

Appendices

Appendix A. DC Bicycle Master Plan Public Participation Process

Public participation was a critical component of the DC Bicycle Master Plan Process. District residents helped develop the vision, goals, and recommendations of this Plan. DDOT worked with the BAC at bi-monthly meetings throughout the planning process to create and refine the Plan. In addition, residents also made many other significant contributions during the two-year DC Bicycle Master Plan process. The following summarizes the public input opportunities for this Plan:

November 2002 to January 2005:	Bicycle Advisory Council meetings (bi-monthly)
December 2002 to January 2005:	Website online with Plan information and feedback opportunities
May 2003:	Survey forms distributed at Bike to Work Day
April 2003 to July 2003:	Series of public rides in each Ward, followed by public workshops
March 2004:	Draft Plan posted on website for public review
May 2004:	Public Open House on Draft Plan

Bike Rides and Public Workshops - Summary

April – June 2003

Between April and June of 2003, bike rides and public workshops were held in each of the District of Columbia's eight wards. (Note: Rides were not held in Wards 1 and 2 due to rain.) Approximately 100 people attended these rides and workshops the purpose of which was to gather public input regarding existing bicycling conditions and needed improvements. At each workshop, Jim Sebastian, the DC Bicycle Program Manager and DDOT's consultants gave a brief presentation on the scope of the bike plan and answered questions about the project. Workshop participants were also given the opportunity to mark up maps with origins, destinations and areas in need of improvement. The following summarizes some of the major issues that were raised by workshop participants.

Issues Raised in Multiple Ward Workshops

Connectivity and Accessibility

- Need more roads with Bicycle Level of Service C or better
- On-street parking/rush hour restrictions. May want to select a few routes where 24 hour parking is maintained to allow for better bike access
- Connections to adjacent jurisdictions are important
- Need better access to trails
- Improve bridge connections and maintenance
- More bike parking is needed
- Improve access to Metro stations and allow bicyclists on Metrorail during peak hours
- Bus/bike lanes should be considered

- New security measures have limited access to Capitol and other Federal facilities

Safety and Security

- Education needed for bicyclists and motorists.
- Enforcement of existing traffic laws affecting bicyclists is needed. Need to ensure laws exist to protect bicyclists, e.g. no parking or driving in bike lanes

Encouragement and Promotion

- Need better information for both visitors and residents
- Promote/market specific facilities and bicycling as transportation mode
- Provide better information about facilities through improved signage and maps
- Signage should provide more information such as destinations and mileage
- Better signage needed to indicate direction to parks/trails, Metro stations

Policies and Practices

- Bicyclists need to be accepted as a legitimate form of transportation by users of other modes
- Health benefits of bicycling should be emphasized. Outreach to health community needed
- Bike facilities should be a regular part of road planning

Issues Raised at Individual Ward Workshops

Ward 1- June 10, 2003:

- Education for both motorists and bicyclists is important
- Need more police enforcement
- Suitability map should be posted in metro stations or other places
- Need unique bicycle signage for the District's bikeways. Signs should show destinations, mileage and other useful information
- Connections to adjacent jurisdictions are important. These should be shown on suitability map.
- Bike plan recommendations should include recommendations for WMATA such as:
 - Improved bicycle racks
 - Bicyclist "cattle car" for Metro
- Should work with ADA community on issues of common concern, such as:
 - Metro elevator access, e.g. getting from blue line to green line at L'Enfant Plaza is difficult with a bike.
- Enforcement of traffic laws important. People who have been involved in incident have almost no recourse to report incidents
 - Create a hotline to report crashes as an informal way track incidents
 - Provide training for police officers
- Should consider closing some streets such as 18th Street to bikes/peds only
- Need more bicycle cops. In some parts of the city, this is the best way to patrol
- Health benefits of bicycling should be emphasized. Reach out to health community
- Should build on some of the things WABA has done. Should have car free days on certain streets.
- Provide bicycle education in the schools
- Need marketing budget to promote facilities
- Could use Bicycle Level of Service as a measure of whether goals are being met or not.

- Rush hour parking restrictions are important issue. Some routes are better for bikes when parking is allowed. May want to select a few routes where 24 hour parking is maintained for better bike access
- Need to look at continuity of BLOS for route planning. Need to match up roads with levels of service A and B
- Also, need to examine existing bike routes. May not be a good idea to have a bike route sign on a road with LOS D
- Education of non-bicyclists is important. There is an assumption in some parts of the city that bikes don't belong on the road
- Contra-flow interesting idea. On 17th Street when you go the wrong way, you still have signs and signals facing you
- Many people ride wrong way on 17th. This may be to avoid 14th, 16th, and 18th Streets
- Bike lanes on 15th Street may be good alternative
- Need taller barriers on bridges to keep debris off of bike/ped facilities
- Need better information for accessing trails, bridges. Seattle bike map is a good example. Cut-outs show you how to access bridge trails
- Yield to bike signs like the ones shown in the Portland photo of blue bike lanes are a good idea
- Bike parking should be coordinated with Zipcar. Put racks near Zipcar spots

Ward 2 – June 12, 2003:

- Need laws on the books to enforce no parking or driving in bike lanes
- Speeding vehicles are a bigger problem than narrow roadways
- Need more access for bikes on Metro during peak hours
 - This will be difficult, Metro has capacity problems currently during rush hour
 - Could implement a system where one can pay more during rush hour to bring a bike
- New convention center needs bike parking in front
- Motorist education is needed, hear lots of “get off the road” comments
- Need more share-the-road signs
- Need more education for motorists, bicyclists
- What routes are good?
 - Q/R Streets
 - E Street
- Biggest problems with bike lanes downtown are rush hour parking restrictions. Better for bicyclists when 24 hour parking is allowed. Remaining portion of lane can be used for bike facility.
- In Portland, few bike lanes downtown, instead signals timed for slow (12 mph) vehicular traffic
- Should try bus/bike lanes. Pennsylvania Avenue is a good candidate
- Buses, bikes and right turns are an uncomfortable mix
- Federal/mall area-security planters are very narrow. Difficult for bike to pass through. These should be made more passable
- Library of Congress is a good model. Has security bollards that bikes can pass through and bike parking at door
- Need to improve Bike DC route so that first time riders are left with a “good taste in their mouth” for bicycling in DC
- Until have LOS B & C on more of our arterials, won't have a truly bicycle friendly city
- 17th Street has lots of wrong-way riding, need innovative solution for this road
- Should try special bicycle traffic lights like those you see in places like Germany
 - May be possible to use these in places where have bicycle volumes heavy enough to support their use.
 - What about using at location where Capitol Crescent comes in to K Street?
 - What about using bike signals for circles?

