

# City of Woodstock Master Bicycle Plan September 2009



Prepared by:

City of Woodstock Transportation Commission

Brian Kierna, Chairman

Dallas Larson, Vice Chairman

Frank Grandau

Cary Sue Lavan

Joan Mansfield

Larry Piekos

Martin Victory

# City of Woodstock Master Bicycle Plan Table of Contents

<b>Chapter One: Introduction .....</b>	<b>4</b>
Preface .....	4
Scope .....	5
Purpose .....	5
Becoming a Bicycle Friendly Community .....	5
Structure of Woodstock’s Master Bicycle Plan .....	6
 <b>Chapter Two: Planning - Assumptions and Considerations .....</b>	 <b>7</b>
Why Do People Ride Bicycles? .....	7
Who Rides Bicycles and What are their Needs? .....	7
What are the Origins and Destinations for Bicyclists? .....	8
Is Bicycling Safe? .....	9
When and Where Do Bicycling Accidents Occur? .....	9
What are the Current & Proposed Bicycle Facilities within Woodstock? .	11
How Do Fiscal Realities Affect this Plan’s Implementation? .....	11
Goals and Objectives .....	11
 <b>Chapter Three: Design and Design Principles .....</b>	 <b>12</b>
Bikeway Network Geometry .....	12
Attributes of a Good Bike Network .....	12
Types of Bikeways used in the Bike Network .....	13
Ideal vs. Best Practical Network .....	14
Affordable Design .....	16
Identifying the Bicycle Network – Signs .....	17
Parking and other Facilities .....	18
What Will Woodstock’s Master Bicycle Plan Look Like .....	18
 <b>Chapter Four: Communication .....</b>	 <b>19</b>
Education and Encouragement .....	19
Enforcement .....	22
 <b>Chapter Five: Implementation .....</b>	 <b>24</b>
Promotion of Land Use Patterns and Zoning that Encourage Walking and Bicycling to Destinations .....	25
Promote Bicycle-Friendly Urban Development and Design that Facilitate Bicycling .....	25
Educating Planners, Local Enforcement Officers, Designers, and Other Officials .....	25
Identify/Coordinate Funding Sources .....	26

Use of Volunteers .....	26
Construct, Improve and Maintain Facilities .....	26
Educate Bicyclists and Motorists .....	27
Encouragement .....	27

## **Appendices**

Appendix A – Master Bicycle Plan Map .....	29
Appendix B – Bike Route Map Destinations .....	30
Appendix C – Bikeway Treatments .....	33

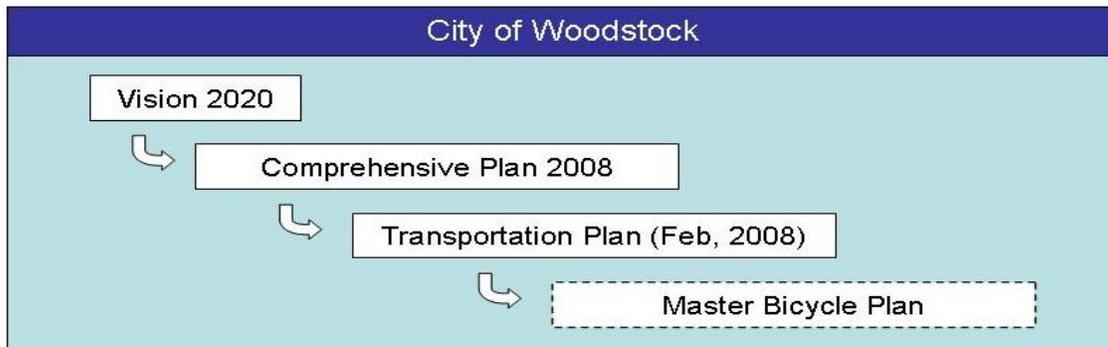


## *Chapter One*

# INTRODUCTION

### **Preface**

The Master Bicycle Plan is one of many planning documents used by the City Council, Woodstock's various boards and commissions, and the City Administration to assist in guiding the physical growth of the community and making transportation and land use decisions. In particular, this plan provides detailed goals, objectives, and implementation strategies which will enable Woodstock to become the bicycle friendly community envisioned in Woodstock's Vision 2020 Statement.



The Vision 2020 Statement serves as an overall declaration of what the City should become in the next decade. Rather than being a description of what Woodstock is today, the Vision 2020 Statement articulates the positive elements and features which the community wants to achieve in the future.

The Woodstock Comprehensive Plan 2008 provides a statement of the community's priorities and guide for both public and private decision makers regarding the community's future. The Comprehensive Plan attempts to (1) recognize existing problems, conditions, and resources which affect the community; (2) guide the growth and development of Woodstock in a responsible and creative way consistent with the type of community we desire; and (3) establish a long-range program which provides for consistent decisions even as decision-making bodies change.

The Woodstock Transportation Plan 2008 amplifies on the transportation-related goals and objectives contained within the Comprehensive Plan; providing the framework and establishes goals for the City to continue to provide an efficient transportation system for all residents and to support the community. It provides Woodstock elected officials with very specific recommendations as well as general planning goals to meet and improve the community's current and future transportation needs.

In addition to the City of Woodstock plans, there are regional and sub-regional plans which are supported by the City's planning documents.

## **Scope**

This plan presents recommendations which will enhance and encourage utilization of bicycles for commuting and other utilitarian trips within the City of Woodstock and immediate adjacent lands. The timeframe is within that of both the Vision 2020 Statement and the Comprehensive Plan 2008. While the focus of the plan is not on recreational activities, recreational bicyclists will also benefit from the recommended policies, projects, and programs.

## **Purpose**

The bicycle-related goals and objectives of Woodstock's higher-level planning documents (found in Appendix C), guide Woodstock towards becoming a "bicycle friendly community." The purpose of this Plan, then, is to provide to City Council, Administration, and other Boards and Commissions the detailed goals, objectives, and implementation strategies necessary for Woodstock to become "bicycle friendly".

## **Becoming a Bicycle Friendly Community**

What is a "bicycle friendly" community? The League of American Bicyclists defines a bicycle friendly community as "one which welcomes cyclists by providing well-engineered bicycle facilities, creating new places to ride, educating motorists and cyclists on the rules of the road, and encouraging people to bike for transportation and recreation".

In becoming bicycle friendly, a community typically addresses five specific elements which contribute to a safe and healthy bicycling environment. Commonly referred to as the five "Es", they include engineering, education, encouragement, enforcement, and evaluation and planning.

- **Engineering.** Engineering refers to the actual bicycling facilities; e.g., what is on the ground and has been built to promote cycling in the community. This includes facilities to accommodate cyclists on public roads, the existence of both well-designed bike lanes and multi-use paths in the community, the availability of secure bike parking, and the condition and connectivity of both the off-road and on-road network.

- **Education.** Education includes teaching cyclists of all ages how to ride safely in any area from multi-use paths to congested city streets as well as teaching motorists how to share the road safely with cyclists. More specifically, it includes cycling education for adults and children, and the distribution of safety information (bike maps, tip sheets, etc.) to both cyclists and motorists in the community, and as a part of driver’s education manuals and courses.
- **Encouragement.** This category concentrates on how well the community promotes and encourages bicycling. This can be done through Bike Month and Bike to Work Week events as well as producing community bike maps, route finding signage, community bike rides, commuter incentive programs, and having a Safe Routes to School program.
- **Enforcement.** Enforcement strategies act to deter unsafe behaviors of drivers and bicyclists, and to encourage all road users to obey traffic laws and share the road safely. Some strategies that are effective include having an appointed liaison in the Police Department for the public to contact, have a bicycle division in the Police Department, and have law enforcement monitor bicycle and motorist compliance with existing laws.
- **Evaluation and Planning.** Refers to how the community evaluates current bicycling programs and plans for the future. More specifically, how the community measures the amount of cycling taking place in the community, the crash and fatality rates, and ways that the community works to improve upon these numbers.

