Town of Normal

BICYCLE AND PEDESTRIAN MASTER PLAN

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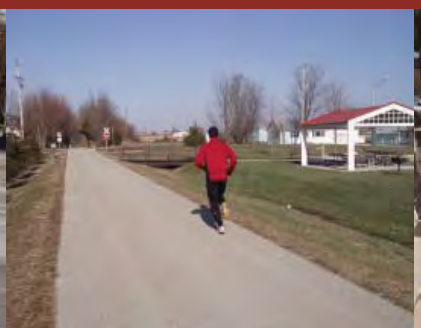
PREPARED FOR:
Town of Normal, Illinois

FINAL PLAN, July 2009

ACKNOWLEDGEMENTS

The Town of Normal appreciates the efforts of the numerous residents and other walking/bicycling enthusiasts who participated in the development of this plan. Their creativity, energy, and commitment were the driving force behind this planning effort. In addition, the following residents, staff, and other agency and organization members contributed regularly to the Normal Bicycle and Pedestrian Master Plan.

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Town of Normal

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If fully implemented, this Plan can reduce carbon emissions by as much as 5,000 tons annually.

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Figure ES-1. The Constitution Trail is the backbone of an excellent shared use path network in Normal

Whether it is a leisurely bike ride along the Constitution Trail or a short walk through Uptown, Normal residents and visitors greatly value the Town's walking and bicycling opportunities. The foundation of a potentially tremendous bikeway/walkway network is currently in place or in development. Uptown Normal and several neighborhoods already have well-connected streets with few sidewalk gaps, while many low-volume streets also act as good bicycling routes. The Constitution Trail, a 24-mile long trail following a former railroad corridor, provides the backbone of Normal's shared use path system (see Figure ES-1). With bicycling and walking combining to account for over six percent of McLean County's commute trips – about twice the national average – residents are clearly making use of the existing network.[1]

With the foundation of a potentially fantastic system in place, the Town wants to take bicycling and walking to the next level. The Normal Bicycle and Pedestrian Master Plan presents the 20-year vision of a fully-developed bicycle and pedestrian system throughout the Town, serving residents, commuters, children and visitors alike. A complete bikeway and walkway network will enhance overall connections within the community and promote the overall health of area residents by making walking and bicycling safe, comfortable and attractive travel modes.

Plan Purpose and Community Involvement

The Bicycle and Pedestrian Master Plan provides an updated inventory and assessment of Normal's walkway and bikeway network, and is an update of the bicycle-pedestrian component of the 1994 *Bloomington-Normal Urbanized Area Long Range Transportation Plan*. This Plan lays out comprehensive strategies for system-wide improvements and specifies exactly what needs to be done to achieve the Town's goal of becoming a better walking and bicycling community. These strategies will help Normal leverage the necessary funding and other resources needed to achieve this goal.

Town staff, stakeholder groups, and – most of all – Normal residents helped guide this Plan. Community workshops were held throughout the project's duration, enabling residents and other interested individuals to express concerns and ideas for improvements. The planning

[1] 2007 U.S. Census American Community Survey.

process also included a Steering Committee, established to identify bicycle/pedestrian issues from the standpoint of various interest groups and organizations.

Existing Conditions

Sidewalks, the existing shared use path system, roadway shoulders, and shared roadways on low-volume streets comprise Normal's current walkway and bikeway network. The quantity and quality of facilities varies by location.

Elements contributing to a positive walking and bicycling environment include:

- Relatively flat topography
- Uptown Normal land use characteristics
- Presence of walk- and bike-friendly streets in many areas
- Recent walkway/bikeway improvements
- Presence of grade-separated trail crossings
- Presence of pedestrian crossing treatments at several intersections
- Presence of available right-of-way for future bikeway improvements
- Use of warning signage at trail/roadway crossings

