

CHAPTER 6: BICYCLE VISION

INTRO

The bicycle network is an important component of a balanced transportation system. Bicycling can be a healthy alternative to the automobile for many trips. It can also play a role in helping to reduce traffic congestion, improve air quality, and enhance the quality of life in the City.

Currently, the bicycle network is virtually non-existent within the City of Champaign. However, with modest improvement efforts to the grid street system, the adequate street width and level terrain provide a framework to reintroduce a system of new trails, designation of on-street bicycle lanes, improvements to existing facilities, and enhanced integration of the bicycle network with the rest of the multi-modal transportation system. Constructing new arterials based on complete street standards will further provide the framework for implementing a system of integrated bikeways.

ISSUES

Several issues were identified as the bicycle system was developed.

- What is the existing system of bike trails, lanes, and routes?
- How can the on- and off-street bicycle facilities be better connected with each other and the rest of the transportation system?
- Where is secure bike parking necessary?

BICYCLE VISION PLAN

The Bicycle Vision Plan presented in Figure 19 is for a system of bicycle improvements that will create a network to get to all parts of the City. Many of these improvements are along the multi-modal corridors. Others are along parallel streets adjacent to or near the multi-modal corridors.

BIKE ROUTES, LANES, AND PATHS - HOW ARE THEY DIFFERENT?

Bikeway - A general term for any street or trail which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designed for the exclusive use of bicycles or are to be shared with other transportation modes.

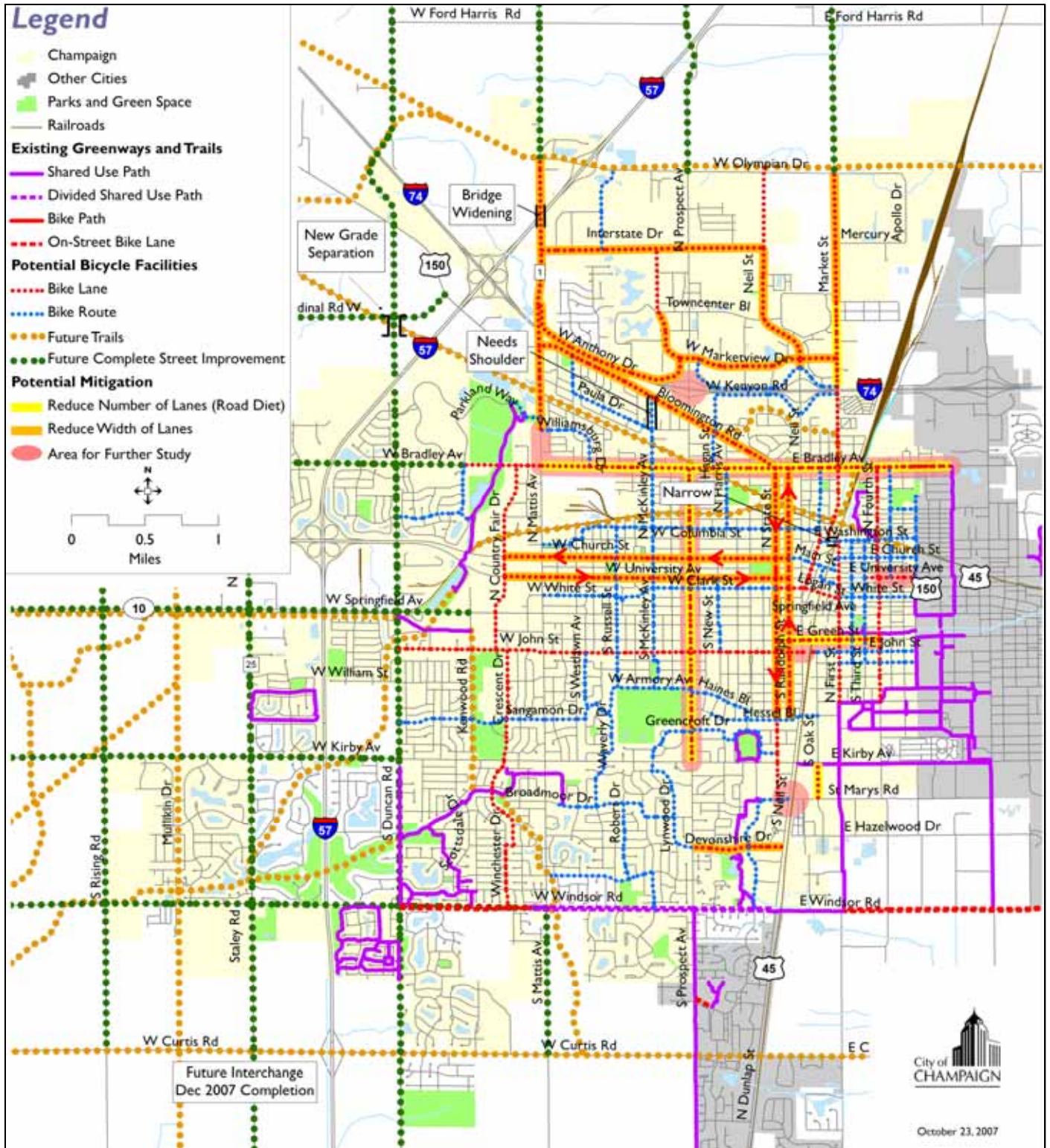
Trails/Paths - This is a bikeway that is physically separated from motor vehicle traffic by open space or a barrier and is either within the road right-of-way or within an independent right-of-way. These are also referred to as a shared-use or multi-use paths or recreation trails.

