

**Appendix A: Hot Spot Matrix**

Hot Spot Intersections	Hot Spot Priority (public meeting voting results)	Hot Spot Un-Friendliness (public meeting voting results)	Additional Considerations/Remarks	Route Network? Y/N	Priority Score	Hot Spot Priority Rank	Timeframe	Opportunities for Implementation	Deficiency
Pleasant St, Rum Hill Rd	1.94	3.24	Problems at this intersection have been addressed	Y	5.18	Low	Completed		Speed, General
North State and Washington	2.12	3.17	No significant intersection deficiencies	N	5.29	Low	Long		General
Main and Pleasant	2.27	3.16		N	5.43	Low	Long		General, advanced green signal without proper signal head
Path from Tech to Ft. Eddy under 393	2.19	3.27		Y	5.46	Low	Short	Ramp to be added as part of the NHDOT Delta Drive bridge	Large curb onto Ft. Eddy
Clinton St, Langley Parkway	2.53	2.97		P	5.5	Low	Short	Signal planned. CY 2011	Difficult to turn left from Langley, Cars don't yield to westbound bicycles
North State and Rumford	2	3.56		P	5.56	Low	Short	Part of CIP 35, Phase 4B. CY 2012	Left turns onto N State are difficult, Continuing south on N State conflict with right turning vehicles
Pleasant and Dunbarton	2.15	3.53	Provides Access to Bike Path	P	5.68	Low	Long		Left turns are difficult due to speed and sight distance
Clinton St, Silk Farm Rd	2.51	3.33	Provides Access to Bike Path, important network link	P	5.84	Medium	Short	Add pavement markings and signs	Difficult turns or movements in any direction
North State, Penacook St.	2.75	3.16	Signal detection deficiency has been addressed	P	5.91	Medium	Short	Part of CIP 35, Phase 4B. CY 2012	Proceeding from Penacook to Horseshoe Pond or left on N State is difficult with a long queue, signals don't change
South Main and West/Water	2.44	3.75		Y	6.19	Medium	Long		General
North Main and 393	2.25	4.16	Alternative routes are available	N	6.41	Medium	Long		General
Loudon Rd, East Side Dr. area	2.64	4.03		P	6.67	Medium	Medium	Included with NHSIP Grant project	General, difficult proceeding south
East Side Dr. Bridge over 393	2.68	4		Y	6.68	Medium	Medium	Restriping program	Northbound vehicle conflict as right lane exits to I393
Manchester St. Bridge	3.03	4		Y	7.03	Medium	Long	Combine with Manchester St / Old Turnpike Road intersection project	General
High School Area	3.35	3.72	Improved bicycle access to schools is a BMP goal, intersection	P	7.07	Medium	Medium	Education & signing	General, Safety and education issues, students that don't always follow the rules
Main and Center	3.03	4.11		P	7.14	Medium	Medium	Restriping program	General
Loudon Rd, Hazen Dr./Airport Rd	3.11	4.19		P	7.3	High	Long		Left turns onto Hazen are difficult with uphill and speed of cars and cross multiple lanes for left turn lane
Sewall's Falls Bridge	2.7	4.64	Important crossing of Merrimack and link in Route Network	Y	7.34	High	Short	Probable start CY 2014	General, surface
Loudon Rd Bridge over Merrimack	3.61	4.66		P	8.27	High	Long	Combine with I-93 reconstruction project	Narrow shoulder, traffic speed and volume
Loudon Rd, Exit 14 area	3.64	5		P	8.64	High	Long	Combine with I-93 reconstruction project, policy decisions	General

Difficult Corridors	Hot Spot Priority (public meeting voting results)	Hot Spot Un-Friendliness (public meeting voting results)	Additional Considerations/Remarks	Route Network? Y/N	Priority Score	Hot Spot Priority Rank	Timeframe	Opportunities for Implementation	Deficiency
Clinton St East	2.86	2.21		P	5.07	Low	Short	Install signing and pavement markings	
Dw Highway to Pembroke line	2.34	3.81		Y	6.15	Low	Short/Long	Airport Road intersection will be reconstructed as part of the Manchester Street reconstruction. Area	long fast uphill right turn lane that exits onto Airport Road
Pleasant St/Hopkinton Rd	2.76	3.61		Y	6.37	Low	Long	Restripe Langley/Pleasant, work with NHDOT outside of urban compact	
Clinton St West	2.7	3.89		Y	6.59	Medium	Long	Coordinate with NHDOT	No shoulder
S. Main St	2.82	4	Paralell routes available, destination	Y	6.82	Medium	Long	Address as part of "Rethinking Main Street"	Diagonal parking causes problems
N. Main St	2.58	4.26	Paralell routes available, destination	Y	6.84	Medium	Long	Address as part of "Rethinking Main Street"	Diagonal parking causes problems
Pleasant St E of Langley	3.17	3.67	A portion is a designated route	P	6.84	Medium	Medium	Bike lanes/ shoulders exist between Langley and Liberty Street. Need to address east of Liberty Street	Narrow shoulder
N. State St by the Prison	2.94	4.17	Serves an important transportation role	P	7.11	High	Short	Part of CIP 35, Phase 4A. CY 2011	Parked cars force bikes into the travel lane, Snow removal
Loudon Rd	2.94	4.59	Serves an important transportation role	P	7.53	High	Medium	Included with NHSIP Grant project	General, Difficult to navigate, Multiple difficult intersections
Loudon Rd- Gully Hill	3.43	4.17	Serves an important transportation role	P	7.6	High	Long	Traffic calming or separate bicycle facility	General, fast moving traffic
Manchester St	3.12	4.53		Y	7.65	High	Short	CIP 36, probably start CY 2013	General, difficult intersections
Silk Farm Rd North of I-89			Access to I-89 path	Y	0		Short		Surface in poor condition
I-93 Bike Path over River			Important crossing of Merrimack and link in Route Network	Y	0		Short	Delta Drive Bridge Project	Sharp corner with poor visibility, awkward intersection with Delta Dr., narrow at bridge
Fort Eddy Rd				N	0		Long		General

### Comprehensive Notes from Public Meeting 1

**Table 1: Route Map**

#### **City Streets/corridors**

- Loudon Rd – general problem area with numerous mentions along the entire length
  - Exit 14 area difficult and not safe
  - Bridge is difficult and not safe
  - East of East Side Dr. is particularly difficult
  - Is a wider shoulder possible?
  - Dedicated path along Loudon Rd- (more than one mention)
  - Bike path paralleling Loudon Rd S. of 393 (more than one mention)
  - General improvements to Loudon Rd. (reduce lanes?)
  - Have some sort of lane/path along Loudon Rd, Airport Rd, Pembroke Rd corridor
  - Open sidewalks to bikes?
  - Bike Path down to Alton Woods from 393 path and Portsmouth St as connection to Loudon Rd.- maybe use utility ROW
  - 393 path is a good choice for a route
- Storrs St.
  - can make a good route
  - Has no land for bike path?
  - Add bike shoulder?
  - Connection to Loudon Rd Bridge
- Sewalls Falls Bridge
  - Wider
  - Make so bikes can go both ways
  - Make better for bikes
- Clinton St
  - W of Silk Farm Rd- difficult for bikes
  - Difficult to cross at Silk Farm Rd
  - blind spots west of Exit 2
  - Difficult to cross at Langley Pkwy.
- State St./N State
  - Intersection with Bouton St to Penacook
  - When NB take right to avoid Bouton St intersection (going NB take N Main to Horseshoe Pond Ln to Penacook St. Intersection)
- Penacook St.
  - Penacook St W of N State
  - (Right lane R turn only) rough pavement at intersection with N State
  - Light won't change for bikes at intersection with N State
- Pleasant St.
  - To HS- Difficult corridor- Need for better access/safety around HS
  - W of Langley needs improvement
- Fisherville Rd-
  - Granite curbs are dangerous- widen shoulder
  - Routes bypassing Fisherville Rd. on each side (Borough and Lilac SB, Sewalls Falls, Abbott Rd NB)
  - Refugees
- Manchester St

Manchester St/Old Tpk./Loudon Rd, Hall St.(potential route)  
Add shoulder at the bridge  
Basin Street and East Sugarball, add “except bikes” to no outlet sign  
Langley Pkwy  
Share easement for bike path- have bike path along route north from  
Hospital (they used it now)  
Intersection with Clinton St. is difficult  
Horseshoe Pond Ln  
Sidewalk connector has no snow removal

**Comments on Rural Roads:**

Shaker/Mountain Rd (sharrows)  
Carter Hill Rd.  
Add to route map  
Pleasant on northward- add to route map  
Mountain Rd, increase shoulder  
Bog Rd- ok when not at peak hours  
Horse Hill Rd/River Rd Improve River Rd by making 1-way

**Existing or proposed Paths:**

Better signs for Paths along I89  
I89 bike path in Bow (makes a good route)  
Path along 93 –proposed idea  
Delta Dr/93 path/bridge-  
Good for a bike route  
Curve where path starts near Delta Dr.  
Improve entrance to Delta Dr.

**Destinations to keep in mind/have a route connection to:**

Rundlet School  
High School  
Library

**Other Comments:**

East Side Dr 393 Bridge (Difficulty with northbound lane)  
State Office Park South (use for cut thru-good for routes)  
Roundabouts  
Support for roundabout at exit 16  
Require education on how to use roundabouts  
Ferry St. Behind Stickney ave/under Highway (dangerous)  
Bridge over River  
Horseshoe Pond Ln sidewalk- no snow removal  
Need for better access/safety around HS  
Recreational Path around Penacook Lake and Turkey Hill Pond  
Advertise Recreational routes in NW corner

**Table 2: Hot Spots**

**Specific Intersection/Location**

North Main and 393  
Main and Center Street

Main and Pleasant (advanced green for left turn? Difficult to navigate particularly due to advance green signal without proper signal head)  
S Main and West (by vinnie's pizza)  
N. State and Washington- Difficult for bikes or anybody  
N. State and Rumford- Left turn onto N State  
N. State and Penacook – Proceeding from Penacook to Horse Shoe Pond or left on N. State is difficult with a long queue  
Pleasant St, Rum Hill Rd- Speed, difficult  
Pleasant at Dunbarton – Left turns are difficult due to speed of vehicles and limited sight distance  
Clinton St and Langley stop sign- cars don't yield to westbound bikes  
Clinton St and Langley – difficult to turn left from Langley  
Clinton St and Silk Farm – difficult turns for all movements in any direction  
Near McGee Square- Allow LT from Clinton St to S. Spring (towards NS Route)  
Loudon and Hazen Left turns are very difficult- fast and uphill  
Loudon and East Side Dr – difficult to proceed south. Provide additional width?  
East Side Dr. Bridge over 393 going north- NB vehicle conflict  
Hazen Dr. and East Side Dr.-Difficult LT onto East Side Dr  
Any bridge across the Merrimack is difficult

### **Specific Corridors**

#### **Main St**

- diagonal parking causes problems
- Change from 4 lanes to 3
- Storrs St. as an alternative
- Have Main St be one way south and Storrs St be one way north

#### **Loudon Rd**

- Exit 14 is difficult to navigate
- Especially the hill
- Reduce lanes- may still be a problem due to turning traffic
- Use Pembroke Rd as an alternative
- Accommodate bikes on sidewalk somehow- especially at gully hill

#### **Manchester St-**

- hill at Pembroke town line- there is a long, fast right turn only lane up hill
- Exit 13 area is unfriendly

#### **North State St**

- Parking at prison forces cyclists into the street
- Winter maintenance of shoulder

#### **Ft Eddy Rd**

Silk Farm Rd maintenance (N of 89)

Path under 393 from Tech to Ft Eddy Rd- Large curb and poor surface

High School area- High school students in cars or bikes that don't always follow rules of the road- safety and education issue

### **Traffic Signals**

Traffic signals in general Citywide- lights don't always change for bikes  
Mark traffic signal detection spot so bicyclists know where to stop  
Penacook St and North State St/Horseshoe Pond-light doesn't change  
Borough rd N State- light doesn't change  
Fruit St and Clinton St- lights don't change  
Washington and N. Main – lights don't change

## **General Topics**

4 way stops are problematic

- School and Liberty intersection

- Roundabouts are preferable to 4 way stops

- Driver education at 4 way stops- people often try to wave you on early

Roundabouts are better than 4 way stops as long as ridden properly by taking the lane

- Support for roundabout at Exit 16

- Support for roundabouts in general

Crossing the Merrimack anywhere is difficult

- Loudon Rd

- Manchester St

- Sewalls Falls- improve for bikes when re-built

## **Shoulder Issues**

Storm grates

- At Mtn Rd

Other utilities sunken in the pavement

Drainage problems in the shoulder force bikes into the travel lane

Clinton St beyond Silk Farm Rd- narrow shoulder

Loudon Rd

- Hill- scary shoulder while uphill- tempted to use sidewalk

- Create some sort of separation on shoulder (hill)

- Reduce to 3 lanes with wider shoulder

- Dedicate portion of sidewalk on Gully Hill for bicycles

East Side Dr N of Shaker Rd.: narrow shoulder w/ curb

## **Maintenance**

All commuter routes should be maintained for 24/7/365 use

Snow Removal/winter maintenance

- 93 bike bridge snow removal

- Horseshoe Pond Ln sidewalk snow removal

- North State Street at Sewalls Falls (new road and it wasn't plowed clean)

Street Sweeping- remove debris from shoulder

## **Connections/Alternatives**

Need and alternative route from Heights to Downtown

Cross RR tracks by Storrs/Stickney Ave area- Formalize a crossing

New Bridge over Merrimack River adjacent to RR Truss near Exit 16

Pembroke St. alternative to Loudon Rd

Cross Loudon rd at diamante Dr. to Old Loudon Rd- construct short path

Shortcuts through State Hospital/Office Park South

## **Other comments:**

Motor Vehicles seen on bike paths

Bikes often ride in wrong direction one way

Warren St

State Street- prohibit cars and make bike-ped only

Support for a Bike Path along River

3A in Bow at end of bike path (problem spot) Poor connection to Route 3A

Random parking spaces like those on Schools St push cyclists into traffic where they otherwise can stay to the side of the street

### **TABLE 3: END OF TRIP FACILITIES AND TRANSIT CONNECTIONS**

#### **PARKING, PARKING, AND MORE PARKING:**

**Increased parking** was a topic that came up over and over again throughout the night (people also mentioned the need to teach people how to properly lock up their bikes so that the racks will be utilized):

- Use downtown parking garage for bicycle parking(racks, lockers, or cage)(consideration: surveillance)
- Increased bike parking at retail locations (in particular Fort Eddy Road)
- Install bike racks at Farmer's Market location
- Increase downtown bike parking
- Increase bike parking at parks
- Increase parking at State buildings
- Add parking at medical facilities, including Concord Hospital
- Increase/improve bike parking at school (away from where kids wait for busses to avoid vandalism)
- Provide overnight bike storage (for those who want to commute some days, but not all days)
- Mindful placement of parking (keep in mind sprinklers, keep them away from areas where people loiter)
- Trouble Spots: McKee Square, Fort Eddy Road, Grocery Stores (all need more parking!)
- Provide grant funded bike racks to employers

#### **Improved Parking:**

- Protecting bike from damage (carbon racks or bike lockers)
- Increase visibility of bike lockers at the bus station
- Invest in racks that have cables already attached so that bikers only have to carry a padlock (this would need to be consistent throughout the city so that riders aren't left unable to lock up their bikes)

#### **OTHER FACILITIES:**

##### **Showers:**

- Public: Possible partnership with YMCA or other gyms (shower/locker membership)
- Private: Encourage employers to put in showers and lockers (changes to building code, monetary incentive, public recognition- **"Bike Friendly Employer of the Month"**)

##### **Transit/Busses (CAT):**

- Leave racks on busses through winter (one attendee said that doing so would allow him to extend his bike commuting season by 6 weeks!)