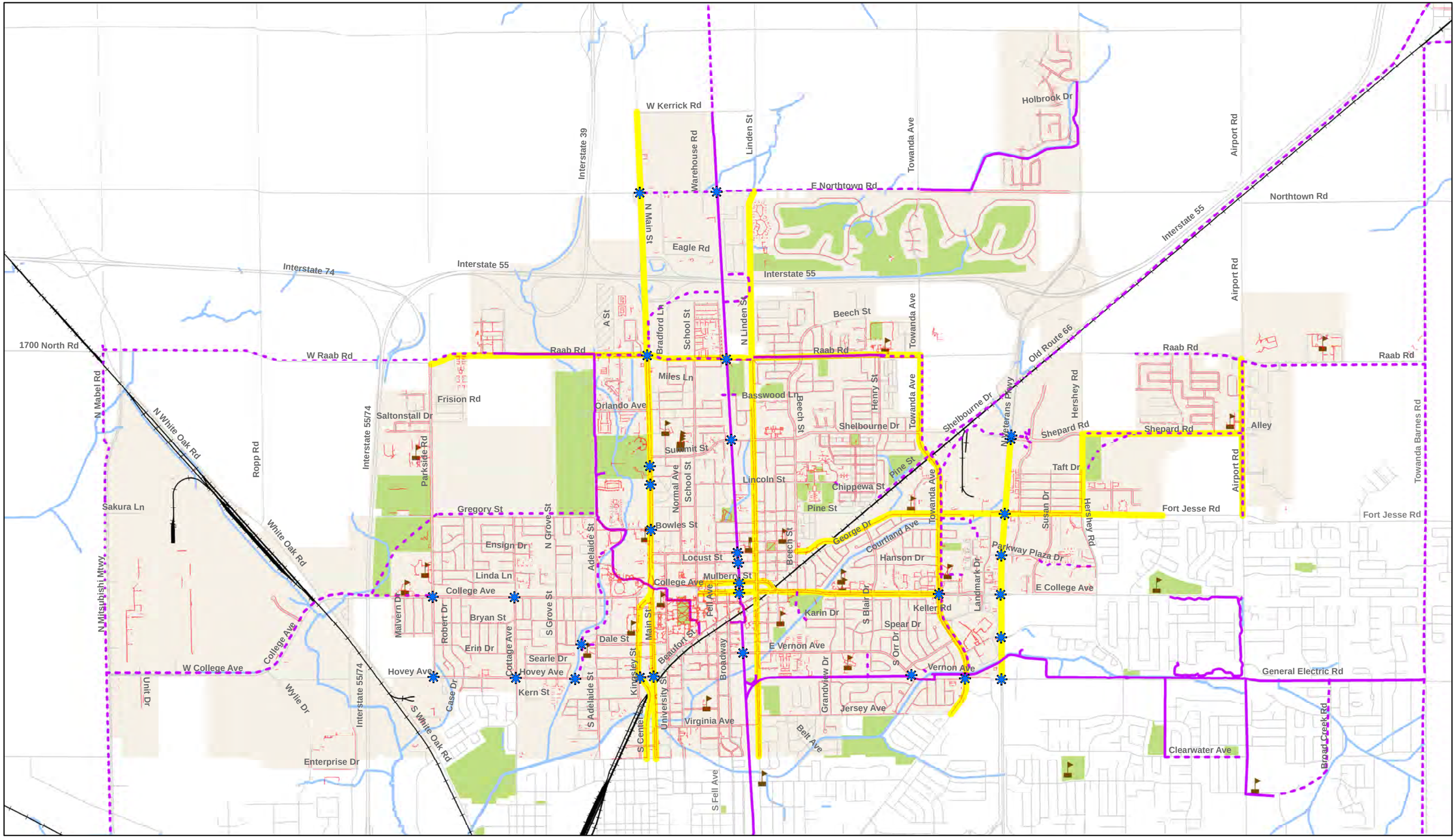
System weaknesses include:

- Limited street connectivity
- Lack of wayfinding tools
- Discontinuous shared use path system
- User conflicts on trails
- Maintenance issues
- Driver behavior
- Sidewalk obstructions
- Uncomfortable walking and bicycling environment around high-volume streets
- Uncomfortable sidewalk environment in some areas
- Demonstrated demand for more bicycle and pedestrian facilities
- Difficult crossings
- Lack of formalized on-street bikeways

Recommendations

Maps ES-1 and ES-2 depict the recommended walkway and bikeway networks. This Plan lays out a comprehensive system connecting key walking and bicycling destinations and surrounding areas. The recommended system was developed based on input from Town staff, stakeholder groups and Normal residents. The network builds upon recommendations from previous and on-going planning efforts. The system includes a variety of facilities including sidewalks, intersection improvements, accessways, shared use paths, bike lanes, shared lane markings, Bicycle Boulevards, signed connections, and cycle tracks.

