

City of Concord Bicycle Master Plan

November 2010

Prepared by The Central New Hampshire Regional Planning Commission in collaboration with the Bicycle Subcommittee of the Concord Transportation Policy Advisory Committee

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Executive Summary

This Bicycle Master Plan is intended to direct and guide a wide range of efforts by the City of Concord and the bicycling community to make Concord a more bicycle-friendly community. Intended to be a supplement to the City's Transportation Chapter of the Master Plan 2030, it takes the spirit and intent of the existing Master Plan 2030 and other planning documents to provide more specific direction for improving bicycling conditions in Concord. This plan identifies implementation and action items for the City of Concord, Planning Board, City staff, the Transportation Policy Advisory Committee and its subcommittees, and the bicycling community at large.

Recommendations in the plan include:

- Continually develop a comprehensive bicycle transportation network connecting all of Concord's neighborhoods and major destinations
- Improve bicycling conditions whenever roadwork is being completed, adhering to the City of Concord's Comprehensive Transportation Policy
- Identify and strategically target bicycle specific improvements for implementation where it is needed most, and as opportunities arise
- Improve communication between various parties to ensure bicyclist concerns are properly addressed in all transportation projects and development
- Develop an off-street shared-use path along the Merrimack River to serve both local and regional transportation and recreational purposes
- Support existing organization and further develop programs that encourage safe bicycling

This Plan was developed by the Central New Hampshire Regional Planning Commission (CNHRPC) under direction of the Bicycling Subcommittee of the Concord Transportation Policy Advisory Committee (TPAC-Bicycle), and in collaboration with the City of Concord Planning and Engineering Services Divisions.

Critical to this Plan is visioning and public comment received via public meetings, surveys, and communications through TPAC-Bicycle. This Plan is intended to serve as a guide to TPAC-Bicycle and other groups dedicated to improving bicycling conditions in the City of Concord.

The plan was funded with federal funds through Concord 2020 and supplemented with CNHRPC Unified Planning Work Program (UPWP) funding from the NH Department of Transportation.

Credits

This Plan was prepared by the Central New Hampshire Regional Planning Commission (CNHRPC) under direction of the Bicycling Subcommittee of the Concord Transportation Policy Advisory Committee (TPAC-Bicycle).

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These community members applied their time, expertise, and local knowledge to the project.

The plan was developed with assistance from and close collaboration with the City of Concord Planning and Engineering Services Divisions.

The project was developed with federal funds through Concord 2020 and supplemented with CNHRPC Unified Planning Work Program (UPWP) funding from the NH Department of Transportation.

1 Introduction

1.1 Purpose and Need

The City of Concord recognizes the importance of bicycling as part of a comprehensive transportation system. The recent formation of Concord's first City-sanctioned bicycle advisory committee, the recent adoption of a bicycle friendly Comprehensive Transportation Policy, the development of this Bicycle Master Plan, and Concord's designation in 2010 by the League of American Bicyclists as a *Bicycle Friendly Community* all serve to illustrate the City's commitment to bicycle transportation.

With multiple bicycle related projects, volunteers and organizations, the need for comprehensive planning is all the greater. This Bicycle Master Plan intends to help harness the positive energy that has been growing on bike related issues. In order to make Concord a more bicycling-friendly community, infrastructure improvements, efforts in education, outreach, and bicycle safety are all important elements.

This Bicycle Master Plan is a supplement to the City's 2030 Master Plan, providing more specific direction regarding plans for improving bicycling conditions in Concord. This Bicycle Master Plan intends to take the spirit and intent of the existing 2030 Master Plan and other planning documents to create a more in-depth and bicycling specific plan, that identifies implementation and action items that will make Concord a more bicycle-friendly community.

1.2 Existing Conditions

Following the creation of the City-wide Transportation Policy Advisory Committee (TPAC) by the Concord City Council and Mayor Jim Bouley, a bicycling subcommittee (TPAC-Bicycle) was formed and met for the first time in June 2008. This committee and various community members have been building momentum for bicycling in Concord with critical support from Concord 2020, help from local bicycle shops and businesses, and help from the Central New Hampshire Regional Planning Commission (CNHRPC) through its transportation planning program, the Program

for Alternative Transportation and Health (PATH), and the Safe Routes to School program. Various events and activities relating to the promotion of bicycling as a healthy, economic, and environmentally friendly form of transportation -- including Green Commute Week, an annual Bicycle Swap, Bike/Walk to School days, production of a bicycle safety video, the development of bicycle sharing programs and establishment of the North-South Bike Route -- have contributed to raising the level of awareness and interest by City officials and the public in bicycling since TPAC-Bicycle was established.

1.3 Existing Plans

Concord 2030 Master Plan

The Concord Master Plan 2030 describes a general framework for bicycle improvements and calls to incorporate bicycling as part of the transportation system. This Bicycle Master Plan builds on that framework and helps Concord and its residents take a more pro-active approach to meeting the challenges involved in making Concord a more bicycle-friendly community.

The Recreation Chapter of the Concord Master 2030 Plan focuses on parks and recreation facilities, but does not address bicycling as a form of recreation. Providing better recreational bicycling opportunities will help meet the City's recreation goals of facilitating active outdoor recreation for citizens of all backgrounds and ages in each area of the City.

Regional Transportation Plans

The Regional Bicycle and Pedestrian Plan for the Central New Hampshire Region was completed by CNHRPC in 2001. This plan, along with the Regional Transportation Plan adopted in 2008, recognizes the importance of bicycling as part of a complete multimodal transportation system providing more choice in transportation. Both plans call for bicycle planning and implementation at the local level. This Bicycle Master Plan fulfills a major goal for these regional plans. Implementation and action items from this Plan will further realize general goals outlined in all of these documents.

2

Existing Infrastructure

2.1 Street Network

Concord's existing street network and layout creates a number of challenges for bicycle transportation. Streets are mostly narrow with limited space for bicycle lanes or shoulders, especially when competing for space with automobile parking. It has been the policy of TPAC and the City to make the most of this limited space with creative engineering and sharing the roadway. One advantage the City has is its traditional "grid" type network that in many cases allows for alternative routes that parallel the main collector roads. These alternatives and connections have been and can be used to calm traffic on selected streets to encourage bike use, while promoting automobile capacity on parallel streets, when appropriate.

2.2 Shared-use Paths

As Concord bicyclists already know, few off-street paved shared-use paths exist in the City. Short segments of path near Silk Farm Road and St. Paul's School leading to Hopkinton, a path over the Merrimack River attached to the I-93 bridge, a short path along I-393 from East Sugarball Rd. connecting to Portsmouth St, a short path under I-393 near Concord's Community College (NHTI), and a short path under the I-93/I-89 interchange just across the City line in Bow complete the City's inventory. These short paved paths create valuable local connections for pedestrians and bicyclists that are much appreciated and used, but by themselves do not make up a significant portion of the bicycling network in Concord.

2.3 Bicycle Routes

During the development of this plan, the North-South Bike Route, Concord's first official signed and marked bicycle route, was approved by City Council in 2009. This route connects from North State Street north of Downtown to the South End near the Bow town line. The North-South Bike Route skirts the downtown area and passes three schools in the Concord School District and passes near Downtown. It connects

with Route 3 where bicycle lanes have been added in places and will be added all the way north to Penacook. When completed, the North-South Bike Route and the Route 3 improvements will create a bicycle-friendly route across Concord from north to south. Other potential bicycle routes connecting various neighborhoods in Concord are discussed later in this Plan.

2.4 Bicycle Lanes

In 2009, Concord striped the first bicycle lanes in the City on the easterly portion of Clinton Street with signage and some painted bicycle symbols. These lanes have been received well by most Concord bicyclists, and this plan discusses the potential future development of additional bicycle lanes. Bicycle shoulders exist on portions of the Route 3 corridor north of Hillcrest Ave with one small section approaching Sewall's Falls Rd. painted as a bicycle lane.

2.5 Bicycle Parking Facilities

The city maintains bicycle parking facilities at the city owned properties such as schools, libraries and municipal offices, and also several bike bollards on Main Street and Bicentennial Square. The Bollards are in deteriorating condition, and have some deficiencies including improper orientation to the street and sidewalk causing clearance issues with the sidewalk, street furniture, and other physical obstacles. Bicycle parking issues and recommendations are addressed later in the document.

2.6 Trails and Recreation

The City of Concord owns and manages open space lands with unpaved trails in various parts of the City. Existing trails are generally destinations for hikers and not interconnected. The trails do not serve destinations for bicyclists and are not intended to be used for "road bicycles".

Mountain bicycling is permitted on all of these trails and the open space land is a recreational resource for Concord residents. There are several locations in the City that are popular mountain biking locations. Some of these trails are maintained by the City while others are more informal trails that may cross over privately owned land.

2.7 Rail Rights of Way

The City of Concord is the third largest and among the most economically important cities in New Hampshire, and as such, the City has historically been a hub for major transportation routes. During the late nineteenth and early twentieth century, railroads built multiple lines to and through the City. Some of these rail corridors are still active with occasional train service, but many are in various stages of abandonment. These corridors are of particular interest to bicyclists and trail advocates because of their potential suitability for conversion into shared-use paths and non-motorized transportation routes. The City has four rail corridors within its borders and each has varying suitability for trail and non-motorized transportation purposes.

These corridors include the main Trunk Line with active rail running north to south, a parallel "Northern Line" from downtown north to Boscawen on the west side of the Merrimack River, and an abandoned Concord to Claremont line that heads toward the Hopkinton Village of Contoocook, and the abandoned Suncook Branch in the Garvin's falls area to the Pembroke town line. These corridors are discussed in more detail in the Shared-use Paths chapter.
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3 Data Collection

3.1 Automobile – Bicycle Crash Data

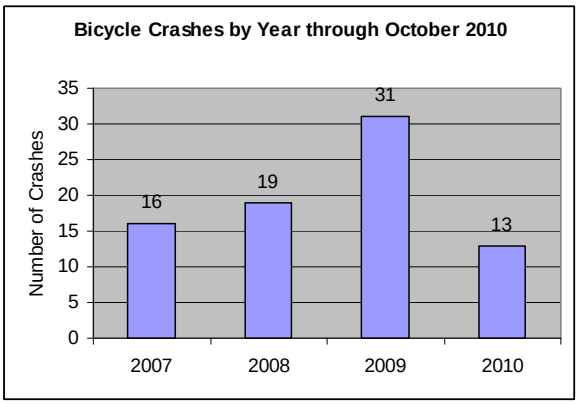
Automobile-bicycle crash data received from the Concord Police Department from the nearly four-year period 2007 through October 2010 showed the following highlights: (more data are available in Appendix J)

- 79 bicycle-automobile crashes (plus one bicycle-pedestrian accident) were reported
- 44 times (63%) the bicyclist was reported at fault
- 25 times (37%) the motorist was reported at fault
- 23 (29%) reported cause of bicyclists riding on the sidewalk
- In 36 of 80 crashes, (45%) the bicyclist wore a helmet
- 82% had non-incapacitating injuries, 10% saw no injuries, and one (1) crash resulted in a fatality (the fatality was not on a public road).

These data clearly demonstrate that both motorists and bicyclists are responsible for bicycle safety. Many of the crashes where the bicyclist was at fault could have been avoided had the bicyclist been following the most basic rules of the road. The most common causes of crashes were from the bicyclist riding on the sidewalk; other common causes with bicyclists at fault included failure to yield, and stop sign/red light violations.

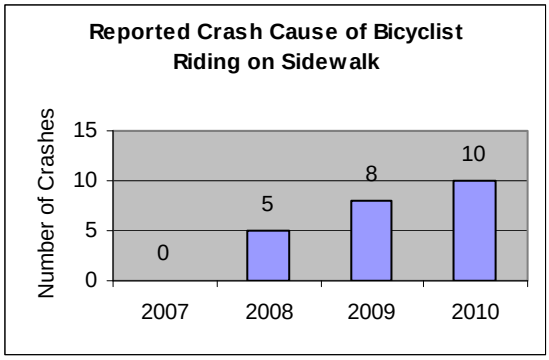
While the data do not specify the causes of the crashes, it is apparent that some of the crashes where the motor vehicle is at fault could have been avoided with better bicycle accommodations.

There were a higher number of crashes in 2009 than any other year by a significant margin, while other years remain fairly steady. 2009 saw a spike in crashes during the months of August, September, and October.



Also, the number of crashes where a cause of the crash was "bicyclist riding on sidewalk" have been increasing dramatically over the time period. This may be caused by a greater awareness and better reporting by police officers of laws pertaining to bicycles on the sidewalk.