## **Structure of the Woodstock Master Bicycle Plan**

This plan consists of five chapters and a number of appendices which address the five “Es” as applied to the City of Woodstock and, when implemented, will meet the criteria that could allow Woodstock to be designated as a “Bicycling Friendly Community” by the League of American Bicyclists.



## *Chapter Two*

### PLANNING - ASSUMPTIONS AND CONSIDERATIONS

This chapter provides discussion of planning assumptions about who rides bicycles, where and why they ride, how often they ride, and what special needs they might have. It also reviews the City of Woodstock's baseline bicycling network, safety issues associated with riding bicycles as a mode of transportation, and acknowledges fiscal realities for executing this Master Bicycle Plan.

#### **Why Do People Ride Bicycles?**

Bicyclists may have different reasons for wanting to utilize the bicycle as their method of transportation. These reasons may involve one or more of the following: recreation, become more physically fit, minimize fuel costs, improve air and water quality, provide an alternate means of travel versus the car, or possibly just to arrive at a destination.

Others may simply have no other choice but to rely upon their bicycle as their primary mode of transportation. Individual reasons may vary, but some may include:

- A student who has a job or participates in after school activities but has no access to an automobile or is too young to obtain a drivers license;
- A person who cannot afford the expense of owning an automobile;
- Persons who are disabled, restricting them from even obtaining a drivers license.

#### **Who Rides Bicycles and What are Their Needs?**

The master plan for the path system to be built in Woodstock will be utilized by cyclists with many different skill levels. According to the American Association of State and Highway and Transportation Officials (AASHTO), there are generally three categories of skills: Advanced, Basic, and Adolescents.

- **Advanced.** Cyclists within this category are experienced and generally use their bicycles as they would a motor vehicle. They are riding for convenience and speed, and they want the most direct access to destinations as possible. These bicyclists comprise the majority of the current users of shoulder bikeways and shared lanes on arterial streets.

- **Basic.** These riders are using their bicycles for transportation purposes but prefer to avoid roads with fast and busy motor vehicle traffic unless there is ample roadway width to allow easy passing for faster motor vehicles. Basic riders are comfortable riding on neighborhood streets and shared use side paths and prefer designated facilities such as bike lanes or paved shoulders on busier streets.
- **Adolescents.** Bicycle riders from an early age to the teenage years need access to key destinations from where they reside. These destinations might include schools, parks, shopping, or other residential areas. Residential streets with low motor vehicle speeds and volume linked with side paths and well-defined pavement markings for both bicycles and motor vehicles are best suited for these riders. Separated side paths along arterial or collector streets would be ideal, if at all possible.

## What are the Origins and Destinations for Bicyclists?

Designated bicycle routes are needed in Woodstock to form important connections between residential areas, activity centers, recreational facilities, shopping areas, parks, and tourist attractions. A list of these destinations has been compiled and included in the plan as Appendix B and delineated on the Bike Route Map.

**Origins.** Residential areas serve as origins in the bike plan because, in most cases, these areas will serve as the starting point for most trips to a destination within the City. However, each residential area will vary in the number of trips/origins to a destination based upon the number of residential dwellings and housing density. A resident who lives close to a commercial area or major arterial street may be more likely to use a bike as transportation than residents who are more remote from these destinations. School boundaries, and the distance from a residence to a school destination, will have an impact on the number of children who ride bikes to/from school as a means of transportation.

**Destinations.** Destinations should be prioritized by the number of clients, customers, or users that are attracted by the service being provided or goods that are sold. Some shopping centers may not be considered a major destination because bicycles have limited capacity for transporting materials and supplies. Some examples of destinations (in no particular order) to be included in development of a bike plan are:

- **Schools.** School officials can help to determine which schools would be destinations for children riding bikes. Enabling and encouraging children to ride a bicycle to school decreases traffic congestion, improves air quality, and creates the desire for a healthy and active lifestyle at an early age.
- **Recreational Facilities.** As a destination, a recreational facility which offers organized sports or group activities should take priority over a neighborhood park.

- **Parks.** For many neighborhoods, parks are a gathering place where citizens congregate to visit and converse with one another while children enjoy the amenities and open space. For families, this can be a favorite stop along the route.
- **Large Employers and Industrial Parks.** Businesses throughout the community which employ one hundred people or more should be a destination along the bike route. This concentrated number of people in one area will attract new cyclists and provide an alternate mode of commuting for those who already find bicycling enjoyable.
- **Government Facilities.** The public needs access to government facilities from time to time, and this access may be required for persons whose only mode of transportation is bicycling or walking. History shows that these locations which provide government services attract both a high number and many different types of user groups.
- **Medical and Social Services.** Similar to government services, human services and medical institutions not only attract a large number of people to their destination but, as a result, may also be the employer for a very large number of employees. For these reasons, these sites need to be a destination in the bike plan.
- **Connections.** Paths should be connected to other means of transportation like train or bus terminals. In addition, routes should be configured to connect with local, regional, or State bike trails in order to provide bicycle access to destinations outside the community.

## **Is Bicycling Safe?**

There are between 700 and 1,000 cycling fatalities in the US each year, which is a small number compared to approximately 150,000 people killed in other kinds of accidents. In comparing the fatality and injury rates of cyclists and motorists, bicycling is less dangerous or no more dangerous than driving a car.

## **When and Where Do Bicycling Accidents Occur?**

Although statistical data concerning non-fatal bicycle accidents is sporadic, two separate surveys conducted by William E. Moritz in 1997 of bicycle commuters and by the League of American Bicyclists (LAB) in 1996 suggest that most bicycle accidents occur, by a wide margin, on sidewalks. Of accidents occurring elsewhere, major streets were the most dangerous. Bike routes/lanes were the safest.

A study by Carol Tan of the University of North Carolina Highway Safety Research Center for the Federal Highway Administration (“Crash-Type Manual for Bicyclists”) reports that the most common causes of cycling fatalities are:

1. 5.1% -- The bicyclist exited a driveway in front of an oncoming vehicle.
2. 4.3% -- The bicyclist turned left in front of a passing vehicle.
3. 3.9% -- The motorist was overtaking the bicyclist, cause of the accident unclear.
4. 2.7% -- The bicyclist was struck while traveling on the left side of the road.
5. 1.4% -- The bicyclist, on the wrong side, turned right in front of a vehicle.
6. 1.3% -- The motorist was overtaking the bicyclist and failed to see him.
7. 1.2% -- The bicyclist lost control and swerved into the path of the vehicle.
8. 0.8% -- The bicyclist made a normal left turn but ignored on-coming traffic.
9. 0.6% -- The motorist lost control of the car and struck the bicyclist.
10. 0.5% -- The motorist struck a play vehicle (tricycle, etc).

Together, these crashes, the ones most likely to result in death, accounted for 21.8% of the total number of bike-motor vehicle collisions in the study.

In number one above, the cyclist pulling out of a driveway has the responsibility of looking both ways and making sure that doing so is safe. Half of these accidents happened to very young children.

In number two, a cyclist turning left in traffic needs to look behind and then move into the correct turning position or lane when it is safe to do so. If the rider is unable or afraid to get into that position, he can ride to the curb, dismount, and walk across. Most of these accidents happened to children as well.

In the third most common type of collision, a cyclist gets struck from the rear, is rare, and easily avoidable. The cyclist can listen to approaching vehicles and/or scan to the rear occasionally, looking back or using a rear-view mirror, and thus be aware if the vehicles are passing carefully and safely. By keeping to the right, moving even further to the right, or even pulling off of the road when it seems warranted, the cyclist can avoid getting hit.

The fourth kind of collision is caused by the cyclist traveling on the wrong side of the road (against traffic).

The fifth also involves a rider on the wrong side, but in this case, he turns in front of traffic. This type of accident was more common among children.

In number six, the accident involves a motorist failing to see the cyclist on the road ahead. These accidents happened almost entirely to adult cyclists. The problem of visibility was mostly due to darkness or glare from the sun. Again, the risk of these types of accidents can be mitigated considerably by the use of both reflectors and lights at night and wearing bright colored clothes during the day.