**“Park and Ride” Lots:**

- Partner with companies/parking lots to have designated “Park and Ride” lots (places for people to drive part way, leave their car, and continue on to their destination by bike) (near highway exits, in particular exit 16)- have organized rides from “Park and Ride” lots for bike to work week to raise awareness about their existence

**OTHER (BIKE SHARE, FUNDING, BIKE FRIENDLY CONCORD):**

- Use road improvement \$ for an alternative transportation fund
- Expand bike share program (Franklin Pierce Law School)
- Seasons are a factor that impact riding- host a Fall Bike to Work Week to keep people going or remind them to start again in the Spring (more activities to keep people going)
- Increase bike visibility in general (make it clear that Concord is “Bike Friendly”)

**Table 4  
Safety and Education**

1. Motor Vehicle Training
  - a. Drivers Ed
  - b. Parent Training- PTO, Elks, VFW, Moose, etc
  - c. Safety Video played in schools, parole training, etc
  - d. Parole/Inmate Training/Refugees
2. Road Rage
  - a. How do we fix this?
  - b. Don’t fight back
  - c. Share the road signs- more of them
3. “How To” signs at intersections
  - a. Signs about 3’ rule, Mountain Rd, Clinton, Pleasant, Shaker, etc
4. Bump outs/cyclist is ahead of cars at stop signs
  - a. Or paint and signs to do the same thing
5. Bike register that includes training
6. Educate Bicyclists of rules
  - a. Reflective clothing is required by law dusk to dawn
7. Earn a bike program with inmates along with training (they can make the signs)
8. “Bike Box “at busy intersections
9. Follow up to bike to work week where police enforce bike laws for (two?) weeks
10. Flyer given to drivers at registration of vehicle



**RECREATION**  
**- Group 5 Discussion -**  
**Bike Master Plan – Public Information Meeting**

1. Improve access and linkage to existing recreational trails
  - a. Everett Arena was noted for this. High Traffic Volumes on Loudon Rd. deter bike travel. Even if you drove to the park so your kid could use the skate park, there aren't any trails in the area for biking.
  - b. Need to strengthen the connection and communication between towns. There is a bridge in either Boscawen or Canterbury that could be utilized as an off-road connection between communities for recreational and commuting purposes.
  - c. For long-range planning, we should consider a Bike Path on both sides of the river.
2. Bike Facilities/Racks should be provided at all trailheads. A person could feasibly bike to a trail, then hike the trail.
  - a. City and State Landmarks should also provide facilities
  - b. Bike Lockers should be considered in parts of the city
3. Bike Share Program and Bike Stations should investigate successful programs to eliminate or reduce the learning curve. There have been a lot of problems and improvements since the programs began in other parts of the country.
  - a. Look at Chicago and Boston programs
4. The North-South Bike Route is an on-road connection to the Concord-Salem Trail and the Northern Rail trail. We need to make sure the off-road (off street) connection remains a priority so Concord can complete the connection from Hanover to Salem.
5. Trail Maintenance on Langley North – portions of the current trail are not usable due to past flooding. This should be addressed so it can be used while awaiting construction.
6. City should support off-road access and linkage from schools to parks for student safety.
7. Multi-use paths should be paved to encourage all users
  - a. A general recommendation was made for permeable pavement. Also noted was the pavement should be adequate to suit all styles of bike.
8. Bike Signage
  - a. Set aside bike parking and sign as such
  - b. Sugarball Road and Basin Road signs read “No Outlet” and could read “No Outlet Except for Bikes”
9. Security Cameras installed on school grounds to monitor and deter theft/vandalism of student's bikes.

10. All buses should have bike racks, including back-up buses used when regular bus comes out of service. Availability of bike racks should be consistent throughout the system.
  - a. Trailways/Greyhound buses should also have bike racks (if not already) so bicyclist can travel to other destinations for the purpose of recreational riding. (e.g. Boston, Nashua and Manchester)
11. Recreational Trail Maps should provide a Bikeability/Skill Level for each trail
12. Develop trails along the power lines
13. Develop trails along the State Hospital Grounds to connect Pleasant Street to Clinton Street
14. Develop a trail from St. Paul's, under Langley, to Memorial Field.
15. Develop a recreational trail along Pleasant Street and Loudon Rd.  
(Note: This comment came from concern that traffic volumes on these corridors created a barrier to riding in the road. A bike path, rather than a recreational trail, would be the appropriate terminology)
16. Stronger education for motorists. We should be educating people that when they enter a neighborhood, they will most likely encounter children riding bikes and drivers should respond appropriately.
17. Community Recreational Planning – Zoning Modifications
  - a. Consideration should be given to kids in the zoning and encourage development of off-road links between neighborhoods.
  - b. When sidewalks are required in new (residential) development, bike paths should also be included.
18. Expand the number of trails and improve access between them.
  - a. The current networks has a lot of stops and starts
19. Develop a multi-use trail along the river. (This was re-iterated by every group and most every person in every group)
20. Educate engineers about bicyclists and connections needs
  - a. Bike Turn Radius should be considered when connecting trails/links
21. Form a “Friends of” trails committee specific to biking or in conjunction with existing groups

## **Table # 6 Vision**

### Overall Vision

- Have a concrete role model (i.e. Portland, OR)
- Bicycle friendly policies when working with new housing and business development and road construction and Park & Rides
- A city with an outer ring of hubs (Park & Rides and other parking lots) that can accommodate bikes, are striped accordingly and where people can leave their cars and ride the rest of the way

- Car free Main Street (i.e. Burlington, Vt.) and other road for bicycles only
- A safe, friendly place to ride anywhere for commuting and recreation – more acceptance of bicycling as transportation
- Having an informed and educated public where people understand low cost of bicycle infrastructure compared to car infrastructure
- Promotion of Concord as a tourism destination for cyclists
- Bicycling is integrated into daily activities (a “tool”) and making it as easy to get to locations as it is to drive there
- Traffic enforcement would play a critical role in safety
- Signage showing people where they can ride and informing drivers to allow for more safety
- Eliminate we vs. they mentality
- Lots of kids bicycling everywhere
- A growing bicycle sharing program with facilities like parking shelters
- A place where drivers are educated on the rules of the road (this should be done at the state level)
- Readily available information about the best way to get where you want to go
- Minuteman Trail north

#### Obstacles

- Stop lights not triggered by bicycles
- No dedicated lanes and signage
- Lack of education of basic laws, general ignorance of both cyclists and drivers
- Distracted drivers
- Cost of implementing changes
- Solar glare on East-West routes
- No facilities to wash-up or shower
- Lack of funding
- Bicyclist irresponsibility breeds public opposition to more bicycling
- Parents fear that bicycling is unsafe for their children

#### The City should...

- Develop maps and brochures for transportation and recreational trails and get them on the city’s website like the hiking/walking info
- Have kiosks similar to Rideshare
- Develop pavement markings and signage for bicycling
- When the planning board reviews housing and business projects, they should make sure there are bicycle connections from neighborhood to neighborhood and business to business
- Focus on building the necessary infrastructure and improve dangerous intersections
- Develop a safety video
- Continue to solicit public input
- Have more high visibility events like GCW
- Parade of new N-S route and other routes
- Better promote existing events
- Get the word out to the general public about bicycling as a safe and healthy transportation option

#### How to fund

- Include bicycle infrastructure improvements into general city budget
- Work to get 2 cents from gas tax for cycling projects
- Bicycle registration fee
- Bicycle events encouraging all to come out and participate like breast cancer awareness

## **APPENDIX C**

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### **Comprehensive Notes from Public Meeting 2**

#### **Open Space Discussion**

##### **Trail Possibilities discussion**

Regarding Multi-Use trails:

Most attendants were enthusiastic about the prospect of multi-use path- none expressed they were not in support

Most agreed that a paved trail would get the most use and is much preferred to a gravel path if possible. Paved trail is more attractive for seniors and small children.

Comments on “reconnecting to the river” and how a paved trail would be a great way to do it. Access to the river was a high priority to those at the meeting. There was specific mention of Horseshoe Pond to Sewalls Falls.

There was strong support for a trail connecting to Manchester- this corridor seemed to be a priority to the most vocal people at the meeting.

Agreed a multi-use path is a needed alternative to busy-unsafe streets- especially if the route offered an alternative where current on-street options are unsafe (i.e. to Manchester).

Multiple comments on importance to connect to Downtown

Some people enthusiastically cited examples from other locations that have a multi-use trail/rail trail.

Concord being the Capital should have one- it would be a shame to have a statewide multi-use trail with a gap in Concord.

We should be “shovel ready” for funds should they become available.

Conversation about the positive economic impact a trail can have.

Find a bridge to re-use to cross the Merrimack- specifically at the Blue Seal factory- asked about the one the Concord Monitor was referring to in Boscawen/Canterbury

It would be nice to connect Manchester St. with Loudon Rd with a trail- possibly use the land by the transfer station. There were questions about existing challenges and suggestions to use land at the Transfer Station.

Access to natural resources is important- natural resources are what draw people to NH.

#### **Other comments:**

Positive responses regarding the open space plan that Kit Morgan presented

Attendants thought it to be important to connect and provide access to Concord’s open space

Classification system for Trails- it is hard to know if they are multi-use, hiking only, easily bikeable or mountain bike only, etc.

Logging Roads are not always a favorite (or even wanted) for bicyclists

## **Vision Group**

1. Vision statement looks great; maybe add some language about how bicycling would be "integrated into the transportation system"
2. Add language about address the disjointed aspects of the city and its current bike infrastructure -- "connecting the city and its neighborhoods"
3. All good
4. Other possible things to consider/pursue:
  - \* Need more enforcement of traffic laws
  - \* Can the CAT buses have the bike racks on them all year?
  - \* NO NO NO to the idea of mandating bike registration and fees
  - \* New paint for lanes used by DOT is really slick. So when painting bike lanes and sharrows, etc., make sure paint that is used in not as slick if possible!
  - \* Do more public relations about the existing trails network on city website and PATH website; have awareness events
  - \* A place to start might be to start with completing small trails and connecting existing trails to make a more complete bike network

## APPENDIX D

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### Public Comments via Email

12/7/2009

Thank you so much for spearheading the "bike friendly" city project. I will not be able to attend the meeting tonight but am in full support of doing everything we can to make Concord a safe and appealing place to bike.

12/7/2009

As you plan Concord's bicycle facilities, please keep in mind Laconia's "bicycle planning" as an example of what not to do. There is no need for the expensive bike path planned for downtown Laconia. The implementation of the plan is particularly stupid. As Laconia and the State waste money on the w.o.w. path, the need for bike shoulders on the roads around Lake Winnepesaukee and on the east side of Paus Bay ( NH 3 ) continue to go unmet. I do support the part of the plan calling for a series of short bike paths linking existing shore side roads between the Weirs and Meredith because this allows cyclists to avoid the hills, high speeds and turning movements made by those unfamiliar with the side roads on NH 3. In line with the stupidity of the Laconia project, this Meredith-Weirs section will be the last section built. Keep in mind that the budget in the w.o.w. plan is a 2003 estimate. The Bristol, N.H. bike path, the Lincoln, N.H. bike path ( which requires cyclists to cross NH 112 more than staying on NH 112 would ) and the Franconia Notch bike path are also examples of stupid projects which receive very little use. Do not look for useful input from the NH DOT Bicycle office. That office has never done a study after the completion of a path project to assess degree of success of a bicycle facility.

Good Luck,

12/7/2009

I live on North State St north of the prison and work downtown. In decent weather I ride my bike to work a couple of times each week.

I am not a spandex rider just someone trying to reduce their carbon footprint.

I would like to see something safe, there are many driveways and business entrances on N state and the area between Rumford and Walker school are especially dangerous to a bike.

I am unable to attend the meeting tonight but I am interested in something both for transportation and recreation

Thanks

12/8/2009

Greetings Nic, good meeting last night. You guys have your hands full with the input. One of the issues brought up at table three was the concern over scratching a nice bike on the metal racks. I went home and found two companies that make a recycled plastic bike rack. They are [www.belson.com](http://www.belson.com) and [www.barcoproducts.com](http://www.barcoproducts.com). There is a big disparity in price. I assume the DPW should have wholesale type options available. Thanks for your efforts

Congratulations and thank you for a well run meeting last night!

Below is the very short summary that I sent to the group of triathletes with whom I train (S2 – coached by Sean Snow).

Regards,

12/8/2009

The purpose of the Transportation Policy Advisory Committee (TPAC) meeting last night was to serve as a kickoff for updating the Bicycle Master Plan. I estimate that there were about fifty or sixty members of the public in attendance. The meeting consisted of two main parts: introductions/presentations and group discussions.

In the introductions/presentations portion (items one through four on the attached agenda), members of TPAC introduced themselves, the Bicycle Master Plan (a section of the City of Concord master plan), and gave updates on activities and initiatives of the committee (which was formed a year and a half ago).

In the group discussions (item five of the agenda), the attendees were divided into six groups and rotated through six tables to discuss the following topics:

- Route Map (street network)
- “Hot Spots” Map (intersections and problem spots)
- End of Trip Facilities and Transit Connections
- Education, Encouragement and Safety
- Bicycling and Recreation
- Visioning and Goals, Policy and Objectives

The agenda included a final item for regrouping and reviewing the notes generated at each table. This item was skipped due to the volume of input generated. Instead, notes will be compiled and published on the TPAC Bicycle Master Plan web site (<http://cnhrpc.org/transportation/Bicycle%20Master%20Plan.html>).

A few of my notes:

- Other S2s in attendance: Brad Hosmer and Tim Farmer (Brad and I were in the same discussion group, Tim presented and moderated – I apologize if I missed anyone else).
- The majority of the public attendees were commuters (informal observation) and the direction of most conversations seemed to be towards commuting (I rode my bike to work most of the summer and felt a strong connection with some of the topics discussed). For example, I found the Route, Hot Spot, and Education tables to be most interesting.
- As an athlete (in contrast with the connection with the commuters), I felt less connected with some concerns. For example, I was not particularly interested in discussions about developing (direct) routes or most of the conversation at the “End of Trip Facilities and Transit Connections” table.
- The “Bicycling and Recreation” table brought up a trailhead parking discussion (the lack of thereof) as well as developing more off-road paths appropriate for road bikes.
- Overall, I was impressed with the organization of the meeting, the sincerity of the TPAC members, and the enthusiasm of the participants.

There will be another meeting to present and discuss the findings from this meeting, however it is not yet scheduled.

12/8/2009

I thought we had a very productive meeting last night. I feel like our concerns were heard and taken seriously. Now the hard work begins. I took a walk through the I-93 over Loudon Road Bridge today. This bridge was identified by several people as being a serious impediment to bicycle traffic connecting the west side of the city to the State Offices on Hazen Drive and Fort Eddy Road. Personally, I've never had a problem with this bridge, but I keep up with traffic and ride like a car. Not everyone does.

Obviously, our options are limited because we can't change the span length of the bridge and the south abutment is tight to the sidewalk. It occurred to me that a fairly low-cost safety enhancement would be to replace the vertical granite curb with a cape cod berm. That would give a bicycle an escape route to the sidewalk in the event it needs to make a quick evasive maneuver. Right now, there is absolutely no way a bicycle can get itself out of harm's way. I know the City of Concord standard sidewalk detail calls for vertical granite curb whenever a sidewalk is adjacent to a roadway, for pedestrian safety. Perhaps in this instance the City would consider allowing a cape cod berm for this section of sidewalk.