- Contra-flow bike lane could be dangerous b/c vehicles not expecting someone to come from opposite direction
 - May be possible to convert some one-way streets to two-way
 - BUT, one-way streets are some of the best opportunities for bike lanes
 - K Street service road is good for bikes, but trucks double park there

Ward 3- April 29, 2003:

- Need access to Rock Creek Park – conflict areas, such as the entrance into the National Zoo
- Access to Capital Crescent Trail and connections from there into downtown
- Need access through Washington Harbor – access to waterfront
- Perhaps Whitehaven could be a possible route to the trail near the mosque? Doesn't go down to the trail. Only access is P Street and the Shoreham Drive access points. Could have some potential
- Garfield down to the Shoreham is a good way to avoid part of Mass Ave
- Nebraska – need access because you don't have a lot of alternatives. Traffic is very fast, and the sidewalk is very bad because of the driveways/entrances
- Connecticut Ave. going north from Dupont – 1000's of bikes, a lot of different bike routes going north. A lot of right turning traffic at the split off, straight bicyclists conflict with this movements
- Connecticut and Van Ness suffer from "side friction", a lot of pedestrians, bikes, parking cars
- Whole area north of Dupont is bad. Florida Avenue left turn onto T or S
- 19th Street is not a good alternative. It's very narrow, brutal uphill stretch. A lot of parked cars. Nowhere to go
- Contraflow lane needed on Woodley Road – something WABA has advocated for in the past
- Need additional bicycle parking: in commercial areas in vicinity in Mazza Gallery, Chevy Chase Pavilion – need parking in underground garages, should have been subject to the ordinance, commercial nodes on Connecticut. Movie theaters especially. "No bikes" sign at the entrance of the underground parking at Mazza Gallery
- Will there be bike parking on M Street in Georgetown? No, it will be on the side streets, to allow more room on the sidewalks for pedestrians
- Georgetown Park needs bike parking
- Are speed humps proposed on Cathedral Avenue? There is room for bikes lanes, working with Park Service (who own half) on this
- Bike parking at Metro improving, but one of problems is bike parking at Friendship Heights. It's overflowing at entrance of Western and Wisconsin. Across the street, there is no parking. Right on state line, need to make sure doesn't get forgotten
- Bike parking at Van Ness is hard to find—there are 2 hidden parking spaces

Ward 4 – May 8, 2003:

- Need signs identifying direction to park/trails
- Parking restrictions on 16th Street--help cyclists by allowing parked cars during commute times.
- 8th Street bike route appears not to be significant
- Some neighborhoods perceived as unsafe affect the usability of potential routes
- Need signs to indicate direction to metro stations
- Need tourist-oriented/recreational routes. Routes out of the city, connecting routes to surrounding communities and destinations
- Need good signage. Currently nothing draws tourists off the mall. Historic Routes, fort tours, etc.
- Need "You are here" signs for street locations/street finding for areas outside of downtown. Similar to WMATA signs

- Link trails to metro. Need signs to direct you to metro. Give trails/routes more prominence on Metro Map or have alternative map adjacent to Metro map
- Consider changes in transportation methods...i.e. Segway, other small motorized personal vehicles
- Need bike racks at police stations
- Livingston as a bike route to Friendship Heights
- Need signs from Webster, Joyce, Blagden into park
- McKinley is bad for bicyclists

Ward 5 – June 3, 2003:

- Bike parking at Metro should be covered and well lit
- Need to conduct outreach to local schools and high schools for input into the bike plan
- Also conduct outreach to recreation centers. Currently there is a disconnect between exercise, health, transportation and education
 - Turkey Thicket recreation center is being rebuilt—opportunity to work on accommodating bikes
- What should be done about roads like New York Avenue? Should they just be written off? This will be explored in planning process. We'll need to decide if we will be able to improve these roads for bicyclists or just show them as red on bike map
- Connectivity to surrounding jurisdictions is important. Map should show that you can get all the way to Mt. Vernon, Wheaton, etc. from the District
- Is Bladensburg Road a bike route on the MD side? This road is a problem. East-West routes needed
- What is the best way to connect Columbia Heights and Brookland? Columbia Rd? Ramps at Irving Street are confusing, not clear what drivers are going to do
- Is it okay for bicyclists to be on the sidewalk? Except for downtown, this is allowed. Areas with numerous driveways need special attention to ensure the safety of bicyclists who use the sidewalk
- Need to ensure roads have bicycle friendly drainage grates

Ward 6 – June 5, 2003

- Plan should aim to increase overall number of bicycle trips, not just improve conditions for people who already bike
- This plan should be integrated with other plans like crime prevention, schools, health. Is crime a constraint to bike usage?
- In the Netherlands they have signs with the number of miles to the next destination. This would be a good idea for DC
- Need a procedure for abandoned bikes at bike racks
- The largest numbers of bicyclists are on separate paths (not on street). Need longer term goal; when big development projects are underway should take the opportunity to make a bike path instead of just striping the street
- Roosevelt Bridge is a problem. There is a bike lane on one side but it is not wide enough. Need higher retaining walls for bridges to keep debris off path
- 19th St. at Constitution. Bikes have to cross lanes of traffic – this is dangerous. Might be a good location for a colored crossing
- Need more intermodal options. WABA has done well with bikes on rail, but we need them on MARC also. No training for how to use bikes on Metrobus. Should have practice racks at key locations?
 - WABA had them at bike-to-work day. Need a bus to come to fairs, Capitol Hill day, etc.
- Education is needed for non-cyclists. Blue cards are a good start
- Need better signage for tourists. A map for bike tours, education for the non-cyclist

- “Bike the Sites” organization at the old post office pavilion on 12th St and Penn
- Bikeways should be built as part of roadway, shouldn’t need separate funding for on-road facilities
- Need to collaborate with other agencies, particularly with Federal government regarding access to the Capitol
- Need access to the National Mall
- On more heavily used routes, bicyclists should be separated from pedestrians
- Don’t forget about peds, strollers, those with disabilities. Need separate space for bikes and peds
- The more lanes we put in, the more aware motorists become, fewer accidents
- Need signs for racks and lockers
- Should look at opportunities related to Saint Elizabeth’s rail spur

Ward 7 – May 15, 2003:

- Need better access across Anacostia River
- Bike parking is needed on Pennsylvania Avenue southeast of Anacostia Freeway
- Penn Branch area needs bike parking
- Benning Road Metro needs improved bike parking
- Need better access to Kenilworth Aquatic Gardens
- Area around Kenilworth Avenue and Benning Road difficult for bicyclists to negotiate
- Minnesota Avenue north and south of Benning needs improvement and bike parking

Ward 8 - May 14, 2003

- Anacostia Park has no sidewalk/path
- South Capitol Street Bridge needs improvement. Access on both sides of the bridge is poor
- Suitland Parkway trail is narrow and poorly maintained
- Need major improvements on South Capitol Street adjacent to Bolling Air Force Base. Particularly bad during rush hour
- Need connection to Oxon Run Trail near 13th Street
- Southern Avenue Metro is difficult to access by bike or foot
- Need path along 295 to Wilson Bridge. Space exists on Westside. Need to coordinate with MDOT and Prince George’s County

Appendix B. DC Bicycle Master Plan Example Survey Form

(This survey was distributed at meetings, bike-to-work day and made available online.)

The District Department of Transportation is undertaking a comprehensive update of the city's 30-year-old bike plan. We want to know how we can make your trip safer and more convenient by bike. Please help us by answering the following questions. For more information on the bike plan or to fill out this survey on-line, visit www.bikemap.com/dcbikeplan.

1. Based on your experience, which DC streets are best for bicycling? (Be as specific as possible about location, for example: East Capitol, between 7th and 14th Streets.)