A map showing daily automobile traffic volumes on Concord roadways that are considered primary bike routes is enclosed. It stands to reason that roads with higher automobile volumes expose bicyclists to greater potential for conflicts; however traffic volumes are only one consideration in assessing bike safety on a given route.



3.2 Bicycle Count Data

In the summer of 2010 the city's first bicycle counts were conducted in response to a proposed bridge closure. Bicycle counts were conducted on the Delta Drive bridge over I-93, and on the adjacent shared-use path on one weekday (Wednesday) and one weekend day (Saturday). The count was conducted manually by volunteers. Approximately 150 bicycles crossed the bridge or the path during daylight hours on Wednesday, and close to 50 on Saturday. The disparity of the weekday count versus the weekend count -- three to one -- is thought to be a strong indication of the degree to which the path and the bridge are used by commuting bicyclists. When compared to vehicle traffic counts from the previous year, non-motorized traffic on the bridge accounted for approximately 17% of all trips. The count and report highlighted the importance of the crossing over I-93 and was critical to making a case to provide for bicycle and pedestrian amenities during the closure of the bridge projected for 2012. The full report of the study can be found in Appendix K.

3.3 Bicycle Level of Service

Bicycle Level of Service (BLOS) data have been obtained for areas near middle and elementary schools that are participating in the Safe Routes to School program. This data was useful for local travel plans and identifying areas in need of improvement. Additional BLOS data will be collected in the future.

4

Public Involvement

4.1 TPAC-Bicycle

The idea of a bicycle master plan to supplement the general coverage in the 2030 Master Plan came from the Bicycle Subcommittee of the Transportation Policy Advisory Committee, also known as TPAC- Bicycle. TPAC- Bicycle also served as the steering committee for the development of this Plan. This group is comprised of individuals from a wide spectrum of backgrounds. At monthly meetings, CNHRPC staff shared progress on the plan and held constructive conversations about the direction of the plan and work tasks ahead. TPAC-Bicycle will also form the lead group for implementation of elements of this Plan, working with and through TPAC, the Planning Board, City staff and the City Council.

The Planning Board and other City staff were regularly updated on the efforts of TPAC-Bicycle and were welcomed to participate in all meetings.

4.2 Public Meetings

A critical component of any planning process is active public involvement. Three public meetings were held during the development of the Bicycle Master Plan.

Meeting 1, held on December 7, 2009 was the plan's largest information gathering effort and drew approximately 70 participants. Along with excellent turnout from the general public, representatives from NH Department of Transportation, Bike Walk Alliance of NH, Concord City Council, Planning Board, Planning Division, Engineering Division, and the Conservation Commission were in attendance. This meeting was the public's opportunity to share its view of bicycling conditions

and needs. After a brief introduction, the group was divided into six "topic tables" where they would discuss a major bicycling related topic.

Table 1: Route Map- A blank map of Concord was provided and groups discussed a possible route network and made general comments on the City's existing street and path network.

Table 2: Hot Spots- A blank map of Concord was provided and groups were asked to identify problem areas for bicycling and to explain their experiences. This will help the City identify locations where improvements are desired.

Table 3: End of Trip Facilities- This group discussed bicycle parking in the City, bicycle facilities including showers, lockers, and amenities at workplaces, and also discussed connectivity of bicycles and transit.

Table 4: Safety and Education- Here attendees discussed bicycle safety concerns in the City and brainstormed ideas for making Concord safer for bicycling. Educating bicyclists and motorists on the rules of the road was a discussion point.

Table 5: Recreation- At this table, attendees discussed the recreational bicycling opportunities in Concord, and addressed issues of access to recreational bicycling, trails, shared-use paths, and open space.

Table 6: Vision and Goals- Attendees developed vision statements and possible goals for their vision for the City.

After this meeting, the discussion points and findings from each table were summarized and analyzed in order to get a sense of the attendees' views. Recommendations in Chapter 12 in this Plan are based in large part on input from this meeting. A detailed summary of the findings from each topic table can be found in Appendix B.

Meeting 2, held on April 6, 2010 was a two-way conversation between the working group (TPAC- Bicycle) and approximately 40 members of the public in attendance. TPAC-Bicycle reviewed what was gathered from Meeting 1, explained the progress of the Plan to that point, and shared some of the public's comments that were already being addressed. There were general discussions on the findings in groups of 10-12 people each. At the second portion of the meeting, the "hot spots" identified in Meeting 1 were graded according to their "overall bicycle friendliness" and their "importance to Concord's bicycling network." This information provided valuable community based input for the prioritization of potential improvements in this Master Plan. Detailed results from this meeting can be found in Appendix C.

4.3 Bicycle Parking Survey

A survey was conducted to help determine the public's needs and wants in regards to bicycle parking. The survey and summary are in Appendix E, and the results are discussed later in the master plan.

5

Vision and Goals

The visioning portion of any master plan is the opportunity to capture and document what people want for the future of their community. Goals, objectives, policies, projects, implementation and priorities all follow the vision.

TPAC-Bicycle and CNHRPC planners have engaged Concord bicyclists of all types and have worked hard to translate City residents' and bicyclists' visions of a bicycle-friendly Concord. The first two public meetings were critical in the development of a vision that reflects a majority of bicyclists' views. At Meeting 1, one of six tables was dedicated to developing a vision and goals. These small groups were conducive to including as many people as possible and allowing for thoughtful discussion. At Meeting 2, one of three tables reviewed draft vision and goal statements that were derived from the Meeting 1's discussion. The result is four vision and goals statements that outline a general bicycle related vision for Concord with specific goals for education, policies, and infrastructure.

The following vision is based in large part on input from the public, through the public meetings, and comprehensive input from TPAC-Bicycle.

5.1 Vision

"Concord will be a community where bicycling is a safe and practical means of transportation and recreation. Bicycling will have equal stature and acceptance as a mode of transportation and will be commonplace for people of all ages and abilities. Bicycling will become part of the culture of Concord through expanded education, public outreach, infrastructure improvements and enabling public policy"

5.2 Goals and Objectives

Education and Awareness Goals:
The City will develop and use effective bicycling education tools, with an emphasis on children and safety. The City will have improved relationships between bicyclists and non-bicyclists based on mutual respect, understanding, and education.

Policy Goals:
The City will be a regional leader with bicycle-friendly policies regarding infrastructure, inclusive transportation planning, and traffic law enforcement.

Infrastructure Goals:
The City will work proactively toward addressing the following infrastructure goals:

- Incorporation of bicycle accommodations within all transportation projects
- A safe and easily navigable, marked bike route network
- Additional dedicated bicycle lanes where feasible
- Traffic signals that are responsive to bicycles
- Additional off-street shared-use paths
- Improved bicycle parking and access provided by NH DOT at Park and Ride facilities
- Secure and convenient bike parking
- Bicycle sharing programs
- Navigation aids and wayfinding for bicyclists
- Wash and shower facilities for bicycle commuters through partnership with local organizations

The vision and goals presented here are the basis for the recommendations in the plan.

6

Safety, Education, Outreach, and Encouragement

Making Concord a more bicycle-friendly community requires both improvements in bicycle infrastructure and changes in attitudes and behaviors. It is important for both bicyclists and motorists to understand and follow the rules of the road pertaining to bicycles, and for all to behave in a safe manner. It will require substantial outreach to help people choose to bicycle more often. There are several programs and organizations in Concord that have worked toward this goal of improving bicycle safety and increasing the number of people who choose to travel by bicycle. It will be important to continue and expand these programs since they are an important part of a comprehensive approach to making Concord a more bicycle-friendly community.

6.1 Green Commute Week

The city had celebrated Bike to Work day and later Bike/Walk to work day for several years with a small gathering downtown. The City of Concord expanded on National Bike/Walk to Work Day in 2009 by holding its first Green Commute Week. Held in May, the weeklong event aims to promote, educate, and encourage, the use of transportation modes other than the single occupancy vehicle (SOV) for the health, economic, and environmental benefits that can be realized. The events attract media attention to the cause, bring together people of similar interests, and involves local businesses and stakeholders to actively support all modes of transportation.

The "bicycling" mode of transportation for two years has drawn the most interest by a significant margin. Green Commute Week events, along with other "bike breakfasts", "Fossil Free Fridays", and Bike to Work Days of years past have helped grow and galvanize the bicycle commuting community. These events celebrate the activity of bicycling to work, and help encourage both committed and new bicycle

commuters by creating a sense of community and letting them know they are part of something positive.

6.2 Program for Alternative Transportation and Health (PATH)

The Program for Alternative Transportation and Health (PATH) is a region wide program administered by the Central New Hampshire Regional Planning Commission (CNHRPC) with a main purpose to encourage and increase the mode share of transportation choices other than the single occupancy vehicle (SOV). It aims to "reduce traffic congestion, improve air quality and increase societal emphasis on personal fitness through the creation of services and materials which promote transportation options to the single occupancy vehicle." Bicycling is one mode of transportation that PATH has actively helped promote in Concord and the Central New Hampshire Region.

Some of PATH's main work items include coordinating Green Commute Week with various volunteers and organizations since 2009, and continually working with employers and local businesses to encourage green commuting year round. PATH's work in bicycle safety, education, outreach, and encouragement are critical components of a bicycle friendly community. PATH was initiated by a Federal funding grant through Concord 2020.

6.3 Central New Hampshire Bicycling Coalition

The Central New Hampshire Bicycling Coalition (CNHBC) is a non-profit bicycling advocacy organization formed in 2010, with a mission to "effectively improve bicycling conditions, safety, parking, and the road network as well as provide education and promotion of bicycling in Concord and surrounding communities." CNHBC expects to be a partner in implementing this Plan and making Concord more bicycle friendly, and expects to be particularly helpful with private fundraising, safety and education. Individuals that now make up the CNHBC have helped with safety, education, and outreach through bicycle training courses, assisting the needy, fundraising, and building bicycling culture in Concord.

CNHBC is unique in that it is the only organization in Concord dedicated to bicycling that is not connected to government or public funding. As such, it can serve different roles and take unique actions that other groups may not be suited for, particularly fundraising. The bicycle swaps held in 2009 and 2010 have raised thousands of dollars the CNHBC intends to put towards bicycling related projects.

6.4 Safe Routes to School

Concord has had active Safe Routes to School programs at several of its middle and elementary schools for the past several years. There are plans for a City-wide Safe Routes to School approach in the coming years. These programs help encourage kids to walk or bicycle to school and strive to make bicycling and walking safer for the school children. These programs provide long term benefits since they introduce lifelong safe cycling skills to our youngest citizens.

7

City Policy, Ordinances and Regulations

7.1 Comprehensive Transportation Policy

In 2009, Concord's Transportation Policy Advisory Committee (TPAC) drafted the City's first ever Comprehensive Transportation Policy. It was unanimously adopted by the Concord City Council in January of 2010. A key part of this policy is "To design, build and operate (the City's) roads and streets to safely accommodate all users and modes of transportation – the so called 'Complete Streets' initiative." It further specifies this can be done in part by "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."

This clear policy provides direction and leverage in any transportation decision-making that affects bicycling. The policy applies to City staff, private developers, and others. The policy sets the stage for this Plan and will be the foundation of many bicycle infrastructure improvements in the years to come. The Comprehensive Transportation Policy is reproduced in Appendix H.

7.2 Bicycle Improvement Strategy

In some cases, opportunities for bicycle-related improvements have not been realized or maximized simply because bicyclists have not been involved in the project's development. Concord's bicycling community has shown interest in infrastructure improvements and how developments and changes to the roadway will affect the routes they ride. TPAC-Bicycle is the designated committee to informally review major developments and roadway projects that may affect bicycling in the City, and this section of the Plan will demonstrate how TPAC-Bicycle can more effectively identify and seize potential opportunities. Several ways for TPAC-Bicycle to be better informed of upcoming projects and potential impacts for bicycling have been identified. These will better allow TPAC-Bicycle to take timely, appropriate action.

The Comprehensive Transportation Policy identifies the following two primary ways in which bicycle related infrastructure improvements are to be made.

1. Bicycle improvements are implemented as incidental parts of street building and resurfacing projects that would be occurring anyway (taking advantage of an opportunity)
2. Projects initiated and funded for the specific purpose of improving bicycling conditions

Given the limited available funding for bicycle-specific infrastructure projects and the high costs of construction, it is likely that most bicycle related improvements will be funded as part of larger projects (Strategy 1 above). An example of this is the bike lanes being constructed on Route 3 as part of a complete streets approach to reconstructing a roadway in need of repairs and improvement. This is an appropriate model for major bicycle improvements at intersections and on corridors. Loudon Road, Manchester Street, and Pleasant Street are candidates for this approach in the future.