Equally important to the walkway and bikeway network are support programs. Additional strategies for improving walking and bicycling in Normal include crosswalk enforcement actions, development of a Complete Streets Policy, and updating the Bloomington-Normal Trail Map.



Map ES-1. Existing and Proposed Walkways

Normal Bicycle and Pedestrian Master Plan

Source: Town of Normal, Illinois
Author: HK
Date: July, 2009

- Existing Shared Use Path
- Existing Sidewalks

Proposed Walkways
- Shared Use Path
- Pedestrian Priority Corridors
- Intersection Improvements

- Schools
- Parks
- Normal Town Boundary

- Streets
- Railroad
- Waterways

0 0.25 0.5 Miles

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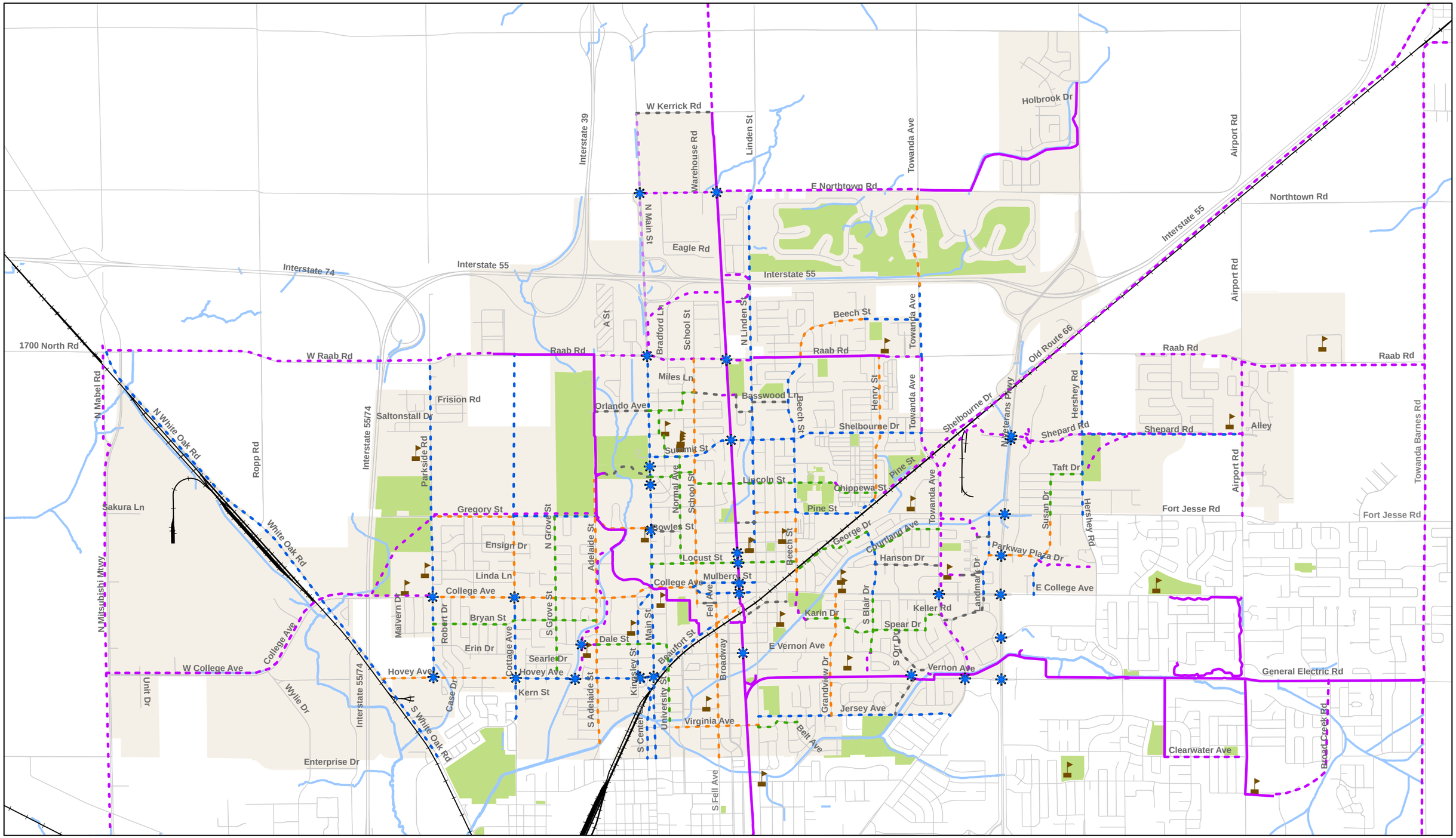