2. Which DC streets are worst for bicycling?

3. What are the best off-street routes (paved trails or sidewalks) in DC?

4. What are the worst off-street routes (paved trails or sidewalks) in DC?

5. On which streets would you like to see bicycle lanes or other bicycle facilities?

6. At which locations would you like to see additional bicycle parking (racks or lockers) provided? (Provide a neighborhood, address, intersection or business name.)

7. What was the primary purpose of your last bicycle trip? (Please circle only ONE reason.)

- a. travel to work
- b. travel to school
- c. personal business /errands
- d. visit friend/social/entertainment
- e. travel to metrorail / metrobus
- f. travel to carpool / vanpool
- g. rode for exercise/recreational activity
- h. other (please explain)_____

8. Which of the following factors plays a role in whether or not you ride your bike to your destination? (Circle as many as apply.)

- a. travel time
- b. availability of bicycle parking
- c. safety of travel route for bicyclists
- d. traffic
- e. costs of other travel modes
- f. need for exercise
- g. availability of showers/changing facilities
- h. weather
- i. hills
- j. other (please explain)_____

9. When making a bicycle trip, which of the following do you prefer to use? (Circle only ONE)

- a. On-street
- b. Bike lanes
- c. Sidewalks
- d. Off-street paved trails

10. How many days during the last week did you use the following forms of transportation? (Check as many as apply.)

- a. Metrobus _____ days
- b. Metrorail ____ days
- c. Bicycle _____ days
- d. Walk _____ days
- e. Drive _____ days

11. Did you take your bike on the following modes of public transportation in the last week?

- a. Metrorail ____yes____no
- b. Metrobus ____yes____no

12. If you have been involved in a crash while riding your bike in the District, please answer the following two questions.

12a. Please indicate who else was involved in the crash (Circle as many as apply.)

- a. Motorist
- b. Bicyclist
- c. Pedestrian
- d. Other cause (i.e. slippery surface, uneven pavement, etc.)

12b. On what type of facility did the crash occur?

- a. Street
- b. Sidewalk
- c. Trail

13. Which of the following factors do you think would do the most to encourage bicycling in the District? (Circle only ONE.)

- a. Build bikeways
- b. Safety outreach and education
- c. Enforce laws applying to bicyclists
- d. Enforce laws applying to motorists
- e. Reduce street traffic
- f. Increase police protection
- g. Provide bicycle storage
- h. Nothing
- i. Other _____
- j. All
- k. Don't Know

14. What is the closest street intersection to your home? (If you live outside DC, please indicate your jurisdiction.)

15. What is your age?

16. What is your gender?

- a. ___M
- b. ___F

Thank you for helping with the DC Bike Plan!

Please return this survey to:

Toole Design Group
535 Main Street, Suite 211
Laurel, MD 20707

APPENDIX C. BICYCLE LEVEL OF SERVICE METHODOLOGY AND SUMMARY OF RESULTS

January 2004

Introduction

A comprehensive roadway inventory was an important component of the background analysis for the District of Columbia Bicycle Master Plan. Field measurements were taken on 406 miles of major collector and arterial streets in the District in early 2003. This accounts for about 45 percent of all DC streets. Roadway lane and shoulder width, speed limit, pavement condition, and on-street parking were collected and used in the scientifically-calibrated Bicycle Level of Service (Bicycle LOS) Model to evaluate the comfort of bicyclists on roadway segments. Bicycle Level of Service results were one of several sources of information used to select the bicycle route network. The Level of Service Methodology and a summary of the LOS analysis for DC streets are provided below.

Background

Level of Service (LOS) is a framework that transportation professionals use to describe existing conditions (or suitability) for a mode of travel in a transportation system. The traffic planning and engineering discipline has used LOS models for motor vehicles for several decades. Motor vehicle LOS is based on average speed and travel time for motorists traveling in a particular roadway corridor. In the 1990s, new thinking and research contributed to the development of methodologies for assessing levels of service for other travel modes, including bicycling, walking, and transit. Specific methodologies for bicycle level of service have been developed and used by a number of cities, counties, and states around the U.S. since the mid-1990s. This Plan adopts the Bicycle Level of Service (Bicycle LOS) Model assessment method.

When considering level of service in a multi-modal context, it is important to note that LOS measures for motor vehicles and bicycles are based on different criteria and are calculated on different inputs. Motor vehicle LOS is primarily a measure of speed, travel time, and intersection delay. Bicycle LOS is a more complex calculation, which represents the level of comfort a bicyclist experiences in relation to motor vehicle traffic.

Bicycle Level of Service Model

The *Bicycle Level of Service Model (Bicycle LOS Model)* is an evaluation of bicyclist perceived safety and comfort with respect to motor vehicle traffic while traveling in a roadway corridor. It identifies the quality of service for bicyclists or pedestrians that currently exists within the roadway environment.

The statistically calibrated mathematical equation entitled the *Bicycle LOS Model¹ (Version 2.0)* is used for the evaluation of bicycling conditions in shared roadway environments. It uses the same measurable traffic and roadway factors that transportation planners and engineers use for other travel modes. With statistical precision, the *Model* clearly reflects the effect on bicycling suitability or “compatibility” due to factors such as roadway width, bike lane widths and striping combinations, traffic volume, pavement surface condition, motor vehicle speed and type, and on-street parking.

The *Bicycle Level of Service Model* is based on the proven research documented in *Transportation Research Record 1578* published by the Transportation Research Board of the National Academy of Sciences. It was developed with a background of over 150,000 miles of evaluated urban, suburban, and rural roads and streets across North America. Many urban planning agencies and state highway departments are using this established method of evaluating their roadway networks. The Virginia Department of Transportation is using the *Bicycle LOS Model* in both the Richmond and Northern

¹Landis, Bruce W. et.al. “Real-Time Human Perceptions: Toward a Bicycle Level of Service” *Transportation Research Record 1578*, Transportation Research Board, Washington, DC 1997.

Virginia regions. The model has also been applied in Anchorage AK, Baltimore MD, Birmingham AL, Buffalo NY, Gainesville FL, Houston TX, Lexington KY, Philadelphia PA, Sacramento CA, Springfield MA, Tampa FL, Washington, DC, and by the Delaware Department of Transportation (DelDOT), Florida Department of Transportation (FDOT), New York State Department of Transportation (NYDOT), Maryland Department of Transportation (MDOT) and many others.

Widespread application of the original form of the *Bicycle LOS Model* has provided several refinements. Application of the *Bicycle LOS Model* in the metropolitan area of Philadelphia resulted in the final definition of the three effective width cases for evaluating roadways with on-street parking. Application of the *Bicycle LOS Model* in the rural areas surrounding the greater Buffalo region resulted in refinements to the “low traffic volume roadway width adjustment”. A 1997 statistical enhancement to the *Model* (during statewide application in Delaware) resulted in better quantification of the effects of high speed truck traffic [see the $SP_t(1+10.38HV)^2$ term]. As a result, *Version 2.0* has the highest correlation coefficient ($R^2 = 0.77$) of any form of the *Bicycle LOS Model*.

