Program Manager within BTD and provide sufficient resources to conduct on-going bicycle transportation planning. The Bicycle Program Manager will serve as staff to the BBAC and together they will identify and analyze major roads for potential bicycle improvements. The Bicycle Program Manager would co-chair the Interdepartmental Bicycle Task Force.

Prioritize Projects

The BBAC has developed a map of projects and issues for further evaluation (Figure 2). BTD should work with the BBAC to conduct corridor studies and conceptual engineering to determine the feasibility of improvements, to estimate cost, to recommend potential improvements, to identify potential public-private partnerships and, as appropriate, to seek funding through the Boston Metropolitan Planning Organization's Transportation Improvement Program. Once improvement projects are identified, funding will be sought from the city budget to finance the project or to leverage state, federal or private funds.

Evaluate Bicycle-related Maintenance Needs of City Streets

Bicycling conditions in Boston could be significantly improved through maintenance to city streets and paths. The City should develop criteria and evaluate bicycle-related maintenance to city streets and paths and determine where improvements are needed. The City should incorporate the use of the existing street maintenance hot line in these efforts. The City should coordinate this evaluation with the appropriate City and State departments.

BICYCLE PLAN

Create an Interdepartmental Bicycle Task Force

BTD should create an Interdepartmental Bicycle Task Force to coordinate the implementation of the Bicycle Plan and other aspects of the City's bicycle policies. The task force should meet at least on a quarterly basis to review progress in implementing the City's bicycle program. BTD Bicycle Program Manager would chair the task force and would prepare quarterly reports on the status of the City's bicycle program and progress in implementing the recommendations of the Boston Bicycle Plan. These reports would be provided to the Mayor and to the public.

Incorporate Bicycle Lanes or Wide Curb Lanes in Routine Street Improvements and Reconstruction

There are opportunities to incorporate bicycle lanes or wide curb lanes in routine street improvement projects, such as resurfacing and utility projects. Consistent with policies already adopted in BTD Streetscape Guidelines, the City should seek to incorporate bicycle lanes or wide curb lanes on major streets that are undergoing resurfacing or utility work. Prior to restriping lane markings, the City should determine if bicycle lanes or wide curb lanes can be incorporated in the cross section without changing the curb positions. In cases where the curbs are being removed, studies should be conducted to determine if the curb locations should be changed to facilitate the creation of bicycle lanes or wide curb lanes. These studies would include an analysis of all intersections affected by the project and balance the needs of motor vehicles, bicycles, and pedestrians. The Streetscape Guidelines state that the desired width of a one-directional bicycle lane is 6 feet. This width is desirable when the lane is adjacent to parallel parking lanes because of the need to incorporate a door-opening zone. In most locations in the city where the bicycle lane is adjacent to a granite curb, five feet from the curb face is sufficient width for the bicycle lane.

Evaluate the Traffic Signal System Relative to Bicycle Detection

Bicycle travel and traffic enforcement in the city could be enhanced if all actuated traffic signals detected bicycles. There has been no systematic evaluation of the traffic signal system in the city to determine which intersections and lanes currently detect bicycles and which do not. The BBAC, with the assistance of bicyclists and City staff, should compile data on signalized intersections that do not detect bicycles. The inventory should begin with intersections where bicyclists frequently can not activate the signal due to the lack of bicycle detection.

Develop and Implement Construction Management Specifications

The City should develop specifications for ensuring safe passage of bicycles during roadway construction. These specifications should be circulated within all relevant City departments and made available to roadway construction contractors.

5. BICYCLE PARKING AND SUPPORT FACILITIES

Safe and secure bicycle parking is important to support and encourage bicycling. A number of bicycle racks are provided publicly and privately throughout the city. The Massachusetts Bay Transportation Authority (MBTA) provides bicycle parking at a number of its stations in Boston. A sheltered and locked facility are provided at major employee sites such as Massachusetts General Hospital. The BBAC has begun research on the location and number of bicycle parking facilities in the city.