In number seven, the loss of control on the part of the cyclist caused the crash. Many motorists worry about this kind of accident. Very young children were frequent victims as were middle-aged cyclists, many of whom had been drinking alcoholic beverages.

## **What are the Current Proposed Bicycle Facilities Within Woodstock?**

Currently, there are no trails or routes specifically dedicated to bike traffic in the City of Woodstock. The City does provide some locations where a bike lane has been identified and is properly signed within a street pavement (e.g. South Street), and bike traffic is allowed on a shared basis on existing paved paths in several locations throughout the City. The City does provide bike racks for storage at most public facilities in Woodstock including the Library, downtown area, and park locations.

Currently, there are no regional trails that connect to Woodstock. However, an extension of the Crystal Lake side path along Route 14 onto Lake Ave terminating at the Woodstock Recreation Center is anticipated to be constructed in conjunction with Route 14 improvements in a future funding cycle.

## **How Do Fiscal Realities Affect this Plan's Implementation?**

Fiscal limitations were not considered during the development of this plan. The pace and extent to which this plan is executed, however, is dependent on the availability of funding and the priority that City Council gives the Plan when weighed against other capital improvement projects and City needs.

## **Goals and Objectives**

Goal: Develop a safe, connected, and attractive network of bicycle facilities throughout the City.

Objective: *Provide residents and visitors with another choice for travel and develop a bike path system that accommodates users by providing safe, convenient, and pleasant travel for people of all ages. Providing bicycling opportunities should reduce traffic congestion, air pollution, and noise pollution.*

Goal: Integrate bicycling as a standard part of each new development and transportation project.

Objective: *The City of Woodstock wants to be a community where bicycling is a comfortable and convenient transportation option. In order for this to occur, it would be helpful for the City to have a plan designated with preferred routes so that as development occurs and roadways are modified, bike routes within the plan can be constructed and/or improved.*

Goal: Create a Master Bicycling Plan to implement bicycle programs and projects.

Objective: *In order for bicycling to be a priority within Woodstock, a master plan should be developed for use by the City Council and City Administration as a guidance document for future planning and development of a complete bike path system.*



## *Chapter Three*

# **DESIGN AND DESIGN PRINCIPLES**

In order for the bikeway to be safe, manageable, and beneficial for the user, certain design principles must be considered in determining the best location of the bikeway within the Woodstock community. Once the location has been determined, there are many factors which may control the type of bikeway to be constructed, how it is signed, and how it might be best to deal with difficult crossings and interaction with other modes of transportation. Information within this chapter describes the principles for consideration in the design of a bikeway system.

## **Bikeway Network Geometry**

When planning for a network of bicycle paths, the League of American Bicyclists recommends that the final product resemble a “grid” of interconnected bicycle-friendly streets and off-road trails, with spacing ½ to 1 mile between segments.

In order to accommodate the limitations and constraints that already exist, the “grid” usually includes a mixture of network geometries (hub-and-spoke, circular, linear, line-and-spurs, etc.) organized to accommodate a functional hierarchy of bikeways within the network.

- Main Network. The main network connects the major destinations in a direct and expeditious manner (i.e., connecting the main network and education centers with the most populated residential areas), and receives the bike traffic flow from secondary networks.
- Secondary Network. The secondary network leads bicyclists to the main network and connects housing centers, major attractions, and parks with the main network.
- Complimentary Network. The complimentary network provides continuous flow throughout the network. It consists of additional bike paths that are necessary to complete the mesh system and to distribute bicycle traffic to specific areas. This part of the network is used for recreation and for reaching less concentrated areas.

## **Attributes of a Good Bike Network**

In determining the type of bikeway and its placement within the network, the following attributes must be considered:

- Accessibility. Does the network link origins with important destinations (parks and schools)? Are routes continuous and as direct as possible (in both distance and time)? Does it offer an advantage over motorized traffic?
- Convenience. Does the network reduce delays for the user? Are all detours avoided or minimized? Are segments unimpeded? Can the network easily be maintained and continuously signed?
- Safety. Does the bikeway match the skill level of the user (e.g., bikeways near schools, parks and residential neighborhoods are likely to attract a higher percentage of basic and adolescent bicyclists than advanced bicyclists)? Are conflicts with motorized traffic minimized, particularly at intersections and with busy thoroughfares? Is on-street vehicle parking compatible with bikes (e.g., perpendicular and diagonal parking have obstructed vehicle operator sightlines and should be avoided)? Are line-of-sight obstructions (hills, vegetation, buildings, etc) minimized?
- Comfort. Are segments wide enough to accommodate bicycle traffic, particularly in high truck and bus usage segments or where there are high vehicle traffic volumes and speeds (especially at bridges)? Are gradients reduced? Is the surface quality sufficient for safe biking? Are curbs depressed?
- Attractiveness. Are segments aesthetically pleasing? Quiet? Litter-free?
- Cost. Does the placement support a long-term commitment to quality maintenance? Does the placement, use, and design meet grant program criteria?

## **Types of Bikeways used in the Bike Network**

Some streets and highways may be unsuitable for bicycle travel and may or may not be considered high bicycle demand corridors so it would be inappropriate to designate these as bikeways. The type of bikeways that constitute a bicycle network may include any number of the following:

- Designated Shared Roadways. Roadways with low to medium traffic counts and low speed limits can be shared by bike riders with the addition of signs and pavement markings to designate it as a bikeway. The signs and pavement markings will guide the rider and alert the motorist that bicycle riders may be present. In general, shared roadways should have a shared travel lane width of 15 feet, although on narrower roadways, four foot wide paved shoulders may be sufficient to accommodate bike riders.
- Bike Lanes. Bike lanes can be included on lower speed urban arterial and collector streets. They are at least five feet wide, on both sides of the roadway, with signage and pavement markings/stripes. Vehicle parking is not permitted on bike lanes.
- Side Paths. Side paths (often called bike paths or bike trails) are constructed separate from but along one side of a road or along utility easements, abandoned right-of-way, campuses, and parks. Side paths are 8-10 feet wide, paved, and accommodate traffic in both directions. They are not appropriate along streets

with numerous driveways, commercial entrances, or side streets due to sightline problems. Side paths/bike paths are shared with pedestrians, strollers, power chairs, roller blades, etc.

## **Ideal vs. Best Practical Network**

Ideally, a well-signed bicycle network adequately addressing all of the above criteria would be composed of dedicated bike lanes and off road bike paths separating bicycles from other vehicular traffic. However, several constraints (including width limitations in the existing road grid, location of buildings, obstructions, railroad crossings, easement and real property limitations) are impediments to building “an ideal” bicycle network. The bicycle network provided within this plan reflects a compromise of constraints and desired attributes; e.g., it provides *the best practical bicycle network* for the City of Woodstock.

The following improvements should be considered when designing the best practical bicycle network:

- Major Urban Streets
  - Typical concerns: High traffic volumes and speeds, lack of space for bicyclists.
  - Possible projects: Widen outside through lanes or add bike lanes by either redistributing space on the roadway by re-striping or adding paved width.
- Minor Urban Street Traffic
  - Typical concerns: Higher than appropriate traffic volumes and speeds on residential streets.
  - Possible projects: Create a traffic calming program that responds to neighborhood requests by installing a variety of measures.
- Minor Street/Major Street Crossings
  - Typical concerns: Bicyclists have difficulty crossing busy arterial thoroughfares from quiet residential streets.
  - Possible projects: Provide median refuges at key minor street crossings, bike-friendly signals, and other features on collectors where there are designated bike lanes.
- Breaking Bicycling Barriers
  - Typical concerns: Physical features (rivers, creeks, railroads, and freeways) often keep bicyclists from getting where they want to go.
  - Possible projects: Provide independent bicycle/pedestrian structure where necessary or combine bicycle/pedestrian structures with other existing or planned transportation facilities.