Version 2.0 of the *Bicycle Level of Service Model (Bicycle LOS Model)* has been employed to evaluate collector and arterial roadways in the District of Columbia. Its form is shown below.

$$\text{Bicycle LOS} = a_1 \ln(\text{Vol}_{15}/L_n) + a_2 SP_t(1+10.38HV)^2 + a_3(1/PR_5)^2 + a_4(W_e)^2 + C$$

Where:

Vol_{15} = Volume of directional traffic in 15 minute time period

$$\text{Vol}_{15} = (\text{ADT} \times D \times K_d) / (4 \times \text{PHF})$$

where:

ADT = Average Daily Traffic on the segment or link
D = Directional Factor (assumed = 0.565)
 K_d = Peak to Daily Factor (assumed = 0.1)
PHF = Peak Hour Factor (assumed = 1.0)

L_n = Total number of directional *through* lanes

SP_t = Effective speed limit

$$SP_t = 1.1199 \ln(SP_p - 20) + 0.8103$$

where:

SP_p = Posted speed limit (a surrogate for average running speed)

HV = percentage of heavy vehicles (as defined in the 1994 Highway Capacity Manual)

PR_5 = FHWA's five point pavement surface condition rating

W_e = Average effective width of outside through lane:

where:

$W_e = W_v - (10 \text{ ft} \times \% \text{ OSPA})$ and $W_1 = 0$
 $W_e = W_v + W_1(1 - 2 \times \% \text{ OSPA})$ and $W_1 > 0$ & $W_{ps} = 0$
 $W_e = W_v + W_1 - 2(10 \times \% \text{ OSPA})$ and $W_1 > 0$ & $W_{ps} > 0$
and a bikelane exists

where:

W_t = total width of outside lane (and shoulder) pavement
OSPA = percentage of segment with occupied on-street parking
 W_1 = width of paving between the outside lane stripe and the edge of pavement
 W_{ps} = width of pavement striped for on-street parking
 W_v = Effective width as a function of traffic volume
and:

$$W_v = W_t \quad \text{if ADT} > 4,000\text{veh/day}$$

$$W_v = W_t (2 - 0.00025 \times \text{ADT}) \quad \text{if ADT} \leq 4,000\text{veh/day,}$$

and if the street/ road is undivided and unstriped

a₁: 0.507 a₂: 0.199 a₃: 7.066 a₄: - 0.005 C: 0.760

(a₁ - a₄) are coefficients established by the multi-variate regression analysis.

The Bicycle LOS score resulting from the final equation is pre-stratified into service categories “A”, “B”, “C”, “D”, “E”, and “F”, according to the ranges shown in Table 1, reflecting users’ perception of the road segments level of service for bicycle travel. This stratification is in accordance with the linear scale established during the referenced research (i.e., the research project bicycle participants’ aggregate response to roadway and traffic stimuli). The *Model* is particularly responsive to the factors that are statistically significant. An example of its sensitivity to various roadway and traffic conditions is shown on the following page.

Bicycle Level-of-Service Categories

LEVEL-OF-SERVICE	Bicycle LOS Score
A	≤ 1.5
B	> 1.5 and ≤ 2.5
C	> 2.5 and ≤ 3.5
D	> 3.5 and ≤ 4.5
E	> 4.5 and ≤ 5.5
F	> 5.5

The Model represents the comfort level of a hypothetical “typical” bicyclist. Some bicyclists may feel more comfortable and others may feel less comfortable than the Bicycle LOS grade for a roadway. A poor Bicycle LOS grade does not mean that bikes should be prohibited on a roadway. It suggests to a transportation planner that the road may need other improvements (in addition to shoulders) to help more bicyclists feel comfortable using the corridor.

Application

The *Bicycle LOS Model* is used by planners, engineers, and designers throughout the US and Canada in a variety of planning and design applications. Applications include:

- 1) Conducting a benefits comparison among proposed bikeway/roadway cross-sections
- 2) Identifying roadway restriping or reconfiguration opportunities to improve bicycling conditions
- 3) Prioritizing and programming roadway corridors for bicycle improvements
- 4) Creating bicycle suitability maps
- 5) Documenting improvements in corridor or system-wide bicycling conditions over time

Bicycle LOS Model Sensitivity Analysis

$$\text{Bicycle LOS} = a_1 \ln(\text{Vol}_{15}/\text{Ln}) + a_2 \text{SP}_t(1+10.38\text{HV})^2 + a_3(1/\text{PR}_5)^2 + a_4(W_e)^2 + C$$

where: a_1 : 0.507 a_2 : 0.199 a_3 : 7.066 a_4 : -0.005 C: 0.760
T-statistics: (5.689) (3.844) (4.902) (-9.844)

Baseline inputs:

ADT = 12,000 vpd % HV = 1 L = 2 lanes
 SP_p = 40 mph W_e = 12 ft PR_5 = 4 (good pavement)

	<u>BLOS</u>	<u>% Change</u>
Baseline BLOS Score (Bicycle LOS)	3.98	N/A

Lane Width and Lane striping changes

W_t = 10 ft	4.20	6% increase
W_t = 11 ft	4.09	3% increase
W_t = 12 ft -- (baseline average) -----	3.98	no change
W_t = 13 ft	3.85	3% reduction
W_t = 14 ft	3.72	7% reduction
W_t = 15 ft ($W_1 = 3$ ft)	3.57 (3.08)	10%(23%) reduction
W_t = 16 ft ($W_1 = 4$ ft)	3.42 (2.70)	14%(32%) reduction
W_t = 17 ft ($W_1 = 5$ ft)	3.25 (2.28)	18%(43%) reduction

Traffic Volume (ADT) variations

ADT = 1,000 Very Low	2.75	31% decrease
ADT = 5,000 Low	3.54	11% decrease
ADT = 12,000 Average - (baseline average) --	3.98	no change
ADT = 15,000 High	4.09	3% increase
ADT = 25,000 Very High	4.35	9% increase

Pavement Surface conditions

PR_5 = 2 Poor	5.30	33% increase
PR_5 = 3 Fair	4.32	9% reduction
PR_5 = 4 -- Good - (baseline average) ---	3.98	no change
PR_5 = 5 Very Good	3.82	4% reduction

Heavy Vehicles in percentages

HV = 0 No Volume	3.80	5% decrease
HV = 1 --- Very Low - (baseline average) --	3.98	no change
HV = 2 Low	4.18	5% increase
HV = 5 Moderate	4.88	23% increase ^a
HV = 10 High	6.42	61% increase ^a
HV = 15 Very High	8.39	111% increase ^a

^aOutside the variable's range (see Reference (1))