BTD applied and received a federal Transportation Demand Management (TDM) grant to install approximately 350 bicycle racks throughout the city. In February 2000, BTD received a notice to proceed on the project. A majority of the racks will be installed at the City's public libraries and community centers, post offices, and neighborhood business districts. Selection and locations will be chosen in coordination with the BBAC.

Sixteen Massachusetts communities, including Cambridge, Watertown, Brookline and Newton, now have provisions in their zoning ordinances requiring bicycle parking for new developments. Boston zoning does not have a formal requirement but has an informal process through BTD's Transportation Access Plan Agreements (TAPA) under Article 80 review of new projects. As part of Access Boston 2000-2010, BTD is rewriting its development review requirements for the TAPA process to strengthen requirements for bicycle rack installation in new buildings.

Secure outdoor parking near destinations (50 feet from entrances) is ideal for short-term trips. Bicycle racks can be located within 750 feet of the site because security is the critical factor not proximity. Racks should be located in public areas to reduce vandalism and in a manner that does not restrict pedestrian access. Bicycle lockers are extremely beneficial at transportation centers. Indoor parking can provide better security and protection from the elements than outdoor parking. Indoor parking in a completely secure area reduces the amount of gear the bicyclist must remove from the bicycle.



Bicycle lockers and racks at the Massachusetts General Hospital provide a safe parking alternative for bicyclists.



The City of Boston has installed bicycle racks in Downtown Boston.

BICYCLE PLAN

Recommendations:

Bicycle Parking and Support Facilities

Increase Sheltered and Secure Parking Facilities for Existing Uses

The City should work with the business community to increase sheltered and secure bicycle parking facilities for existing uses. The City should encourage building owners to install indoor bicycle parking during renovations.

Publicize the Location of Existing Bicycle Parking Facilities

The City should develop and distribute brochures and other information to encourage the maximum use of bicycle parking facilities.

Develop a "Bike Central" Concept

The City should investigate developing a "bike central" concept, which is a combined bicycle parking, shower and changing facility that is convenient for commuters. The opportunity to develop a "bike central" concept may exist on Central Artery and Turnpike air rights parcels and in the South Boston Waterfront.

Adopt a Boston Bicycle Parking Ordinance

For new construction, a Boston Bicycle Parking Ordinance should be adopted. The BBAC has proposed a sample Boston Bicycle Parking Requirement and a Proposed Boston Bicycle Parking Ordinance for consideration by the City.

Update Transportation Access Plan Guidelines

BTB should update its TAPA Guidelines to include a provision for bicycle parking.

Develop Bicycle Rack Design Guidelines

The City should use guidelines for bicycle rack design and bicycle parking signage in order to indicate parking locations.

BICYCLE RACK SITING GUIDELINES FOR BICYCLE RACKS ON CITY PROPERTY

These guidelines apply to installation of bicycle parking facilities within the City of Boston, on City owned property and through City funding (partially or completely funded, including grants). The criteria are solely guidelines and will not supercede any local, State or Federal code requirements. The Guidelines are for U shaped bike racks, approximately 22" wide and 36" high. Other types of bicycle rack designs are acceptable but may affect siting guidelines.

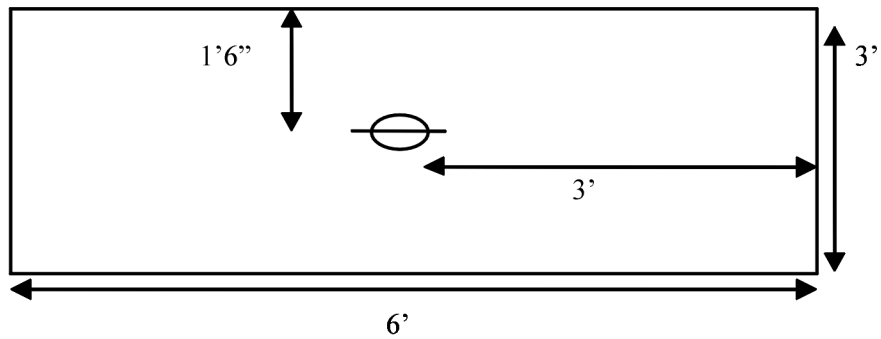
Thoughtful planning for convenient, secure and plentiful bicycle parking is encouraged in the City of Boston.