The second approach, bicycle specific improvements, can take place to target areas that are of greatest need or where relatively inexpensive changes can make a large difference. An example of this approach is the development of the North-South Bicycle Route. This relatively inexpensive project was funded through a specific grant and was not part of a larger, general purpose road project. A need was identified by TPAC-Bicycle, and a solution was accepted by the City Council. A possible example for the future would be bicycle and pedestrian improvements at an intersection near a school, made possible through the Safe Routes to School program.

In order to identify and realize opportunities for making Concord more bicycle-friendly, procedures for reviewing upcoming projects should be made policy. While a formal review is not necessary or desired, TPAC-Bicycle should be aware of the happenings in Concord that may affect Bicycling. ***TPAC-Bicycle should internally review the Capital Improvements Program (CIP), the City and State's Paving Program, the State's roadwork schedule, utility work schedule, and private development applications for subdivision or site plans. This practice will better enable TPAC-Bicycle to identify and take a proactive approach to opportunities or potential problems. After informal review, TPAC-Bicycle should take formal action if deemed pertinent.***

One important reason for developing and maintaining a city-wide bicycle master plan is that it provides a consistent and comprehensive roadmap for bike improvements whenever and wherever transportation infrastructure modifications are considered.

7.2.1 Capital Improvement Program

The Capital Improvement Program (CIP) is relevant to bicycling in that proper review of upcoming projects will allow for bicyclists to be accommodated in the project (Strategy 1 above), and also will allow the opportunity for bicycle-specific projects to be added to the CIP (Strategy 2 above).

TPAC-Bicycle should formally review the CIP annually, or whenever changes or additions are made. The purpose is to be sure that any projects in the CIP accommodate bicyclists when appropriate, to capitalize on concurrent roadwork opportunities, and to help the bicycling community add bicycle-specific projects to the CIP when appropriate. The City Council has the ultimate responsibility for the CIP, but TPAC's responsibility is to advise the council on transportation matters. CIP #17, funded by vehicle registration fees, is a potential funding source for bicycle, pedestrian, and streetscapes improvements and is of particular interest to TPAC-Bicycle.

7.2.2 Paving Program Review Procedures

Review of the paving program by TPAC-Bicycle will provide an opportunity for bicyclists to work with the Engineering Division Services and General Services Department to re-think the allocation of space, via lane striping as part of each street, on a case by case basis. It is an opportunity to re-evaluate lane width, add bicycle shoulders, bicycle lanes, or other markings. ***TPAC-Bicycle should review the annual paving program with City staff for potential bike related improvements.***

7.2.3 State Maintained Roadways

Concord's Comprehensive Transportation Policy states the City's intent to cooperate with state and regional transportation organizations, including the New Hampshire Department of Transportation (NHDOT). Some of the major transportation routes in Concord are State maintained roadways, and as such, are under the jurisdiction of the NHDOT. ***TPAC-Bicycle should actively participate in the public process on NHDOT projects in Concord. In addition, it should regularly review the State's Paving Program, be aware of the State Transportation Improvement Program projects in Concord, and be informed well in advance of any roadwork.*** This will allow sufficient time for coordination and cooperation with the NHDOT to ensure that roadwork on State maintained roadways reflects the City's Comprehensive Transportation Policy. The NHDOT Bicycle and Pedestrian Coordinator and Intermodal Facilities Engineer should be an early point of contact for these issues.

7.2.4 Utility Work Review Procedures

Utility work in the City of Concord often requires roadway trenching and re-surfacing, which could provide the same opportunities to restripe the roadway as a repaving project. In some cases there may be opportunities to make even more significant and timely bicycle (or Complete Streets) improvements.

Opportunistically re-building roadways to Complete Streets standards in conjunction with utility work would be much more cost effective and fundable than systematically retrofitting roadways with Complete Streets improvements. Significant improvements could be realized at much lower cost. ***TPAC-Bicycle should regularly review the utility work schedule to help identify such opportunities.***

7.2.5 Private Development Review

Given the diverse range of private development projects that occur in Concord, there are a myriad of areas where TPAC-Bicycle could provide input. The type and location of bicycle parking facilities, the potential for adding off-street connections, pathways, and even recreational paths, and opportunities to preserve existing connections or recreational trails could be identified by bicyclists. A procedure for getting input from bicyclists can help accommodate their comments early and avoid conflicts later in the approval process. ***Planning and Engineering Division staff should notify TPAC-Bicycle of any specific bicycle related issues it foresees. TPAC-Bicycle should internally conduct an informal bicycle planning review of any flagged site plans and subdivisions, and provide written comments to the Planning or Engineering Divisions for consideration, and determine if future action by the committee is advisable. The City staff representative of TPAC-Bicycle should be a leader in this process.***

Furthermore, this Master Plan will be available to developers so they can understand how their proposed developments would be integrated into the City's bike network.

7.3 Land Use Regulations

The city's land use regulations, including zoning, site plan, and subdivision regulations should be reviewed to ensure the needs of bicycles are accommodated. This can be specifically relevant to bicycle parking. Providing the appropriate locations, types, and number of bicycle parking accommodations can be required in site plan regulations. Regulations could also permit developers to reduce the

required automobile parking if proper bicycle parking is provided. ***TPAC-Bicycle should consider using these regulations as a tool to help developers better meet the needs of bicyclists.***

7.4 Responsibilities of TPAC and TPAC-Bicycle

In addition to the education, advocacy, and project-specific work that have been undertaken since its creation, ***TPAC-Bicycle should develop a procedure to regularly review the CIP, the Paving Program, Planned State Roadwork in Concord, the utility work schedule, major subdivisions, and major site plans or other site plans that may impact bicycling.*** This can be done in a number of ways, including having standardized agendas for each meeting.

In order to help TPAC-Bicycle receive these reports, it is important to have at least one City staff member active on the Committee. ***Ideally, a designee from the Engineering and Planning Divisions, and Concord's Bicycle Program Manager should be appointed to TPAC-Bicycle.*** In some cases, having a contact liaison for TPAC-Bicycle from other groups will aid in communication. Having a cross-section of representation on the Committee from local residents, City Councilors, City staff, engineers, the Central New Hampshire Regional Planning Commission, and other organizations can help ensure that the Committee has a broad perspective of what is taking place in the City and region.

One of the main duties of TPAC-Bicycle is to update the Bicycle Master Plan on a regular basis. ***Additions, updates, and alterations to the plan should be made on a continual basis, with more significant changes, updates, or re-writes every 5 years.***

7.5 Maintenance and Funding

As stated earlier, most bicycle improvement projects will likely need to be implemented as incidental parts of larger City or State projects or private developments.

The bicycling community has been able to raise small but significant amounts of money to go towards bicycle-related projects in the City. In May of 2009, Concord held its first annual Concord Bicycle Swap and raised over $4,000, and in 2010 raised about $6,000. The swap was organized by a local bicycle shop and volunteers, and will likely be

organized by Central New Hampshire Bicycle Coalition (CNHBC) in the coming years. This new annual event is anticipated to grow and raise larger amounts of money each year. While these funds will not fund major infrastructure improvements, they can be used to help provide local match monies for larger projects, and provide major funding for smaller projects. ***CNHBC should continue and expand its fundraising abilities, and collaborate with TPAC-Bicycle and the City to help track funding needs and opportunities.***

Funding for major bicycle infrastructure projects is primarily available through Transportation Enhancement (TE) grants, which are administered through the New Hampshire Department of Transportation. These funds are distributed through a very competitive process. ***TPAC-Bicycle should work with the City Staff to apply for TE funds and other sources of funding that might be available.***

Maintenance and installation of many bicycle amenities often depend highly on the General Services Department. This department typically does not have resources to take on additional tasks and responsibilities. ***TPAC-Bicycle should support the General Services Department to ensure proper maintenance of bicycle infrastructure.***

8

Infrastructure

Concord residents and area bicyclists have shared with TPAC-Bicycle their views on what is needed and wanted in order to make Concord more bicycle-friendly. City engineers and local planners have also identified several ways to improve bicycling in the City, using engineering and planning concepts and available data. All of this input was synthesized to develop bicycle infrastructure assessments and recommendations. The infrastructure needs fall into the following categories.

8.1 Bicycle Routes and Bicycle Route Planning

All Streets in the City of Concord should accommodate bicycles, and the appropriate bicycle facilities on all roadways should over time be phased in to better meet the ideals of the Comprehensive Transportation Policy. In addition to this approach, Concord should develop a comprehensive bikeway system that will help meet the vision and goals of this plan. The bikeway system would be an interconnected network of on-street bikeways and off street shared-use paths. The network is to provide a higher level of service for bicyclists and encourage bicycle use. Routes on the network should be a priority for strategic bicycle-specific improvements and incidental improvements.

TPAC-Bicycle has developed a map of a comprehensive bicycle network based on transportation needs, planning and engineering principles, and input from public meetings and other feedback. The routes selected are areas deemed most suitable for a bikeway network intended to have a higher level of service for bicycling. The routes were not selected based on the current suitability for cycling.

Within this bicycle network, several corridors are of particular importance, making north to south and east to west connections, and connecting major destinations in the city. These priority routes are as follows:

- The North-South Bike Route spanning from Penacook to the South End leads bicyclists into downtown or through the city using lower traffic streets (South, Spring, Rumford), and continues north on Route 3 to Penacook, where bicycle lanes are currently planned.

- An East-West Bicycle Route to connect the western entrance to Concord and the Concord Hospital area to Downtown. The Pleasant Street approach from the west diverges onto Warren Street at Fruit Street. Pleasant Street east of Fruit Street is classified as a major collector where car traffic is predominant. Warren Street offers bicyclists a route with lower motor vehicle traffic at lower speeds.

- The Loudon Road corridor is a key connector road for the Heights for all forms of transportation, and is the access for many residences and services.

- Clinton Street serves the park and ride lot at I-89 Exit 2 and communities to the west like Bow, Dunbarton, Weare, and bicycles entering from the shared-use path off Silk Farm Road.

8.2 Hot Spot and Corridor Improvements

Attendees at Public Meeting 1 were asked to identify areas of Concord that are particularly troublesome for bicyclists. With pens, markers, and a large poster map, their comments were labeled, then later carefully mapped and their reported deficiencies documented. These "hot spots", 20 intersections or bridges and 11 corridors, were subsequently discussed then ranked at Public Meeting 2. Scores and results from this process can be found in the Hot Spots Matrix in Appendix A.

The hot spots range widely in character; there are varying levels of opportunity and cost associated with making improvements; and there is a wide range of potential fixes.

Their status as documented trouble spots should be a considering factor when weighing options and alternatives for roadway projects that may affect the hot spot. When minor fixes are possible, TPAC-Bicycle should pursue a solution. The City should implement bicycle improvements as part of road improvement projects.

8.3 Bicycle Parking / End of Trip Facilities

Inadequate, unsecure or unsafe bicycle parking can hinder bicycle use since some bicyclists would opt out of using their bikes for transportation if they feel there is a risk that they will be stolen or be exposed to the weather while they are at their destination. Bicycle parking needs were identified in the following areas.

Downtown: Bicycle bollards at numerous sidewalk locations on Main Street sidewalks often go unused. During the public involvement process secure bicycle parking in the parking garages was identified as a partial solution.

Statehouse Block: The Farmer's Market is held on summer Saturday mornings Downtown near the State House. In 2009 bicycle racks were placed in front of the State House that provide bike parking for Market patrons. Bicyclists that arrive from State St. would not see these racks, and would not be able to get there as the nearby streets are one-way in the wrong direction. It may also require more time for bicyclists to get accustomed to using the existing racks.

State Offices: State Offices are major employment destinations in Concord, as is expected for a state capital. It was felt by many that government facilities should take a leadership role in accommodating bicycling by providing secure bike parking.

Schools and Library: Comments at the Bike Master Plan public involvement meetings suggest that the bicycle parking at some schools is not safe or secure.

McKee Square: This location in Concord is the site of several neighborhood amenities for the South End. The small park, and the retail and service locations at this site are potential destinations for a typical neighborhood bicycle trip by South End residents; however, bicycle parking facilities are not present in the vicinity.

Fort Eddy Road: Bicycle parking facilities are not present in the shopping centers along the corridor. This is a major retail center for the City with multiple grocery stores and it would seem that the businesses would also benefit if bike parking was provided.

Grocery Stores in General: It was felt that while bicyclists attempt to run daily errands, suitable places to park bicycles are often lacking. These retail facilities were considered particularly important and therefore should become a priority for TPAC-Bicycle efforts.

City Parks
Bicycle parking is not accommodated at many city parks. Many city parks are located in neighborhoods with bicycle friendly streets, however there are no bicycle racks for those who wish to bike to the park.