- Trail Networks
  - Typical concerns: Trails are popular facilities among the bicycling public but they may be rare or discontinuous. In addition, some are poorly designed, constructed, or maintained.
  - Possible projects: Provide new trails where possible throughout the community, connect existing trail segments, and encourage developers to include trails in their developments.
  
- Transit Connections
  - Typical concerns: The success of a multimodal transportation system suffers when bicyclists cannot get to transit stations, when there is not adequate safe bicycle storage, and when bicyclists are not accommodated on the system itself.
  - Possible projects: Improve connections between residential areas and transit stops and provide secure bicycle parking at stops.
  
- Roadway Bridge Modifications
  - Typical concerns: Some bridges contain narrow outside lanes, hazardous deck surfaces, hazardous expansion joints, high traffic volumes, high traffic speeds, or high speed on- and off-ramps.
  - Possible projects: Reallocate bridge deck width by shifting lane lines, modify surface for better bicycle stability, modify ramps to discourage high speed turning movements, and, as a last resort, develop bicycle connections independent of the bridge in question.
  
- Railroad Crossings
  - Typical concerns: Diagonal railroad crossings and rough crossings can cause bicycle crashes.
  - Possible projects: Replace dangerous crossings with rubberized installations (especially in the outside through lane), use flangeway fillers on low speed diagonal crossings, flair paved surface at crossing approaches to allow right-angle crossings, and use warning signs or markings.
  
- Traffic Signals
  - Typical concerns: Most traffic-actuated signals have difficulty detecting bicycles. In addition, signal timing may not allow sufficient clearance time for bicyclists to get through an intersection, and traffic signals may not be as visible from a typical bicyclist's location as from a typical motorist's location.
  - Possible projects: Provide bicycle-sensitive loop detectors in new installations and retrofit where needed; in some cases, use pavement markings to identify most sensitive locations; adjust timing requirements on signals for visibility at necessary angles where there are designated bike lanes.

- Drainage Grates and Utility Covers
  - Typical concerns: Some drainage grate designs can trap a bicycle wheel; in addition, grates and utility covers should be kept level with the grade of the street surface and, wherever practical, such installations should be kept out of the typical path of a bicyclist.
  - Possible projects: Replace bad drain grate standards with bicycle-safe models; replace or modify existing installations; as a routine practice, consider bicyclists when locating new utilities along designated bike routes.
  
- Rural Road Shoulders
  - Typical concerns: Many rural roads serve high-speed traffic and, in some cases, high volumes of motor traffic containing a significant proportion of large trucks. For bicyclists, sharing narrow roads with such traffic can be unpleasant and dangerous.
  - Possible projects: Provide smooth paved shoulders on all new construction and reconstruction along designated routes; add shoulders, adopt standards calling for adequate paved shoulders; or provide space for future shoulders if they cannot be installed at the time.
  
- Bicycle Parking
  - Typical concerns: Scarce bike parking at popular destinations, undesirable bike parking devices, no bike parking zoning requirements.
  - Possible projects: Provide new bike parking as a routine practice, use only parking devices that accept high security locks, or add bike parking to local zoning regulations.
  
- Maintenance
  - Typical concerns: Poorly maintained trails and roadway edges.
  - Possible projects: Create a user-requested bicycle spot improvement program.

## **Affordable Design**

Fiscal realities preclude the bicycle network from being built all at once. Rather it could be built as development occurs and as funds become available. With new development, new roads are constructed and occasionally existing roads are improved. These new and improved roadways should include bikeways to improve or expand the existing network. As a result, the bicycle network developed within this plan is designed to accommodate a two-phase approach ~ an initial affordable network and a desired end-state network.

- Affordable Network. This is the foundation of the network. Designed to be implemented expeditiously at low cost, it is designed to take advantage of existing roads and bikeways. By using low-cost options such as pavement markings and signs, a basic bicycle network can be made available to the community relatively inexpensively and expeditiously. “Appendix C” provides a description of those

low-cost bikeway options which were considered when designing the Affordable Network.

- Desired Network. This is the desired end-state. Built upon the foundation provided by the Affordable Network, it includes more costly bikeway treatments such as widened outside curb lanes and shoulders, bike lanes, and bike paths/trails. “Appendix C” provides a description of the more costly dedicated bikeway options which were considered when designing the Desired Network.

## **Identifying the Bicycle Network - Signs**

Shared roadways are identified by signage as preferred bike routes. There are several reasons for designating signed bike routes:

- They provide continuity to other bicycle facilities such as bike lanes and shared use paths.
- They delineate the road as a common route for bicyclists through a high demand corridor.
- In rural areas, signed bike routes are preferred for bicycling due to low motor vehicle traffic volume and paved shoulder availability.
- The shared roadways extend along local neighborhood streets and collectors that lead to an internal neighborhood destination such as a park, school, or commercial district.

Bike route signs can be used on streets with bike lanes as well as shared use paths. Regardless of the type of facility or roadway in which they are used, it is recommended that bike route signs include destination information.

Signing of shared roadways indicates to cyclists that there are particular advantages to using these routes compared to alternate routes.

The following criteria should be considered prior to the signing of a route:

- Does the route provide through and direct travel in bicycle-demand corridors?
- There is a need to utilize the route to connect segments of shared use paths, bike lanes, and/or other bike routes.
- Can traffic control devices be adjusted (e.g., stop signs, signals) to give greater priority to bicyclists on the route as opposed to alternative streets? This could include placement of bicycle-sensitive detectors where bicyclists are expected to stop.
- Can on-street parking be removed or restricted in areas of critical width to provide improved safety?
- Can a safe pathway be provided that is free of hazards like sunken or raised utility covers, drainage grates with wide openings, potholes, etc?
- Can the route be maintained to prevent an accumulation of debris (e.g., regular street sweeping, tree trimming, garbage collection, etc.)?

- Do the shoulder or curb lane widths generally meet or exceed width requirements?

## **Parking and Other Facilities**

Bike racks should be in well-lit, highly visible locations near main entrances. Racks should support the bike frame and wheel and allow both frame and wheel to be locked. Bike racks and lockers are desirable at points of intermodal connections.

Benches should be available at various locations throughout network to allow bicyclist's a place to rest and relax.

## **What Will Woodstock's Master Bicycle Plan Look Like?**

Although there are many documents which attempt to predict the future boundaries of the City of Woodstock, no one really knows what the City might look like 20–30 years from now. The economy, overall population, industry, and commerce all factor into the plan.

In 2009, the City's Transportation Commission created a map displaying their vision of a bikeway system for the City based upon the footprint that exists today. The map (Appendix A) attempts to connect, or at least get within, the vicinity of most destinations identified in *Appendix B*. In addition to depicting existing recreational paths, the map identifies the best routes available within the City warranting consideration for both proposed and future bike routes.

Once the bikeway system becomes a priority for the community to the point in which it is growing each and every year, City staff will need to determine exactly where the pathway should be constructed. Defined segments on the map may be relocated several blocks in any direction for a number of reasons. Reasons might involve considerations for safety, total cost, proximity to a destination, avoidance of hills or rough terrain, dangerous intersections, etc.

At this time, the McHenry County Conservation District has plans for the extension of the Prairie Trail from the City of Crystal Lake to a point near the intersection of Lake Ave and U.S. Route 14 in Woodstock. The Kishwaukee Headwaters Proposed Intergovernmental Bike Trail Plan calls for the extension of that trail west on U.S. Route 14 toward the City of Harvard. The fact that these regional trails are being considered for extension to the City of Woodstock is promising for connectivity to a more regional bikeway system in the future.



## *Chapter Four*

# COMMUNICATION

Education, encouragement, and enforcement are critical to the success of Woodstock's bicycle plan. Goals within this section include the production and availability of bicycle maps and brochures, the creation of a "hotline" for cyclists to call and report cycling hazards, the expansion of a police bicycle squad, licensing of bicycle couriers, instituting the mandatory use of bicycle safety equipment, enforcement of bicycle "rules of the road", and participation in educational events such as "bike to work" week.