Bicycle Lane - This is a bikeway on a portion of a street that has been designated by striping, signage, and pavement markings for the preferential or exclusive use of bicycles.

Bicycle Route - A segment of a system of roadways signed for the shared use of automobiles and bicyclists without striping or pavement markings.

CHAPTER 6: BICYCLE VISION

FIGURE 19: BICYCLE VISION PLAN



CHAPTER 6: BICYCLE VISION

Because of the importance of the future development nodes, the bicycle facility connections to these nodes and the multi-modal corridors should be given a priority for implementation.

It is also important to not have gaps in the system, as even one short stretch of missing bike lane or multi-use trail can result in a no bike trip condition.

The Bicycle Vision shows the existing bicycle network and planned facilities. An expanded view of the downtown area is presented in Figure 20. The development of the Bicycle Plan came from three basic efforts. These included:

1. **HISTORIC CITY BICYCLE MAPS:** Historically, the City of Champaign had a major bicycle route system. Maps of those historic bike routes are an important starting point for identifying a bicycle plan for the City.
2. **FIELD INVENTORY:** Utilizing the historic City bicycle maps, each route was driven to determine the potential of reintroducing bike lanes or routes to the City street system. In areas where problems resulted through change, alternative routes were sought.
3. **CITY OF CHAMPAIGN TRAILS PLAN:** As part of an independent work effort, the City is in process of developing a Trails Plan. The two separate efforts were very similar and collaboration between the two efforts rectified differences.

Bicycle Vision Plan Elements

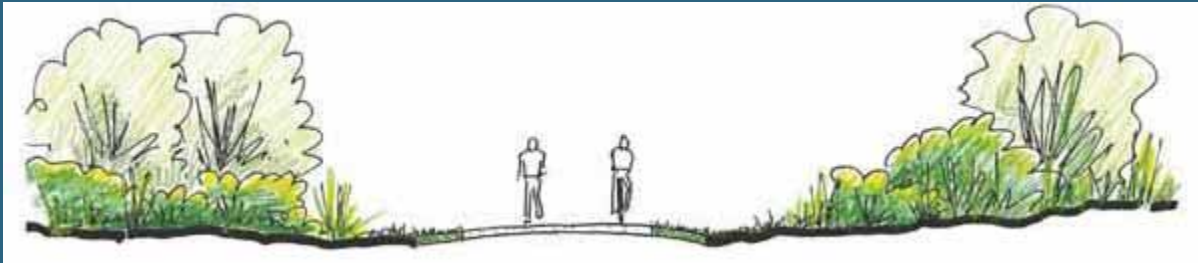
The bicycle vision is to provide for a seamless, comprehensive network to encourage bicycling. While bicyclists can ride on any City street, a system of designated bicycle paths, routes, and lanes are proposed to identify those roads that are best suited for bicycles. The American Association of State Highway Officials (AASHTO) guidelines for bikeway design delineate three different types of bikeway facilities.