Map ES-2. Existing and Proposed Bikeways

Normal Bicycle and Pedestrian Master Plan

Source: Town of Normal, Illinois
Author: HK
Date: July, 2009

- Existing Shared Use Path

Proposed Bikeways

- Shared Use Path
- Cycle Track
- Bike Lane
- Shared Lane Markings
- Bike Boulevard
- Signed Connection
- Proposed Intersection Improvements
- Schools
- Parks
- Normal Town Boundary
- Streets
- Railroad
- Waterways

0 0.25 0.5 Miles

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The Bottom Line: Where to Start

This Plan lays out a long list of projects and programs to make Normal a premier bicycling and walking community. To get the momentum going, the Town should start today with a few key strategies (later chapters discuss these strategies in greater detail):

- **Develop an east-west on-street bikeway across southern Normal following Bryan Street, Dale Street, University Street, Virginia Avenue, Jersey Avenue, and other local streets.** Improvements would include Bicycle Boulevards, shared lane markings, and roadway re-striping to provide dedicated bike lanes (see Figure ES-2). The corridor passes within close proximity of numerous schools, parks, and Uptown Normal. The corridor also connects with other existing and planned bikeways, including the Constitution Trail.

Figure ES-2. The Southern Normal bikeway would improve east-west connectivity

- **Improve the School Street/Fell Avenue north-south bicycle route connecting Uptown Normal, ISU, elementary schools, and several neighborhoods in central Normal.** Although physical constraints preclude the addition of dedicated bike lanes, shared lane markings and supplemental signage could effectively serve bicyclists while enhancing motorists' awareness of bicyclists on this corridor (Figure ES-3). In addition to connecting schools, neighborhoods and Uptown, an improved Fell Avenue/School Street corridor would link bicyclists with several **other existing and planned bikeways, including eight proposed east-west corridors.**

Figure ES-3. The School Street/Fell Avenue project would include signage and pavement markings to designate a bicycle route

- **Develop an east-west bikeway following Clay Street, Lincoln Street, Chippewa Street, and other local streets.** Improvements would include signed connections, Bicycle Boulevard treatments, and a short shared use path segment to overcome limited street connectivity. This corridor would formalize a much needed east-west bikeway connecting ISU with residential neighborhoods in central and eastern Normal. The bikeway would also connect with several parks as well as existing or planned walkways and bikeways, including the Constitution Trail. Opportunities also exist to establish this route as part of the designated Route 66 Bikeway in Normal.

- **Add shared lane markings and bike lanes to the College Avenue/Mulberry Street corridor between Parkside Road and Linden Street.** This project would add shared lane markings to College Avenue in western Normal between Parkside Road and School Street. Sufficient curb-to-curb width exists on the College/Mulberry couplet in Uptown Normal to provide dedicated bike lanes through roadway re-striping. Improvements to this corridor would vastly improve east-west connectivity for Normal cyclists. The corridor passes within close proximity to several schools, ISU, and provides a direct link between western Normal and Uptown Normal. The corridor would also connect with several existing and proposed bikeways, including the Constitution Trail.