12/9/2009

Concord, and the Capitol Region, are way behind the curve on being a more "bike friendly" place to live. The turnout at the meeting on Monday was encouraging and perhaps a good message to local planners who have not taken bike transit planning seriously. I attended the hearing but had to jump next door for a meeting on the evolving public library planning so consequently was unable to stick around for the small group sessions.

A few ideas....:

- Make local site plan and subdivision approvals more bike/pedestrian opportunity conscious; the development approval process provides opportunities for the creation of easements and pathways for pathways serving non vehicular transportation, often time providing once in a lifetime opportunities to secure connections between neighborhoods, schools, and community resources. Planning approvals often envision right of ways to other undeveloped parcels to ensure future access. The same logic should be applied to pedestrian and bike avenues.
- Assure real bike lane capacity....often times bike lanes are little more than narrow strip along roadways....the lanes double as parking and include drainage hazards...and often time disappear or narrow beyond use.
- More aggressive use of rail corridors....examples of rail bed bikeways are widespread around New England.

Concord's planning staff needs a consciousness raising re: bike planning. The assistant planner is prone to saying things like "people in New Hampshire don't bike".

12/9/2009

Thanks Craig

Let me quickly qualify my comments about "local planners" to mean the city's own staff planner.....the single largest city redevelopment project ,Horseshoe Pond, in which the city moved rail beds, built new roads, and created a large office park, but knowingly and



intentionally failed to incorporate bike connectors between downtown and the I-93 bridge bikepath is but one example (the so called bike lane roadside there is a particularly comic example....which disappears just when it would be needed most). In doing so there was a missed opportunity to create a critical linkage to East Concord and neighborhoods and communities north of Concord east of the river. Anyway....you get the drift.

I would love to participate in future sessions.

Thanks for the response.

12/11/2009

Wish I could have gone myself, but was unavailable. Even though I'm not a cyclist, I'm a big supporter of increased cycling infrastructure.

12/11/2009

The kick-off meeting for Concord's Master Bicycle Plan was very good. I was impressed with the presentation. I wanted to meet the people involved and see what is planned.

I live outside your area of influence (Litchfield); but many of the ideas presented will transfer to my area (Nashua/Manchester). Obviously, I would like to be kept informed. I would like to be on your mailing lists. Hopefully, you will find my input of value.

12/24/2009

Thanks for your thoughts on these issues and the work you have been doing to make this all come together. I rode my bike through town this morning on the way to a holiday breakfast and was pleased to see the bike lanes at several tough intersections (My normal commute doesn't take me through town, so I hadn't seen these before).

However, I'd like to further stress the point Tom made regarding the connection between the Horseshoe Pond office park and downtown over the railroad tracks. I understand that the tracks are a protected HSR corridor, but what I don't understand is why there is a crossing over the same railroad less than a quarter mile north of where Tom was suggesting? Does the HSR corridor end right there? The existing crossing is fine if you are either coming or going to West Concord or Penacook, but it is not a good route if you plan on going downtown. It literally doubles your time and is significantly more dangerous from a traffic perspective.

I really think that improving access via this corridor should be a critical part of the plan to help Concord become a model for wellness. If you create safe access for people to travel by foot or bike to downtown in under 10 minutes (which this will), you will immediately give a large population a reason to go downtown without the need for a car. I don't know how many people work in the Horseshoe pond office park and NHTI, but it is certainly significant. If the HSR corridor is a deal breaker, it might make sense to at least investigate other rights of way or opportunities to get a path through to downtown.

Anyway, thanks again for leading the charge for a better Concord and keep us posted on your progress.

1/5/2010

I may have missed it but I suggested the use of portable signs to notify automobile traffic and or bikers with messages. I'm talking about the tow along type then placed on side of road like they use for you are speeding 48mph. A flashing statement like bike lane ahead, bike turn box ahead, bike crossing ahead, 3 foot rule, etc. This would work great at a

place where the sign could say 2 min. by bike to downtown with an arrow showing a short cut. By car it would be 10 min. through lights and roadways.

Another item since I rollerblade is that a paved path should be with a finish coat not just base course and also at least 6 feet wide, I prefer 8 feet. Base course pavement is rough on rollerblades and also baby carriages with our hard rubber tires.

Keep up the good work.

4/1/2010

Glad to see the bike path conversations are continuing, I had been wondering about that.

Also, are you making sure that cyclist needs are incorporated into the new downtown concord planning? I heard they want to make main st a two lane st, expand the side walks, etc etc. All sounds great to me, but we should remember to incorporate cyclists into the planning. Maybe not bike lanes on the main drag (keep it pedestrian focused), but make sure the design has easy bike-in bike-out access, with racks and cyclist accessibility needs in mind.

4/1/2010

Unfortunately I have another commitment at the same time as the public hearing. I seriously regret that I won't be able to participate. Since I won't be able participate in person, I'd like to express my concern over the route for the proposed north-south bike route. For a little background, I live on Broadway and bicycle commute to the heights via the bike path over the Merrimack River and approach the heights from East Side Drive. I would use the portion of the north-south bike route from McKee Square to Penacook Street. However, I would never choose to ride a bicycle on South Spring Street because of all the stop signs. With clipless pedals, I'd be constantly clipping in and out every block, and it would be an extremely frustrating experience. There's a reason there's low traffic on South Spring Street. Drivers don't like to stop every block and neither to bicyclists. A bicycle route needs to be appealing to bicycles.

Alternatively, I have never had a problem with cars on Green Street. Green Street is wide enough to accommodate cars and bicycles together, even with cars in the parking spaces. I am very concerned that the portion of the north-south bike route in this area would never get used by bicycles. I realize it's late in the game to be raising these concerns, but the route has not yet been marked or signed, so hopefully there is still time to reconsider.

Re:

I completely understand the rationale, as you explained it. Experienced adult riders can take care of themselves pretty well, especially since we also drive cars and can, with a high degree of accuracy, predict what a car will do. We can also ride like we drive, so we can ride in a predictable way for the drivers. Children and inexperienced riders don't have that experience to draw from. I'm completely okay with choosing a route that was selected with safety of children as its highest priority.

## APPENDIX E

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### Bike Parking Survey

#### Short Term Parking:



1. Do you know what this is an image of?

It is a historic thing that people used to tie their horses to

It is a decoration

I don't know/I've never noticed one before

It is a bike bollard for parking a bicycle

I wouldn't have known it was for parking bikes if it weren't included in a bike parking survey!

2. Concord's bicycle committee TPAC- Bicycle found that these bollards are rarely used for parking bicycles downtown. We want to find out why and make sure there is adequate, usable short term bicycle parking that people want and will use. We also want to do it in a cost effective way that other Main St. users will agree with (keep "clutter" to a minimum). Do you or would you use these bollards for short term bicycle parking downtown? If not, why? What do you prefer? Please share your thoughts.

#### Long Term Parking:

1. Where do you park your bike when you bicycle to work?

In my work building

On a bike rack outside

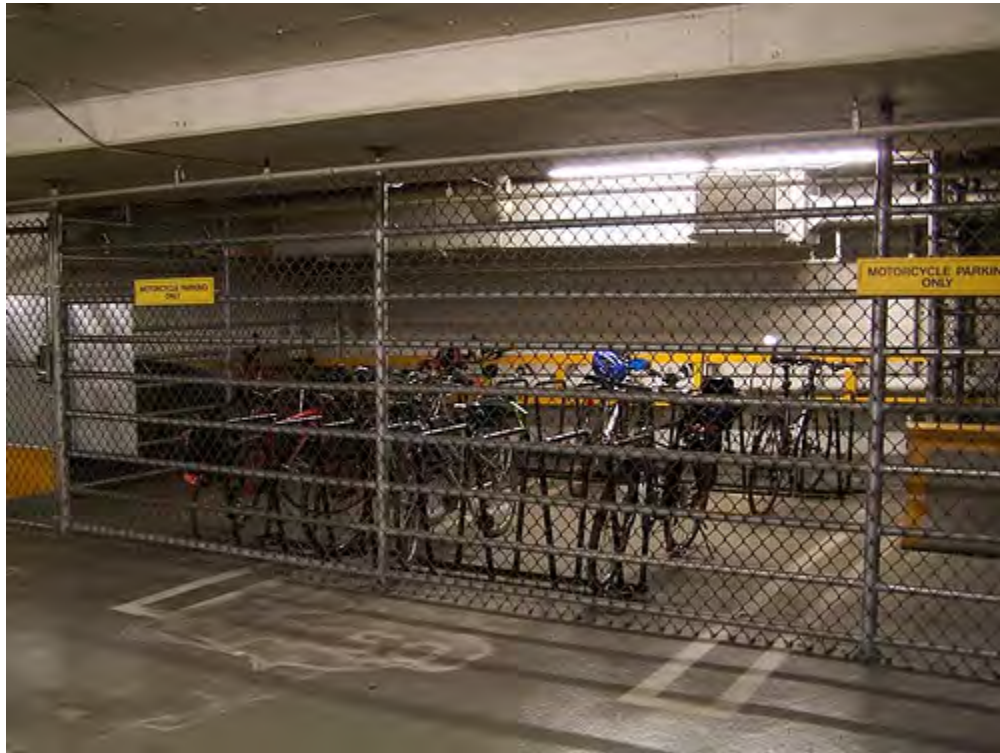
I lock it to a sign/tree/fence etc.

I never ride my bicycle to work

2. Would you use a long-term bicycle parking facility (bike locker) near your workplace if it were available?

Yes

No



3. Concord's bicycle committee (TPAC-Bicycle) has been investigating the possibility of creating long term bicycle parking in "dead space" in Concord's parking garages for temporary bicycle storage while commuters are at work or visiting downtown. The above images are samples of what could be provided. Would you use such a facility? What would it take for you to want to use it?

4. About how close to work would this facility need to be in order for you to want to use it?

It would need to be very close- almost across the street



I'll walk up to a few blocks  
I'll walk up to 5 minutes  
I'll walk a bit more than 5 minutes  
Even if it were close, I would continue to use the bicycle parking arrangement I have now.  
Comments:



### **Results Summary**

#### **Bicycle Parking Survey**

#### **CNHRPC**

During the recent green commute week a survey was distributed to participants who rode bicycles into work. This survey was intended to gather information that would inform us about certain bike parking issues in the city. We received 50 responses along with great feedback, from those who are most

likely to be using bike parking facilities

The first survey question showed a picture with of one of the bike bollards along Main Street in downtown Concord and asked what it was. Most respondents were aware of the use of the bike bollard but 22% of respondents selected “I wouldn’t have known that it was for parking bikes if it weren’t included in a bike parking survey”. Many of the people who answered this survey were bikers. This shows the need for descriptive signage on the bollard, such as the bollard shown here. Comments on the use of bollards for bicycle parking showed that, although these are secure, there is still concern regarding both theft and vandalism. A few comments expressed a liking for using parking meters rather than bollards due to availability throughout Main Street.

The next question was intended to find out where people currently park their bicycle when they ride into work. Almost half of those who answered the survey park in their building, some of the comments relate this to convenience, necessity, bicycle value, and fear of theft or vandalism. The other half of respondents park outside at a bike rack or other secure object.

The survey then asked about the use of long term bicycle parking near the workplace. Almost 60% of the users said that they would utilize a bike locker. Comments infer that bike lockers will see more use when weather conditions are unfavorable. The picture of the bicycle “cage” received a great deal of positive feedback, some of the benefits...

- “wouldn’t have to carry a large lock”
- “various bags / panniers / water bottles / helmets that accompany me can be left on the bicycle securely”
- The bicycle can be kept out of unfavorable weather

Many bicycle users would continue to use current parking arrangements, but there are just as many who would be willing to park their bicycle and walk a few blocks in order to be able to use these secure facilities.



## Main Street Bicycle Parking Report and Recommendations

### Section 1: Main Street Bollards

**Bollard #1:** This bollard is perpendicular to the road which puts the bike close to the curb. It is rarely used because of the nearby racks at the State House. The location feels strange out in the open. Close proximity to State House and Farmers Market.

Recommendations: Remove the “loops” and attach a plate that is more appropriate for balancing and locking a bicycle. The plate should be made parallel to the road to avoid clearance issues. If the bike parking in front of the State House is made permanent (a fixed rack), consider removing this bollard.





**Bollard # 2:** This bollard is in front of Merrimack County Savings Bank. There is a step in the sidewalk that is very problematic, but the problem could be minimized if the loops are removed and the orientation is changed to parallel Main Street. A parked bike might obstruct access to the bench, but this does not seem critical. This is a tight area but the bicycle parking is manageable.

Recommendation: Remove loops, add plates that run parallel to Main Street and the Curb. Consider adding a one-sided meter parking area on School Street if resources are available (See section 2).





**Bollard #3:** In front of Subway, this bollard is difficult to use due to proximity to a step in the sidewalk. This can be fixed by orienting it parallel to the street. It is far enough from the step to work. The new sign post for the new parking system is a bit close but should be ok. This busy area with various destinations nearby seems ideal for bicycle parking.

An alternative that may reduce sidewalk clutter would be to use an area between the last parking spot and the bulb out for street bicycle parking (discussion in Section 2).

Recommendation: Remove the loops and add plates that run parallel to Main Street. Orientation parallel to Main Street is critical for this location. The nearby on-street option is not recommended at this time but should be considered in the future.





**Bollard #4:** Slightly cramped area mid-block near the camera store. The location is on a slight slope. Overall, the location is adequate. Orientation should be changed to be parallel to street. A trash can is in the way and should be moved to the opposite corner of the bulb out.

Recommendation: Remove loops and add a plate attached parallel to Main Street. Move trash can to opposite corner of the bulb out.



**Bollards 5 and 6:** These bollards are next to each other in front of Capital Commons and Red River Theatre. They get used if families ride to a movie, etc. They are a bit close together so bikes may touch, but it is manageable. These bollards are well placed, oriented, and in a good location. They would benefit from new plates to help better balance the bicycles.

Recommendation: Add plates that run parallel to Main Street.





**Bollard # 7:** This bollard is in a very tight space between the curb at a truck loading/unloading area and the narrow sidewalk in front of Gibson's Bookstore. Its current orientation perpendicular to Main St renders this bollard nearly unusable. If a plate running parallel to Main St is added the bollard could be usable. It may be best to have the plate on the sidewalk side only because it is very close to the curb and the pick up/drop off for trucks etc. The sidewalk would be very narrow with a parked bike. There may be nearby alternatives in the plaza near the entrance to the Capital Commons parking garage.

Recommendation: Remove bollard, or attach a plate on the sidewalk side only.





**Bollard #8:** This bollard is barely usable with a nearby tree forcing the bike well into the sidewalk, but would work well if rotated 90 degrees.

Recommendation: Remove loops and add plates that run parallel to Main Street.





**Bollard #9:** Near Dos Amigos and The Works. There is not much room but the area is manageable. There are other bollards nearby but this is suitable since it is a busy area. Leave the orientation the way it is (perpendicular). If bikes were parked parallel to Main St it would obstruct the crosswalk. This is one of only two bollards that should be oriented this way.

Recommendation: Add plates running perpendicular to Main Street.





**Bollard #10:** Near Caffenio. There are two trashcans at this location, and one abuts the bollard. One of these can be moved elsewhere. A light pole is close by but it is workable. The Perpendicular orientation is ok, but parallel to Main Street would work too.