- **BICYCLE PATHS OR SHARED USE PATHS** include separated pathways along major arterials and portions of the multi-use trail system. While these facilities provide the safety of a separated facility, intersections with roadways and the multiple crossing of driveways and entrances provides the potential for conflict with motor vehicles, and increases the likelihood of accidents. Also, the presence of pedestrians on trails increases the likelihood of conflicts with bicyclists. Bicycle paths require a minimum 10-foot width and preferably a 12-foot width for high activity areas with four feet clear on either side of the trail. The City of Champaign Street Standards requires an 8-foot shared bicycle and pedestrian path on either side of four and five lane arterials.

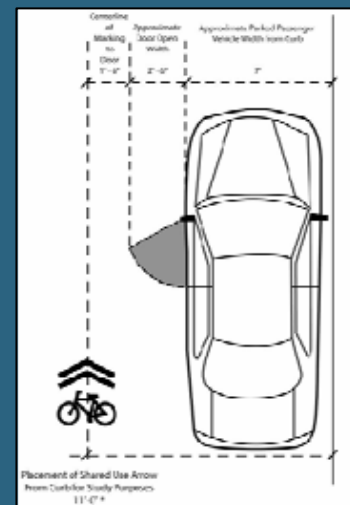
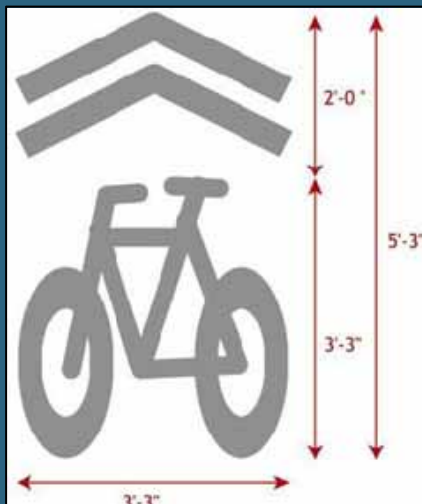
CHAPTER 6: BICYCLE VISION

Off-Street Shared Use Paths

Off-street bikeways consist mostly of shared use paths that are shared with pedestrians, in-line skaters, and others. Shared Use Paths are used primarily for recreation, but also provide an off-street transportation system for non-motorized uses. Ideally a shared use path should be 12 feet wide (10-foot minimum) paved with concrete or asphalt. A four-foot soft shoulder should be provided on either side of the trail consisting of crushed gravel or mowed grass.



Shared Lane Use Designation "Sharrow"



Sharrows are becoming a popular form of striping bike routes on lower volume roadways that are shared by automobile and bicyclist. Sharrows are proposed for bike routes in Champaign. Benefits of Sharrows include:

- Encourage motorists to be more aware of bicycles.
- Increase the distance between bicyclists and parked cars.
- Increase the distance between bicyclists and passing vehicles.
- Reduce the number of sidewalk riders.
- Significantly reduce the number of wrong-way riders.

CHAPTER 6: BICYCLE VISION

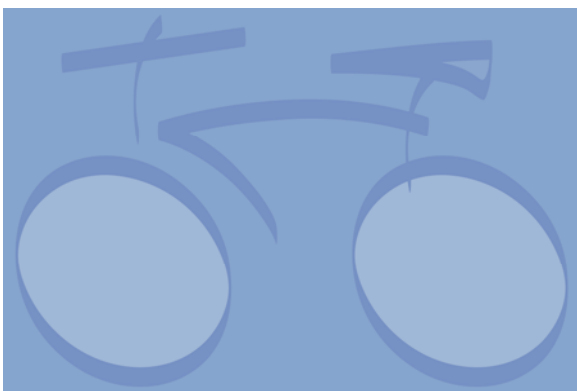
- **BICYCLE LANES** are portions of streets that are dedicated to the exclusive use of bicycles and are marked with white lanes on the pavement. Bicycle lanes are located on streets that have sufficient width and preferred by bicycle commuters. The dedicated lane decreases the chance of one travel mode being slowed by the other and provides a clear lane for the bicyclist. Bike lanes do, however, restrict the cyclist to a relatively narrow section of the roadway and channels them to the far right of through traffic, posing a potential hazard for turning movements of both bicyclists and motor vehicles. Standard bicycle lane widths should be six feet; five feet is the minimum width adjacent to curbs and four feet is the minimum width when no curb exists.