- **Improve pedestrian crossings at Veterans Parkway.** Non-motorized users currently face a variety of challenges in this area, including prohibited crossing movements on most or all intersection legs, high vehicle turning speeds at channelized right turns (Figure ES-4), absence of sidewalks and other bicycle/pedestrian infrastructure in the intersections' vicinity, and motorists' occasional disregard of traffic control devices (e.g., running red lights). Improved Veterans Parkway crossings would substantially enhance bicycle/pedestrian system connectivity, especially for east-west travelers. Upgraded crossings would also link several proposed east-west bikeways, including an on-street bikeway on Parkway Plaza Drive.

Figure ES-4. Channelized right turns at Veterans Parkway present major barriers to non-motorized travelers

- **Upgrade the Constitution Trail/Vernon Avenue crossing in eastern Normal.** This project would close a major trail gap by improving a critical trail/roadway crossing on the Constitution Trail. Specific improvements include upgrading the existing trail/roadway crossing with an innovative bicyclist/pedestrian-activated signal, a high-visibility crosswalk, advanced stop lines for motorists, and supplemental warning signage. These improvements will streamline bicycle/pedestrian connections to and across Vernon Avenue, while enhancing Constitution Trail access to/from surrounding neighborhoods. This project could also tie in with the proposed widening of the narrow sidewalk along Vernon Avenue that currently serves trail users. (Figure ES-5).

Figure ES-5. Non-motorized users must share a narrow sidewalk on Vernon Avenue's south side to cross Sugar Creek

Chapter 1. Introduction

Imagine sipping coffee in Uptown Normal and walking comfortably along a wide sidewalk on College Avenue and up Towanda Avenue, past Sugar Creek Elementary School. Imagine walking along Fort Jesse Road toward eastern Normal and making your way across Veterans Parkway on a series of completed sidewalks and safe street crossings to reach Normal's newer neighborhoods.

Figure 1. The Constitution Trail is the backbone of an excellent shared use path network in Normal

Now imagine riding your bicycle on the Constitution Trail, complete with safe and comfortable street crossings along the way. Imagine cruising along Locust Street, a bike-friendly street where autos and bikes travel at the same speed. The ride continues on Pine Street, where bike lanes designate space for bicyclists. Imagine connecting to the Historic Route 66 Bike Trail, a wide shared use path linking Normal with communities throughout McLean County.

Finally, imagine building a transportation system that reduces fuel consumption, enables freedom of mobility, encourages more physical activity, allows children to walk and bike to school, and makes it possible to create economic growth at the same time… this is the vision for Normal's walking and bicycling system.

The foundation of a potentially tremendous bikeway/walkway network is already in place or in development. Uptown Normal and several neighborhoods already have well-connected streets with few sidewalk gaps, while many low-volume streets also act as good bicycling routes. The Constitution Trail, a 24-mile long trail following a former railroad corridor, provides the backbone of Normal's shared use path system (see Figure 1). The Historic Route 66 – long symbolizing the freedom of transportation and opportunities of progress – winds through Normal. The "Mother Road" presents a spectacular opportunity to link Normal into a regional bicycle trail network and build a new symbol of commitment to providing transportation options. This Plan presents a tremendous opportunity to build upon current efforts to develop a Historic Route 66 Bikeway, with Normal having one of the first completed segments in Illinois and the U.S.

With bicycling and walking combining to account for over six percent of McLean County's commute trips – about twice the national average – residents are clearly making use of the existing network.[2] With the foundation of a potentially fantastic system in place, the Town wants to take bicycling and walking to the next level. The Normal Bicycle and Pedestrian Master Plan presents the vision of a fully-developed bicycle and pedestrian system

[2] 2007 U.S. Census American Community Survey.

throughout the Town, serving residents, commuters, children and visitors alike. A complete bikeway and walkway network will enhance overall connections within the community and promote the overall health of area residents by making walking and bicycling safe, comfortable and attractive modes of travel.