For the Fort Eddy Road, McKee Square, and grocery stores locations mentioned at meetings, the results are not surprising. Currently no formalized bicycle parking in these areas exists and bicyclists must lock their bicycles to other fixed objects. In

other cases, bicycle parking is present but often goes unused, which raises further questions about the proper placement and location of bicycle parking.

Among the lessons learned from Concord bicyclists at Meeting 1 was that any bicycle parking must meet specific needs. There are different needs for short-term parking at retail locations and longer-term parking for when bicycle commuters are at work. These needs must be considered in order to better provide adequate bicycle parking. This will avoid situations where racks that go unused while bicycles are parked at other objects nearby, and situations where there is a perceived lack of bicycle parking when in fact there is not.

For example: The bike bollards downtown have been found to have several deficiencies. Recommendations, including providing 2 points of contact, changing the orientation, and adding or removing bollards in certain locations have been made in the Bike Bollard Study reproduced in Appendix F.

A second example includes the perceived lack of parking at the Farmer's Market. Bicyclists that arrive from State St. would not see the racks in front of the State House at the East entrance to the farmers market. Streets to get there are one-way in the wrong direction, and the only street that heads there is closed for the market. There is also the possibility that it will require more time for bicyclists to get accustomed to using the existing racks.

Bicycle bollards are generally intended for short-term bicycle parking. For bicycle commuters who spend the day at work, or for all-day visits to Downtown, a more secure bicycle parking arrangement may be required. Participants expressed the need for secure bicycle parking in the parking garages Downtown at both public meetings. The bicycle parking survey (see Appendix E) also revealed that the parking would need to be convenient and close to their workplace. Providing long-term bicycle parking in at least one parking garage Downtown is recommended, and the option of accommodations with the YMCA for showers and lockers would make this alternative even more attractive. TPAC-Bicycle could assist the City with the planning of such parking, including consideration of a fee based system, business donations, and partnerships with the YMCA.

8.3.1 Bicycle Parking Survey

The bicycle parking survey (see attached survey and results summary in Appendix E) highlighted some of the deficiencies with the bollards, and provided insight regarding how to best meet the needs for secure bicycle parking and showers.

8.3.2 Bicycle Parking Design Standards

Additional measures to improve the quality of bicycle parking and to help ensure its usability include adhering to engineering standards and best practices for bicycle parking, including distance measures, bicycle rack standards, location characteristics and other factors. Each City sponsored bicycle rack location should be planned with these factors in mind, and building owners and private developers should be encouraged or required to meet the same standards. A document from the City of Cambridge Massachusetts showing preferred bicycle parking designs is reproduced in Appendix L. Another source for guidance is the Bicycle Parking Guidelines that the Association of Pedestrian and Bicycle Professionals released 2010.

8.4 Complete Streets Policy and Infrastructure

The Comprehensive Transportation Policy adopted by the City in January 2010 is a positive, forward-thinking step towards a commitment to ensuring that roadways in Concord will accommodate all users, including bicyclists. Over the years, Concord's streets and roads have been designed and engineered without much thought given to bicycles, leading to many roadways and intersections that are less than bicycle-friendly. Opportunities to improve access and safety for bicyclists, pedestrians and public transportation should be capitalized on.

The Comprehensive Transportation Policy provides services and facilities for bicyclists only if the policy is followed through with action. Its success requires a partnership of both public and private parties, whereby the policy's incorporation into the City's regulations, procedures and standards as well as into developers' plans is necessary for the benefit to be realized. As a standing committee, TPAC-Bicycle should be consulted as roadway projects are planned relative to Complete Streets implementation.

9

Shared-Use Paths

The idea of shared-use paths has grown over the last several years as bicyclists and other active people have visited facilities in other states and experienced what such paths offer. With the recent development of paved rail trails in Manchester, Windham, Nashua, and the Lakes Region, many Concord residents are championing for a signature trail for the Capitol City.

9.1 Merrimack River Greenway Path

In response to the calls for Concord's own shared-use path, the concept of the Merrimack River Greenway Path has been developed, and a feasibility study has been conducted for the project. Merrimack River Greenway Path is envisioned as follows:

Purpose and Need:
The Merrimack River Greenway Path is envisioned as a continuous, off-street path, roughly following the Merrimack River in Concord, connecting the eventual terminus of the "Northern Rail Trail" at the Boscawen Town Line to the proposed "Salem to Concord Bikeway" at the Pembroke Town Line. The path is intended to be a 4-season paved facility, meeting the definition of a "shared-use path" given by AASHTO, to serve bicyclists, pedestrians, skiers, snowshoers and other non-motorized users, and to be universally accessible to the extent practicable.

Goals:
The intent of the Path is to serve both transportation and recreation purposes, connecting villages, providing access to the Merrimack River and adjacent open space, and providing safe and inviting health and fitness opportunities. The Path will provide river views as well as access to the River when possible, and it will follow a somewhat direct north-south route to facilitate transportation use. It is consistent with the Master Plan 2030 and Concord's Vision for 2020 by connecting neighborhoods and re-connecting Concord to the River.

The Master Plan 2030, Section VI, "Transportation", depicts an off street bike path following the general alignment of the Merrimack River. Section IX, "Recreation" states that bike paths and hiking/walking trails topped the list of a survey of residents' recreation wants in a survey. During the public input phase of this Plan, it

was learned that there is great support for a signature off street bike path of some sort.

In response, with funding from Concord 2020, the engineering consulting firm of Fay, Spofford and Thorndike (FST) was engaged to conduct a study to determine the feasibility and approximate costs of such a trail. A steering committee, comprised of representatives of TPAC-Bicycle, City Planning and Engineering staff and the Conservation Commission, was formed and it developed the above purpose and need statement and participated in several site walks.

It was determined that a bike path, termed a "shared-use path" envisioned by the 2030 Master Plan, Concord residents and the steering committee was feasible and outlined a preferred route and alternative routes. The complete feasibility study can be found as an addendum to this Bicycle Master Plan.

9.2 Other Opportunities for Shared-Use Paths

Along with the Merrimack River Greenway Path, other options for shared-use paths exist in Concord, many of which follow existing or abandoned rail corridors as described in the existing conditions chapter. Below is a more detailed summary of existing conditions and opportunities.

Trunk Line
One corridor is the major north to south "Trunk Line" line in New Hampshire connecting the Massachusetts border in Nashua through the Merrimack Valley and Manchester through Concord, then north through the Lakes Region into the White Mountains. This line enters Concord from the south in Bow, to the west of the Merrimack River and runs northerly to Downtown, then crosses through the Horseshoe Pond area to the east side of the Merrimack River at East Concord, then continues north to the Canterbury town line. This rail right-of-way is owned by Pan Am Railways from Downtown south to Bow, but is owned by the State of New Hampshire north of Downtown. This active line is not likely to be suitable for trail purposes due to ownership and rail use, but the potential for a "rail with trail" arrangement in the future may be possible in some places.

Northern Line
An additional line known as the "Northern Line" runs from Downtown at the main "trunk" line and heads north to Boscawen on the west side of the Merrimack River. This line is owned by Pan Am Railways and is considered "active" from downtown to 0.6 miles north of the Boscawen town line. Although it is considered "active" there have been no freight customers along this route in many years. North of the Concord line in Boscawen, this corridor is inactive and owned by the State of New Hampshire all the way to the City of Lebanon on the Vermont border. This stretch of the corridor has been designated the Northern Rail Trail, of which more than 40

miles have been improved in portions of Grafton and Merrimack Counties with a packed unpaved surface, with additional stretches planned for completion as funds become available. The Northern Line is designated as a portion of the Montreal-Boston High Speed Rail Corridor by the Federal Government, which comes with certain restrictions regarding crossings and fragmentation of the corridor.

Further discussion of corridor and potential alternatives to the use of this right of way as a trail are outlined in the Merrimack River Greenway Path Feasibility Study addendum to this plan.

Concord-Claremont Line

A third right-of-way is an abandoned Concord-Claremont corridor beginning at the Northern Line near Horseshoe Pond and crossing North State Street heading towards Penacook. Portions of this corridor near North State Street have been acquired by the abutting property owners, but Pan Am Railways still owns a continuous piece of approximately 3000 feet from the Pierce Manse area to Smokestack Center. Continuing north, the right of way once paralleled North State Street until just north of Hutchins Street but is now barely visible along the roadside in front of homes and businesses. North of Hutchins Street the line turns westward. Much of this stretch of trail from North State Street to the Hopkinton town line is an active un-improved trail used by hikers, mountain bikers, and snowmobiles on various segments. The City purchased portions of the land on which the trail sits, and other portions are under conservation easement. Still, some of the right-of-way is in private ownership with no formal public access.

The trail crosses the Contoocook River in two places. The bridge is missing at the southern most crossing, but any trail users could bypass this stretch of trail using a short stretch of Bog Road and the bridge at Horse Hill Road. At the northern crossing near the Hopkinton line, a bridge has been installed through the efforts of local snowmobiling clubs. This trail continues to the Hopkinton Village of Contoocook, on to Warner and Lake Sunapee. An extension of a trail on this corridor beyond Concord would require negotiations with property owners.

Opportunities for converting this corridor to a shared-use path exist, but depend primarily on the priorities of the community. It has scenic views, access to the Contoocook River, and a relatively intact rail bed and it is currently in use as a trail. The trail would begin on or near North State Street in a growing neighborhood of moderate population density, but would not connect directly to Downtown. These characteristics make it a desirable route for a shared-use path, but when compared to the Merrimack River Greenway Path, is not a priority for major improvements at this time.

Garvin's Falls Line

The last corridor is a branch of the Trunk Line along the Merrimack River in the Garvin's Falls area, once known as the Suncook Branch. It meets the Trunk Line near the Bow town line, crosses into Bow near the intersection of Hall Street and Route 3A

(by Blue Seal Feeds), and crosses the Merrimack River back into Concord, and parallels the River on it's east bank to the Pembroke town line. The bridge abutments and piers across the Merrimack at the Blue Seal Feeds are still in place but the bridge has been removed. Also, at the Soucook River, comprising the Concord/Pembroke town line, there are bridge abutments across this River but no bridge. The right of way is otherwise intact, and much of the route is paralleled by utility lines. The property on which the right-of-way resides is owned by the private electricity utility, Public Service of New Hampshire (PSNH). This stretch is otherwise undeveloped and quite scenic and offers access to the River. This alignment is the recommended route for the Manchester to Concord stretch of the proposed Salem-Concord Bikeway, and a preferred alignment for the proposed Merrimack River Greenway path. South of Concord, the route travels through Suncook Village in Pembroke and Allenstown before re-crossing the river at the Hooksett Town Center. More details on this corridor are available in the Merrimack River Greenway Path Feasibility Study addendum.

9.3 Regional Effort

To date, trail improvements have been accomplished by various trail advocacy groups in each community, competing for the limited Federal funding. More recently, trail advocacy groups and the regional planning commissions have combined forces to promote and coordinate regional trail initiatives that would result in a planned approach to regional trail development. These planning initiatives dovetail nicely with Concord's plans since the community is situated at a key north-south location within the regional rail-trail network.

10

Recommendations and Implementation

The recommendations that follow are based on the aforementioned discussions and are intended to guide the City as it takes positive steps toward enhancing the bicycling infrastructure, programs, policies and bike culture in the community. In Concord's application and designation as a Bicycle Friendly Community, the League of American Bicyclists (LAB) provided a comprehensive list of recommendations for improvement, reproduced in appendix M. Most recommendations here are repeated or reflected in the LAB list. For additional detail or further insight on any recommendations in this plan, refer to that document.

10.1 Policy

In the past several years the City of Concord has developed several programs and policies that have helped Concord become more bicycle friendly. The development of the Transportation Policy Advisory Committee (TPAC) and its subcommittees, and the adoption of the Comprehensive Transportation Policy can both have a very positive impact on bicycling

Short Term Implementation

- Continually review all avenues for all upcoming or potential road work in Concord by developing a standard TPAC-Bicycle agenda that systematically checks for opportunities. The list should include: (TPAC-Bicycle in coordination with City and NHDOT Staff)
    - The CIP
    - The Paving Program
    - The State Transportation Plan
    - The State Paving Program
    - The Utility Work Schedule
    - Private Development

- Continue and improve collaboration and communication with NHDOT officials on DOT work being conducted in Concord to ensure any roadwork sufficiently meets Concords Comprehensive Transportation Policy
- Improve coordination between entities

        - Develop a standard TPAC-Bicycle agenda with regular updates from Planning and Engineering, CNHBC, PATH, SRTS, City Council/PB briefs, NH DOT updates etc.
    - Ensure there is broad representation at TPAC and TPAC-Bicycle
        - Improve communication with Police Department
        - Improve communication with/or TPAC membership from Concord Hospital
        - Representation from Engineering and Planning Divisions
    - Ensure that all transportation infrastructure that is planned, or being constructed, is consistent with the City of Concord's Comprehensive Transportation Policy

    Medium Term Implementation

    - Update the Bicycle Master Plan with minor revisions and updated data annually, with major revisions or re-writes every five to ten years. (TPAC-Bicycle)
    - Encourage State government offices to take a leadership role in accommodating bicycling and providing end-of-trip facilities. (TPAC-Bicycle, CNHBC)

10.2 Infrastructure

- Make roadway and intersection improvements at all hot spots identified in the plan (see Appendix A) and on the proposed bicycle route network. As stated earlier in the plan, these improvements should be made using the following two strategies:

    1. Bicycle improvements are added or included in roadwork and/or private development occurring anyway (taking advantage of an opportunity, and ensuring roadway projects are consistent with the City's Comprehensive Transportation Policy)
    2. Bicycle improvements are initiated and implemented in bicycle specific projects

    The City should be opportunistic when available, and seek creative solutions to tackle specific problems when possible.