## **Education and Encouragement**

### **Safe Routes to Schools**

Safe Routes to School is a federally-funded grant program created to assist communities in making school routes safer, thereby encouraging more children to walk or bicycle to school. The program focuses upon the removal of barriers that currently prevent children from doing so. Those barriers might include a lack of infrastructure, unsafe infrastructure, or lack of programs that promote walking and bicycling through education or encouragement programs aimed at children, parents, and the community.

The City should utilize this grant funding opportunity to improve pedestrian and bicycle transportation in and around all of the schools in Woodstock. It would be beneficial for the City to partner with each individual school in an effort to identify the routes that are being used by school children and determine if they could be made safer through the installation of new paved areas, signs, signals, pavement markings, etc. In addition, this partnership should include the development of bicycle safety and skill programs at all elementary and middle schools within the community. The following events and programs are strongly recommended:

- Walk and Bike to School Week celebration
- Encourage the inclusion of pedestrian and bicycle safety skills in relevant physical education and extracurricular programs
- Encourage the inclusion of the sustainable transportation benefits of walking and bicycling in relevant health, environmental, and academic curriculum
- Create a Walking School Bus program

## **Mobility Education Curriculum in High School**

Many teens spend hours and hours in driver's education courses, preparing to get behind the wheel, but learn very little about sharing the road with cyclists. Mobility education changes the way we think about getting around. It gives teens an understanding of how to utilize all kinds of transportation – bicycling, walking, and taking transit. Mobility education also makes sure that all new drivers understand the experience of people on foot, bike, and transit and works to afford greater respect for those who utilize other methods of transportation.

The City should encourage D200 and Driver's Ed programs serving both public and private high schools to integrate a Mobility Education curriculum into the existing class structure. These courses should be geared toward teaching students:

- the rules of the road for bicyclists
- instructions on mapping bicycle and walking routes
- how the behaviors of motorists can endanger bicyclists
- behaviors that put bicyclists at risk
- the most common causes of bicycle accidents
- the best ways to prevent bicycle theft
- transportation, health, and environmental benefits of bicycling and walking

## **“Commuter Challenge” at the High School Level**

Some school districts encourage students to bicycle to and from school by creating a competition between classes, organizations, or entire schools. The City should encourage the high schools in the community to form student groups (i.e. Bicycle Club, Environmental Club, Physical Education classes) and from those groups create a Commuter Challenge for students that are willing to ride their bikes to school. The School District, in conjunction with the City's liaison, can offer bicycle skills training and rules of the road classes for all students participating in the program.

## **Educational Campaign**

Many bicyclists and motorists have not been exposed to any formal rules of the road for cyclists' training. By providing ongoing educational opportunities (free of charge) for these groups, it would help to create a safer environment for bicyclists. This campaign could be organized and implemented by the City with assistance and materials from bicycling agencies, local user groups, bike shops, and hospitals. Educational material could be added to the City's website with information focused upon:

- partnering with local bike shops to distribute publications
- partnering with local doctors and hospitals to distribute information on health benefits of cycling
- promoting Woodstock as a bicycle friendly community through advertising sponsored by the City

## **Shop by Bike**

It is recommended that the Department of Community and Economic Development (DCED) work with local businesses to develop a “Shop by Bike” program. City staff should be encouraged to work with the Chamber of Commerce and the Downtown Business Association to promote year round discounts for shoppers using bicycles as their mode of transportation to the businesses. The program might include the receipt of a sticker or punch card for cyclists when making a purchase of \$5 or more. Once cyclists receive five stickers, they return completed cards for a chance to win a raffle. Additionally, the DCED should offer training twice yearly to educate merchants on the advantages of attracting and accommodating bicycle-riding customers and present the benefits of bicyclists shopping locally. This program should encourage a healthy community through physical activity while, at the same time, relieve parking congestion at and around the place of business.

## **City Bicycle Map**

The Department of Community and Economic Development and the Department of Public Works should work together to design and publish a free bicycle map to promote the City’s bike network. Maps should be mailed to all residents and included in new resident welcome packets. The private sector should be encouraged to sponsor the printing of the map, and a portion of the map should accommodate those who would like to market their business through a printed advertisement. A City bicycle map encourages bicycle use by promoting the bicycle network and identifying bicycle friendly routes to important and much used destinations such as parks, schools, libraries and business districts of Woodstock.

## **Bike to Work Week Commuter Challenge**

Each year in the month of May, the League of American Bicyclists (LAB) promotes “Bike to Work Week”. The intent of this promotion is to give bicycle commuters and non-commuters alike the chance to learn more about traveling by bicycle. During “Bike to Work Week”, participating agencies and businesses encourage employees to bike some or all of their daily commute. The City should encourage competition in the Chicagoland Bicycle Federation sponsored Bicycle Commuter Challenge. Specific means of encouragement may include:

- creating incentives for employees to participate and organize training classes through the Recreation Department to raise awareness for injuries and illnesses that may occur to those who bicycle long distances on an infrequent basis
- encourage participation in the Commuter Challenge forming competitive teams made up of residents from different neighborhoods and encouraging neighboring communities to do the same
- celebrate Bike Month locally by holding rallies and events to promote the benefits of a bicycle friendly community

## **Bicycle Sharing Program**

The City should consider a Bike Sharing program. This program could be managed and operated by an outside vendor under the auspices of the City of Woodstock. Through the program, patrons could check out bikes from kiosks located throughout the City and return them back to any kiosk. Normally a credit card or debit card is required as a deposit for the use of the bicycle. There is usually no charge for the first 30 minutes with a nominal charge after that. The costs for the program can be recovered through a combination of sponsorship, advertising, and user fees. The Bicycle Sharing Program will encourage bicycle use for short-term transportation and recreation within the City.

## **Bicycle Hotlines – Telephone and E-mail**

Hotlines should be formed and publicized throughout the bikeway system in order to provide an opportunity for bicyclists to report an emergency, hazardous cycling condition, ask questions, or make suggestions. These hotlines should be in addition to the 911 emergency system that is already in place for those that need assistance from Police or Fire/Rescue. The majority of the calls will likely be related to road maintenance issues such as potholes, broken glass, and lighting. Many callers may also use these communication lines to request bike maps or suggest future bike routes.

## **Enforcement**

A vital component of a safe bicycling environment is enforcement with education to reduce common vehicle-bike accidents. According to Illinois law, bicycles have both the rights and responsibilities of other vehicle users. Many bicyclists ignore the law when riding in traffic creating dangerous situations and causing motorist resentment toward other cyclists trying to share the road safely. Police should be encouraged to stop cyclists if the situation dictates, to educate, issue citation warnings, or issue tickets. Changing the behavior of bicyclists sharing the road could save lives.

## **Police Department**

One element that is necessary for maintaining a safe bikeway system is the presence of Police Department personnel from time to time. Their presence will allow them to communicate with the users of the bikeway while at the same time allow them to enforce the traffic laws aimed at improving the safety of the bikeway system. The City should dedicate some personnel to the bikeway system once it becomes connected and large enough to attract citizens from other communities.

These patrol officers should be equipped with bicycles so that they can easily respond to bicycle safety issues, and the officers should be provided training opportunities as needed. The Police Department and these officers should be involved in community outreach programs sponsored by both the City and School District 200. Bicycle training provided to these officers should include but not be limited to:

- rules of the road for bicyclists
- types of illegal motorist behaviors that endanger bicyclists
- most dangerous types of bicycling behaviors
- most common causes of bicycle accidents
- importance of reporting bicycle accidents
- importance of investigating serious bicycle accident sites
- best ways to prevent bicycle theft
- advantages to policing by bicycle
- transportation, health, and environmental benefits of bicycling

The League of Illinois Bicyclists and the Chicagoland Bicycle Federation can provide training and resource materials. It is strongly recommended that the City Code be amended, when appropriate, to create new laws and strengthen existing laws that protect bicyclists and establish and publicize new penalties for reckless driving that have the potential to endanger bicyclists.