Provisions:

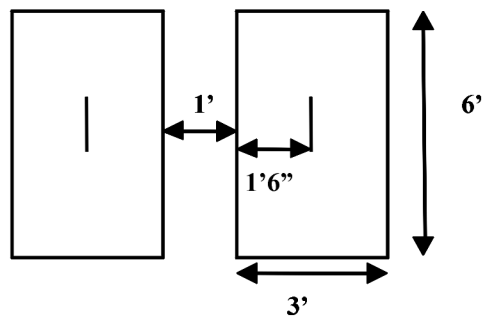
1. All ADA dimension requirements will take precedence over any other requirement.
2. How to Select Locations:
 - a. If you see bicyclists locked to trees, posts or other stationary objects nearby, you probably need bicycle parking at that location.
 - b. The location should meet the needs of potential users and consider where bicyclists want to park, not where you might like them to park. Locations should encourage cycling.
 - c. Locate parking in visible and prominent locations - if cyclists are unaware of the parking it won't be used.
 - d. If possible, locate racks within 50 feet of a main entrance. Where there is more than one entrance or building on a site, a few scattered racks are better than many in a single place.
 - e. The location should be flat and at the same level which cyclists use for access.
 - f. Racks will be surface mounted only and must be placed on an existing surface.
 - g. Consider the space that a rack full of bicycles will take up, not just the rack itself.
 - h. Racks may be placed adjacent to the building or within the existing line of trees and street furniture.
 - i. Racks may be placed either parallel or perpendicular to a building or the curb line.
3. Clear Path:
 - a. All racks shall be installed so as to allow a straight unobstructed path (i clear path) for pedestrian circulation on the sidewalk. Preferably, and unless otherwise approved, bicycle racks should be installed so that the length of a bicycle is parallel to the sidewalk.
 - b. Each bicycle parking space should be easily accessible.
 - c. ADA requires that sidewalks have at least 4' of unobstructed clear space for travel. Bicycle racks must be sited so as to permit this space to be maintained.
4. Sight Lines:
 - a. The placement of the racks shall not interfere with pedestrian or motorist sight lines necessary for traffic safety.
 - b. The racks shall not obstruct sight lines of historic significance or of historic places and buildings.
5. Minimum Distance Requirements:
 - a. Each rack must have a minimum 3 ft. by 6 ft. clear space around it, based on the centerpoint of the rack (see drawing).
 - b. A 1 foot aisle (see drawing) for bicycle maneuvering should be provided and maintained beside or between each row of bicycle parking. When racks are placed next to each other, this will provide a distance of 4 feet total between empty racks.
 - c. Racks must be separated from the following by at least the prescribed minimum distance:
 - i. Corners, 20 feet.
 - ii. Pedestrian Ramps, 10 feet
 - iii. Fire Hydrants, 10 feet
 - iv. Building or Curb (if parallel), 1 foot
 - vi. Minimum sidewalk clearance, 4 feet

BICYCLE PLAN

Bike Rack Siting Criteria



Spacing between Bike Racks



Minimum Distances*

FEATURE	DISTANCE
Corners	20 feet
Pedestrian Ramps	10 feet
Fire Hydrants	10 feet
Building or Curb (if parallel)	1 foot
Minimum sidewalk clearance	4 feet

*Distances are measured from the box not the bike rack.

6. TRANSIT AND INTERMODAL CONNECTIONS

Bicycle facilities are provided by public transit agencies and private companies. Facilities include accommodations on buses, trains and boats and parking at stations.

MBTA System

The MBTA began a program to allow bicycles on transit vehicles on a trial basis in 1985, and the program has been expanded periodically. The MBTA recently adopted several changes to its "Bikes on the T" program that will offer bicyclists more access to the MBTA system (see box, page 26). The MBTA restricts bicycle accessibility to off-peak traveling periods. On weekends, the MBTA allows bicycles at all times on the subway and commuter rail systems.