Short Term Implementation

- Continue the policy of creative use of narrow roadways (City Staff, TPAC-Bicycle)
- Continue the practice of context sensitive lane striping, where travel lanes can be narrowed to accommodate wider bicycle shoulders when possible (City of Concord)

Medium Term Implementation

- Develop additional bicycle routes similar to the North South Bicycle Route as identified in Chapter 8

Long Term Implementation

- Develop a comprehensive bikeway system that offers a higher level of service for bicycling

10.3 Bicycle Parking

Short Term Implementation

- Ensure any new bicycle parking in the city of a desirable form. Refer to the Bicycle Parking Guidelines released by the Association of Pedestrian and Bicycle Professionals, or the Cambridge, MA Bicycle Parking Standards document in Appendix L as a reference

Medium Term Implementation

- Address the need for long term bicycle parking downtown with decisions based on data collected in this document and in the survey, Appendix E (TPAC-Bicycle, CNHBC, City Staff)
    - Develop bicycle parking in one or more parking garage
    - Develop a bicycle cage at an appropriate location downtown, preferably near the YMCA
    - Develop an agreement with the YMCA for a program for renting a bicycle cage, shower use, and locker
- Develop and implement a strategy to improve or replace bicycle bollards on Main Street, based on the findings in the report attached in Appendix F (TPAC-Bicycle, City Staff, CNHBC, Main Street Concord)
    - Add side plates to the bollards to provide two contact points
    - Change the orientation of parked bicycles at bollards as identified in the attached report
    - Add or remove bollards as appropriate
    - Continue to add, edit, and work on the report based on project developments
- Add bicycle parking at McKee Square, on Fort Eddy Road, and at other identified areas requiring parking facilities. (TPAC-Bicycle, CNHBC, City of Concord)
- Encourage or partner with grocery stores on Fort Eddy Road (Shaw's, Hannaford, Market Basket) to acquire funding to add bicycle parking at their locations (CNHBC, TPAC-Bicycle).

Long Term Implementation

- Plan for improved bicycle parking to be associated with any future reconstruction of Main Street (TPAC-Bicycle, Concord 2020, Main Street Concord)

10.4 Safety and Education

The vision for concord is for bicycling to be a safe and practical activity and transportation choice.

Short Term Implementation

- Continue and expand the annual tradition of Green Commute Week (PATH/CNHRPC, NHDOT, CNHBC, City of Concord, Volunteers, TPAC-Bicycle, Local Businesses)
- Regularly collect, review, and map all bicycle related crash data, analyze the data, and develop a strategic plan to reduce the crashes (TPAC-Bicycle in coordination with the Police Department)
- Support the continuation of all safety and education programs including:
    - PATH program (NH DOT, CNHRPC)
    - SRTS (School Districts, CNHRPC, Safe Routes Committees)
    - CNHBC (Everyone)
    - Bike Walk Alliance of NH (TPAC-Bicycle, CNHBC, others

Medium Term Implementation

- Continue and expand bike safety lessons, and bicycle repair classes, especially LAB certified courses as stated in Appendix M (CNHBC, Volunteers, Bicycle Shops, TPAC-Bicycle)
- Develop a bicycle safety program for bicyclists and for motorists. (CNHBC, TPAC-Bicycle)

10.5 Enforcement

Enforcement is a critical component in bicycle safety that Concord should improve on.

Short Term Implementation

- Have more contact and coordination between TPAC-Bicycle and the Police Department
- Encourage the Police Department to engage bicyclists more: for example, show up at the beginning of GSW rides to chat
- Ask the Police Department to patrol Loudon Rd/ Fisherville Rd, or other targeted areas to enforce and educate biking on the sidewalk
- Encourage the Police Department to participate at Bicycle events (on bike)

Medium Term Implementation

- Increase the visibility of the Police Department bike patrols
- Pursue a grant for reducing distracted driving, allowing officers to stand at intersection and make citations for texting and driving.

10.6 Shared-use Path Development

Short Term Implementation

- Develop a stakeholder's list of all individuals, groups, and businesses that may be interested in developing shared-use paths, or the Merrimack River Greenway Path
- The Steering Committee for the Greenway project should continue to meet, engage others, and develop a specific strategy moving forward
- Research funding opportunities, match money opportunities, and coordinate with the City on which municipal projects will apply for Transportation Enhancement (TE) funding
- Invite regional trails groups (Granite State Rail Trail, Northern Rail Trail, Salem Concord Bikeway, WOW Trail, and others) to TPAC-Bicycle meetings and appoint TPAC-Bicycle members to go to the groups' meetings to foster awareness and partnership opportunities.

Medium Term Implementation

- Conduct more detailed engineering work for Merrimack River Greenway Path as needed
- Conduct fund raising and apply for grants for funding for path development

Long Term Implementation

- Develop a shared-use path in Concord, as outlined in the Merrimack River Greenway Path addendum
- Continually identify and develop other areas suitable for conversion to shared-use paths as demand warrants

10.7 Maintenance

- Cooperate and support the General Services Department, as maintenance and many other bicycle projects rely heavily on them.
- Street Sweeping- sweep hot spots in the spring during the typical preliminary sweep before the official contract
- Ensure timely snow removal on bicycle shoulders and bike lanes
- Continue to work with the State to maintain the shared-use paths (brush clearing etc.)

10.8 Public Awareness

Short Term Implementation

- Finalize the development of and promote the North-South Bike Route
- Develop social media for bicycling to improve communications, build community, and develop the bicycling culture (CNHBC)
- Form alliances with other groups with common or overlapping goals (health, environment, conservation, etc)

Medium Term Implementation

- Develop bicycle facilities and end-of-trip facilities maps of the Concord area for all types of bicyclists, identifying routes as stated in this Plan.

10.9 General

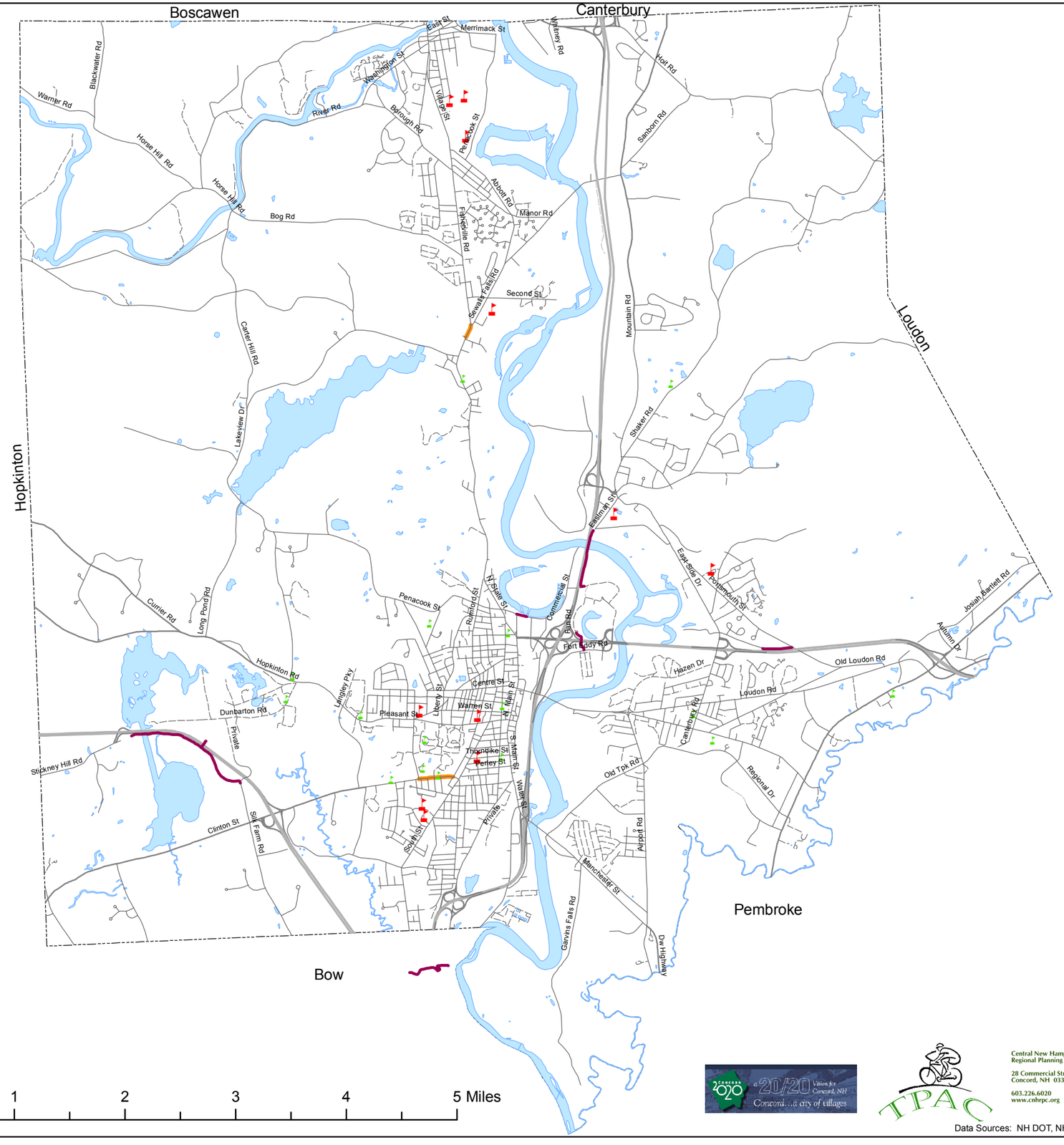
Short Term Implementation

- Continue, expand and grow fund raising events (CNHBC, TPAC-Bicycle, Volunteers)
    - Annual Bicycle Swap
    - Support from local businesses
    - Develop a time trial race series
    - Research and develop other creative ideas
- Refer to the LAB recommendations in Appendix M as a supplement to these recommendations.