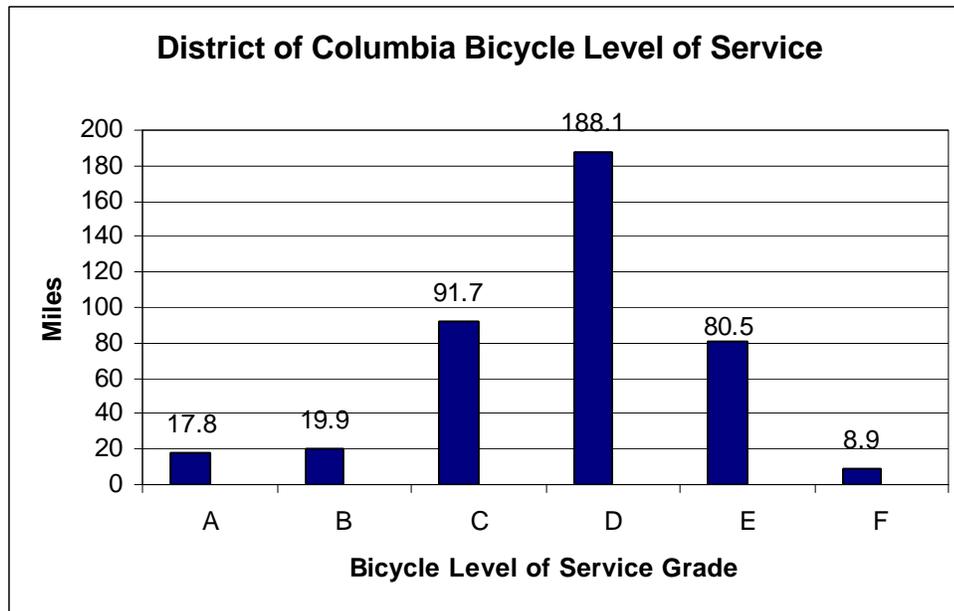
District of Columbia Bicycle LOS Results

Analysis of the major collector and arterial streets in the District of Columbia found that about 32 percent of the study network received above average grades of A, B, or C on an A (best) to F (worst) grading scale (see Exhibit 1). Streets with lower traffic volumes and bicycle lanes tended to have the highest Bicycle LOS grades. Most of the downtown streets and major arteries between downtown and the suburbs had grades of D or lower.

Exhibit 1. Bicycle Level of Service Results

Bicycle Level of Service	Miles	% of Miles with BLOS
A	17.8	4.4%
B	19.9	4.9%
C	91.7	22.5%
D	188.1	46.2%
E	80.5	19.8%
F	8.9	2.2%
Total	406.9	100%
Not evaluated	745.4	

Note: 745 miles of DC roadways were not evaluated. These were either limited access roads (freeways) or local streets where conditions tend to already be good for bicycling.



Appendix D. Bicycle Project Review Process

Routine Bicycle Projects

Below are the review processes for installation of bike route signs, bike lanes and bike racks.

Figure 1.

Installation of Signed Bicycle Routes

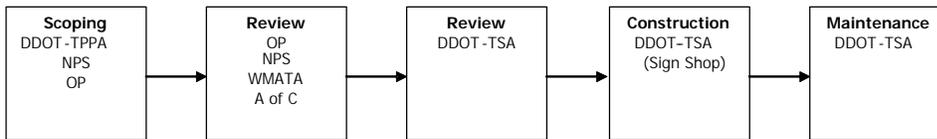


Figure 2.

Installation of Bike Lanes

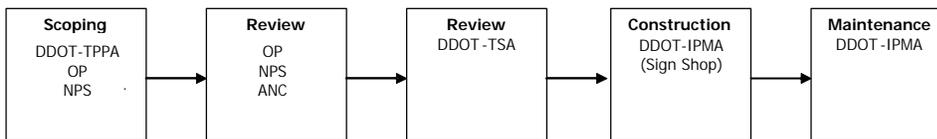


Figure 3.

Shared Use Path Projects

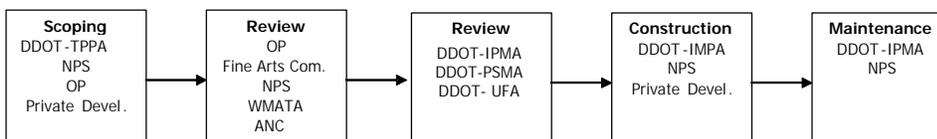
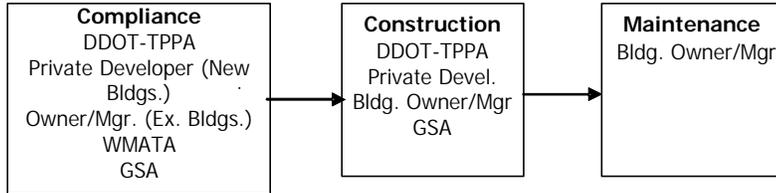


Figure 4.

Installation of Bicycle Parking

Off-Street (Garage, Surface Lot)



In Public Space

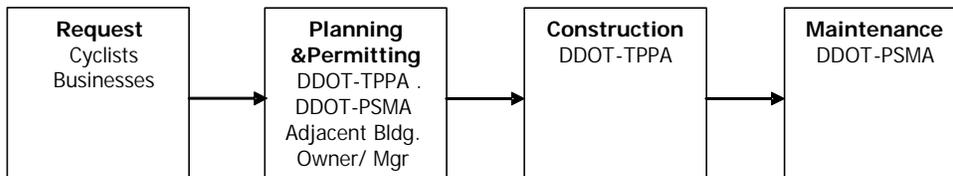
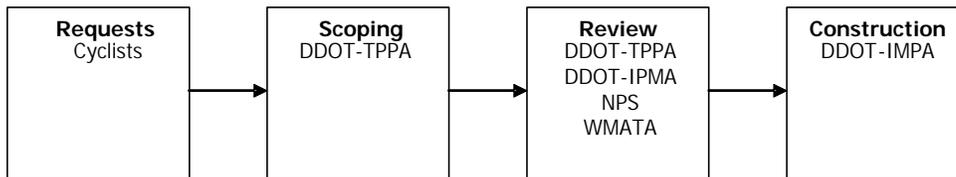


Figure 5.

Spot Maintenance



Abbreviations:

A of C	Architect of the Capitol
Adjacent Jurisdictions	Arlington County, VA; Montgomery County, MD; Prince George's County, MD
ANCs	Advisory Neighborhood Commissions
BAC	DC Bicycle Advisory Committee
BOT	Greater Washington Board of Trade
CTC	DC Convention and Tourism Corporation
DCPS	DC Public Schools
DDOT IMPA	District Department of Transportation Infrastructure Project Management Administration
DDOT TPPA	DDOT Transportation Planning and Policy Administration
DDOT PSMA	DDOT Public Space Management Administration
DDOT TSA	DDOT Traffic Services Administration
DDOT UFA	DDOT Urban Forestry Administration
DMV	DC Department of Motor Vehicles
DOH	DC Department of Health
DPR	DC Department of Parks and Recreation
GSA	Federal General Services Administration
HCD	DC Department of Housing and Community Development
HTC	DC Heritage Tourism Corporation
MPD	Metropolitan Police Department
MWCOG	Metropolitan Washington Council of Governments
NCPC	National Capital Planning Commission
NPS	National Park Service
OP	DC Office of Planning
SEC	DC Sports and Entertainment Commission
WABA	Washington Area Bicyclist Association
WMATA	Washington Metropolitan Area Transit Authority

Appendix E. Policy Review

Introduction

Creating an urban environment that is conducive to safe cycling for both recreation and daily transportation requires thoughtful planning and decision-making at many different levels. Although bicycle use is a transportation function with DDOT serving as the lead agency, other District departments and other agencies outside District government have a role to play.