Recommendation: Add plates to each side. Can be either perpendicular or parallel to Main Street.



**Bollards 11 and 12:** This area is just north of the clock at the Eagle Square entrance. If a rack or bollard is added at the Eagle Square entrance as discussed in section two, one of these could be moved or removed. The perpendicular orientation is ok, but should be made parallel for consistency, and to keep wheels from being close to the loading/unloading area. Multiple news kiosks severely obstruct access.

Recommendation: Remove loops and add plates running parallel to Main Street. Remove one if parking is added at the entrance to Eagle Square. Locate news boxes so they do not interfere with bicycle parking.







## Section 2: Other current or potential bicycle parking areas

**A: Statehouse Racks-** These racks appear to be used more frequently than bollards. Could be used for the Farmers Market, although most people who arrive by bicycle arrive at the State Street entrance, and the nearest street to get here is one-way in the wrong direction. There should be permanent bicycle racks at this location, but a more aesthetic design would be an improvement.

In the past month homeless have been using the rack to hang clothing/towels while they sleep behind the nearby information structure. A context sensitive solution to this issue is advisable.

Recommendations: Keep these racks here for the short term. Investigate adding permanent, fixed, and more attractive racks at this location. Consider addressing the issue of the racks being used by the homeless in a sensitive manner.





**B: Near Bollard #2- Merrimack County Savings Bank and School Street**

The area around Bollard #2 is somewhat cramped. Bicycle parking along the MCSB building could be an alternative, but may intrude on people on the sidewalk. A better option or addition could be one-sided meter parking on School Street located just around the corner. This location leaves little room for wide handlebars but seems workable. There is less traffic on this sidewalk and bicycle parking should have a minimal effect on pedestrians.

Recommendation: If enough plates can be purchased, affix one to one of the parking meters on School Street for one-sided parking (one bicycle).



**C: Bulb Outs at and Across from Capital Plaza entrance.**

There is a crosswalk and bulb outs on both sides of Main Street near the entrance to Capital Plaza. There are currently no Bollards at either location, and there are no nearby bollards on either side of the street. There is room for a bollard at both. A bollard at one of these bulb-outs would fill a long gap with no bicycle parking from MCSB to Subway, or Caffenio to Dos Amigos. Also, options exist for bicycle parking inside Capital Plaza.

Recommendation: Add a bollard at one of these bulb-outs.









**D: Capital Plaza:** Several opportunities for parking exist in and near the entrance to Capital Plaza. A location at a railing seems suitable. There may be issues with private property.



**E Millennium Square Entrance:** The northernmost bollard in Millennium Square at Warren St appears to be the best choice for a bollard in the area because it is visible and findable. Also, clutter and a dumpster surround the others. There is a slight slope but not enough to be a significant problem. Any plate should be attached so bikes are parked parallel to Warren St.

Recommendation: This bollard is a lower priority to the ones on Main Street, but should be considered a high priority.



**F: Millennium Square:**

There are multiple bollards in Millennium Square, most appear to prevent cars from bumping into buildings etc. Many have “rings” and have “bikes” stenciled on them. There is a row of 7 ring bollards on the West side of the square. It isn't clear which would be best for bicycle parking. The 6<sup>th</sup> from the north may be the best. There are three more bollards at the southern entrance to the square. Any of these would be a good choice.





**G: Pleasant St Parking:** At the corner of Pleasant and Main a landscaped corner may be suitable for parking. There is space at the Main Street end or and the narrow end further down Pleasant St. The narrow end of the island could be altered to accommodate bike parking. This area is an “Adopt-a-Spot” area. Further up Pleasant street, there are suitable areas for bicycle parking against blank walls of the buildings. This is a somewhat busy area and there is no bicycle parking accommodations nearby. Any bike parking would probably take the form of a meter pole with a plate attached to one side.

Recommendation: Adding parking to the landscaped area is not a priority in the short term, however this area could be used for bicycle parking in the future. Any changes to this area should consider the potential for use as bicycle parking. If resources are available, adding parking against the buildings on Pleasant St. may be welcomed.









**H: Alley North of Capital Commons:** There is a space near the wall North of the Capital building near the drug store. White wall is ideal space but may be private property, and may be a fire access.

Recommendation: Determine the ownership of the alley and whether it needs to remain open for fire access.



**I: Eagle Square:** A “wave” style bicycle rack is available in the back corner of Eagle Square. Due to its hidden location, it is more likely for this rack to be used for longer term parking. A bollard closer to the entrance of the square would be a good location for a bollard.

Recommendation: Install one or two bollards perpendicular to hill against the building on the North side of the alley that enters Eagle Square. This is a relatively high priority and should be considered if resources are available.



**J: On Street Parking:** This area near bollard #3 (Subway) between the last parking spot and the bulb out may be suitable for on street bicycle parking. There would be a maintenance issue, and would need to be removed in winter for plowing. It is likely that an organization would need to take ownership of this area to maintain and remove it in the winter.

With on-street bike parking here, it may be possible to remove the nearby bollard to reduce sidewalk clutter, but there would be no bicycle parking nearby during the winter months when the on street rack is removed. Bicycle parking at this location would also be dependent on the on-street rack being maintained and replaced properly and timely each season.

Recommendation: On street parking is not recommended here at this time. If there is evidence for demand, consider investigating the possibility of locating and maintaining an on street parking area.





**K: Near Loudon Rd:** There is space for bicycle parking North of the Bus Stop at the State House. Some areas are likely private property. There are no bollards in this area on either side of Main Street. There are no obvious places on East side of Main Street north of bollards 11 and 12 (near the clock tower) for bicycle parking.



**General Discussion: Formal use of parking meters for bicycle parking.**

Use of parking meter poles for bicycle parking along Main Street are generally not recommended. Meters between School and Warren have a step that makes it difficult to balance the bike. In all cases along Main Street parked cars overhang the curb and could potentially hit a parked bicycle. Also, bicyclists would be very close to parked cars and may bump into them while locking their bikes. A bicycle could appropriately be parked on the sidewalk side of the meter, but in the event a bicyclist chooses to park on the street side, or if two bicycles are parked on one meter pole, clearance issues arise.

**Recommendation:** Do not use parking meter poles for bicycle parking on Main Street. Meter poles may be useful on side streets where the post is located against the building.





**General Discussion: South Main Street, State Street, Storrs Street:** There are no bollards on Main St south of Pleasant St (excluding Gibson's and Capital Commons). The sign for Kiosk parking near the Concord Cooperative Market is good placement on the sidewalk for bicycle parking. There is enough distance from the curb and also plenty of space for pedestrians to walk by. The meter poles at their current location appear to be too close to the curb for practical bicycle parking use. Bicycle parking on South Main Street should be investigated further.

**Recommendation:** Locate bicycle parking on South Main, State, and Storrs Streets when the meters are removed.



## APPENDIX G

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### Definitions

#### Bicycle Boulevard

A street segment, or series of contiguous street segments, that has been modified to accommodate through bicycle traffic but discourage through motor traffic.

*Source: February 2010 Draft definition for AASHTO Committee Review and Comment*

#### Bicycle Facilities

A general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically designated for bicycle use.

*Source: 1999 Guide for the Development of Bicycle Facilities*

A general term denoting improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways specifically designated for bicycle use.

*Source: February 2010 Draft definition for AASHTO Committee Review and Comment*

#### Bicycle Lane

A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

*Source: 1999 Guide for the Development of Bicycle Facilities*

Bicycle lanes are a portion of the roadway designated for preferential use by bicyclists. They are one way facilities that typically carry bicycle traffic in the same direction as adjacent motor vehicle traffic. Bike lanes are the appropriate and preferred bicycle facility for thoroughfares in both urban and suburban areas. Where desired, or where there is a high potential for bicycle use, bike lanes may be provided on rural roadways near urban areas. Paved shoulders can be designated as bike lanes by installing bike lane symbol markings (see Exhibit 4.9); however, a shoulder marked as a bike lane will still need to meet the criteria listed elsewhere in this chapter.

*Source: February 2010 Draft definition for AASHTO Committee Review and Comment*

#### Bicycle Network

A system of bikeways designated by the jurisdiction having authority. This system may include bike lanes, bicycle routes, shared use paths, and other identifiable bicycle facilities.

*Source: February 2010 Draft definition for AASHTO Committee Review and Comment*

#### Bicycle Route

A roadway or bikeway designated by the jurisdiction having authority, either with a unique route designation or with BIKE ROUTE signs, along which bicycle guide signs may provide directional and distance information. Signs that provide directional,

distance, and destination information for cyclists do not necessarily establish a bicycle route.

*Source: February 2010 Draft definition for AASHTO Committee Review and Comment*

### Bicycle Route System

A system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route markers, with or without specific bicycle route numbers. Bike routes should establish a continuous routing, but may be a combination of any and all types of bikeways.

*Source: 1999 Guide for the Development of Bicycle Facilities*

### Sharrow

Shared Lane Marking

### Shared Use Path

A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users.

*Source: 1999 Guide for the Development of Bicycle Facilities*

A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right - of - way or within an independent right - of - way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers and other non - motorized users.

*Source: February 2010 Draft definition for AASHTO Committee Review and Comment*

### Shared Lane

A lane of a traveled way that is open to bicycle travel and vehicular use.

*Source: February 2010 Draft definition for AASHTO Committee Review and Comment*

### Shared Lane Marking

A pavement marking symbol that indicates an appropriate bicycle positioning in a shared lane

*Source: February 2010 Draft definition for AASHTO Committee Review and Comment*

### Shoulder

The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of sub-base, base and surface courses.

*Source: 1999 Guide for the Development of Bicycle Facilities*

The portion of the roadway contiguous with the traveled way, for accommodation of stopped vehicles, emergency use and lateral support of sub - base, base and surface courses, often used by cyclists where paved.

*Source: February 2010 Draft definition for AASHTO Committee Review and Comment*



# CITY OF CONCORD

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*In the year of our Lord two thousand and nine*

## COMPREHENSIVE TRANSPORTATION POLICY

**PREAMBLE:** *The overall goal of this comprehensive transportation policy is to plan and promote the development, operation, and maintenance of a complete, multi-modal transportation system serving the community, inclusive of its residents, businesses, employees, and visitors.*

*The transportation network serves to accommodate the needs of the community while improving connectivity of Concord's neighborhoods. This is in the context of the overarching goals of economic vitality, enhanced livability, quality of life, and environmental and fiscal sustainability.*

In the effort to promote a transportation infrastructure that primarily focuses on quality of life and mobility for Concord residents, proactively assesses traffic operations and safety, and improves the experience of visitors, it shall be the policy of the City of Concord:

1. To design, build and operate its roads and streets to safely accommodate all users and modes of transportation – the so called “complete streets” initiative by:
  - a. Fully integrating pedestrians into the transportation system with walkable neighborhoods, and to promote improvements to sidewalks and trail systems throughout the community that provide safety and convenience.
  - b. Fully integrating bicyclists into the City’s transportation system, via improvements as incidental parts of street building and resurfacing projects as well as separate projects for that specific purpose.
  - c. To develop, implement, and maintain a comprehensive Neighborhood Traffic Management Program that focuses on enhancing livability in residential neighborhoods by lessening the adverse impacts associated with increased traffic volume, cut-through traffic and speeds.
2. To develop, implement, and maintain appropriate measures that encourage through-travel along the collector and arterial street network rather than along residential streets.
3. To promote a comprehensive public transportation system that responds to and serves the needs of the community.
4. To cooperate with state and regional transportation organizations (such as the New Hampshire Department of Transportation and the Central New Hampshire Planning Commission) in projects of state and regional significance that benefit or impact Concord

residents.

5. To partner with community programs, the Concord School District, and the Merrimack Valley School District, to improve safety and encourage more children to safely walk and bicycle to school by supporting the initiatives of the National Safe Routes to School Program.

## APPENDIX I

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### Comprehensive List of Significant Bicycle Improvements

#### 2010

- Council adopted the Comprehensive Transportation Policy, January 11, 2010 (including Complete Streets policy)
- Initiated and completed the Bicycle Master Plan (TPAC) Process included two successful public meetings. (\*\*\*\*\* Verify after actual completion\*\*\*\*\*)
- Restriped shoulder along Clinton Street east of Langley with 11' lanes to establish 5' min. shoulder. (CoC)
- Restriped Pleasant Street between Rum Hill and Kensington with 11' lanes to establish 5' min. shoulders. (CoC)
- Pleasant Street striped with 11' lanes west of Fisk Road (NHDOT) (CoC)
- Completed Phase 2 of US 3 (Fisherville Road) with full bike lanes (CoC)
- Design of Manchester Street (Airport Road intersection) with full bike lanes (CoC)
- Adopted by Council / Design of N-S Bike Route (TPAC/CoC)
- Completed river trail feasibility study
- Applied for BFC designation, received bronze (TPAC)
- NHDOT provided trail crossing and bike route signs along Delta Drive
- Fossil Free Fridays (PATH)
- Formation of Central New Hampshire Bicycling Coalition
- NHDES bike share (PATH)
- UNH Law School bike share (PATH)
- Completed bike safety video
- Acquired bike land and shared use lane pavement marking stencils (TPAC/CNHBC)

#### 2009

- Pleasant Street between Kensington and Langley Parkway (CoC)
- Pleasant Street at Fruit Street - spot widening, extended curb, striped shoulder (CoC)
- Clinton Street between Spring Street and Fruit Street (CoC)
- Clinton Street at exit 2 (worked w/ NHDOT) (CoC)
- Clinton Street striped with 11' lanes west of Silk Farm Road (NHDOT) (CoC)
- Expanded Green Commute to a week long event (PATH)
- Restriped N. State between Centre and Chapel (CoC)
- Restriped N. Main between Court and I-393 to provide shoulders along the west side of the street. (CoC)
- Completed Phase 1 of US 3 (Fisherville Road) with full bike lanes. (CoC)
- First annual bike swap (CNHBC)
- First bike valet parking during Market Days (CNHBC)
- Striped Rockingham Street w/ 9' lanes (CoC)
- Initiated bicycle education at Rundlett Middle School - Students spend two days of the physical education program dedicated to bike education and safe riding.