The MBTA has also expanded its "Bikes-on-the-T" program to its Crosstown bus fleet. Buses on these routes are now equipped with front racks to accommodate bicycles. The MBTA provides bicycle parking at many of its stations. As the MBTA renovates or reconstructs stations, it includes bicycle facilities as one of the central design criteria associated with station improvement projects. The MBTA is developing a capital program for bicycle parking and is updating its inventory of bicycle parking facilities at stations to make this inventory a working document, which will be re-evaluated on a frequent basis.

Express Services and Private Bus Carriers

Massport accepts bicycles on its Logan Express buses, which run express service between Logan Airport and three suburban park-and-ride facilities (Braintree, Framingham and Woburn). MASCO, the Medical, Academic and Scientific Community Organization, a charitable corporation established in 1972 by its member institutions to plan, develop, and enhance the Longwood Medical and Academic Area, will be mounting bicycles on the front of shuttle buses

TRANSIT-ORIENTED DEVELOPMENT

The Boston Redevelopment Authority recently initiated a planning project called "Fostering Transit-Oriented Development in Boston." Working closely with BTM, other City agencies and the MBTA, the BRA is developing a new policy designed to encourage transit-oriented rather than auto-oriented development and infrastructure improvements. Guidelines and recommendations that aim to facilitate intermodal conditions will be central to this effort. BTM and the BBAC will contribute to this planning process by making specific recommendations for bicycle infrastructure improvements in transit areas, including bicycle path connections to transit stations and bicycle parking locations.

BICYCLE PLAN

on the Longwood Medical to Harvard Yard - M2 route. There are six buses on this line that operate every 10 to 15 minutes.

Some private bus companies, including Peter Pan/Greyhound lines and Plymouth & Brockton, take unboxed bicycles on a space permitted basis. Bicycles may be carried in the baggage compartments when there is sufficient room after all other baggage has been loaded. Bicycles must be carried in a separate baggage compartment or placed in such a manner as not to damage any other baggage. There is no guarantee that bicycles will be accepted by connecting carriers. Bonanza require bicycles to be boxed and placed in the luggage area.

Amtrak

Amtrak provides intercity rail service through Boston's South Station to points south (New York City, Washington, D.C., etc.). The only Amtrak line serving Massachusetts that allows unpacked bicycles is the Vermonter. In addition to baggage service, Amtrak offers specially fitted bicycle racks in one car on the Vermonter line, which travels from Washington, D.C. and New York into Vermont passing through central Massachusetts (Springfield). Reservations are necessary to use the bicycle racks and a service charge applies. Other Amtrak trains require bicycles to be boxed.

Water Transportation

A number of ferry services are provided in Boston. Massport and private carriers provide service to Logan Airport, the north shore, the south shore, Cape Cod, the harbor islands, and around Boston. Public and private carriers that were contacted for this plan indicated that bicycles are allowed on all routes. Some private carriers have an extra charge for bringing bicycles on trips to the harbor islands and Provincetown.



Bicycle lockers and racks at transit stations provide a safe parking alternatives with protection from the elements



Bike paths in the Southwest Corridor provide access to and from Ruggles Station.

Recommendations:

Transit and Intermodal Connections***Increase Awareness of "Bikes-on-the-T" Program***

The City should help the MBTA increase awareness of the "Bikes-on-the-T" Program. The MBTA is also working to more effectively publicize changes to its bicycle policy through wider distribution of its bicycle-related brochures. In a similar effort, the MBTA will now begin to include bicycle information on its system maps. The MBTA plans to better inform its personnel on current bicycle rules.

Encourage Provisions for Carrying Bicycles by All Transit Operators

BTD should encourage all transit operators to include provisions for carrying bicycles.

Increase Bicycle Parking at MBTA Stations

The City should assist the MBTA in identifying funding sources to provide additional bicycle parking. The City can assist the MBTA to target stations that have additional demand for bicycle parking.