The District of Columbia government maintains a number of policy documents, municipal regulations, guidelines, and coordination activities between District agencies and with other jurisdictions that collectively have a substantial impact on the facilities and environment for bicycling in the District. This policy review for the District's Bicycle Master Plan includes the following policies, regulations, guidelines and activities:

- Comprehensive Plan (DCMR Title 10 - rev. 12/98)
- Zoning (DCMR Title 11 rev. - 2/03)
- Traffic & Parking (DCMR Title 18 rev. - 3/97)
- Public Space & Safety (DCMR Title 24 rev. 12/96)
- DDOT Design & Engineering Guidelines (Draft 4/03)
 - DC Long Range Transportation Plan
 - Policy Coordination With Other Agencies/Jurisdictions

Each of these areas is addressed in the following section starting with purpose and relationship to bicycle facilities and use, followed by a set of recommended changes to enhance conditions for bicycling.

DCMR Title 10: Comprehensive Plan

Purpose & Relationship to Bicycle Facilities & Use

The District's Comprehensive Plan establishes the policy framework that guides public sector decision-making on the part of the District government and federal agencies in the development and regulation of the District's environment. This document was last amended in February 1999. The current document is organized into 15 chapters as listed below:

- Chapter 1 - General Provisions Element
- Chapter 2 - Economic Development Element
- Chapter 3 - Housing Element
- Chapter 4 - Environmental Protection Element
- Chapter 5 - Transportation Element
- Chapter 6 - Public Facilities Element
- Chapter 7 - Urban Design Element
- Chapter 8 - Preservation and Historic Features Element
- Chapter 9 - Downtown Plan Element
- Chapter 10 - Human Services Element

- Chapter 11 - Land Use Element
- Chapter 12/- Ward Plans
Chapter 19

Many of these chapters have a bearing on transportation facilities and use. A strategy for transportation should be a major feature of Chapter 1, the General Provision Element, since it underpins many of the elements of the Comprehensive Plan. Transportation is specifically referenced in Chapter 5, the Transportation Element, Chapter 9, the Downtown Plan Element, and Chapters 11 through 19, the Ward Plan Elements.

The current document is limited in its guidance and support for non-motorized modes of travel. At present, the District's Office of Planning is leading a process to revise and update the Comprehensive Plan. It should be noted that this review and update could lead to a significant restructuring of the Comprehensive Plan. This process offers an opportunity to strengthen the Comprehensive Plan with regard to intermodal and multimodal transportation with an emphasis on the importance of non-motorized forms of transportation.

Recommended Changes

The District of Columbia is a truly multi-modal urban environment where all modes of transportation can and do play a role. The District ranks in the top tier of cities with regard to use of public transit and walking, but has lagged substantially behind other cities with regard to policies and investments that promote non-motorized transportation.

Chapter 1 - General Provisions Element

Add a provision that calls for the development and management of a balanced transportation system that provides safe, attractive and convenient access for all modes of travel with an emphasis on walking, biking and transit.

Chapter 4 - Environmental Protection Element

Under the Air Quality section, add language that promotes the use of non-motorized transportation as an integral part of plans and programs to reduce mobile source emissions. The Greater Washington Region has been designated "Severe Non-Attainment" under the provisions of the Clean Air Act.

Chapter 5 - Transportation Element

Revise this chapter to strengthen multi-modal and intermodal transportation provisions. Create new sections to address pedestrian and bicycle policies and facilities.

Chapter 6 - Public Facilities Element

Add text that supports the provision of multimodal access for all public facilities. This section should also establish planning requirements for the development and implementation of multi-modal transportation plans for all public facilities.

Chapter 9 - Downtown Element

Apply the same approach as in Chapter 5, but with far greater focus on the importance of balanced transportation facilities and systems management to the long-term health of the region's core. This section should also cover the transportation relationship between the core and adjacent neighborhoods.

Chapter 12 to 18 - Ward Elements

These sections should be revised to address the importance of non-motorized travel within the wards, to other destinations in the District, and surrounding jurisdictions. These sections should also address the specific facility needs within the wards.

DCMR Title 11: Zoning Ordinance

Purpose & Relationship to Bicycle Facilities & Use

The Zoning Ordinance regulates the development of land in the District of Columbia and establishes off-street parking requirements for development under the following sections.

- Chapter 21 - Off-Street Parking Requirements
- Chapter 23 - Garages & Parking Lots
- Chapter 24 - Planned Unit Development Procedures

To the extent that off-street bicycle requirements exist in the District's municipal regulations, it is in DCMR Title 11. The District of Columbia Department of Zoning is the government staff department responsible for zoning, and the 5-member Zoning Commission is responsible for review and approval of amendments to the Ordinance. The following section covers the existing bicycle parking requirements included in the Zoning Ordinance.

Chapter 21 - Off-Street Parking Requirements:

This section of the zoning ordinance establishes minimum provisions for off-street vehicle and bicycle parking. It also establishes the size, location, access, maintenance and operation of those required spaces. Section 2119 - bicycle Parking Spaces, specifically requires the following:

2119.1 "Bicycle parking spaces shall be provided for office, retail and service uses, except for retail and service uses in the C-3-C, C-4, and C-5 (PAD) Districts. For office uses in the C-4 and C-5 (PAD) Districts, bicycle parking spaces shall be provided as if the building or structure were located in a C-3-C District.

2.119.2 "The number of bicycle parking spaces provided shall be at least equal to five percent (5%) of the number of automobile spaces required under 2101.1.

For general office uses in the C-3-C District (the bicycle parking requirement, which applies to C-4 and C-5), is very modest due to the linkage with vehicle parking. The minimum vehicle-parking requirement

for this District is 1 space for every 1,800 SF above the first 2,000 SF. Thus the bicycle-parking requirement works out to be one space for every 36,000 square feet of office development or one space for every 120 employees (assuming 300 SF per employee).

The current bicycle parking requirements also do not cover multi-family residential development in the District and it is unclear how university and medical campuses/facilities are treated in this ordinance.

Chapter 23 - Garages, Carports, Parking Lots and Gasoline Service Stations

This section of the zoning ordinance regulates both parking garages and parking lots that may be developed as either an ancillary or primary use. There is currently no specified bicycle-parking requirement in this section.

Chapter 24 - Planned Unit Development Procedures

The planned unit development (PUD) process is intended to encourage high quality developments in return for public benefits. The goal is to permit flexibility of development and other incentives such as increased building height and density, provided that the project offers a commendable number of public benefits and advances public health, safety and welfare. Section 2405.7 refers back to Chapter 21 for off-street parking requirements but states that the Zoning Commission may reduce or increase the parking requirement of such facilities depending on the uses and the location of the project.

Recommended Changes to the Zoning Ordinance

The existing requirements for bicycle parking in the Zoning Ordinance are limited in scope and will only yield a modest amount of off-street bicycle parking in the future. Multi-family residential development is not addressed in the ordinance and the ordinance is ambiguous as to whether university campuses and medical campuses are covered by the existing requirements. The intent of bicycle parking requirements is to provide cyclists with convenient and safe bicycle parking at a range of potential trip origins and destinations, the same approach that is taken for vehicle parking. Cyclists, like motorists, need convenient secure short-term parking for some service trips, while also needing secure, weather-protected locations for longer-term bicycle parking at home and at work.