Approximately, 1100 students receive an hour and a half of class time each year they attend Rundlett (6, 7, and 8 grades). (SR2S)

- NHTI bike share (PATH)
- St. Paul's School bike share (PATH)
- Bikes for Refugees (PATH)

2008

- Formation of TPAC-Bike (Mission statement adopted October)
- Formation of PATH (funded December 2007, Concord 2020)

Pre 2008

- Striped East Side Drive w/ 10' lanes (CoC)
- Other streets striped w/ 10' lanes? (CoC)
- Bike Walk to Work Day (Concord 2020: 2003-2005, Groundwork Concord: 2006-2008)
- Bike Walk to School Day each October
- Share the road signs along Mountain Road (CoC)
- Bike racks for Conant Elementary School (Concord 2020)

APPENDIX J

City of Concord  
Bicycle & Pedestrian Accident Data  
January 2007 through September 2009

	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Total	
	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike	Ped
Number of Crashes	2		2 1	1 2	1	2	1 2	5	2 3	1 4	2 3	8	16	26
Once every ____ days													23	14
Fatal	1												0	1
Incapacitating			1		1		1	1	2	1		3	1	9
Non-incapacitating			2			2	1 1	4	1	2	1	4	12	7
None				1 1					1		1 2	1	3	4
Unknown/undetermined	1			1	1				1	1	1		0	5
Helmet Worn			2	1		0	0	3	2	0	1		9	
Motorist	1		2 0	1 1	1		2	4	1	3	2 2	4	10	14
Bicylist or Pedestrian	1		0	1		2	1	1	1	1	1	3	6	6
													Bike	Ped
Most Common Cause													MV=Failure to Yield (3) MV=DWI (2) B=Failure to Yield (3)	MV=FTY in Crosswalk (8) Undertermined (5) Ped= Ran into Roadway (3) Ped=Jawwalking (3)
Undetermined/Other									3	1		1	0	5
													Bike	Ped
Most Dangerous Streets													North State (3) Loudon Rd. (2) South St. (2)	North Main (5) Loudon Rd (4) Centre (2) Bog/Fisherville (2)
	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Total	
	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike	Ped
Number of Crashes	3		3	2 2	4	2	2 3	4 3	2 2	1 2	3 2	1 3	19	25
Once every ____ days						One accident is Bike/Ped							19	15
Fatal				1									1	0
Incapacitating				1	1	2						1	2	3
Non-incapacitating			3		1 3		2 3	3 2	1 2	1 2	2 1	1 2	13	16
None	3							1 1	1		1 1		3	5
Unknown/undetermined					1								0	1
Helmet Worn				1	1		1	2	1	1	2	?	9	
Motorist	2		2	1 1	1	1.5	1 2	1 1	2	1 2	2	1	4	16.5
Bicylist or Pedestrian			1	2 1	3	0.5	1	2 1	1		3	1 2	13	5.5
													Bike	Ped
Most Common Cause													MV=Failure to Yield Intersection (3) B=Riding on Sidewalk (5) B=Failure to Yield (2)	MV=Failure to use Due Care (9) MV=Pedestrian in Crosswalk (6) Ped=Jaywalking (2) Ped=Ran into Road
Undetermined/Other	1						1	1 1	1				5	3
													Bike	Ped
Most Dangerous Streets													Fisherville/Village St. (4) Loudon (3) Pleasant (2) North Main (2)	Pleasant (3) Loudon Rd. (3) North Main (2)
	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Total	
	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike	Ped
Number of Crashes	1 3	1	2 1	1 2	3 3	1 1	3	6 3	6 2	7 1	1 5	2	31	24
Once every ____ days													12	15.20833333
Fatal													0	0
Incapacitating										1	2		3	2
Non-incapacitating	1 3	1	2 1	1 2	3 3	1 1	3	5 3	6 2	5 1	1 1	2	28	18
None								1		1			2	2
Unknown/undetermined											2		2	2
Helmet Worn			1	1		1	2	4	3	3			15	
Motorist at fault	3	1	1	2	1 2	0.5	2	1 3	1 1	2	1 2	1	8	16.5
Bicylist or Pedestrian at fault	1		2	1	2 1	1 0.5	1	4	5 1	4 1	1		21	4.5
													Bike	Ped
Most Common Cause													MV=Unsafe Movement (4) MV=Failure to Yield (4) B=Riding on Sidewalk (8) B=Red Light	MV=Pedestrian in Crosswalk (7) MV=Unsafe Backing (3) MV=Failure to use Due Care (4) Ped=Failure to Obey Crossing Signal (3) Both at Fault (2)
Undetermined/Other								1					1	0
													Bike	Ped
Most Dangerous Streets													Loudon Rd (11) Fisherville/Village (4) Water Street (6)	Loudon (4) Warren St. (2) South Main (2)
	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Total	
	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike Ped	Bike	Ped
Number of Crashes	1	1 1	5	2 2	1 2	1 2	3	1	1	3			13	13
Once every ____ days													28	28.07692308
Fatal													0	0
Incapacitating			1				1						2	1
Non-incapacitating	1 1	1	4	2 1	1 2	2 1	2	1		3			12	10
None													0	0

Unknown/undetermined	1				1					1				1										3	2
Helmet Worn	?								1	1				2										4	
Motorist		2.5			0.5	0.5	0.5	1.5		1	1			1										3	5.5
Bicylist or Pedestrian		2.5			1.5	1.5	0.5	0.5	2		2													6	4.5
Most Common Cause																								MV=Failure to Yield (2) B=Riding on Sidewalk (10) MV=No Specific Violation Cited (2)	MV=Pedestrian in Crosswalk (2) MV=Unsafe Backing (1) MV=Failure to use Due Care (2) Ped=Failure to Obey Crossing Signal (1) Both at Fault (4)
Undetermined/Other	1													1										3	1
Most Dangerous Streets																									
TOTALS 2007-2009	J		F		M		A		M		J		J		A		S		O		N		D		Totals
Number of Crashes	1	9	1	2	4	10	6	8	8	6	4	5	9	5	16	6	11	7	12	7	6	10	1	13	167
Once every ___ days																									9
Fatal		1					1																		1
Incapacitating					2	1		1	1		2	1	1	1				2	1	1		2		4	8
Non-incapacitating	2	4		2	4	8	3	2	7	5	5	2	8	4	13	5	8	4	10	5	4	2	1	8	65
None		3					1	3							2	1	2		1		2	3		1	8
Unknown/undetermined		2						3									1	1			1		3		5
Helmet Worn				3			3		1		1		4		10		6		6		3				37
Motorist		6		3.5	2	3	1.5	4.5	2.5	4.5		3	4	4	7	4	2	3	3	5	3	6		6	25
Bicylist or Pedestrian	1	1		2.5	2	1	4.5	3.5	5.5	1.5	5	1	5		7	1	7	1	5	1	3	2	1	5	46

# **Delta Drive Bridge and Trail Bicycle/Pedestrian Study**



**Prepared by the  
Central New Hampshire Regional Planning Commission  
August, 2010**



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# **Chapter 1**

## **Introduction**

### **Purpose:**

The purpose of this study is to have accurate data regarding the use of the Delta Drive bridge over I-93, which is slated to have a complete replacement of the deck and girders and rehabilitation of the abutments and piers in the summer of 2012. It is expected the data will inform local and state stakeholders as part of the public comment process that is being solicited by the New Hampshire Department of Transportation (NHDOT). It is also expected the data and analysis will reflect comments made by community members about their transportation needs and the community's goals.

### **Goals:**

The goals of this study are:

- To measure the extent to which pedestrians and bicyclists use the Delta Drive bridge and adjoining multi-use trail.
- To understand what impact closing the bridge or keeping the bridge open, for three or more months, as proposed by NHDOT, would have on bicycle and pedestrian traffic in Concord.
- To understand what mobility impacts closing the bridge could have on stakeholders such as employers and employees around the bridge, Concord Area Transit service and users and emergency services.
- To identify potential remedies for improving the unsafe entrance/exit point from the bridge and the first/last curve on the trail.

### **Location Summary:**

Bicycle and pedestrian volume counts were collected on Wednesday, August 4 and Saturday, August 7, 2010 for 15 hours apiece. On August 4, 260 bicyclists and pedestrians used the bridge during the observation hours. When the data from August 4 is compared to an October 2008 (the most updated information available) ATR count, the bike/pedestrian counts reflect 22% of trips. On August 7, 70 bicyclists and pedestrians used the bridge during the observations hours. When the data from August 7 is compared to the October 2008 ATR count, the bike/pedestrian counts reflect 17% of trips.

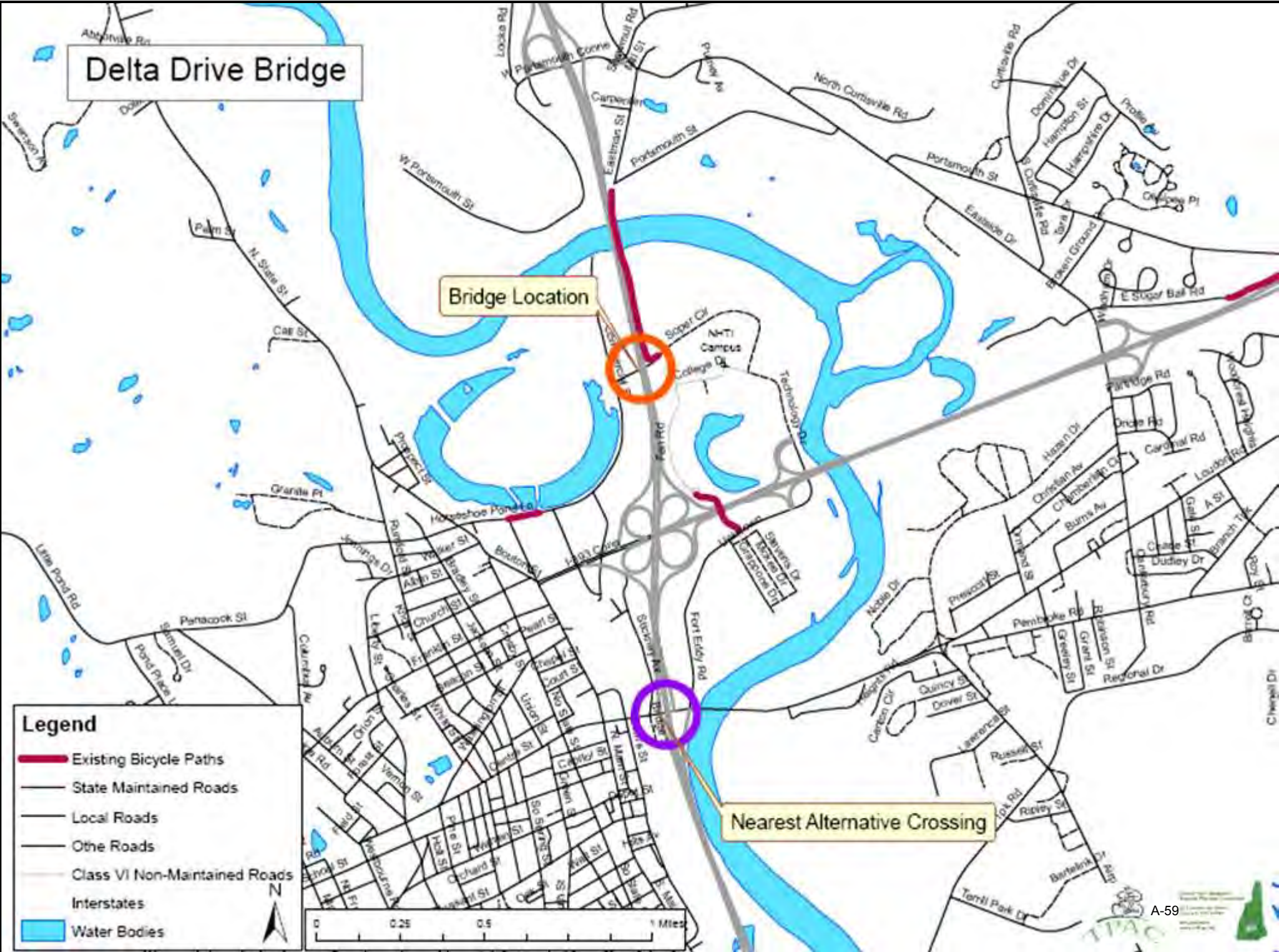
Based on a visual assessment by volunteer counters (trained by Central New Hampshire Regional Planning Commission staff), the Delta Drive bridge and trail appears to attract two user types. The first group is employees walking and bicycling to/from nearby workplaces in and around Horseshoe Pond and NHTI and the second group are people who are recreationally bicycling after dinner hours.

The Delta Drive bridge over I-93 and the adjacent multi-use trail are important connectors for bicyclists and pedestrians traveling from east to west in Concord. The nearest alternative crossing point over the Merrimack River is Loudon Road at the I-93 bridge. Loudon Road is heavily traveled by motorized vehicles, has dense traffic in critical areas where bicyclists interact with the road, has high speed issues in other areas, a lack of desired shoulder widths by bicyclists and is generally classified by residents and City transportation planning and engineering leaders as an unsafe road for all transportation modes. In addition, the Loudon Road at I-93 bridge intersection was ranked among the least friendly intersections by during public meetings for the City's Bicycle Master Plan. The other nearest crossing (which is several miles away) point is to the north at the bridge at Sewall's Falls. This bridge was also identified as hazardous by bicyclists at Bicycle Master Plan meetings. Route 3, which is the route that connects to the bridge, will also be under construction for the next few years and pose additional safety risks. The Delta Drive bridge is also a key access point for bicyclists and pedestrians accessing the retail area of Fort Eddy Road and NHTI Community College via the tunnel under I-393.

CNHRPC received numerous emails bicyclists and pedestrians who rely on the bridge and trail for a safe alternative to crossing the river and accessing downtown. As noted above, several people also explained that while automobiles have access to key points around the City via I-393 and I-93, there are no safe alternative crossings for bicyclists and pedestrians. Required accessibility to Concord Area Transit services would be limited and users would be inconvenienced. A sample of the emailed comments is attached in the Appendix of this report. Volunteers conducting counts also had conversations with users who explained the importance of the bridge and trail to their travel. Several bicyclists and pedestrians expressed to volunteers their desire to keep the bridge and trail open during construction.

Bicyclists and pedestrians also expressed deep concerns about the geometry, i.e. tight curves, at the entrance/exit of the trail at the Delta Drive bridge and the first/last curve of the trail. In addition, concerns were raised about the sight line restrictions on the trail in both locations, but in particular around the first/last curve due to significant overgrowth of vegetation. Counters also observed several bicyclists having significant difficulty negotiating both curves. In particular, several bicyclists had great difficulty getting around the first/last curve without coming through to the travel area for oncoming bicyclists and pedestrians. On several occasions bicyclists also reached the entrance/exit and needed to take such wide turns onto Delta Drive toward the bridge that they were onto the double yellow lane markings.

Map 1: Delta Drive bridge and alternative crossings





## **Chapter 2**

### **Data**

#### **How the Counts Were Conducted:**

The counts were conducted with human field observations where counters manually tabulated the number of bicyclists and pedestrians and characteristics using pen, paper and spreadsheet. There were 19 volunteers who covered 30 hours of count data. Shifts varied from three hours long to one hour long on Wednesday, August 4 and Saturday, August 7. The times were sunup to sundown, or 5:30 a.m. to 8:30 p.m.<sup>1</sup>

The counters stood at the intersection of the bridge and trail and imaginary screen lines were drawn across the bridge and entrance/exit of the trail. All bicyclists crossing those lines were counted. The count was a volume count, so a person crossing the line multiple times was counted each time. This is the method that CNHRPC uses for motor vehicle volume counts. A copy of the counting spreadsheet and instructions for counters is included in the Appendix.

---

<sup>1</sup> No data was collected from 6-6:30 p.m. on August 7 because there was no volunteer available. The data totals for this time period are reflected by n/a's in the aggregated count data in the appendix and counted as 0's.

**Bridge Counts:**

Wednesday, August 4			
Bicyclists	Percentage of Total	Per Hour	Peak Hour
160	62%	10.7	6-7 p.m. <sup>2</sup> (37 bicyclists)
Pedestrians	Percentage of Total	Per Hour	
100	38%	6.7	5:30-6:30 a.m. (20 pedestrians)
TOTALS			
260	100%	17.3	

Saturday, August 7			
Bicyclists	Percentage of Total	Per Hour	Peak Hour
51	73%	3.4	3:30-4:30 p.m. (11 bicyclists)
Pedestrians	Percentage of Total	Per Hour	
20	27%	1.3	11:30 a.m.-12:30 p.m. (4 pedestrians)
TOTALS			
71	100%	4.7	

**Historic Bridge ATR Counts:**

ATR Data for 2008 and 2005				
Month, Year	ADT Weekday	Bike/Ped Data as % of ADT	ADT Saturday	Bike/Ped Data as % of ADT
October, 2008	1,164	22%	414	17%
August, 2005	819	31%	236	29%

<sup>2</sup>A secondary Peak Hour was identified as 11:30 a.m.-12:30 p.m. and 12 p.m.-1 p.m. (13 bicyclists each) because the primary Peak Hour and adjacent hours for August 4 were affected by a large Granite State Wheelmen ride. It should be noted that this is a common occurrence during non-winter months.