## *Chapter Five*

# **IMPLEMENTATION**

The actual implementation of the Master Bicycle Plan is based upon available funding for the bicycle network and related bikeway projects. The City should make every effort to install and provide for the installation of bicycle facilities as part of other, scheduled improvements. Maintaining the current level of bikeway activity and programs will not fulfill the visions and goals that the Woodstock community has for completing a bicycle network. This chapter provides guidance and strategies to assist the City in completing its vision as a “get fit” community with connected bicycle paths creating a network throughout the City while, at the same time, allowing for “a connected green community”.

The City’s administrative staff has the responsibility to plan, manage, and implement projects which will improve bicycling within the Woodstock community. The City should appoint one department as a liaison for the users of the bikeway that was built with and being maintained by public funds. This department should appoint a responsible person to be in charge of community outreach programs specifically related to bicycling and the use of the City’s bikeway system providing face-to-face demonstrations for kids, teens, and adults. This person could also be the contact for reported issues, concerns, and suggestions in making the bikeway safer for all user groups, and he/she could partner with the bicycling community to identify and address local transportation safety concerns. This person could offer bicycle safety and encouragement programming to the Woodstock schools and be available for local festivals.

The following responsibilities, as a minimum, should be addressed by designated persons with authority to give advice or to take action on these matters:

- Review subdivision plats and street improvement plans for potential and required accommodations for bicyclists
- Request funding from federal, state, county, regional, and private sources
- Propose a phased approach to bicycle network construction and include alternatives for funding in the City’s 5-year Capital Improvement Program
- Direct street and trail maintenance requests to responsible parties
- Act as a point of contact for public and partner agencies
- Review potential bicycling locations and designs
- Record and analyze bicycle traffic counts
- Record and analyze accidents involving bicyclists

- Develop public service announcements, disseminate bicycle safety tips, and produce promotional literature along with other pertinent information
- Review land availability, and when possible, the City should make an effort to retain easements or obtain right-of-way necessary to fulfill the goal of pathway connection/completion
- When necessary, oversee the design and installation of bicycle sensitive traffic loop detectors, traffic signal indications, and median refuge areas
- Keep abreast of State, County, and Conservation District plans for bike routes and, as much as possible, create links to them from City pathways
- Review and update Master Bicycle Plan a minimum of every five years

**Promotion of Land Use Patterns and Zoning that Encourage Walking and Bicycling to Destinations**

– Local land use patterns are fundamental to the number of trips that can easily be made by walking or bicycling. Sprawling land use patterns produce lengthy trips resulting in an increased dependence on motorized transportation. Clustered patterns tend to promote shorter trip lengths that more readily enable walking and bicycling. Mixed land uses allow for the creation of self-sufficient neighborhood communities and shorter trip lengths to access needed goods and services. City planning officials and staff should review the assumptions of land use plans and zoning ordinances and, when possible, include the needs of non-motorized travel. Zoning requirements should be reviewed to ensure that they are bicycle and pedestrian friendly. For example, a requirement for bicycle parking (in addition to requirements for off-street motor vehicle parking) may be added by ordinance.

**Promote Bicycle-Friendly Urban Development and Design that Facilitate Bicycling**

– Street layout is important to encourage safe bicycling. Subdivision development guidelines that call for sidewalks, green space, local trail networks, and collectors that connect across arterial streets can greatly improve the environment for safe and efficient bicycling. Street alignments shown in new subdivision plats should be reviewed to ensure that they accommodate cyclists as well as motor vehicles.

Public Right-of-Way Design Standards should be adopted to accommodate the creation of a pathway. Bicycle considerations should be incorporated into local planning and design policies, manual, and standards. As a minimum, the planning for public streets and facilities should follow the 1999 *Guide for the Development of Bicycle Facilities* by the American Association of State Highway and Transportation Officials (AASHTO). Non compliance with these standards and guidelines should be by exception just as any other established design standard.

**Educate Planners, Local Enforcement Officers, Designers, and Other Officials**

– An important element in implementing non-motorized modes of transportation is support from professionals within governmental agencies including the engineers and planners who conceive and implement much of the City’s infrastructure. Coordination between transportation offices and a broad spectrum of public agencies will

help to ensure that the needs of bicyclists are addressed, not only during project development, but in project improvements and maintenance as well.

**Identify/Coordinate Funding Sources** – The City should work to plan and program funding opportunities. Bicycle facility projects and non-construction programs may be funded under a variety of sources, both at a federal/state level and on a local level.

#### Example Sources of Bicycle Network Funding

- Sales Tax – local sales tax can be increased to fund transportation improved bicycle paths
- Developer Dedications – These require the developer to construct bicycling facilities as a condition for enabling the project to proceed
- Donations – (from the public and corporate sectors) – The City of Woodstock could set up a special fund to receive public and corporate donations for the City’s bicycle programs. These donations could also come from non-profit groups willing to sponsor fund-raising rides and events.
- State administered funding sources
  - Illinois Transportation Enhancement Program (ITEP)
  - Congestion Mitigation and Air Quality (CMAQ)
  - Illinois Bicycle Path Grant Program

**Use of Volunteers** – Volunteer programs may substantially reduce the cost of implementing some of the proposed trails and pathways. Local schools or community groups may use the bikeway as a project for the year working with City staff to design or engineer plans. Work parties may be formed to help clear right-of-way where needed. A local construction company may donate or discount services. Cooperative programs with local businesses may be a good source of local funding where corporations or individuals “adopt” a bikeway and help construct and maintain the facility.

**Construct, Improve, and Maintain Facilities** – Usable facilities must be in place in order for bicycling and walking to be promoted as a viable transportation option. Future road widening and construction projects are one means of providing bike lanes and pedestrian infrastructure. To ensure that roadway construction projects provide bike lanes where needed, are appropriate, and feasible, it is important that an effective review process is in place so that new roads meet recommended standards. For instance, there are several locations within the Woodstock community which, based upon input from private citizens and Commission members, will present a significant challenge for engineers in determining the best route or method to safely and efficiently convey bicyclists through certain hazardous areas. Specific areas that have been identified include but are not limited to: Dean Street & U.S. Rt. 14; South St/Country Club Rd/Route 47; and an East Lake Street connector to Lake Avenue. As much as possible, improvements at these locations should include provisions for the safe operation of bicycles and pedestrians or allow for optional routes where safety can be preserved.

In the initial phases of bicycle network development, it would be most prudent to focus local resources on implementing the lower cost measures within the plan. Lower cost measures for bicyclists include the signing of bike routes, designating shoulder lanes, and striping bike lanes with specific attention to intersection treatments. Matching funds should be sought to aid in the development of higher cost improvements such as bike trails and/or street modifications and traffic signals to accommodate bicyclists.

In addition to safety, the lack of adequate bicycle parking is often cited as a common reason why people do not bicycle. Bicycle trips require some sort of parking at the destination. Secure parking is particularly important for commuters leaving their bicycles for long periods of time. Some communities require bicycle parking facilities in new developments. Apartment complexes and other high density settings need to address the issue of where to store bicycles while at home. Bicycle parking provisions should be encouraged at work places and commercial developments.

It would be beneficial for the City to implement a bicycle facility improvement program to enhance bicycle safety and encourage bicycling through low-cost, small-scale improvements suggested by the users themselves. Ongoing bikeway maintenance should take place on an as needed basis and should include but not be limited to:

- sweeping, inspection and remediation of pavement surfaces
- hazard removal (i.e. sewer grate, overgrown trees, landscaping, brush, etc.)
- restoration of designated bikeway as needed
- Replacement and restoration of bike lane markings, signs and signals

**Educate Bicyclists and Motorists** – Maintaining a bikeway system that is safe for users is one of the main goals of this bike plan. Education is a key element in realizing this goal. The availability of educational material can calm fears and instill skills and confidence in bicyclists and teach motorists how to share the road and avoid common mistakes that can lead to accidents. Therefore, the City should facilitate the distribution of bike safety materials through schools, PTA's, at public places such as City Hall, the Library, the City's website, and publications like the *City Scene*. There are several links to the Illinois Department of Transportation's website ([www.dot.state.il.us](http://www.dot.state.il.us)) that can be used as educational tools for both bicyclists and motorists.