BICYCLE PLAN

BICYCLE RACKS ON MBTA BUSES

Effective September 2, 2000, the MBTA expanded its Bikes-on-the-T Program to its Crosstown bus fleet. Buses on these routes are now equipped with front racks to accommodate bicycles. Bikes are permitted on the racks at all times. This program will test the effectiveness of these racks within the MBTA bus fleet. For more information on bicycle usage on the MBTA system, riders should consult the MBTA's new Bikes-on-the-T brochure as well as the Rack and Roll instruction pamphlet for the Crosstown routes.



BIKES ON THE T

Beginning on October 1, 2000 the MBTA no longer required that customers purchase a permit to bring their bicycles on the Blue, Red and Orange lines (subway) and commuter rail system. This is a 3-year pilot project that is under evaluation for impacts on cyclists and MBTA operations.

Bicycles are allowed on the subway system on weekdays during the hours of 10:00 AM to 2:00 PM and 7:30 PM until end of service. On the commuter rail system, the MBTA prohibits peak period access during the morning inbound and evening outbound weekday commutes.

The MBTA produces and distributes a brochure that describes the opportunities and requirements to bring bicycles on MBTA transit services.



7. PROMOTION AND TOURISM

Since 1995, the City of Boston has held an annual Bicycle Festival and supports Boston Bike Week. The goal is to encourage safe bicycle use as a viable form of transportation for recreation and commuting. Working with Boston Area Transportation Management Associations (TMAs), MassBike, CARAVAN for Commuters, and many other private and public organizations, the City developed Bike Week calendars of events, organized bicycle rides, and obtained sponsors, donors and exhibitors for the Bicycle Festival. In 1999 the City held a "Bike to Work Corporate Challenge" which encouraged over 400 employees, from over 40 companies to ride their bike to work on a designated day during Bicycle Week.

Transportation Management Associations

TMAs represent businesses that have common interests in transportation issues and are located in the same section of the city. TMAs typically promote bicycling among their

member firms as part of a broader mission to reduce single occupancy vehicle use and vehicle miles traveled. TMAs provide effective partners with the City and other public agencies to promote bicycling programs, coordinate events and support efforts to secure funding for improvements.

TMAs provide various forms of incentive programs for employees to bicycle to work. The Artery Business Committee (ABC) TMA represents employers in the downtown, and the Seaport TMA, which represents firms in South Boston, provide employees who are new to bicycling with a "starter kit" that includes a hel-met, a reflector and a Boston bike map. Employees must agree to bicycle to work one or more times per week. MASCO, which represents institutions in the Longwood Medical Area, promotes bicycling through CommuteFit, a CommuteWorks' Incentive Program for Employees. Anytime someone walks, jogs, in-line skates, or bicycles to work, they receive credit towards free prizes such as T-shirts, flat repair kits.



BICYCLE WEEK

BOSTON BIKE FESTIVAL

FRIDAY, MAY 21, 1999
CITY HALL PLAZA
11 AM - 2 PM

including:
Boston Bike to Work Corporate Challenge
sponsored by BEN & JERRY'S

music by:
Mr. Floozie Party

sponsors:
• History of Bicycles display
by Lincoln Cycle Service
• Share the Road bike ride
by Edith Hernandez School
sponsored by King Boston Moving Safety

For more information:
Call the Bike Week Info Line at
(617) 635-2075,
or visit the
MassBike website at
[www.massbike.org/events/
bw99/boston.htm](http://www.massbike.org/events/bw99/boston.htm)

Brought to you by:
Bicycling Infrastructure Committee
Artery Business Committee (ABC) & Seaport
Commuters (CARAVAN) Committee
Commuters (MASCO) Committee Support Team

Sponsoring individual private firms:
Aston, Boston, MIT, and many others. See the
MassBike website for a complete list of sponsors.
1-800-345-3453 or 617-635-2075
Project: Boston Bike Week, Photography: MPT/MA

BTD sponsors events during Bicycle Week to encourage bicycling in the city, to recognize bicycle-friendly employers and to support the city's bicycle economy.




BICYCLE PLAN



Boston Bike Tours is a private company that rents bicycles and provides tours in Boston, including the Boston Common, which is pictured above.