## Trail Counts:

Wednesday, August 4			
Bicyclists	Percentage of Total	Per Hour	Peak Hour
148	71%	9.9	6-7 p.m. <sup>3</sup> (38 bicyclists)
Pedestrians	Percentage of Total	Per Hour	Peak Hour
59	29%	3.9	5:30-6:30 a.m. (13 pedestrians)
TOTALS			
207	100%	13.8	

Saturday, August 7			
Bicyclists	Percentage of Total	Per Hour	Peak Hour
57	74%	3.8	5-6 p.m. (12 bicyclists)
Pedestrians	Percentage of Total	Per Hour	Peak Hour
20	26%	1.3	11:30 a.m.-12:30 p.m. (4 pedestrians)
TOTALS			
77	100%	5.1	

<sup>3</sup>A secondary Peak Hour was identified as 8:30-9:30 a.m. (14 bicyclists) because the primary Peak Hour and adjacent hours for Wednesday were affected by a large Granite State Wheelmen ride. It should also be noted, however, that this is a common occurrence during non-winter months.

# Bicycle and Pedestrian Counts Delta Drive and Bike/Ped Path Wednesday 8/4/2010



Bicycles: 72  
Pedestrians: 28  
Total: 100

Bicycles: 76  
Pedestrians: 31  
Total: 107

Bicycles: 79  
Pedestrians: 52  
Total: 131

Bicycles: 81  
Pedestrians: 48  
Total: 129



# Bicycle and Pedestrian Counts\* Delta Drive and Bike/Ped Path Saturday 8/7/2010



\*Data was not collected from 6:00-6:30pm

Bicycles: 33  
Pedestrians: 11  
Total: 44

Bicycles: 24  
Pedestrians: 9  
Total: 33

Bicycles: 27  
Pedestrians: 8  
Total: 35

Bicycles: 24  
Pedestrians: 12  
Total: 36

## Other Data:

### Commuters vs. Non-Commuters

Counters were asked to make visual assessments of traveler purpose: commuting/utility or recreation. Commuting/utility was defined as traveling to a destination for work, education, shopping, appointment or similar activities. Recreation was defined as travel strictly for enjoyment, exercise and the like. Counters were asked to make an assessment based on observing whether a traveler was carrying a travel bag, their clothing, the speed in which they traveled, the style of bicycle as well as interviewing travelers (when able and safe) and their knowledge of travel patterns in the City. It is likely the number of commuters was underestimated as many bicycle commuters change their clothes for their commute when they got to their destination.

Wednesday, August 4		Saturday, August 7	
Commuting/Utility	Recreation	Commuting/Utility	Recreation
29%	71%	12%	88%

### Adult Male vs. Adult Female

Wednesday, August 4		Saturday, August 7	
Adult Male Bicyclist	Adult Female Bicyclist	Adult Male Bicyclist	Adult Female Bicyclist
71%	29%	88%	12%
Adult Male Pedestrian	Adult Female Pedestrian	Adult Male Pedestrian	Adult Female Pedestrian
44%	56%	79%	21%

### Adult Bicycle Helmet Use

Wednesday, August 4		Saturday, August 7	
Helmet	No Helmet	Helmet	No Helmet
73%	27%	74%	26%

## **Chapter 3**

### **Conclusion**

Regardless of the number of bicycles and pedestrians using the bridge and trail, the connection is of particular importance to those who do use them. Looking strictly from transportation and safety perspectives, closing the bridge and trail for any length of time, particularly in the summer months, could cause a significant group of pedestrians and bicyclists to choose and stay driving alone. If pedestrians and bicyclists did continue to bicycle and walk, bridge closure could force them to choose alternatives like Loudon Road that have been identified as measurably unsafe or inefficient. Additionally, bridge closure would necessitate the rerouting of Concord Area Transit trolleys along heavily used corridor, which would likely further promote people driving alone and seriously inconvenience transit dependent populations in this corridor. Interviews with business and school leaders in the area also found that bridge closure would inconvenience business activity and reduce access to critical medical care and senior residential facilities. Bridge closure would also reduce a major access point for emergency services to major employment/education nodes in NHTI, Northeast Delta Dental, other surrounding businesses and the Horseshoe Pond Senior Center.

#### **Recommendations for NHDOT:**

##### Bridge

- Consider the phased, eight-month bridge construction process, provided it is financial feasible.
- Consider making safe provisions for bicyclists and pedestrians on the bridge during the construction.
- If the three-month construction option is chosen, consider adding specific highly-visible signage and for pedestrians and bicyclists around Horseshoe Pond, NHTI and Fort Eddy Road announcing the bridge closure and alternative safe travel routes.
- During construction, consider reducing the lane width on both approaches to the bridge and on the bridge to allow for future bicycle lane placement or space for shared lane markings.
- As part of either construction option, consider adding highly-visible pedestrian and bicyclist and trail alert signage on both sides of the bridge to bring greater awareness to the trail entrance/exit.

## Trail

- Consider improving the entrance/exit point of the trail to allow for safer bicycle turning onto Delta Drive toward the bridge.
- Consider painting lanes on the approaches and at the first/last curve of the trail along with adding caution signage along the approaches and convex mirror at the center of the curve.
- Consider aggressive removal of the vegetation along the approaches to the first/last curve and at center of the curve to eliminate sight line restrictions.
- If the trail is closed during construction, consider adding signage at the trail entrances/exits that has an explanation and timeline of closure and maps with alternative safe travel routes that can be taken.



## Chapter 4

### Appendix

#### Selected Public Comments:

CNHRPC staff received 17 emails and another handful of phone calls from July 29 to August 5 after sending an email to contacts about the August 12 public meeting. Below is a collection of samples from the emails along with the author's initials and date of receipt.

From K.K., July 29:

"To me it's a very important connection over the river and using back roads. The only thought the City of Concord should have is how to improve the access to the route for all."

From A.V., July 29:

"Besides improving the multiuse path angle, perhaps the path could split and go under the bridge (under the first span- construct a flat path) then connect into the new Tech driveway south of the rocket. This would eliminate crossing Delta Drive for those headed to the Fort Eddy Road by way of the underpass under I-393... I use the path an average of once or twice a week."

From K.N., July 29:

"...(I) did want to comment that I use the DD bridge during my commute from Tilton (4 days this week. Tonight I was on it around 7pm and saw another biker as well as a runner. The entrance/exit to the trail is nasty and the blind corner worrisome. It would be a bummer to have it closed off to pedestrians as Loudon Road is certainly no prize either."

From A.B., July 30:

"... Traffic will increase significantly during the academic year when faculty and students return to campus as they use that path extensively."

From C.M., August 2:

"I use the bridge almost every day to walk to work. I walk two miles each way to work and would find total shutdown a major issue for me. I would probably have to walk over four miles one way to get to work."

From J.K.W., August 2:

"... I did want to pass along that Meghan and I are looking for a home in Concord, and love the NW area of town. If that bridge was taken down, we couldn't bicycle downtown in a convenient way that would pretty much eliminate our desire to be up there. That feature is literally the entire reason for wanting to be in that area."

Bicycle Count Data – August 4											
Period (minutes)	Adult Bicyclist		Child	Bridge		Trail		Helmet		Purpose	
	Male	Female		WB	EB	NB	SB	Yes	No	C	R
0530-0600	7	1	0	5	1	4	2	5	3	6	2
0600-0630	3	0	0	0	3	2	0	0	3	3	0
0630-0700	5	1	0	1	3	2	2	6	0	4	2
0700-0730	5	0	0	3	2	2	3	3	2	5	0
0730-0800	1	0	0	0	0	0	1	1	0	1	0
0800-0830	1	4	0	2	3	1	2	5	0	4	1
0830-0900	2	2	0	3	1	1	3	3	1	4	0
0900-0930	2	3	2	1	4	5	5	1	2	1	5
0930-1000	5	0	0	1	2	2	1	4	1	0	5
1000-1030	2	0	0	1	1	0	0	0	2	2	0
1030-1100	3	3	0	3	0	2	2	6	0	0	6
1100-1130	2	3	0	2	0	1	2	5	0	0	5
1130-1200	1	0	2	0	3	0	0	2	1	3	0
1200-1230	7	1	2	2	8	6	2	5	5	4	6
1230-1300	3	0	0	1	2	2	1	3	0	1	2
1300-1330	1	0	0	1	0	0	0	1	0	0	1
1330-1400	4	0	0	4	0	0	3	1	3	1	3
1400-1430	4	0	0	2	4	2	0	3	4	2	1
1430-1500	0	1	0	0	1	0	0	0	0	0	1
1500-1530	2	0	0	0	2	0	2	0	2	0	2
1530-1600	1	2	0	1	2	1	1	3	0	1	2
1600-1630	3	3	0	3	0	4	2	2	0	2	4
1630-1700	5	2	0	2	5	1	5	2	5	2	5
1700-1730	5	0	0	2	2	2	2	2	3	3	2
1730-1800	7	2	0	5	3	2	1	3	6	2	7
1800-1830	24	3	0	26	1	26	1	27	0	0	27
1830-1900	8	3	2	7	3	7	4	8	3	0	11
1900-1930	6	7	0	0	13	0	13	13	0	0	13
1930-2000	8	2	0	0	10	0	10	10	0	0	10
2000-2030	2	1	0	1	2	1	2	2	1	0	3
	129	44	8	79	81	76	72	126	47	51	126
	181			160		148					

Pedestrian Count Data – August 4									
Adult Pedestrian		Child	Bridge		Trail		Purpose		
Male	Female		WB	EB	NB	SB	C	R	
9	4	0	7	6	5	4	1	12	
5	2	0	2	5	3	1	1	6	
4	2	0	4	2	2	4	0	5	
0	1	0	0	1	1	0	0	1	
0	4	0	3	1	0	1	3	1	
3	0	0	1	0	2	0	1	2	
3	0	0	0	0	0	3	1	2	
1	0	0	1	0	0	0	1	0	
2	3	0	4	5	0	0	1	4	
4	6	0	5	3	4	1	2	2	
1	4	0	1	2	1	1	0	5	
2	6	2	4	1	1	4	0	7	
1	7	1	3	6	4	1	1	9	
6	3	0	4	4	1	1	2	5	
2	2	0	3	1	0	2	1	3	
0	2	0	2	1	0	0	0	2	
0	2	0	1	1	0	0	0	2	
2	7	0	3	5	1	1	2	7	
1	0	0	0	1	0	0	0	1	
0	4	0	2	2	2	2	0	4	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	1	0	0	1	0	0	1	
0	0	1	1	0	0	0	0	1	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
2	0	0	1	1	1	1	0	2	
2	0	0	0	0	1	1	0	2	
1	0	0	0	0	1	0	0	1	
51	59	5	52	48	31	28	17	87	
115			100		59		At 69		

# Bicycle Count Data – August 7

Period (minutes)	Adult Bicyclist		Child	Bridge		Trail		Helmet		Purpose	
	Male	Female		EB	WB	NB	SB	Yes	No	C	R
0530-0600	1	0	0	1	0	1	0	0	1	1	0
0600-0630	0	0	0	0	0	0	0	0	0	0	0
0630-0700	0	0	0	0	0	0	0	0	0	0	0
0700-0730	1	0	0	1	0	0	0	1	0	0	1
0730-0800	4	1	0	3	2	2	2	5	0	1	4
0800-0830	1	0	0	0	1	0	0	1	0	0	1
0830-0900	1	1	0	0	1	0	2	0	2	0	2
0900-0930	0	0	0	0	0	0	0	0	0	0	0
0930-1000	2	3	1	2	0	1	3	3	3	1	5
1000-1030	1	0	1	0	0	1	0	2	0	0	2
1030-1100	2	1	1	0	2	2	2	1	3	0	4
1100-1130	3	0	2	1	0	0	4	4	1	1	4
1130-1200	4	0	2	0	1	3	3	5	1	0	6
1200-1230	0	1	0	1	0	0	0	1	0	1	0
1230-1300	1	1	0	0	2	0	1	2	0	0	2
1300-1330	3	1	0	2	2	2	2	3	1	0	3
1330-1400	1	0	0	0	0	1	0	1	0	0	1
1400-1430	2	0	0	1	0	1	0	2	0	0	2
1430-1500	1	0	0	0	1	0	0	1	0	1	0
1500-1530	0	0	0	0	0	0	0	0	0	0	0
1530-1600	1	2	0	3	1	1	1	2	1	0	3
1600-1630	5	2	0	3	4	3	3	6	1	1	6
1630-1700	1	1	0	1	1	1	1	1	1	1	1
1700-1730	4	1	0	2	3	2	3	5	0	0	5
1730-1800	6	1	0	2	3	2	5	5	2	1	6
1800-1830	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1830-1900	2	0	1	1	2	0	0	1	2	0	3
1900-1930	2	0	0	0	1	1	1	2	0	0	2
1930-2000	0	0	0	0	0	0	0	0	0	0	0
2000-2030	0	0	0	0	0	0	0	0	0	0	0
	49	16	8	24	27	24	33	54	19	9	63
	73			51		57					

# Pedestrian Count Data – August 7

Adult Pedestrian	Child	Bridge	Trail	Purpose
0	0	0	0	0
1	0	0	0	0
0	0	0	0	0
2	0	0	1	0
0	0	0	0	0
0	1	0	1	0
0	0	0	0	0
0	0	0	0	0
2	0	0	1	0
1	1	0	1	0
0	0	0	0	0
1	0	0	0	1
2	0	0	2	0
1	1	0	0	2
0	0	0	0	0
1	0	0	1	0
1	0	0	1	0
1	0	0	0	1
1	1	0	0	1
0	0	0	0	0
1	0	0	0	1
2	0	0	0	1
0	0	0	0	0
1	2	0	1	0
1	0	0	0	1
n/a	n/a	n/a	n/a	n/a
0	0	0	0	0
2	0	0	1	1
0	0	0	0	0
1	0	0	1	0
22	6	0	12	21
	28			

Weather Conditions – August 4							
Time (edt)	Wind (mph)	Vis. (mi.)	Weather	Temperature (°F)	Precipitation (in.)		
				Air	1 hr	3 hr	6 hr
4:51	S 6	6	Light Rain Fog/Mist	69	0.08	0.26	
5:51	SE 3	5	Fog/Mist	69			
6:51	Calm	6	Fog/Mist	70			
7:51	S 6	8	Fair	72			0.26
8:51	SW 10	9	Fair	76			
9:51	SW 7	9	A Few Clouds	79			
10:51	SW 12 G 16	8	Fair	84			
11:51	W 7 G 16	8	A Few Clouds	88			
12:51	W 13 G 18	9	A Few Clouds	89			
13:51	W 9 G 20	9	A Few Clouds	90			
14:51	W 9 G 17	9	A Few Clouds	92			
15:51	W 9 G 16	10	A Few Clouds	92			
16:51	W 12 G 17	10	Fair	91			
17:51	NW 8	10	Fair	90			
18:51	NW 6	9	Fair	88			
19:51	Calm	9	Fair	85			
20:51	Calm	9	Fair	86			

Weather Conditions – August 7							
Time (edt)	Wind (mph)	Vis (mi.) Air	Weather	Temperature (°F)	Precipitation (in.)		
				Air	1 hr	3 hr	6 hr
4:51	Calm	10	Overcast	48			
5:51	Calm	10	Overcast	49			
6:51	Calm	10	Overcast	50			
7:51	Calm	10	Mostly Cloudy	53			
8:51	Calm	10	Fair	60			
9:51	N 5	10	Overcast	67			
10:51	NW 8	10	Fair	70			
11:51	W 7	10	Partly Cloudy	73			
12:51	NW 13 G 18	10	Fair	75			
13:51	Vrbl 6	10	A Few Clouds	74			
14:51	Vrbl 7 G 17	10	A Few Clouds	75			
15:51	W 9	10	A Few Clouds	76			
16:51	W 8 G 18	10	Fair	76			
17:51	W 9	10	Fair	76			
18:51	W 9	10	Fair	74			
19:51	Calm	10	Fair	71			
20:51	Calm	10	Fair	62			



## BIKE/PED COUNT FORM – CNHRPC

Name: \_\_\_\_\_ Location: \_\_\_\_\_ Site# \_\_\_\_\_ Date: \_\_\_\_\_ Time Period: \_\_\_\_\_ Weather: \_\_\_\_\_

### General Instructions:

- Do your best and don't worry if you think you've missed a bicyclist or pedestrian. Don't try to make up if you think you missed a count, just keep going and describe any complications in the notes section below.
- Please contact Nik Coates at 391-6811 if you have any questions or if your replacement has not showed up 10-15 minutes before your shift is about to end of you have to leave in an emergency.
- Leave completed sheets on the clipboard.