The City should make educational materials available to motorists so that they can safely share the road with bicyclists and avoid common mistakes that might otherwise lead to an accident or personal injury. The League of Illinois Bicyclists has produced a seven minute video which is available on their website ([www.bikelib.org/video](http://www.bikelib.org/video)) or on DVD. It may be beneficial to show this video on a local cable channel during the summer months when bicyclists are most active. More educational programs are described and presented in Chapter Four of this bike plan.

**Encouragement** – During the implementation of the bike plan, it will be necessary to encourage residents and visitors to explore Woodstock by bicycle. Suggestions for

promoting bicycling and the City's bikeway system are documented in Chapter Four of this bike plan, but in general, the following programs are worthy of consideration:

- Design and publish free bike maps and make them available to bikeway system users
- Proclaim the City's annual observance of National Bike Month in May
- Declare a Bike to Work day to encourage bicycling to work, errands, or other destinations
- Work with the School District to organize and observe annually International Walk or Bike to School Day in October
- Promote Woodstock as a bicycle-friendly community through advertising sponsored by the City

**Note: Some of the information and photos used in this report and its appendices were obtained from documents made available through the American Association of State and Highway and Transportation Officials (AASHTO) and the League of American Bicyclists (LAB).**

Dated:	September 2009
Revisions:	November 10, 2009

*Appendix A*

*City Map with Landmarks and  
Bike Routes in  
Woodstock GIS*

## *Appendix B*

# **Bike Route Map Destinations**

### **Schools**

St. Mary's School, 312 Tryon Street  
Woodstock Christian School, 1201 Dean Street  
Marian Central Catholic H.S., 1001 McHenry Ave  
Woodstock Early Learning Center, 350 Christian Way

### **District 200 Schools**

Clay Academy, 112 Grove Street  
Woodstock North H.S., 3000 Raffle Road  
Woodstock H.S., 501 W. South Street  
Northwood Middle School, 2121 N. Seminary Ave.  
Creskide Middle School, 3201 Hercules Road  
Westwood Elementary School, 14124 West South Street  
Olson Elementary School, 720 W. Judd Street  
Prairiewood Elementary School, 3215 Hercules Road  
Mary Endres Elementary School, 2181 N. Seminary Ave.  
Dean Street Elementary, 600 Dean Street  
Verda Dierzen Early Learning Center, 2045 N. Seminary Ave.

### **Recreation Facilities**

Recreation Center, Lake Avenue  
Woodstock Water Works, Emricson Park  
Prairie Ridge Drive Park  
Apple Creek Park  
Sonatas Park  
Sweetwater Park  
Banford Road Park  
A.J. Olson Park  
Mary Ann Street Park  
Castle Road Park  
McConnell Road Park  
Tara Drive Park  
Sunnyside Park  
Dick Tracy Way Park  
Raintree Park  
Park in the Square  
Sesquicentennial Park  
Bates Park  
Merryman Fields Park  
Emricson Park

### **Recreation Facilities** (cont)

Davis Road Park  
Ryders Woods  
Albert/Gerry Street Nature Area  
Westwood Conservation Area  
Hennen Conservation Area

### **Transportation**

Train Station - Intersection of Church/Washington/Main

### **Commerce**

K-Mart  
Wal-Mart  
Farm & Fleet/Menards  
Woodstock Square  
Jewel-Osco  
Walgreens

### **Industry**

Cardinal Health, 2200 Lake Shore Dr.  
Brown Printing Co., 11595 McConnell Rd.  
Claussen Pickle Co., 1300 Claussen Drive  
D.B. Hess Co., 1530 McConnell Rd.  
Wells Manufacturing Co., 2100 W. Lake Shore Dr.  
Berry Plastics, 1008 Courtaulds Dr.  
Precision Quincy Corp., 1625 W. Lake Shore Dr.  
Guardian Electric Mfg. Co., 1425 Lake Ave.

### **Government Services**

Woodstock City Hall, Calhoun Street  
Woodstock Public Library, Judd Street  
Woodstock Police Dept., Lake Avenue  
McHenry County Government Center, 2200 N. Seminary Ave.  
Post Office, Country Club Road

### **Human Services**

Social Security Office, 2450 Lake Shore Drive  
Dept. of Employment Security, 500 Russel Court  
McHenry County Housing Authority, 1108 N. Seminary Ave.  
Children and Family Services, 109 Newell Street  
Public Aid Office, Lake Shore Drive  
Centegra Memorial Medical Center, Rt. 14 & Doty Road  
Centegra Behavioral Health, 527 W. South Street  
Mercy Woodstock Medical Center, 2000 Lake Avenue

### **Existing Bike/Recreation Paths Within the City**

Ware Road @ Sonatas property line east to Raffel Road (north side)

Raffel Road from Haydn to Banford Road (west side)

McConnell Road from Red Barn Road to Greenview Drive (north side)

South Street from Hill Street to the entrance at Emricson Park (north side)

Entrance to and within Apple Creek Subdivision

Within Merryman Fields Park

Within Emricson Park

Within McConnell Road Park

Along the Wal-Mart Development, western entrance to U.S. Route 14

*The Commission recognizes that this list of destinations may not be all inclusive or encompass all locations that are vital to the bicycling community. However, as this plan is updated, the number of destinations will likely keep pace with the growth of the plan and the community it serves.*

## Bikeway Treatments

### Low Cost Alternatives

#### Shared Roadways Pavement Markings - “Sharrows”

Shared lane markings (“sharrows”) are used on streets designated as part of a bikeway network that are shared by bicyclists and motorists. Sharrows are used to show motorists that cyclists may “take the lane”, and it helps show cyclists good lane positioning, especially where lanes are too narrow to share safely.

*When Used:* On narrow roads shared by motorists and cyclists or areas where there is a need for a bike lane. Most often they are used on streets which form a critical link in the network or in dense urban areas where streets cannot be widened to accommodate bike lanes or wider shoulders.

*Advantage:* Improved lane positioning of cyclists and improved passing distance by motorists. Sharrows also cut down on the number of cyclists using the sidewalk, and they help to keep them traveling in the same direction as traffic. Where there is occupied on-street parallel parking, sharrows help reduce crashes involving the opening of doors on parked cars.

*Disadvantage:* Until the final version of the next Manual of Uniform Traffic Control Devices (MUTCD) is published in late 2009, shared lane markings are still considered experimental, and Federal Highway Administration (FHWA) experimental approval is required for use.



Shared lane marking



Shared lane transition from bike lane

## Shared Roadways – Combined Bike/Parking Areas

*When Used:* Some residential streets with wide lane widths permit on-street parking, but cars are only parked on occasion. While these may be opportunities for dedicated bike lanes, the absence of parking on one or both sides may not be politically feasible. Another option is to stripe a minimum of 7-8 feet along both sides (12 feet is recommended) of the roadway to accommodate an occasional parked car and/or a bikeway. The road is signed as a Bike Route only with no bike lane signage or pavement markings.

*Advantage:* Increased cyclist comfort, fewer parked cars being hit, and decreased traffic speeds.

*Disadvantage:* On-street parking increases the potential for conflicts between motor vehicles and bicyclists. The most common bicycle riding location on urban roadways is in the area between parked cars and moving motor vehicles. Here, bicyclists are subjected to opening car doors, vehicles exiting parking spaces, extended mirrors that narrow the travel space, and obscured views of intersecting traffic.



**Combined Bike/Parking Area**

## Shared Roadways – Paved Shoulders

Existing roads with wide paved shoulders (or roads where shoulders could be improved or widened with minimal cost) could be used as bikeways in the bicycle network.