Medium Term Implementation

- Seek donations or write a grant application for the development and promotion of bicycle maps and signage for routes and end-of-trip facilities.
- Develop a bike suitability map using local knowledge and BLOS data
- Coordinate with the Trails Committee and the regional mountain biking organization to expand opportunities for mountain biking in Concord. Produce trail maps dedicated to mountain biking and promote the interconnectivity of city-maintain trails.
- Re-apply for Bicycle Friendly Community Status before the current designation expires in 2014. This will be increasingly difficult as the bar is continually being raised. Set goals for which level to achieve. Use the LAB feedback as a guide. The application process and the feedback received are extremely valuable

2010 Concord Bicycle Master Plan
Existing Conditions



Legend

- Public Schools
- Non-Public Schools
- Existing Bicycle Paths/Shared Use Paths
- North South Bike Route
- Bike Lanes
- Water Bodies

N

0 0.5 1 2 3 4 5 Miles

a 20/20 Vision for Concord, NH
Concord...a city of villages

TPAC

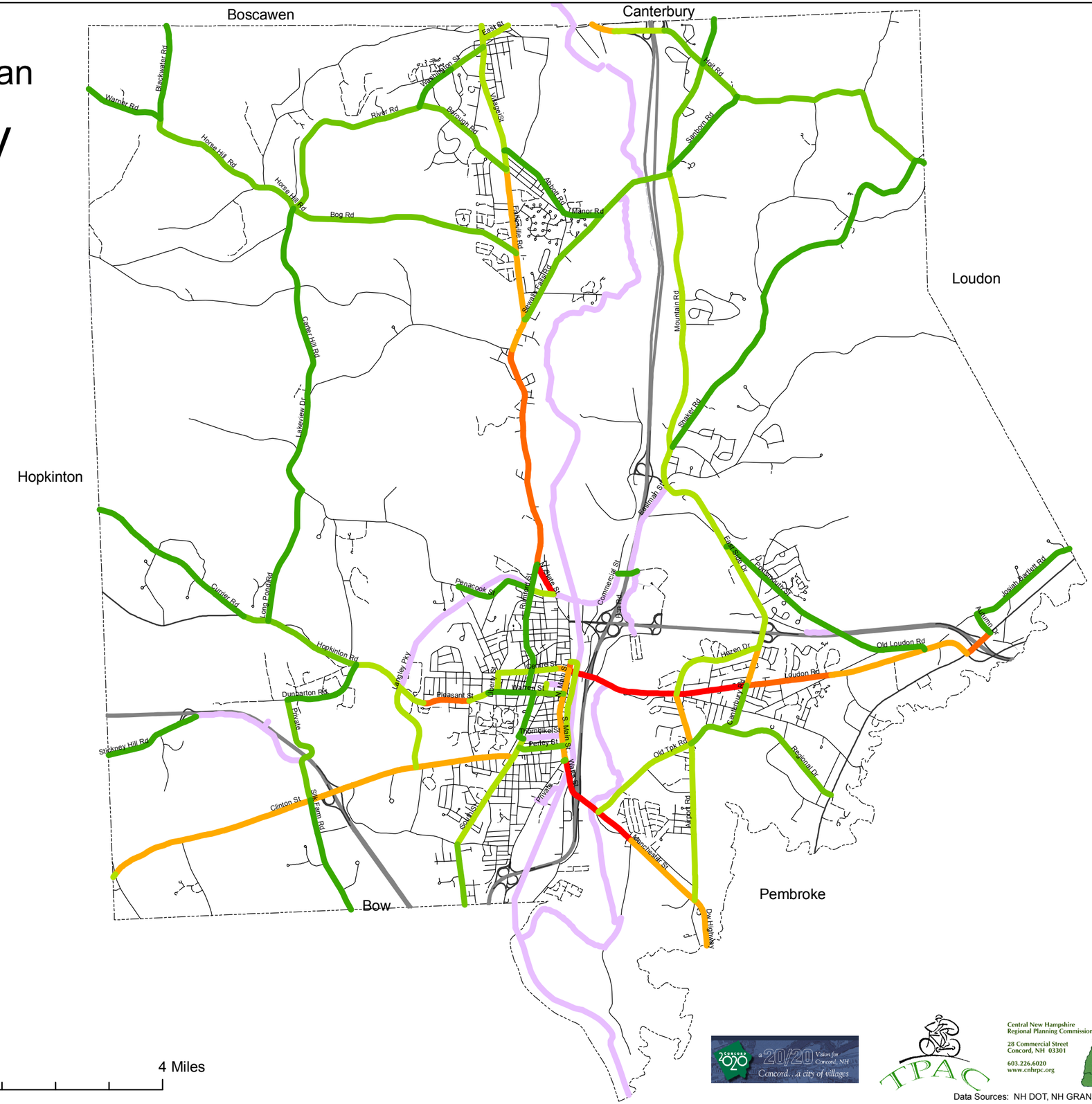
Central New Hampshire Regional Planning Commission
28 Commercial Street
Concord, NH 03301
603.226.6020
www.cnhrpc.org

Data Sources: NH DOT, NH GRANIT, CNHRPC

2010 Concord Bicycle Master Plan

Average Annual Daily Automobile Traffic

On Proposed Bicycle Routes



Legend

Bike Routes

AADT

- NA
- 2000 or Less
- 2001 - 4800
- 4801 - 9302
- 9303 - 14000
- 14001 - 18999
- 19000 or More

N

0 1 2 4 Miles

Concord 2020 a 20/20 Vision for Concord, NH — Concord...a city of villages

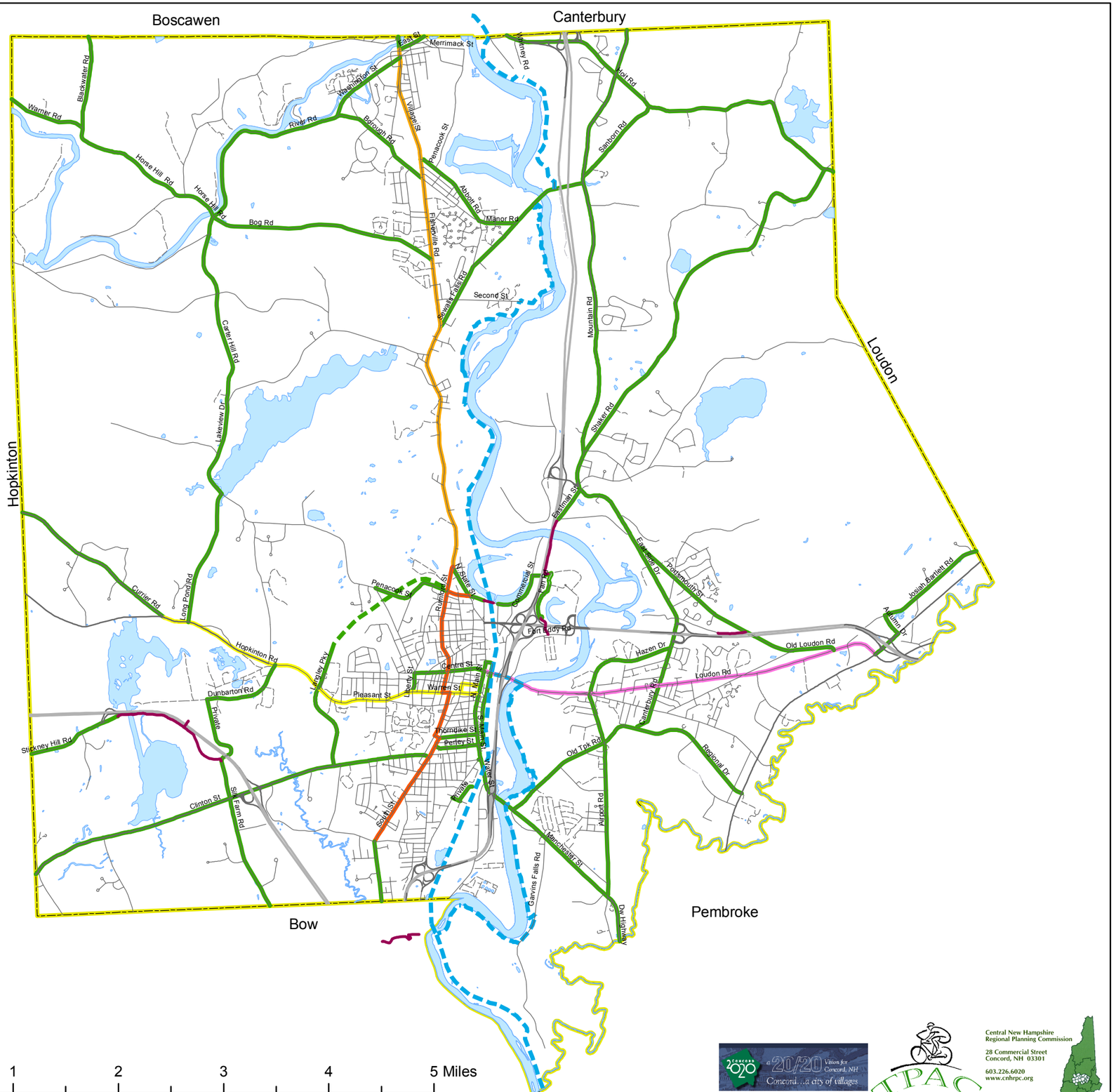
TPAC

Central New Hampshire Regional Planning Commission
28 Commercial Street
Concord, NH 03301
603.226.6020
www.cnhrpc.org

Data Sources: NH DOT, NH GRANIT, CNHRPC

2010 Concord Bicycle Master Plan

Bicycle Route Network Plan



Bike Routes

- North South Bike Route
- North State/Fisherville Rd Bike Improvements
- Proposed East-West Bike Route
- Proposed Loudon Rd Bike Route
- Bike Route Network
- Bike Route- Future Road
- Merrimack River Greenway Path Preferred Route
- Existing Bike Paths

Central New Hampshire Regional Planning Commission
28 Commercial Street
Concord, NH 03301
603.226.6020
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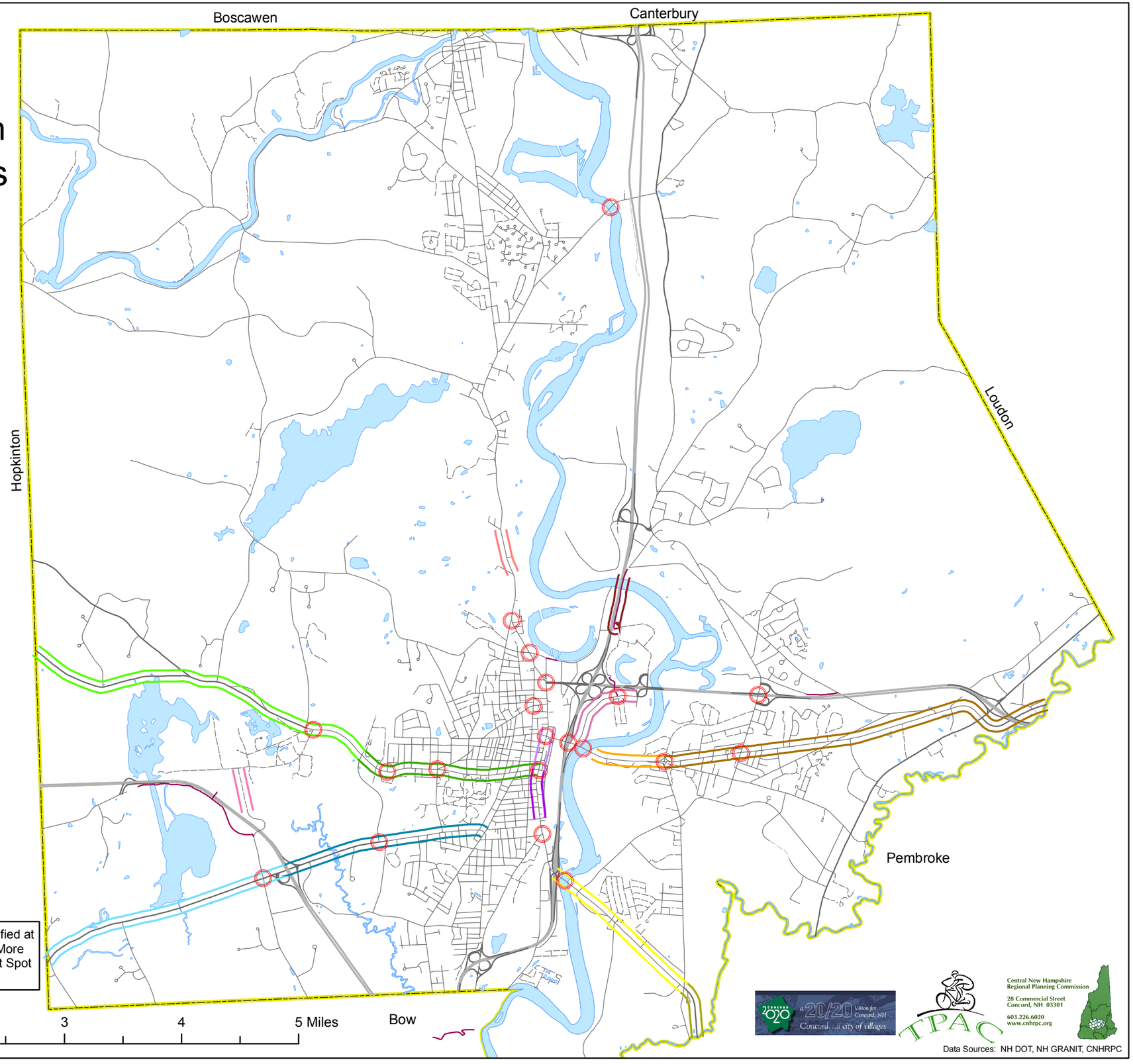
Data Sources: NH DOT, NH GRANIT, CNHRPC

2010 Concord Bicycle Master Plan
Hot Spots and Difficult Corridors



Legend

- HotSpots

Difficult Corridors

- N. Main St
- S. Main St
- Pleasant St/Hopkinton Rd
- Pleasant St
- N. State St by the Prison
- Manchester St
- Dw Highway
- Loudon Rd- Gully Hill
- Loudon Rd
- Fort Eddy Rd
- Clinton St West
- Clinton St East
- Silk Farm
- I-93 Bike Path
- Bike Paths