Car-free days are opportunities to promote bicycling.

The TMA's have monthly drawings for program participants to provide additional incentives. In order to be part of these drawings, commuters registered for the programs must submit a monthly log of the number of miles traveled, thereby allowing the TMA to track vehicle miles saved. Incentives relate back to the modes of bicycling and walking and therefore help to offset the cost of traveling via these modes.

TMA's also provide training and event programs to reduce barriers to bicycling in an urban environment and promote bicycling as a positive health and exercise experience. The "Bike to Work Basics" program was designed by MassBike to introduce bicycle commuting to employees. A series of training are available to commuters who choose to bike or walk to work including Effective Cycling, a health and fitness seminar, a crime prevention and safety seminar, and a bicycle maintenance course. These training events are being offered to participants in these programs.

Private companies also promote bicycling to their employees. Goldstein & Manilo, sponsors employees in races and encourage commuting and rides. The World Trade Center is attempting to implement a "Borrow a Bike" program in which individuals can borrow a bicycle to run errands throughout the day.

Tourism

The Massachusetts Office of Travel and Tourism (MOTT) produces and distributes brochures on bicycling including the Massachusetts Bicycle Guide. The guide contains information on bicycling laws, safety tips, and listings of ferry services, and state and metropolitan parks with bicycle facilities. A thorough listing of bicycle paths and a map showing bicycle paths and on-road bicycle routes throughout the state is provided.

In addition to work by MOTT, there are a number of other efforts in the area of tourism. American Youth Hostels and the League of American Bicyclists conduct bicycle tours along the Freedom Trail and also to the Cape. Boston Bike Tours, Hotel/Health Bicycle Program is a guest service that provides hotels with bicycles that are available for guest use. This enables visitors to exercise and see the city at the same time. A number of fundraising bicycle rides also pass through or originate in Boston, including the AIDS ride. These events bring a large number of bicyclists into Boston.

Bicycle Economy

Boston is one of the most innovative areas for developing bicycle-related items. As a result, many companies related to the bicycle industry have started in the Boston area and many are still sprouting up. The City has included bicycle companies and manufacturers in bicycle festival events as a means of promoting local businesses. Examples of Boston-area companies include:

- Independent Fabrication Company, an industry-leader that manufactures a variety of popular hand built bicycle frames.
- Strida Bicycle, which has entered the niche industry of manufacturing ultra-portable, rust-proof, folding bicycles.
- Montague Corporation and Boston Edison who have produced a lightweight electric motor for mountain bicycles.
- E-Bike, a recent addition to the electric bicycle market in Boston.
- Bike Security Racks Company and R.A. Allen Company who produce bicycle racks.
- Cycle Yourself Silly, which has a hydro-bicycle available for rent at Museum Wharf.
- Boston Bike Tours and Sea and Cycle Tours of Boston who rent bicycles and provide bicycle tours.
- Kryptonite is a major manufacturer and marketer of cables, chains, U-locks, and flexible security systems for the bicycle and other industries.

BOSTON BIKE TO WORK CORPORATE CHALLENGE



The Boston Bike to Work Corporate Challenge was a friendly competition between businesses to get the largest percentage of employees to ride their bikes to work. Over 400 employees, from over 40 companies competed in the challenge and rode their bikes to work on Tuesday, May 18th, 1999. Winners of the Corporate Challenge were announced at the Boston Bike Festival and were awarded a certificate of recognition from the Boston Transportation Department and an ice cream party at the company's work place, thanks to sponsorship by BEN & JERRY'S. Many of the people who participated in the Corporate Challenge were not regular bike commuters. After the challenge, many stated that they now plan to bike to work more often.



Commissioner Andrea diAmato accepts a T-shirt from Mass. General Hospital, after MGH won their division of the Boston Bike to Work Corporate Challenge in 1999.

BICYCLE PLAN

Recommendations:

Promotion and Tourism

Increase Bike Week Activities

The City should continue to support and expand Bike Week and Bike Festival activities.