There are a number of both two-way and one-way arterial streets in the City of Champaign that are wide enough to accommodate bike lanes. In certain cases, sufficient width could exist with the narrowing of through lanes. This narrowing would still provide the capacity requirements for the automobile and would calm the traffic through reduced travel speeds.



- **ON-STREET BICYCLE ROUTES/WIDE SHOULDERS** are streets or segments of streets that bicyclists share with motor vehicles. In general, designated routes have lower traffic volumes and are sufficiently wide for drivers and bicyclists to share. Most routes are located on secondary or minor streets that parallel busier, major routes. Many of the routes will be marked with special signs including the use of Sharrows. Numerous commuting bicyclists prefer on-street, non-striped routes where room is provided on the outside travel lane for both bicyclist and motor vehicles, that does not restrict the bicyclist to one part of the roadway.

Bicycle Networks



Establishing a vision of how bicycling fits into the overall transportation system of a community or region is important in developing a safe and enjoyable bicycle network. Identifying appropriate bicycle routes requires recognition of various user needs and abilities, and analysis of traffic operations and design factors of individual roadways.

Less experienced bicyclists prefer to ride on neighborhood streets or designated bicycle facilities. Experienced bicyclists should be anticipated on

roadways where bicycles are not excluded by statute or regulation, regardless of functional classification. Safe accommodation of all bicyclists is best accomplished by creating a comprehensive and continuous bicycle and pedestrian network in built-up areas in order to enhance the safety and travel comfort of users.

CHAPTER 6: BICYCLE VISION

Bicycle Facilities and Complete Streets

Constructing new roadways or improving existing ones based on the proposed complete street standards will help implement a system of bicycle improvements. Adhering to the complete streets standards within the City of Champaign is the responsibility of the City of Champaign and the Illinois Department of Transportation.

Currently, there are state facilities which cross I-57 where the existing bridges are dangerous and significantly restrict bicycle and pedestrian travel. It is critical to the overall Bicycle Vision that these I-57 overcrossings be replaced and includes bicycle lanes and pedestrian sidewalks.

Support Facilities and Programs

Parking and Storage

Secure bicycle parking should be provided at convenient locations. Inadequate bicycle parking facilities and fear of theft are major deterrents to bicycle transportation. A sufficient supply of effective bicycle parking requires a properly designed rack in an appropriate location for the type of use.

Racks should be highly visible so bicyclists can spot them immediately when they arrive from the street. A visible location also discourages theft and vandalism. Adequate lighting and surveillance is essential for the security of the bicycles and the users. Bicycle racks and lockers must be well anchored to the ground to avoid vandalism and theft.

Adequate clearance is required around racks to give bicyclists room to maneuver, and to prevent conflicts with pedestrians or parked cars. Racks should not block access to building entrances or fire hydrants.

Bicycle facilities should be designed in accordance with Chapter 2 of the AASHTO Guide. Bicycle parking may be provided in floor, wall or ceiling mounted racks.

Bicycle parking facilities should meet these requirements:

- Holds the bicycle frame, not just a wheel;
- Can be used with a U-shaped shackle lock;
- Accommodates a wide range of bicycle sizes, wheel sizes and types;
- Is covered with material that will not chip the paint of a bicycle that leans against it; and
- Does not have hazards, such as sharp edges.