### Counting Instructions:

- Please fill in your name, count location, time, date, time period and weather (approx. temp and conditions: sunny, rainy, foggy, snow, etc.).
- Use single lines in groups of five to indicate each pedestrian or cyclist (4 = ||||, 5 = ~~||||~~ ).
- This is a volume count. For example, if someone passes you twice, count them twice.
- Count all adult cyclists and pedestrians crossing your screen line (both sides and directions of bridge and trail) under the male or female categories. Count children (appearing under 16) separately under child only.
- On Bridge category: EB = using bridge heading toward Delta Dental; WB = using bridge heading toward NHTI. On Trail category: NB = entering trail from either direction; SB = exiting trail heading either direction. Record with single line.
- Record whether the bicyclist is wearing a helmet.
- Record number of cyclists and pedestrians by purpose. C = Commuter; R = Recreational user.
- Record skaters, roller-bladers, boarders and skiers using an "s" in the pedestrian column.

### Field Notes:

Comments/observations: Describe any visible problems bicyclists/pedestrians have negotiating the trail and onto the road or vice versa. Also note any bicyclists that are riding on sidewalks, or close calls, conflicts, unlawful behavior. Also note any factors that may have affected your count (car accident at site, road construction, tour group, band practice, etc.)

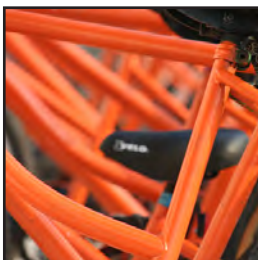
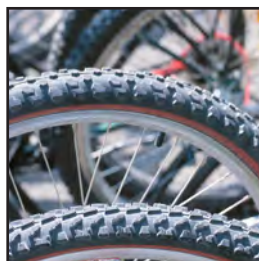
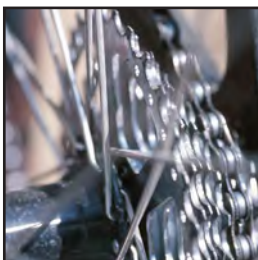
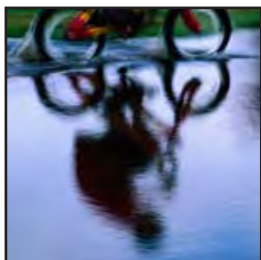
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# City of Cambridge

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## Bicycle Parking Guide



## DEVELOPMENT REQUIREMENTS

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For new development and redevelopment projects, bicycle parking must be provided in accordance with zoning requirements. Locations and types of bike parking must be shown in building site plans and approved by the Traffic, Parking and Transportation Department and the Community Development Department. Ensure that your bike racks are approved and well used by following these guidelines.

### City of Cambridge Zoning Ordinance

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For the latest and most accurate information, please access the ordinance online at [www.cambridgema.gov/cdd](http://www.cambridgema.gov/cdd); by e-mail, [bikeracks@cambridgema.gov](mailto:bikeracks@cambridgema.gov), or by phone 617/349-4604. A hard copy can be obtained at the City Hall Annex at 344 Broadway, Cambridge, MA.

As of the publication of this guide, zoning specifications for bike parking within the City of Cambridge are outlined in Article 6.000 of the Zoning Ordinance.

The following is a summary of the City's requirements:

- 6.11** "...The parking standards contained herein are intended to encourage public transit, bicycle usage and walking in lieu of automobiles..."
- 6.37.1** "For multifamily residences there shall be one bicycle space or locker for each two dwelling units or portion thereof."
- 6.37.2** "For all other uses, except those exempted in Subsection 6.37.4, there shall be one bicycle parking space for each ten (10) automobile parking spaces or fraction thereof required in Subsection 6.36."
- 6.49.1** "Each bicycle parking space shall be sufficient to accommodate a bicycle at least six (6) feet in length and two feet wide, and shall be provided with some form of stable frame permanently anchored to a foundation to which a bicycle frame and both wheels may be conveniently secured using a chain and padlock, locker or other storage facilities which are convenient for storage and are reasonably secure from theft and vandalism. The separation of the bicycle parking spaces and the amount of corridor space shall be adequate for convenient access to every space when the parking facility is full."
- 6.49.2** "When automobile parking spaces are provided in a structure, all required bicycle spaces shall be located inside that structure or shall be located in other areas protected from the weather. Bicycle parking spaces in parking structures shall be clearly marked as such and shall be separated from auto parking by

some form of barrier to minimize the possibility of a parked bicycle being hit by a car."

- 6.49.3** "Bicycle parking spaces shall be located near the entrance of the use being served and within view of pedestrian traffic if possible, and shall be sufficiently secure to reasonably reduce the likelihood of bicycle theft."

### WHY IS BIKE PARKING IMPORTANT?

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The City of Cambridge promotes bicycling as a healthy, environmentally friendly way of getting around Cambridge and the Boston area. Cambridge is well suited for bicycling and more people are using their bikes every day for commuting, shopping, and general transportation. Enhancing and promoting sustainable transportation is a cornerstone of Cambridge climate protection policies.

Providing bicycle parking encourages people to use their bicycles as transportation. People are more likely to use a bike if they are confident that they will find convenient and secure parking at their destination.

Providing a designated area for bike parking gives a more orderly appearance to a building and prevents cyclists from locking their bikes to unacceptable fixtures, such as trees, benches, or railings. However, if a bike rack appears insecure, does not fit bikes well, or is in the wrong location, cyclists will not use it.



### Getting it Right

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When installing bicycle parking, it is important to consider the following:

- Location of building entrance(s) that the cyclists will be using
- Quantity of bikes (current or anticipated) parking at the site
- Amount of time that bikes will be parked there (a few hours versus all day)



## Acceptable Bike Racks

There are multiple designs for bicycle racks produced by many manufacturers. Bike racks can be purchased as single units, with a capacity of 2 bikes (one on each side), or as multiple units, with a larger capacity. Only some designs have proven successful.



### Features of a good bike rack include:

- Stable structure and permanent foundation that is securely anchored in the ground
- Support for an upright bicycle by its frame in **two (2)** places
- Design that prevents the bicycle from tipping over
- Ability to support a variety of bicycle sizes and frame shapes
- Space to secure the frame and one or both wheels to the rack
- Keeps bike wheels on the ground



*Acceptable racks, like the "Post and Ring", "U" racks and "Swerve" racks have two-point support and fit a variety of bicycle types.*

## Unacceptable Bike Racks

### Bicycle racks must **NOT**:

- Only support the bicycle at 1 point
- Allow the bicycle to fall, which can damage the bike and block pedestrian right-of-way
- Have sharp edges, that can be hazardous to the visually impaired
- Support the bicycle by one wheel
- Connect to each other with a bar across the top (that blocks certain handlebars and baskets)
- Suspend any part of the bike in the air

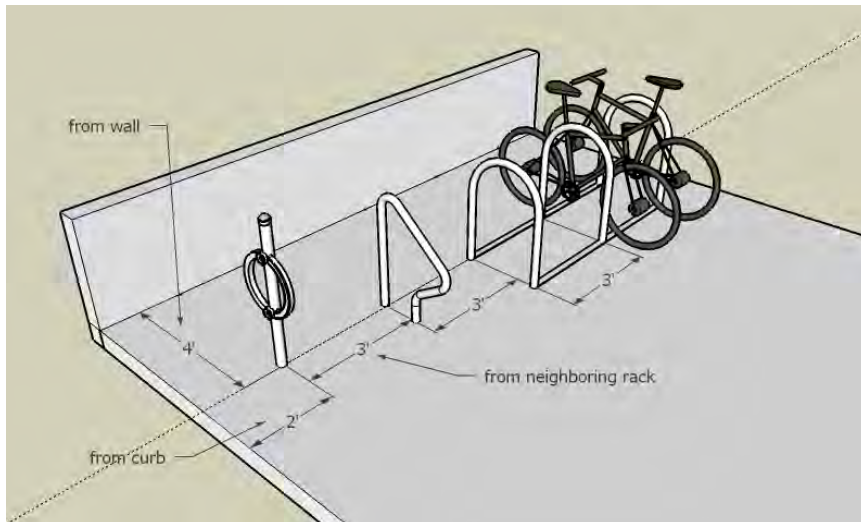
The rack should be easily and independently accessible and accommodating for a bicycle at least seven feet in length and two feet wide while still allowing access to each space when parking area is full. Rack units that are (installed) closer than 36 inches together prevent cyclists from utilizing the racks to their fullest capacity.

*DO NOT USE racks that only provide one point of support or only accommodate certain bicycle shapes.*

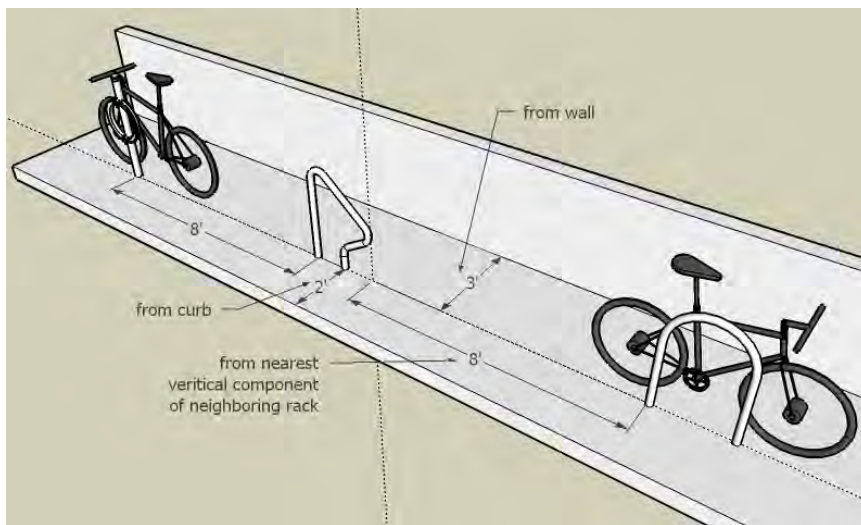


## Dimensions

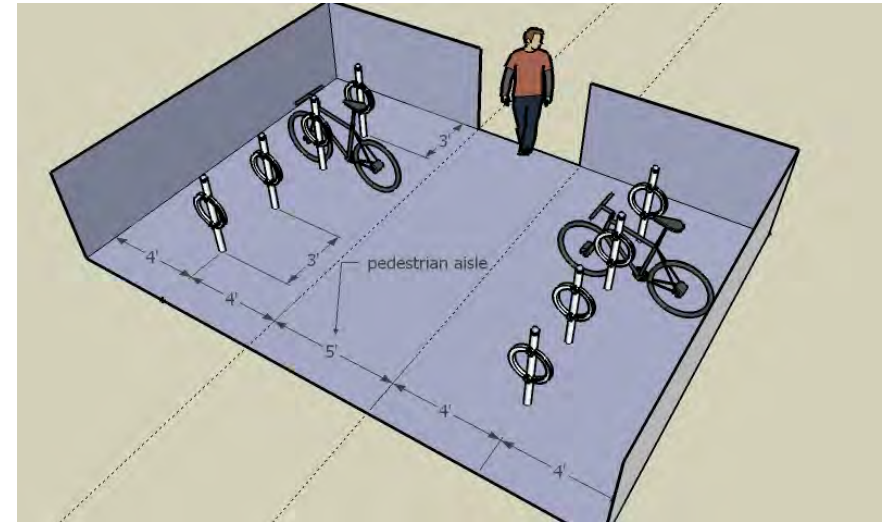
Distances between the bike rack and objects nearby vary depending on the context and the type of rack. Some racks have only one vertical component, such as the pole and ring rack, whereas others have two, such as the inverted-U rack. Measurements must be taken from the nearest vertical component of the rack to the object.



*Racks aligned side by side*



*Racks aligned end to end*



*Enclosed rack area with pedestrian aisle*

### Distance to other Racks:

- Rack units aligned parallel to each other (side by side) must be at least 36 inches apart. This includes racks that are sold as multiple rack units attached together.
- Rack units aligned end to end must be at least 96 inches apart.

### Distance from Wall:

- Rack units placed perpendicular to a wall must be at least 48 inches from the wall to the nearest vertical component of the rack.
- Rack units placed parallel to a wall must be at least 36 inches from the rack to the wall.

### Distance from a Curb:

- Rack units placed perpendicular to the curb must be at least 48 inches from the curb to the nearest vertical component of the rack.
- Rack units placed parallel to the curb must be at least 24 inches from the curb to the rack.

### Distance from a Pedestrian Aisle:

- Rack units perpendicular to a pedestrian aisle must be at least 48 inches from the rack to the edge of the aisle, and the aisle should be at least 60 inches wide.

### Other Distances:

- Racks should be no more than 30 feet from the building entrance that they serve.
- Allow at least 4 feet for safe pedestrian clearance
- 14 feet from curbside fire hydrant
- 6 feet from a wall fire hydrant



## Choosing a Location

Location is an extremely important factor in the utility of a bike rack. The rack should be located in a safe and accessible space (see Article 6.49.3 for requirements).

### Safe locations are:

- In full view, maximizing visibility and minimizing vandalism, near pedestrian traffic, windows, and/or well-lit areas
- Under cover, to protect bikes from inclement weather
- Far enough away from the street or parking spaces so that bikes will not be damaged by automobiles, on a setback if possible
- Not obstructing pedestrian traffic



### Accessible locations are:

- Between the road/path that cyclists use and the entrance of the building
- Not up stairs or large curbs, preferably near handicap accessible ramps
- Spacious enough to allow room for bikes of all shapes and sizes to use the racks to their fullest capacity.
- Close to the main entrance that cyclists use for the building

Private developers and property may not install racks in the public right of way without formal permission from the City.



*Weather protected bicycle parking is desirable at locations where bikes may be parked for extended periods.*

## Short-Term Versus Long-Term Parking



Another factor in bike rack choice is the amount of time that each cyclist is expected to park at the rack. Bike parking for a commercial area, such as a restaurant or store, is considered short-term, as cyclists are expected to park there for a couple of hours (at the most). The main concerns for short-term bike parking are close proximity to the building entrance and visibility.