Promote Bicycling among City Staff

The City should promote and encourage City employees to commute by bicycle by participating in existing bicycle incentive programs, or by creating a city sponsored borrow a bike or similar program. The City should provide lockers and showers to employees that bicycle to work.

Encourage Employers to Become Bike Friendly

By working with TMAs, the City should design a program that encourages and supports businesses to be bicycle friendly. The program should be presented to larger employers in Boston. These companies should be encouraged to set up the program, and recognition should be given to those who participate. The City should identify the employers who support bicycling publicly perhaps at an annual event - corporate challenge and/or Bike Week activities.

Promote Bicycling through Car-free Days on Roadways

The City should analyze the feasibility of having car-free days on Boston roadways, such as has been done by the Metropolitan District Commission (MDC) on Storrow Drive for special events.

Improve signage for Bicyclists

The City should review the signage system in Boston that leads bicyclists to paths and on-road facilities and develop recommendations for a clear and consistent system.

Produce a Guide to Bicycling in Boston

The City of Boston should work with the bicycle tourism industry to produce a guide to bicycling in the Boston area. The guide could include suggested routes such as the routes taken by the League of American Bicyclists and those followed by Boston Bike Tours. Consideration should be given to establishing a self-guided bicycle route downtown that could be placed on the City map and also provided to private map companies, tour book companies (including AAA). The City map could be provided at a number of attractions and hotels. The routes could also be printed on a smaller card for ease to review while on a bicycle. The City should work with Massport to provide information to bicycle tourists arriving at Logan Airport.

Encourage Bicycle Tourism Industries

The City of Boston should review the permitting of bicycle touring companies and special bicycle events for opportunities to streamline the process. The City should work with the bicycle industry to track the economic benefits of the bicycle tourism industry in Boston.

8. FUNDING AND IMPLEMENTATION

SUMMARY OF FUNDING APPROACH

- Fund staff, training, feasibility studies and design with City monies.
- Create public-private partnerships such as corporate sponsorship.
- Prioritize projects with the assistance of the Boston Bicycle Advisory Committee.
- Coordinate Transportation Access Plan Agreement mitigation requirements for new developments.
- Include bicycle facilities in long-range plans.
- Pursue Transportation Enhancement and State Bond funds for new bicycle facilities.

Funding is needed to successfully implement the City's Bicycle Plan. BTD will pursue funding from various sources to implement the Bicycle Plan. City monies will be pursued to fund the Bicycle Program Manager position, personnel training and future engineering studies and design of specific bicycle projects. The City will seek outside public and private funding sources to increase funding availability for recommended projects and supplement City expenditures where possible.

The City will create **public-private partner-ships** to leverage funds to implement aspects of the Bicycle Plan. BTD will continue to pursue opportunities for corporate sponsorship of bicycle events. This approach will be extended to identify and secure sponsors for the publication of informational materials.

The procedure for implementing bicycle facility improvements will begin by working with the BBAC to **prioritize potential improvements**. BTD will use the information presented in Figures 1 to create a comprehensive Geographic Information Systems (GIS) database to track bicycle projects. Feasibility studies will be conducted where appropriate to analyze alternatives and further define a preferred alternative. The City will then fund design of the bicycle facility project. Funding for the construction of new bicycle facilities will primarily be sought from the Transportation Enhancement Program and the biennial state Bond Bill.

The City's **Transportation Access Plan Agreement** process provides opportunities to implement elements of the Bicycle Plan. BTD secures TAPAs for new development projects. BTD will use the proposed database of bicycle projects described above to determine the appropriateness of funding all or some of specific bicycle projects through mitigation commitments. This would be in addition to specific on-site requirements for bicycle parking and accommodations that will be described in the TAPA guidelines

BTD will pursue opportunities to fund bicycle improvements as part of long-range planning for the Central Artery/Tunnel project air rights, the South Boston Waterfront and the Turnpike air rights. The restoration of roadways above the depressed Central Artery already includes bicycle accommodations. BTD will use its GIS database and the inventory of other recommended bicycle projects to identify potential improvements that could be implemented as part of these long-range projects.