CHAPTER 6: BICYCLE VISION

Techniques for Facilitating Bicycle Use

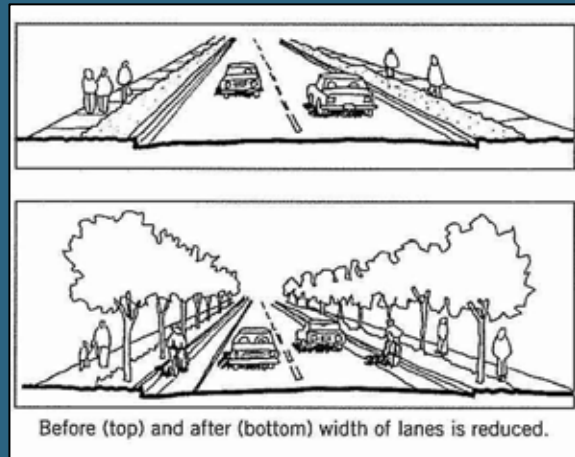
Bicycles are vehicles and need to be safely accommodated on our streets and roadways. Over half of all bicycle-motor vehicle crashes occur at or near intersections or other jurisdictions. Improvements at these locations have the potential to significantly increase safety. Specialized intersection markings that may help bicyclists and motorists safely navigate through intersections and use of innovative techniques are gaining more prominence in some communities.

Roadway Narrowing (Road Diet)

Roadway narrowings or “Road Diet” is a term used to describe the process of reducing the width of existing travel lanes or reducing the number of travel lanes on a given roadway. Road diets are often conversions of four-lane undivided roads into three lanes, two through lanes, and a center turn lane (i.e., Green Street through Campustown). The fourth lane may be converted to bicycle lanes, sidewalks, and/or on-street parking. Road diets have been shown to improve mobility and access for all travel modes, enhance safety by reducing vehicle speeds, and to promote economic vitality for the community. A variety of reconfigurations are possible for lane number reductions depending on the current configuration, user needs, and potential operational and safety outcomes.

Along with lane elimination, roadway lane narrowing may also help to reduce vehicle speeds and enhance movement and safety for pedestrians and bicyclists. Lane narrowing is best used where motor vehicle speeds are low. Lane width reduction can be achieved in several different ways:

- **Lane widths** can be reduced to 10 or 10.5 feet and excess pavement striped with a bicycle lane or shoulder.
- **Excess lane width** can be reallocated to parking, bike lanes, and/or pedestrian space.
- **The street and lanes** can be physically narrowed by extending the curb for wider sidewalks and landscaped buffers or by adding a raised median.



Road Diet



Before



After

CHAPTER 6: BICYCLE VISION

Techniques for Facilitating Bicycle Use

Access Management/Driveway Improvements

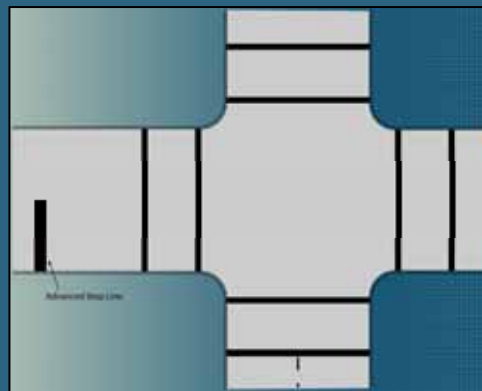
Managing the number, spacing, access, directional flow, and other aspects of driveway and side street connections protects those traveling along the roadway from conflicts with those entering/ leaving the roadway. Access management includes such measures as limiting the number or establishing minimum spacing between driveways; providing for right-in, right-out only movements; restricting turns to certain intersections; and using non-traversable medians to manage left- and U-turn movements.



Driveway design affects sight distance for both motorists and bicyclists accessing roadways, as well as the speed and care with which drivers enter or leave the roadway. Right-angle connections are best for visibility of approaching traffic, as well as slowing the turning speed for vehicles exiting or entering the roadway. Tighter turn radii at driveways, as well as ramps to sidewalk level, also slow vehicles speeds.

Advance Stop Line/Bike Box

The objectives of the advance bike box are to improve the visibility of bicyclists at intersections and to enable them to correctly position themselves for turning movements during the red signal phase by allowing them to proceed to the front of the queue. A bicycle lane leading up to a bike box is located between the motor vehicle stop line and the crosswalk. The bike box should be 12 to 14 feet deep. To increase its effectiveness, a bicycle stencil should be placed in the bike box and a contrasting surface color is strongly recommended for the box and the approaching bicycle lane. Instructional signs and separate bicyclists signal heads can be installed in conjunction with the bike box.