N

This map shows numerous locations that were identified at public meetings as being troublesome for bicyclist. More information on these location can be found in the Hot Spot Matrix in Appendix A

0 0.5 1 2 3 4 5 Miles

2020 a 20/20 Vision for Concord, NH
Concord...a city of villages

TPAC

Central New Hampshire Regional Planning Commission
28 Commercial Street
Concord, NH 03301
603.226.6020
www.cnhrpc.org

Data Sources: NH DOT, NH GRANIT, CNHRPC

2010 Concord Bicycle Master Plan

Regional Shared Use Path Opportunities

To Franklin

Northern Line-State of NH

Trunk Line-State of NH

Canterbury

Webster

Boscawen

Loudon

Northern Line-PanAm

Trunk Line-State of NH

Concord and Claremont

Hopkinton

Concord

Pembroke

Bow

Trunk Line-Pan Am

Suncook Branch

Allenstown

To Manchester

Legend

Merrimack River Greenway Path

- Preferred Route

Other Potential Trail/Path Corridors

- Concord and Claremont
- Northern Line-PanAm
- Northern Line-State of NH
- Garvin's Falls Line/Suncook Branch
- Trunk Line-Pan Am
- Trunk Line-State of NH
- Existing Bike Paths

Central New Hampshire
Regional Planning Commission

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Concord, NH 03301

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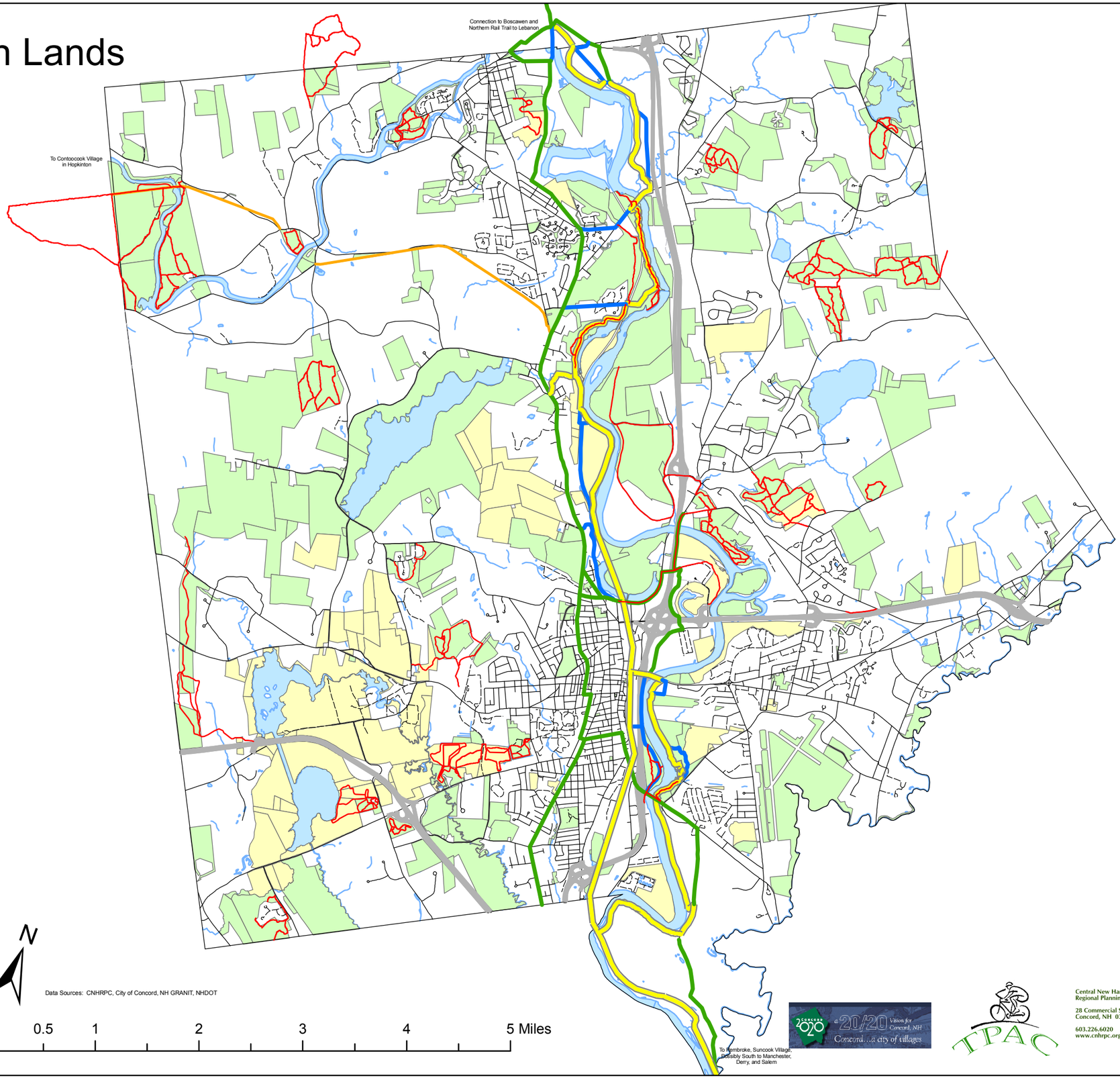
0 0.5 1 2 3 4 5 Miles

Data Sources: NH DOT, NH GRANIT, CNHRPC

Trails and Conservation Lands



Legend

- HikingTrails, Mountain Biking Permitted

Proposed Greenway Path

- Prefferred Route
- Alternate Route
- On-Street Option
- Concord-Claremont Corridor

Protected Open Space or Land Unavailable for Development

- Easement or Ownership Fee Simple
- Not Protected but Unavailable for Development
- Rivers and Streams
- Intermittent Streams
- Water Bodies

N

Data Sources: CNHRPC, City of Concord, NH GRANIT, NHDOT

0 0.5 1 2 3 4 5 Miles

Concord 2020 a 20/20 Vision for Concord, NH
Concord...a city of villages

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Appenix 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	Route 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 wihout 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 yeild 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	
Loudon Rd Bridge over Merrimack	3.61	4.66		P	8.27	High	Long	Combine with I-93 reconstruction project	
Loudon Rd, Exit 14 area	3.64	5		P	8.64	High	Long	Combine with I-93 reconstruction project, policy decisions	

	Hot Spot Priority (public meeting voting results)	Hot Spot Un-Friendliness (public meeting voting results)	Additional Considerations/Remarks	Route Network? Y/N/Priority	Route Priority Score	Hot Spot Priority Rank	Timeframe	Opportunities for Implementation	Deficiency
Difficult Corridors									
Fort Eddy Rd				N	0		Long		General
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	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	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

APPENDIX B

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
- Exit14 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

<u>Overall Vision</u>

- 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

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 facrory- 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

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 Winnipesaukee and on the east side of Paugus 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 and 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.

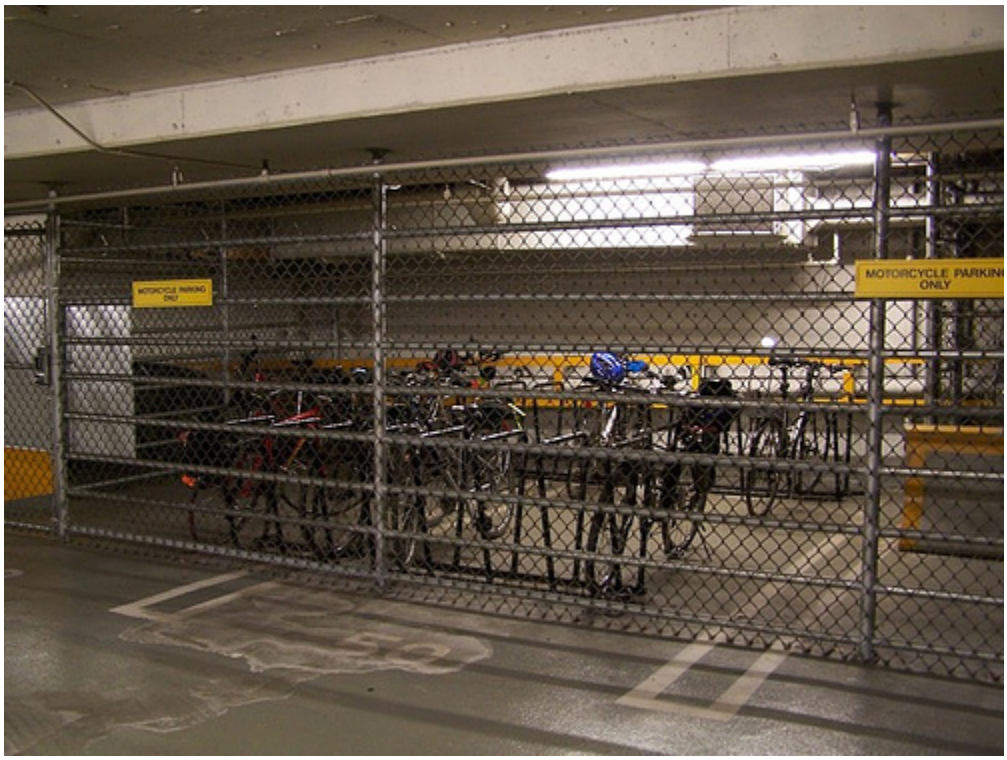
Bike Parking Survey
Short Term Parking:

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.

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.


PANOOSUC MILLS
TEMPORARY HOME FURNISHINGS
R11 PENACOOK
3105

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.


CAPITAL PLAZA

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 6th 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.

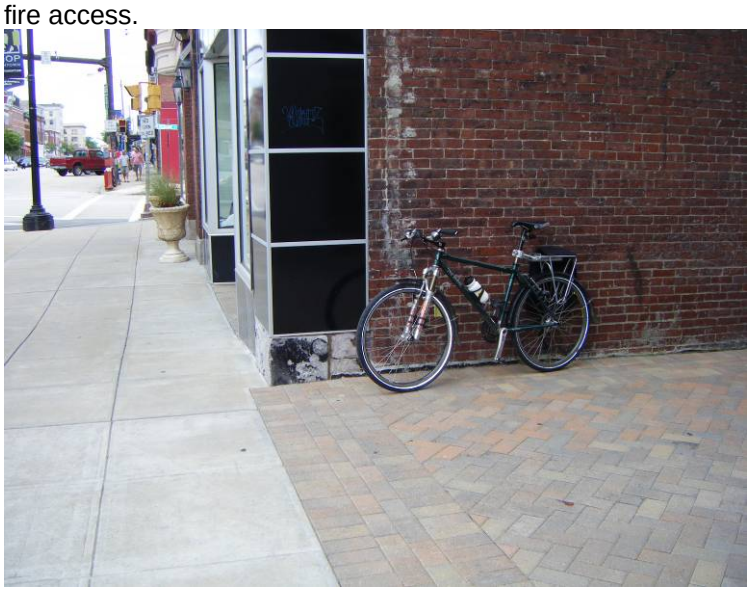
G: Pleasant St Parking: At the corner of Pleasant and Main a landscaped corner may be suitable for parking. There is space at the Main Street end or and the narrow end further down Pleasant St. The narrow end of the island could be altered to accommodate bike parking. This area is an “Adopt-a-Spot” area. 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.


P

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 bollards11 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 to 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

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 1 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

APPENDIX H

CITY OF CONCORD

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

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 and 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		1	2	1			4	12	7
None							1	1									1				1	2	1		3	4
Unknown/undetermined		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=Jaywalking (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		1.5		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		3	3	1	1	3		5	3	6	2	5	1	1	1		2	28	18
None								2							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

	J		F		M		A		M		J		J		A		S		O		N		D		Bike	Ped
Unknown/undetermined		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
																									Bike	Ped
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
																									Bike	Ped
Most Dangerous Streets																									Loudon Rd (5)	Loudon (1) Warren St. (0) South Main (0)

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

Table of Contents

Acknowledgements
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Project Contacts: Nicholas Coates and Craig Tufts

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.