The **Transportation Enhancement** program was established in 1991 by the Intermodal Surface Transportation Act of 1991 (ISTEA) and re-authorized in the Transportation Equity Act for the 21st Century (TEA 21) in 1998. This

BICYCLE PLAN

U.S. Department of Transportation program is one of the primary sources for funding bicycle facilities in the United States. In Massachusetts, the Transportation Enhancement program is administered by MassHighway. Up to 80 percent of project costs can be paid by federal funds with 10 percent match each by MassHighway and the local jurisdiction. Transportation Enhancement funds can also be used to fund bicycle safety initiatives.

Another source of funds for bicycle facility projects is the **state's Bond Bill**. The Norwottock Rail Trail in western Massachusetts and the Minuteman Bikeway in the Boston area were both funded under a general bikeway account established in the Bond Bill. All bond funds are subject to caps. Specific projects may be earmarked in the bill or the project can be funded out of the general bikeway account. Bicycle facility improvements within Metropolitan District Commission (MDC) corridors in Boston could be earmarked in a future bond bill. The next Bond Bill is scheduled for 2002.

Implementation Approach

The City of Boston should budget adequate funding to implement the recommendations of the Boston Bicycle Plan and other aspects of the City's bicycle policies. The City's budget should include provisions for:

- the full-time position of a Bicycle Program Manager
- initial engineering feasibility studies for bicycle-related improvements to major roads as identified on a priority basis by BTM in consultation with other City departments and the Boston Bicycle Advisory Committee
- a pilot bicycle/motorist safety education program
- high priority bicycle-facility improvements, including bicycle lane, roadway, intersection and path projects

Starting December 31, 2001, the City of Boston shall prepare a detailed report every year outlining the status of the recommendations of the Boston Bicycle Plan including funding requirements. The report will be submitted to the BBAC no later than December 31 of each year.

The Boston Bicycle Advisory Committee will continue to play an important role implementing the recommendations of the Boston Bicycle Plan. The BBAC will advise and work with the City to develop, prioritize and implement Access Boston bicycling recommendations. To do this, the BBAC should:

- organize annual Bike Week events in cooperation with the City and private sector partners

- provide input for the evaluation and prioritization of bicycling-related proposals for compliance with City bicycling policies and to maximize use of available resources
- provide technical assistance, grant-writing aid, and advocacy to obtain resources for bicycle programs and projects
- develop an awards program to recognize "bicycle-friendly" efforts of area businesses, schools, employers, and institutions
- monitor commitments and compliance of projects in their implementation and maintenance phases and
- present a unified voice for bicycling advocacy in Boston, particularly in dialogue with public agencies, private sector businesses, and other advocacy groups.

The BBAC should post quarterly progress reports on committee activity, referencing specific Access Boston recommendations and deadlines, subcommittee activity, special events and programs. (A website has been proposed for this function.) The BBAC would coordinate efforts with other regional bicycle advisory committees, as well as with advocacy groups and private sector partners.

The Bicycle Plan includes a number of recommendations that require implementation or approval by different City departments. BTM should create an Interdepartmental Bicycle Task Force to coordinate the implementation of the Boston Bicycle Plan and other aspects of the City's bicycle policies. The task force should meet at least on a quarterly basis to review progress in implementing the City's bicycle program.

Another key aspect of the implementation approach is modifications to existing ordinances and regulations. The City should adopt a bicycle parking ordinance and update the Transportation Access Plan Guidelines to address bicycle issues. These measures would facilitate the implementation of bicycle improvements by the private sector.

BTM Bicycle Program Manager would chair the task force. BTM Bicycle Program Manager would manage all bicycle-related transportation projects and activities conducted by BTM, including the development of a GIS database to track project illustrated in Figure 1, and serve as a liaison with all other City of Boston departments to implement the City's bicycle policy. BTM Bicycle Program Manager would serve as an advocate for the City's bicycle policy with state and federal agencies and other municipalities in the Boston metropolitan area and work with the BBAC to evaluate and prioritize bicycle-related improvements to streets, paths and intersections in the city.