Signs



As the Champaign bicycle plan evolves, a consistent system of bicycle way finding signs that identify clear routes from origin to destination should be developed and implemented. In addition, a sign system for off-street paths that integrates a variety of information such as maps, distances, etiquette, and regulations should be developed and implemented. A variety of signs are available to alert motorists to the presence of bicycles in the traffic stream and to inform bicyclists.

CHAPTER 6: BICYCLE VISION

There are many types of bicycle racks and lockers available. Some are suitable for certain situations but not others, and some designs are unsuitable anywhere. There are two general categories of bicycle parking requirements:



- **LONG-TERM** parking is needed where bicycles will be left for hours at a time. It requires a high degree of security and weather protection, with well-designed racks in covered areas, lockers, storage rooms, or fenced areas with restricted access.
- **SHORT-TERM** parking is needed where bicycles will be left for short stops. It requires a high degree of convenience (as close to destinations as possible). At least some short-term bicycle parking should be protected from the weather (a portion can be unprotected, since demand tends to increase during dry weather). This can use an existing overhang or covered walkway, a special covering, weatherproof outdoor bicycle lockers, or an indoor storage area.

Table 2 provides a guideline for providing parking spaces per land use category for new development or property which requires a change of use permit.

TABLE 2: RECOMMENDED MINIMUM BICYCLE PARKING REQUIREMENTS

Type of Establishment	Minimum Number of Bicycle Parking Spaces
Primary or Secondary School	10% of the number of students, plus 3% of the number of employees.
College or University Classrooms	6% of the number of students, plus 3% of the number of employees.
Commercial – Retail or Office	One space per 3,000 sq. ft. of commercial space or 5-10% of the number of automobile spaces.
Sport and Recreation Center	10-20% of the number of automobile spaces.
Movie Theater or Restaurant	5-10% of the number of automobile spaces.
Industrial	2-5% of the number of automobile spaces.
Multi-Unit Housing	1 space per 1-2 apartments.
Public Transit Stations	Varies, depending on usage.

Source: LSA Associates, Inc.

Bicycle Personal Facilities

Along with secure and convenient bike parking and transit access, another prerequisite for encouraging bicycle commuting is facilities for bicyclists to shower, change clothes, or otherwise “freshen up” once they arrive at the workplace. Ideally, such facilities will be located on or very near the worksite premises and will also include lockers for storing clothing and personal items.

CHAPTER 6: BICYCLE VISION

Some creative options might be to partner with other nearby businesses to provide facilities or make arrangements with a nearby health club to allow bicyclists to use its facilities for a nominal fee.

Maps and Wayfinding

Even great bikeways can be well-kept secrets if the average rider can't find them. Although there are several bikeway maps published at a regular basis for the CU area, there is a need for more comprehensive, widely available maps, especially for visitors. Some bicyclists would like to see maps that more accurately depict terrain and difficulty.

Once on a bikeway, proper signs are needed to direct bicyclists. Particularly in the case of on-street routes, bicyclists may follow Bike Route signs for awhile only to find they end abruptly or don't indicate which way to go at an intersection.



On-street route signs are not just for bicyclists; they should also serve to notify motorists to watch out for bicycles. However, many of the route signs are not easy to see from a car. In addition to signs designating bicycle routes, "Share the Road" signs directed at motorists should be placed along high traffic routes.

A well-designed bike map is typically in high demand and can serve many functions. In addition to showing the best route for getting places, bike maps often contain information or advertising for a variety of resources including a calendar of bike events, location of bike shops, points of interest in the community, laws and local ordinances pertaining to bicycles, and safety tips for the rider and motor vehicle driver. Thus, a good bike map can be a tool for promoting bicycling as well as for educating and informing riders and motorists.

Wayfinding pertains to direction signs, distance markers, posted maps, information kiosks, and other aides for getting people places.

The 4 E's

Facilities are only one of several elements essential to building a successful bicycle and pedestrian planning transportation system. With bicycle and pedestrian safety education and training encouraging walking and bicycling, and enforcing the rules of the road as they pertain to bicyclists, pedestrians, and motorists should be combined with facilities development to form a comprehensive approach to bicycle and pedestrian use. The 4 E's - Engineering, Education, Enforcement, and Encouragement are important elements for implementing a comprehensive bicycle system.