For long-term parking, such as at transit stations, workplaces, or residential areas, where cyclists may park all day or overnight, it is better for bikes to be parked in lockers, covered storage areas, parking garages or indoors. Safety is the main concern with long-term parking. Bikes need to be sheltered from inclement weather, under cover or in a locker. To prevent vandalism, racks should be within view of any parking attendant, security guard, or transit worker.

*Weather protected bicycle parking is appealing to cyclists and is twice as likely to be used as unprotected parking options. Bicycle parking lockers housed inside parking garages is a desirable choice for cyclists. Using building design to add sheltered storage is a creative means to supplying much needed parking options for cyclists.*





## Parking Garages



As stated in the Zoning Ordinance Article 6.49.2, “When automobile parking spaces are provided in a structure, all required bicycle spaces shall be located inside that structure or shall be located in other areas protected from the weather.” Bicycle parking in parking garages must be either on the same level as the

entrance to the garage or accessible via automobile ramps designed to serve bicyclists, or near an elevator that is sufficiently large to accommodate bicycles. Bike racks inside parking garages must still meet the security standards of short-term racks or lockers.

## Locking

The rack must allow for the convenient securing of the bicycle frame and both wheels using a chain, cable or U- lock. Chains and cables vary in length from 2' to 6'. U-locks, which cyclists frequently use to attach their frame and one wheel to a rack, are usually between 3.25" and 5" wide and vary in length from 5.5" to 12".



*Chain Lock*



*U-Lock*

The locking surface on the rack must be thin enough for cyclists to use these popular locking mechanisms, yet thick enough not to be cut by hand tools, such as bolt cutters, pipe cutters, pry bars and wrenches.

## Bike Rack Manufacturers

There are many bicycle rack manufacturers who can supply high quality racks that meet Cambridge specifications. The City of Cambridge maintains a list of bicycle rack



manufacturers on its website: [http://www.cambridgema.gov/cdd/et/bike/bike\\_park.html](http://www.cambridgema.gov/cdd/et/bike/bike_park.html)

Custom designs and “artistic” racks can also be used, provided they meet the performance criteria for bicycle racks. Images on this page show examples of such racks.

Cambridge staff are always available to assist with reviewing the performance standards for bicycle racks, including custom designs, as well as rack selection and placement; please feel free to contact us at [bikerack@cambridgema.gov](mailto:bikerack@cambridgema.gov).

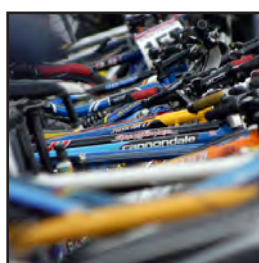
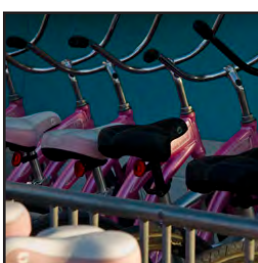


## Photo Credits:

With appreciation to the following individuals and companies for use of their photographs:

Dero Bike Rack Company (pp. 4, 9, 11); Susan Cooper (p. 11); John Luton (p. 8); Norman Cox (p. 10); Mark Horowitz (p. 9); Shannon Simms (pp. 5, 10); Jessica Zdeb (p. 3)





## City of Cambridge

### Community Development Department

Environmental and Transportation Planning

344 Broadway, Cambridge, MA 02139

Voice: 617-349-4600 ■ Fax: 617-349-4669 ■ TTY: 617-349-4621

Web: [www.cambridgema.gov/cdd/et/bike/index.html](http://www.cambridgema.gov/cdd/et/bike/index.html)

Spring 2008

## APPENDIX M

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## Feedback on **Concord's** application to be designated a Bicycle Friendly Community – Fall 2010

The League of American Bicyclists has designated Concord as a Bicycle Friendly Community at the **bronze** level. Reviewers were very pleased to see the current efforts, potential and commitment to make Concord a great place for bicyclists which can be seen in the growing number of cyclists. Some of the highlights of the application are the bicycle master plan, complete streets policy, off-road cycling opportunities, bike-related training for engineers, bike parking map, bicycle donations and classes offered to underserved populations, and the breadth and participation in Bike to Work/Green Commute week. The application also highlighted the strong leadership and work of local advocacy groups such as PATH, BWA-NH, The Granite State Wheelmen, and CNHBC.

The BFC review team expects great things in the future given the good local team and the coming improvements to the network and programs. Reviewers provided the following suggestions to further promote bicycling.

The five most significant measures the city should take to improve cycling in the community are:

- Fully implement the [comprehensive bike plan](#) and continue to close gaps in the cycling network. Also, expand the encouragement, education, and enforcement programs to increase usage. Set an ambitious, attainable target to increase the percentage of trips made by bike in the city.
- Continue to improve bicycling education opportunities for children and adults. Increase the amount of regular class offerings. [Smart Cycling](#) can be integrated into motor vehicle violation diversion programs, commuter education programs, Safe Routes to School, as well as motorist education classes for city employees.
- Increase the amount of [secure bicycle parking](#) throughout the community – in addition implement a regulation that requires bike parking. See bicycle parking ordinances and guidelines for [Madison, Wisconsin](#) and [Santa Cruz, California](#) Bicycle Parking Ordinances and guidelines for choosing racks.
- Continue to expand public education campaigns to promote the share the road message and the rights and responsibilities of all users. There are some new tools for you to use. See a new motorist education video at <http://bikelib.org/video/index.htm> It is vital to make motorists and cyclists aware of their rights and responsibilities on the road. Also, see the excellent Look Campaign from New York City: [http://www.nyc.gov/html/look/html/about/about\\_us\\_text.shtml](http://www.nyc.gov/html/look/html/about/about_us_text.shtml) and use the valuable information from the League's Ride Better Tips in your outreach education and encouragement efforts. See the Ride Better Tips pages at <http://www.bikeleague.org/resources/better/index.php>

- Continue to expand the bicycle network and increase network connectivity through the use of bike lanes, shared lane arrows and signed routes. On-street improvements coupled with the expansion of the off-street system will continue to increase use and improve safety. These improvements will also increase the effectiveness of encouragement efforts by providing a broader range of facility choices for users of various abilities and comfort levels.

## Engineering

- Expanding the amount of staff time devoted to this work by bicycle and pedestrian coordinator would help in scaling up your BFC efforts. Current work of the BPAC and TDM staff could be complemented by a full-time staff person devoted to acquiring bike/ ped grants and making the community bicycle-friendly. See this report on the importance of Bicycle & Pedestrian program staff.  
[http://www.bikeleague.org/resources/reports/pdfs/why\\_bike\\_ped\\_staff\\_april\\_2010.pdf](http://www.bikeleague.org/resources/reports/pdfs/why_bike_ped_staff_april_2010.pdf)
- Continue to increase the number of arterial streets that have wide shoulders or [bike lanes](#).
- Ensure that new and improved facilities to accommodate bicyclists conform to current best practices and guidelines – such as the [AASHTO Guide for the Development of Bicycle Facilities](#) and the DOT's own guidelines.
- Provide more opportunities for [ongoing training](#) on accommodating bicyclists for engineering, planning staff, and law enforcement. Consider hosting a [Smart Cycling](#) course for city staff to better understand cyclists' needs, behavior, and their right to use city streets as well as multi-use paths for transportation.
- Set up training for city staff and area consultants on bicycle facility design and planning. Consider a membership to the Association of Pedestrian and Bicycle Professionals [www.apbp.org](http://www.apbp.org) for city Bicycle and Pedestrian Staff. Training opportunities and the listserv provided by this organization are excellent resources.
- Work to improve the access to public lands for mountain bicyclists as well as the connectivity of the bicycle network to these open spaces.
- Offer more options for bicycle users of all ages and abilities through a system of bicycle boulevards. Concord's network is likely to be a great fit for these. This is a great way to reach new cyclists in their neighborhoods. See more on how to do it at <http://www.ibpi.usp.pdx.edu/guidebook.php>
- Increase the amount of way-finding signage around the community. Here are some best practices from the Washington, DC area council of governments:  
<http://www.mwcog.org/uploads/committee-documents/t1dZW1k20070516090831.pdf>
- Improve the coordination between the city and the state paving and rehabilitation projects and facilities maintenance. Consider offering oversight to state DOT staff and contractors working within municipal boundaries are properly installing facilities and are current on best practices.



- Consider measuring the bicycle level of service on community roads.  
<http://www.bikelib.org/bike-planning/bicycle-level-of-service/>
- Implement road diets to calm traffic and lead to a better use of roadway space  
<http://lcmpoweb.las-cruces.org/Training/Road%20Diet/Road%20Diet%20Supplement.pdf>  
and investigate more innovative on-road treatments to accommodate bikes on narrower Concord streets, such as [contra flow bike lanes](#) and signage.

## Education

- Improve the reach of the community's bicycle safety campaigns. Use valuable information from the League's Ride Better Tips in your outreach education and encouragement efforts. See the Ride Better Tips pages at <http://www.bikeleague.org/resources/better/index.php> , PSA's <http://www.bikeleague.org/programs/bikemonth/psas.php> and the downloadable Bicycle Safety Tips for Adults video at <http://www.bikeleague.org/programs/education/shortversion.wmv>
- Reach children with bicycling education outside of school in recreation programs, bicycle repair co-ops, Trips for Kids events, and through youth bike clubs. Here is an example from Portland, OR - <http://www.communitycyclingcenter.org/index.php/programs-for-youth>
- Work to get bicycling and motorist education messages added to routine local activities such as tax renewal, drivers licensing and testing, or inserts with utility bills.
- Start a motorist education programs for bus and taxi drivers in the city. See what San Francisco has done <http://www.sfbike.org/?drivertraining> Also, use the materials listed above for this purpose in addition to classes that can be offered by League Cycling Instructors.
- The community should work to increase bicycling education opportunities for children and adults. Having more instructors will help. Host an LCI seminar to train League Cycling Instructors. Contact the League offices or visit <http://www.bikeleague.org/programs/education/> for information on upcoming seminars. Both adult and child classes can be taught by League Cycling Instructors. Having local instructors will enable the community to expand cycling education, to be cycling ambassadors, to deliver education to motorists, provide cycling education to adults, and have an expert to assist in encouragement programs.  
[http://www.bikeleague.org/cogs/programs/education/seminar\\_schedule](http://www.bikeleague.org/cogs/programs/education/seminar_schedule)
- Ensure that bicycle-safety education is a routine part of public education. Expand your [Safe Routes to School program](#) that emphasizes bicycling and encourage all schools to get involved. In Arlington, Virginia every school in the County was visited by a team with representatives from Department of Public Works, the Police and Schools to assess conditions for walking and biking to each school. A list of problems and solutions was developed measures were identified to address problems. Short-term projects such as painting crosswalks were done right away while larger construction projects are on-going. Funding is available in the federal transportation bill, SAFETEA-LU, among several other

sources at both the federal and state levels. See [www.saferoutesinfo.org](http://www.saferoutesinfo.org) for more information.

## Encouragement

- Set up community celebrations and/or rides each time the community completes a new bicycling related project. This is a great way to show off the city's good efforts and introduces new users to the improvement.
- Encourage more local businesses to promote cycling to the workplace. During Bike to Work Week set up a commuter challenge or bike to work pit stop. For more information on encouragement ideas please visit <http://www.bicyclefriendlycommunity.org/tech.htm> Olympia, Washington holds a Bike Commuter Contest during Bike Month and encourages people to participate in the month-long Contest to see who can ride the most number of days or miles in the month of May. The growth in participation has been stunning. Olympia also offers city employees a \$2 per day incentive for commuting by bike (as well as for walking, riding the bus or carpooling). Each year, approximately 50 to 60 of the City's 600 employees participate in the Bicycle Commuter Contest.
- Work to create more active involvement of bicycle community. Consider a Bicycle [Ambassador program](#) like Chicago's. This could be based out of a Bikestation or cycling hub downtown.
- Consider passing an [ordinance or local code](#) that would require larger employers to provide [bicycle parking](#), shower facilities, and other encouragement tools. The city could be the model employer for the rest of the community.
- Develop a series of short (2-5 mi.) loops rides around the community and provide appropriate way-finding signage. Integrate these rides into local bike map.
- Increase the amount of way-finding signage around the community.
- Set up community celebrations and/or rides each time the community completes a new bicycling related project. This is a great way to show off the city's good efforts and introduces new users to the improvement.
- Post your local bike map online on Concord's website to give bicyclists and potential bicyclists a wide variety of choices from transportation to recreation at various cyclist comfort levels.
- Consider offering a 'Ciclovía' or 'Summer Streets' type event, closing off a major corridor to auto traffic and offering the space to cyclists, pedestrians and group exercise events. <http://cicloviarecreativa.uniandes.edu.co/english/index.html>
- Launch a bike buddy or bicyclist mentorship program for inexperienced riders. See what Spokane, Wash. and Charlotte, N.C. are doing <http://groups.google.com/group/bikementor>, <http://www.spokanebicycleclub.org/bikebuddy.htm>

- Consider launching a public bike sharing system that is open to the public, similar to those smaller programs you have running at NHTI and NHDOL. See what is being done across the country at <http://streetswiki.wikispaces.com/Public+Bike-Sharing+Programs>

## Enforcement

- Make stronger connections between bicycling community and law enforcement. Having an officer on the BAC would be excellent. Ensure that police officers are educated on the “Share the Road” message and have general knowledge regarding traffic law as it applies to bicyclists. The city should implement regular training for officers on this like an *Enforcement for Bicycle Safety* seminar. This is a great continuing education opportunity for law enforcement.  
[http://www.bicyclinginfo.org/bikesafe/case\\_studies/casestudy.cfm?CS\\_NUM=801](http://www.bicyclinginfo.org/bikesafe/case_studies/casestudy.cfm?CS_NUM=801)
- Encourage police officers to use targeted enforcement to encourage motorists and cyclists to share the road. This could be in the form of a brochure or tip card explaining each user’s rights and responsibilities.
- Improve and expand the training offered to police officers regarding traffic law as it applies to bicyclists. See the video put out by the National Highway Traffic Safety Administration (NHTSA) <http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.810acae50c651189ca8e410dba046a0/> Here are some Law Enforcement Products  
  - [Law Enforcement's Roll Call Video: “Enforcing Law for Bicyclists”](#)
  - [Enhancing Bicycle Safety: Law Enforcement’s Role \(CD-ROM Training\)](#)

## Evaluation/Planning

- Expand efforts to evaluate the bicycle usage and crash statistics to produce a specific plan to reduce the number of crashes in the community. There are tools available including *Intersection Magic*: <http://www.pdmagic.com/im/> and [PBCAT](#). See the report [Bicyclist Fatalities and Serious Injuries in New York City 1996-2005](#)
- Work to improve data collection methods on bicycle usage and crash statistics and evaluation of this data.
- Conduct research on bicycle usage beyond the U.S. Census’ Journey to Work report and consider implementing a trip reduction program/ordinance. See good examples at <http://bikepeddocumentation.org/> and <http://www.portlandonline.com/transportation/index.cfm?c=43801>
- Consider conducting an economic impact study on bicycling in your community  
[http://www.altaplanning.com/App\\_Content/files/fp\\_docs/2008%20Portland%20Bicycle-Related%20Economy%20Report.pdf](http://www.altaplanning.com/App_Content/files/fp_docs/2008%20Portland%20Bicycle-Related%20Economy%20Report.pdf)

For more ideas and best practices please visit the [Bicycle Friendly Community Resource Page](#)