*When Used:* Generally used in rural areas.

*Advantage:* Adding or improving paved shoulders can be the best way to accommodate bicyclists in rural areas and benefit motor vehicle traffic. Paved shoulders can extend the service life of the road surface since edge deterioration will be significantly reduced. Paved shoulders also provide a break-down area for motor vehicles. Where funding is limited, adding or improving shoulders on uphill sections will give slow-moving bicyclists needed maneuvering space and will decrease conflicts with faster moving motor vehicle traffic.

*Disadvantage:* Paved shoulders should be at least four feet wide to accommodate bicycle travel not including the width of the gutter pan. Five feet is recommended from the face of guardrail, curb, or other roadside barriers. It is desirable to increase the width of shoulders where higher bicycle usage is expected. Additional shoulder width is also desirable if motor vehicle speeds exceed 50 mph; the percentage of trucks, buses, and recreational vehicles is high; or static obstructions exist at the right side of the roadway. Rumble strips or raised pavement markers, where installed to discourage or warn motorists they are driving on the shoulder, are not recommended where shoulders are used by bicyclists unless there is a minimum clear path of one foot from the rumble strip to the traveled way, four feet from the rumble strip to the outside edge of paved shoulder, or five feet to adjacent guardrail, curb, or other obstacle.



**Bikeway using shoulder of rural road**

## Shared Roadways – Wide Curb Lanes

Existing roads with wide curb lanes could be used as bikeways in the bicycle network. Restriping to provide wide curb lanes may also be considered on some existing multi-lane facilities by making the remaining travel lanes and left-turn lanes narrower. This should only be considered after careful review of traffic characteristics along the corridor and supported by a documented engineering analysis based on applicable design criteria.

*When Used:* Wide curb lanes for bicycle use are usually preferred where shoulders are absent, such as in restrictive urban areas.

*Advantage:* A curb lane wider than 12 feet can better accommodate both bicycles and motor vehicles in the same lane and thus is beneficial to both bicyclists and motorists. In many cases where there is a wide curb lane, motorists will not need to change lanes to pass a bicyclist. Also, a wide curb lane provides more maneuvering room when drivers are exiting from driveways or in areas with limited sight distance.

*Disadvantage:* In general, 14 feet of usable lane width is the recommended width for shared use in a wide curb lane. Usable width normally would be from edge stripe to lane stripe (the gutter pan should not be included as usable width). On stretches of roadway with steep grades where bicyclists need more maneuvering space, the wide curb lane should be slightly wider where practicable. It should be noted that widths greater than 14 feet which extend continuously along a stretch of the roadway may encourage the operation of two motor vehicles in one lane, especially in urban areas, and therefore, it is not recommended. In situations where there is more than 15 feet of pavement width, consideration should be given to striping bike lanes or shoulders.

## Sidewalks as Bikeways

In general, the designated use of sidewalks (as a signed shared facility) for bicycle travel is unsatisfactory. It is important to recognize that the development of extremely wide sidewalks does not necessarily add to the safety of sidewalk bicycle travel. Wide sidewalks encourage higher speed bicycle use and increase potential for conflicts with pedestrians, fixed objects, and motor vehicles at intersections.

*When Used.* Sidewalk bikeways should be considered only under certain limited circumstances, such as:

- To provide bikeway continuity along high speed or heavily traveled roadways having inadequate space for bicyclists, and uninterrupted by driveways and intersections for long distances.
- On long, narrow bridges. In such cases, ramps should be installed at the sidewalk approaches. If approach bikeways are two-way, sidewalk facilities also should be two-way.

*Required Modifications.* Whenever sidewalk bikeways are established, unnecessary obstacles should be removed. Whenever bicyclists are directed from signed shared roadways to sidewalks, curb cuts should be flush with the street to assure that bicyclists are not subjected to problems associated with crossing a vertical lip at a flat angle. Curb cuts at every intersection and uncontrolled intersections should include a bikeway yield or stop sign. Curb cuts should be wide enough to accommodate adult tricycles and two-wheel bicycle trailers.

In residential areas, sidewalk riding by young children is common. With lower bicycle speeds and lower cross street auto speeds, potential conflicts are somewhat lessened but still exist. Nevertheless, this type of sidewalk bicycle use is accepted. It is inappropriate to sign these facilities as bicycle routes. In general, bicyclists should not be encouraged through signing to ride facilities that are not designed to accommodate bicycle travel.

## More Costly Alternatives

### Bike Lanes

*When Used:* Bike lanes can be incorporated into a roadway when it is desirable to delineate available road space for preferential use by bicyclists and motorists and to provide for more predictable movements by each.

*Advantages:* Bike lane markings can increase a bicyclist's confidence in motorists not straying into their path of travel. Likewise, passing motorists are less likely to swerve to the left out of their lane to avoid bicyclists on their right.

*Design Considerations:* Bike lanes should be one-way facilities and carry bike traffic in the same direction as adjacent motor vehicle traffic. Two-way bike lanes on one side of the roadway are not recommended when they result in bicycles riding against the flow of motor vehicle traffic.

Bike lanes on one-way streets, bike lanes that approach an intersection, and bike turning lanes all pose particular design challenges that require a complete engineering study.

*Minimum Width Requirements:* For roadways with no curb and gutter, the minimum width of a bike lane should be four feet. If parking is permitted, the bike lane should be placed between the parking area and the travel lane and have a minimum width of five feet.



**Bike lanes approaching intersections**

## Shared Used Paths / Side Paths / Bike Paths

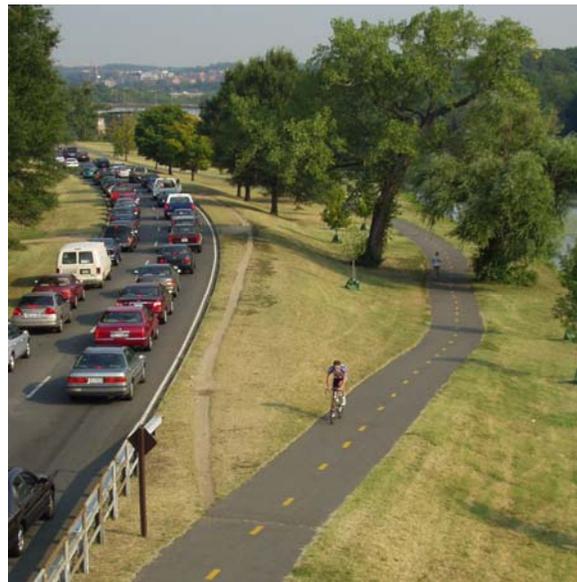
Shared use paths are facilities on exclusive right-of-way and with minimal cross flow by motor vehicles. Shared use paths are sometimes referred to as trails, however, in many states the term trail means an unimproved recreational facility. Care should be taken in using these terms interchangeably. Users are non-motorized and may include but are not limited to: bicyclists, in-line skaters, roller skaters, wheelchair users (both non-motorized and motorized) and pedestrians, including walkers, runners, people with baby strollers, people walking dogs, etc. These facilities are usually designed for two-way travel.

*When Used:* Shared use paths can serve a variety of purposes. They can provide users with a shortcut through a residential neighborhood (e.g., a connection between two cul-de-sac streets). Located in a park, they can provide an enjoyable recreational opportunity. Shared use paths can be located along rivers, ocean fronts, canals, abandoned or active railroad and utility rights-of-way, limited access freeways, within college campuses, or within and between parks. Shared use paths can also provide bicycle access to areas that are served only by limited access highways (closed to bicycles). Appropriate locations can be identified during the planning process.

Shared use paths should be thought of as a complementary system of off-road transportation routes for bicyclists and others that serve as a necessary extension to the roadway network. Shared use paths should not be used to preclude on-road bicycle facilities but rather to supplement a system of on-road bike lanes, wide outside lanes, paved shoulders, and bike routes.



**Shared Use Path**



**Shared Use Side Path**