CHAPTER 6: BICYCLE VISION

- **ENGINEERING.** An adequate bicycle system is one that allows users with varying abilities to safely and efficiently travel from origin to destination. Bicycle facilities include on-street facilities such as bike lanes, bike routes, low-volume roads and roads with adequate shoulders, and off-street facilities such paths, bridges, overpasses, and underpasses.
- **EDUCATION.** Education of the public is the most important element in reducing bicyclists and pedestrian injuries, reducing hostility between the various transportation modes, ensuring that the law is obeyed, and facilities are properly designed and built. Bicyclists, pedestrians, and motorists need safety education. Police officers need education regarding the manner in which to enforce bicycle and pedestrian laws, and engineers and planners need facility design education.
- **ENFORCEMENT.** Enforcement goes hand in hand with education. Education is not effective if there is not enforcement to back it up. Therefore, it is important to enforce the rights and responsibilities of all modes of transportation by ticketing motorized and non-motorized transportation users alike. Bicyclists and pedestrians should be expected to be ticketed for traffic offenses the same as motorists.
- **ENCOURAGEMENT.** Encouraging cycling and walking can help mitigate air pollution and traffic congestion, as well as promote healthier, friendlier communities. One-way trips of five miles or less are often suitable for bicycling. Often bicyclists are willing to travel even farther distances for commuting trips or recreation. Shorter trips are often suitable for walking. Providing safe, well-designed and maintained facilities encourages bicycling and walking. Annual events, such as Bike Month or Bike to Work Day promote bicycling and walking through events and media attention. These events are designed to celebrate non-motorized transportation, encourage people to bicycle or walk, build awareness through safety campaigns in the media, and institutionalize bicycling and walking as viable modes of transportation.

Maintenance



Broken glass and debris tend to accumulate near curbs where bicyclists ride, resulting in flat tires and accidents. Certain streets become mud-covered after rain, making the riding surface hazardous, while others are prone to icy conditions. Painted lanes delineating bike routes wear off over time and are no longer usable without proper upkeep. During the winter months, snow either gets plowed onto the right-most edge of the roadway (which forces bicyclists to ride

farther left) or off the roadway and onto the sidewalks.

Consistent upkeep and maintenance of bikeways should be top priority. On-street routes need to be regularly swept of debris. Bike lane lines should be repainted at least as regularly as those on the rest of the street. Weather-related obstacles such as ice and mud cannot be eliminated, but can be minimized through good design practices. Bikeway segments that regularly have these problems should be identified and corrected when and where it is possible. It is recommended that all paths that are part of the bicycle system be paved.

CHAPTER 6: BICYCLE VISION

Development Requirements

As future developments occur, it will be critical to implement Complete Streets standards and require land development integration with the bicycle network. This will require modifications to the City of Champaign's development review requirements and codes to be successful.

The final recommendation is to think bicycle. When designing improvements for a multi-modal corridor or for any street, think about how a bicyclist would use this facility. Think about safety or how to approach and cross a major arterial. Think about how a bicyclist gets to the corridor and think about what a bicyclist does with his bike when he gets to his destination.

Bicycle Policies and Five Year Action Plan

Policies

- BP-1. Coordinate local bicycle improvements with the planning and construction of the regional trail system.
- BP-2. Identify locations where lanes can be eliminated or reduced in order to create bike lanes.
- BP-3. Increase the use of Sharrows and other education opportunities to identify facilities, connections, directions, etc. and to enhance bicycle use and safety.
- BP-4. When resurfacing streets, incorporate striping for bicycle facilities as identified on the Bicycle Vision Plan map.

Five Year Action Plan

- BA-1. Develop an early implementation action plan to do some quick striping projects to get a bicycle network started. The action plan should identify logical bike lanes and Sharrow projects that can be done now.
- BA-2. Revise standards and codes for new development to require on and off street bicycle facilities to connect with City Bike Vision Plan.
- BA-3. Revise standards and codes for new development to require on site bicycle parking.
- BA-4. Launch a bicycle network campaign to introduce a comprehensive bicycle network.
- BA-5. Complete at least one east-west and one north-south bicycle facility that traverses the City as a priority for completion of the system.
- BA-6. Modify standards and codes to require bicycle facilities and secure bicycle storage for non-residential and multi-family development projects.