As part of this assessment, the zoning ordinances and bicycle parking requirements of 11 jurisdictions around the country were reviewed. The jurisdictions that were selected for this review are at or near the center of a metropolitan area, are highly urbanized, and have implemented supportive bicycle plans, policies or programs over the last five-year period. These jurisdictions include the following:

- San Diego, California
- San Francisco, California
- Portland, Oregon
- Seattle, Washington
- Vancouver, British Columbia
- Boulder, Colorado
- Madison, Wisconsin
- Chicago, Illinois
- New York City, New York

- Boston, Massachusetts
- Cambridge, Massachusetts

These jurisdictions have diverse approaches to off-street bicycle parking requirements. These approaches ranged from a comprehensive requirement for bicycle parking for all uses (treating bicycle-parking requirements like minimum vehicle parking requirements). The Cities of San Diego, CA, Portland, OR and Vancouver, BC, fall into this category. In the case of Portland and Vancouver, these codes went further to specify different types of required bicycle parking. In Portland, this differentiation was made between short and long term spaces. Vancouver was similar but organized requirements based on level of security provided. Most of the jurisdictions reviewed have more modest requirements for a set of specified uses such as commercial office and/or multi-family residential. And finally, several jurisdictions such as Chicago and Boston have not yet adopted off-street bicycle parking requirements in their ordinances although recently developed bicycle master plans call for this.

Based on a review of the District's existing requirements as described in the Zoning Ordinance and the requirements of other cities, substantial revisions are required to promote conditions that are supportive of bicycle use District-wide. As stated at the beginning of this section, the intent of policies that require bicycle parking for a variety of developments is to make bicycle parking and use convenient for a range of trip purposes and for a wide range of origins and destinations. As such, the comprehensive approach to bicycle parking facility requirements that has been employed in the cities of San Diego, Portland, and Vancouver is recommended. Further, the approach of requiring two tiers of bicycle parking (both short and long term spaces) as in Portland and Vancouver is also recommended.

Second, it is recommended that bicycle-parking requirements be de-coupled from vehicle parking requirements and be described in a separate table. The District's minimum vehicle parking requirements are generally very modest and can be reduced further through the PUD process or through other provisions of the Zoning Ordinance listed in 2103 - Exceptions to the Schedule of Requirements. One example from this section applies to developments within 800 feet of a Metrorail Station where the parking requirement can be reduced by 25 percent.

Third, the proposed revisions should be linked to District transportation goals and a policy direction that supports bicycling as an essential mode of transportation that can accommodate a significant percentage of daily person trips. In Portland, the city's goal is for 10 percent of all daily person- trips to be made by bicycle. This policy objective is stated at the beginning of the bicycle requirements section of Portland's municipal regulations (the equivalent of the District's Zoning Ordinance).

The City of Portland's municipal regulations pertaining to bicycle parking, "Title 33: Planning and Zoning, Section 33.266.200," and the City of Vancouver's Development Bylaws, "Section 6 - Off-street Bicycle Space Regulations," are included as an attachment to this memorandum for your review.

DCMR Title 18: Traffic & Parking

Purpose & Relationship to Bicycle Facilities & Use

The purpose of this title is to regulate the use of the surface transportation system, focusing predominantly on drivers and motor vehicles. Use of bicycles and issues related to pedestrian movement are covered in this document. This title also establishes enforcement provisions.

The specific sections that are relevant to cycling are the following:

- Chapter 1 - Issuance of driver's license
- Chapter 12 - Bicycle use, registration and parking
- Chapter 22 - Moving violations
- Chapter 26 - Bicycle use infractions
- Chapter 40 - Traffic signs & restrictions at specific locations

Recommended Changes

Chapter 1 - Issuance of Driver's Licenses

Review driver testing requirements to assure that it reflects safe motor vehicle operations in an urban multi-modal environment with cyclists, pedestrians and transit vehicles.

Chapter 12 - Bicycles, Motorized Bicycles, and Miscellaneous Vehicles

This section lays out the regulations for lawful bicycle use, mandatory bicycle registration, bicycle safety equipment, installation of bicycle racks on public space, bicycle parking on public space, etc. This section is clearly written and no significant revisions are recommended at this time.

Chapter 21 - Traffic Signs, Signals, Symbols, and Devices

In Chapter 12, in 1200.3, it states that "operators of bicycles have the same rights as operators of motor vehicles." However, most of the interaction and potential conflicts between motor vehicles and cyclists occur at intersections. There is no mention of cyclists in this chapter. This section should be reviewed to clarify cyclist rights at controlled intersections particularly with regard to turning vehicles.

Chapter 22 - Moving Violations

This section needs to be strengthened regarding the rights of pedestrians and cyclists in the public right-of-way. As the most vulnerable users of the surface transportation system, these users should be afforded the maximum degree of protection by the regulations that govern right-of-way use. At present, most collisions involving pedestrians and cyclists with motor vehicles are assumed to be the fault of the pedestrians and cyclists unless there is conclusive proof to the contrary.

This section also establishes motor vehicle speed restrictions and the proper use of the roadway. Motor vehicle speeds have a tremendous impact on the safety and comfort of cyclists using public streets. Vehicle travel speeds of 25 mph or less are most conducive to safe cycling.

Chapter 40 - Traffic Signs and Restrictions at Specific Locations

Temporary vehicle parking/double parking on bicycle routes and in designated bicycle lanes creates a serious hazard for cyclists. Section 4033 specifically references a prohibition of motor vehicle use of bicycle lanes. This section needs to be clarified to prohibit temporary vehicle parking and loading in established bicycle lanes. There should also be set fines for this infraction to discourage this activity.

DCMR Title 24: Open Space & Safety

Purpose & Relationship to Bicycle Facilities & Use

This title regulates the use of public space in the District and establishes streetscape standards. While bicycle parking on the public right-of-way is covered under Title 18 Vehicles and Traffic, there is no discussion of bicycle parking in this Title. The provision of well-designed short-term visible and accessible bicycle parking in the public right-of-way is important for encouraging bicycle use and should be thought of in the same way as short-term curbside vehicle parking.

Recommended Changes

Insert a section in Title 24 that specifically addresses bicycle parking as a legitimate use in the public right-of-way, consistent with Title 18, and incorporate appropriate bicycle rack designs in the streetscape standards for Downtown and other districts.

DDOT Design & Engineering Manual

Purpose & Relationship to Bicycle Facilities & Use

The District's Department of Transportation (DDOT) Office Manual for Design and Engineering documents procedures that will enable DDOT staff, consultants, and private interests to develop projects that meet the District's policies and standards. Aspects of this manual that are relevant to bicycle facility and use include the following:

- Establishes procedures for transportation capital project management and guidelines for facility design
- Provides guidance for traffic management/maintenance
- Provides guidelines for pavement markings and signage
- Establishes requirements for traffic impact studies
- Provides guidelines for on-street parking
- Relies heavily on established industry standards and guidelines

The most recent draft of this manual reviewed for this study was issued 04/14/03. To date, this manual has not been formally adopted by the Department.

Recommended Changes

The recommended changes to this document are intended to address the fact that the District is a highly urbanized multi-modal environment where many different transportation system users need safe and convenient access to transportation facilities and services. As such, these standards should be aligned.

Chapter 3 - Project Management Checklist

3.2 Project Scoping - This section needs to emphasize up-front multimodal planning and coordination. Important objectives to guide projects going through the scoping process include the provision of multimodal access and balance, promoting safety for all users, and supporting the lawful use of transportation facilities.