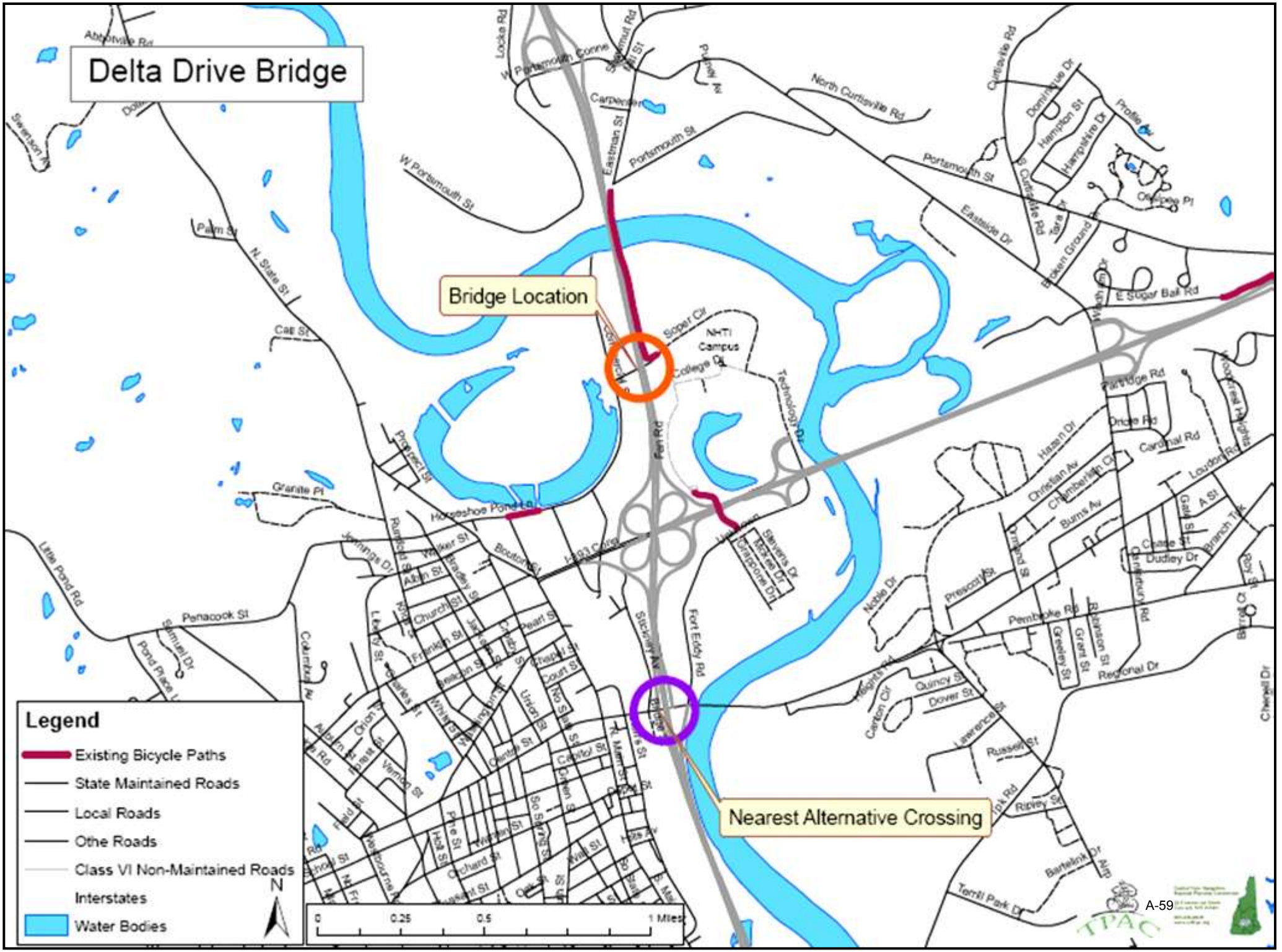
Based on a visual assessment by volunteer counters (trained by Central New Hampshire Regional Planning Commission staff), the Delta Drive bridge and trail appears to attract two user types. The first group is employees walking and bicycling to/from nearby workplaces in and around Horseshoe Pond and NHTI 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.[1]

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.

[1] 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.[2] (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%

[2]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.[3] (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	

[3]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.

Map 2: Count Data – August 4

Map 3: Count Data – August 7

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:

<u>Bridge</u>

- 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			

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	
Male	*Female*		EB	WB	NB	SB	C	R
0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	1	1	0
0	0	0	0	0	0	0	0	0
2	0	0	1	0	0	1	1	1
0	0	0	0	0	0	0	0	0
0	1	0	1	0	1	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	0	0	0	2
1	1	0	1	1	0	1	0	2
0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	0	0	1
2	0	0	2	0	2	0	0	2
1	1	0	0	2	0	2	0	2
0	0	0	0	0	0	0	0	0
1	0	0	1	0	0	1	0	1
1	0	0	1	0	0	0	0	1
1	0	0	0	0	0	1	0	1
1	1	0	0	1	1	1	1	1
0	0	0	0	0	0	0	0	0
1	0	0	0	0	1	0	0	1
2	0	0	0	2	0	1	1	1
0	0	0	0	0	0	0	0	0
1	2	0	2	0	1	1	0	2
1	0	0	0	0	1	0	0	1
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
0	0	0	0	0	0	0	0	0
2	0	0	2	0	1	1	1	1
0	0	0	0	0	0	0	0	0
1	0	0	0	0	1	0	1	0
22	6	0	12	8	9	11	6	21
28			20		20			

Weather Conditions – August 4							
Time (edt)	Wind (mph)	Vis. (mi.)	Weather	Temperature (ºF) Air	Precipitation (in.) 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 (ml.) Air	Weather	Temperature (ºF) Air	Precipitation (in.) 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 = ~~I I I I~~).
- 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.)

Period (minutes)	Adult Bicyclist		Child	Bridge		Trail		Helmet		Purpose	
	Male	*Female*		EB	WB	NB	SB	Yes	No	C	R
0530-0600											
0600-0630											
0630-0700											
0700-0730											
0730-0800											
0800-0830											
0830-0900											
0900-0930											
0930-1000											

Adult Pedestrian		Child	Bridge		Trail		Purpose	
Male	*Female*		EB	WB	NB	SB	C	R



City of Cambridge

Bicycle Parking Guide









DEVELOPMENT REQUIREMENTS

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

For the latest and most accurate information, please access the ordinance online at www.cambridgema.gov/cdd; by e-mail, 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?

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

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*:

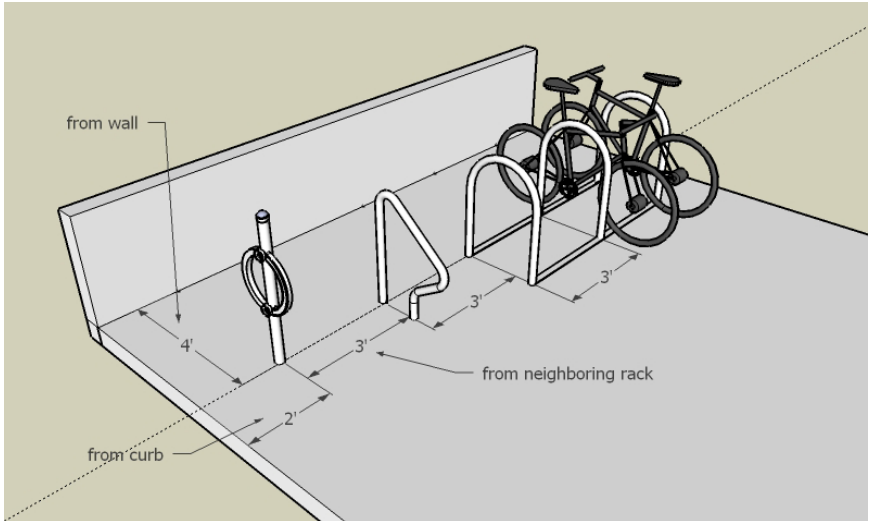
- Only support the bicycle at 1 point
- Allow the bicycle to fall, which can damage the bike and block pedestrian right-of-way
- Have sharp edges, that can be hazardous to the visually impaired
- Support the bicycle by one wheel
- Connect to each other with a bar across the top (that blocks certain handlebars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

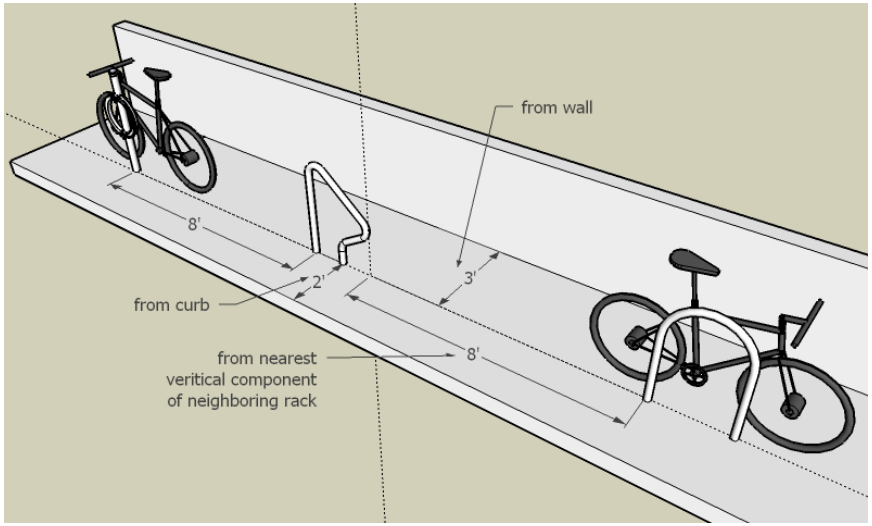
DO NOT USE racks that only provide one point of support or only accommodate certain bicycle shapes.

Dimensions

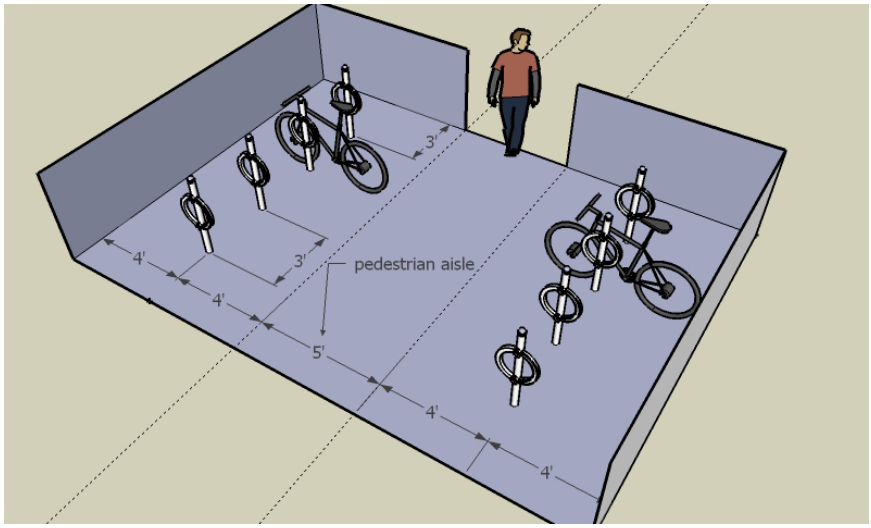
Distances between the bike rack and objects nearby vary depending on the context and the type of rack. Some racks have only one vertical component, such as the pole and ring rack, whereas others have two, such as the inverted-U rack. Measurements must be taken from the nearest vertical component of the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

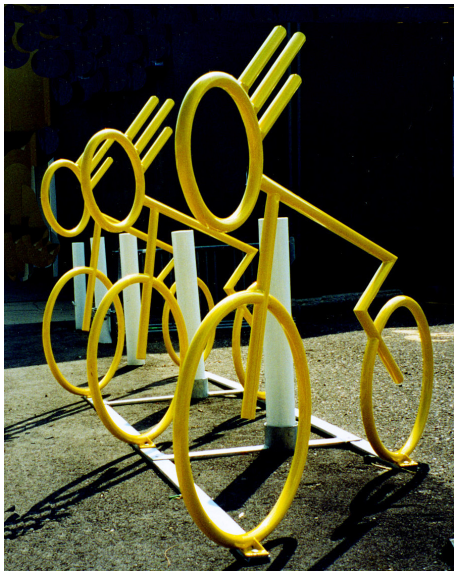
Chain Lock

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



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.

Photo Credits:

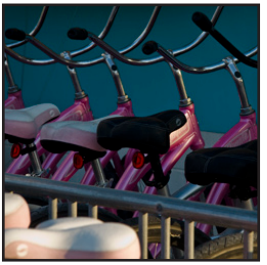
With appreciation to the following individuals and companies for use of their photographs:
Dero Bike Rack Company (pp. 4, 9, 11); Susan Cooper (p. 11); John Luton (p. 8); Norman Cox (p. 10); Mark Horowitz (p. 9); Shannon Simms (pp. 5, 10); Jessica Zdeb (p. 3)










City of Cambridge

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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

Spring 2008

APPENDIX M

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 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

- 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 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

- 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 access 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 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.

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- 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 'Ciclovia' 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 NHDoJ. 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

- 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.810acaee50c651189ca8e410dba046a0/ 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

For more ideas and best practices please visit the Bicycle Friendly Community Resource Page