Chapter 5 - Traffic

Add a section that includes the objectives stated above. Emphasize steps needed to protect the most vulnerable users - pedestrians and cyclists.

Chapter 30 - Roadway

Review the functional classification system for its appropriateness in an urban multi-modal context (30.4). Revise design speed for urban streets to equal posted speeds (30.5). Review standard roadway element widths (30.11).

Chapter 43 - Guidelines for Pavement Markings & Signage

Consider inclusion of a provision of bicycle boxes at intersections, use of yield triangles at intersections, color differentiation of bike facilities on major commercial streets.

Chapter 44 - Guidelines for Reviewing Traffic Conditions & Preparing Traffic Impact Studies

This section should focus on person travel by all modes and should address the issue of traffic speed and safety for all users.

Chapter 45 - Requirements for Traffic Impact Studies for Development Projects

Same note as in Chapter 44.

Chapter 46 - Parking (Table 46a)

Consider adding the option for a 7'-0" parking stall width.

District Long Range Transportation Plan

Purpose & Relationship to Bicycle Facilities & Use

The District developed its first State Long Range Transportation Plan (LRTP) in 1996. For the purpose of federal transportation funding programs, the District of Columbia is treated as a state. The creation of an LRTP is a planning requirement of the federal surface transportation legislation. The 1996 plan was noteworthy for its scenario-based planning approach. The plan is relevant to the Bicycle Master Plan

because the LRTP is intended to serve as a guiding document for the development, evaluation, selection and implementation of transportation projects in the District. The Transportation Strategy described in this plan included the following elements:

1. *Develop sufficient and consistent funding to sustain world-class infrastructure and an exemplary multi-modal transportation project planning and institutional coordination process. This will be accomplished by creating new revenue opportunities and innovative financing techniques.*
2. *Improve the efficiency, safety and attractiveness of the existing transportation system through improved maintenance, streetscaping and signage*
3. *Focus transit investment on internal circulation to provide City residents and visitors with improved alternatives to the automobile.*
4. *Reduce the impacts of suburb to City travel on District residents by intercepting automotive traffic at key locations and providing excellent alternatives to driving in the City.*
5. *Promote business in the District by addressing goods movement through improved loading facilities and by improving rail as an alternative to moving goods into and out of the City.*
6. *Develop non-traditional, "signature" transportation for the District, including a water-taxi system, light rail and a world class bicycle transportation network.*

The development of a viable bicycle facility network is explicitly supported in the last strategy element. However, other strategy elements also support improvements in cycling conditions. Strategy 1 calls for multi-modal transportation planning. Strategy 2 calls for improved maintenance. Strategy 4 recommends the provision of viable alternatives to traveling by auto within the District.

The Action Plan calls for the development of District-wide "bicycle spine network," to connect existing, dedicated bicycle paths with one another and with new paths and dedicated bicycle lanes. The detailed recommendations for this area are included under Action Item 7.17 - Bicycle Spine Network.

The District's LRTP is currently being updated. This provides an opportunity to update and expand upon the recommendations for bicycle facilities and policies.

Recommended Changes

A preferred bicycle route network and design standards are being developed as part of the Bicycle Master Plan. This work should be integrated into the LRTP. One of the main challenges presented in the LRTP update is providing the right balance of access and use by all modes (auto/truck, transit, walking and cycling) on major transportation corridors. Some corridors may be best suited for intensive transit use while others may be highly suitable for bicycle facilities. This analysis must be done within a context where the boundaries of public right-of-way are fixed.

A goal for the bicycle element of the LRTP is to identify a network of bicycle facilities and routes that provide reasonably direct and safe access to most of the desired destinations in the District. A second goal

would be to pursue the incorporation of reasonable bicycle and pedestrian accommodation in all new or substantially reconstructed segments of the District's street network as part of the routine project planning and development process.

Policy Coordination with Other Agencies

District Schools (public and private)

There are over 50,000 students that attend DC Public Schools and many more that attend the District's many private schools. Encouraging bicycle and pedestrian access to schools is good public policy from many vantage points: promotes physical activity among students, has no adverse environmental impacts, and requires only modest expenditures in pedestrian and bicycle facilities (compared to adding new road and/or transit capacity).

DC Public Schools has a written policy on the provision of reduced fare bus tokens and Metrorail passes for access to school but has no comparable written policies for non-motorized (bicycle and pedestrian) access to schools. However, individual schools have been found to discourage student bicycle use by prohibiting bicycle parking on school grounds or not providing secure bicycle parking facilities (due to concerns about liability).

DDOT staff should work with the DC Public Schools and other private schools to develop policies that are supportive of multi-modal access, and that encourage walking and bicycling.

Metropolitan Police Department

Promoting lawful use of public streets and sidewalks by all users is very important to providing an environment that is conducive to safe cycling. Cars and trucks, if driven with disregard for motor vehicle laws, are a serious hazard to others, particularly pedestrians and cyclists that do not have the protection of the vehicle with its many safety features. If the District is serious about promoting non-motorized travel, a minimal tolerance for motorist infractions is required, and travel speeds of 25 mph or under would need to be standard. The Metropolitan Police Department (MPD) is responsible for enforcing existing traffic laws. Improved communication and coordination between the MPD and DDOT will be required if progress is to be made in this area. It will also require staffing and financial resources.

Supporting education programs that promote shared use of the right-of-way is also important to promote safe cycling conditions.

WMATA

Substantial advances in bike access to transit have been implemented in the last five years. Bicycles are now permitted on Metrorail throughout the system outside of the peak hours of operation. Further, a majority of Metrobus's fleet has now been outfitted with bicycle racks. These actions have greatly expanded the range of cyclists in the region.

More work is required on the provision of visible, secure and user friendly long-term bicycle parking at Metrorail Stations.

Providing safe bicycle access from surrounding neighborhoods to the station entrance is also needed. Many Metrorail Stations, particularly on the east side of the District are dominated by auto and bus drop-off and parking areas with limited accommodation for pedestrians and cyclists.

National Park Service

The National Park Service has jurisdiction over much of the District's public open space system, particularly in the Monumental Core and along the river corridors. Much of the District's existing and proposed trail network is on NPS controlled land. As such, any plan for enhanced bicycle facilities and use will require ongoing coordination with the National Park Service.

Architect of the Capitol

A Similar coordination as discussed above is required between DDOT and the Architect of the Capitol regarding bicycle facilities and signage that fall within the Capitol grounds.

National Capital Planning Commission (NCPC) & the General Services Administration (GSA)

NCPC is responsible for establishing planning guidelines for federal facilities in the District, including policies governing off-street parking for vehicles and bicycles. The DC Zoning Ordinance does not apply to federally owned facilities. GSA is the umbrella property manager for the federal government and sets the requirements for federal facilities in the District and numerous other locations. Incorporating bicycle parking and other bicycle supportive facilities will require coordination with both NCPC and GSA.

Transportation and Public Works Departments in Adjacent Jurisdictions

The District of Columbia lies at the center of a highly diverse region of over 5 million people. Many trips made by all modes of travel including cycling, cross-jurisdictional boundaries every day. The bicycle network should be seamless across these boundaries. Coordination regarding route location, treatments and signage are necessary. This will require ongoing communication with the local Departments of Transportation from adjacent jurisdictions including Arlington, Alexandria, Prince George's County and Montgomery County.