Setting

Whether it be a leisurely bike ride along the Constitution Trail or a short walk to school, Normal residents and visitors greatly value the area's walking and bicycling opportunities. Uptown Normal offers an attractive walking environment, while the *Main Street Plan* (2007) will improve non-motorized conditions on one of the town's nearby north-south thoroughfares. Surrounding neighborhoods have well-connected streets, many of which serve as excellent bicycling routes due to low traffic speeds and volumes. Sidewalk connectivity is generally good throughout the Town, and large planting strips provide a buffer from traffic, increasing the attractiveness of walkways.

Despite these assets, Normal residents and leaders desire to make their community even more attractive for walkers and bicyclists. In some areas, bicycle and pedestrian system upgrades are needed. These include intersection improvements, sidewalk completion, *Americans with Disabilities Act* (ADA) compliance, completing bikeway network gaps, and establishing new connections.

Purpose of the Normal Bicycle and Pedestrian Master Plan

The Bicycle and Pedestrian Master Plan provides an updated inventory and assessment of Normal's walkway and bikeway network and is an update of the bicycle-pedestrian component of the 1994 *Bloomington-Normal Urbanized Area Long Range Transportation Plan*. This Plan lays out comprehensive strategies for system-wide improvements and specifies exactly what needs to be done to achieve the Town's goal of becoming a better walking and bicycling community. These strategies will help Normal leverage the necessary funding and other resources needed to achieve this goal.

Public Involvement in the Plan

Town staff, stakeholder groups, and – most of all – Normal residents helped guide this Plan. Community workshops were held throughout the project's duration, enabling residents and other interested individuals to express concerns and ideas for improvements. The planning process also included a Steering Committee, established to identify bicycle/pedestrian issues from the standpoint of various interest groups and organizations.

Contents of the Plan

The Normal Bicycle and Pedestrian Master Plan is organized as follows:

- Chapter 1: Introduction, provides an overview of this Plan and its purpose.
- Chapter 2: Existing Conditions, describes Normal's existing walkway and bikeway network and summarizes strengths and weaknesses of the system.
- Chapter 3: User Needs Assessment, uses an analytical model to estimate current bicycling and walking demand and to predict future demand and evaluates safety data to identify locations for facility and programmatic improvements.
- Chapter 4: Recommended Walkway and Bikeway Network, depicts the recommended system of on- and off-street walkways and bikeways, along with design guidelines from local, state and national best practices for various bicycle and pedestrian facility types.
- Chapter 5: Recommended Pedestrian and Bicycle Programs, describes education, encouragement, enforcement and evaluation measures the Town of Normal and/or other local agencies should implement to promote walking and bicycling, to increase bicyclist and pedestrian safety, and to increase the awareness of walking and bicycling as viable travel modes.
- Chapter 6: Project Prioritization, presents evaluation criteria for facilities and programs and defines the methodology for developing a phased implementation approach, detailing several top-priority projects.
- Chapter 7: Implementation Plan, provides cost opinions for the recommended pedestrian and bicycle projects and programs, and identifies potential funding strategies and supporting policies.
- Appendices at the end of this Plan include a more detailed discussion of existing conditions, a list of previously-proposed bicycle and pedestrian projects, and a summary of relevant background documents and data that informed the prioritization process. Additional appendices include graphics depicting proposed bike lane retrofit projects, a detailed project evaluation matrix, cost opinions, and a matrix of potential grant funding sources for individual improvement projects.

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Chapter 2. Existing Conditions

This chapter describes the current walkway and bikeway network in Normal. The first section is an inventory and assessment of existing bicycle and pedestrian facilities, including sidewalks, intersections, shared use paths, accessways, and bike parking. The second section discusses important destinations for bicyclists and pedestrians, in particular connections to transit and schools. An analysis of system strengths and weaknesses follows, which highlights key areas where improvements may be needed.

Walkways

Pedestrian travel is accommodated and enhanced primarily by sidewalks, intersection treatments such as crosswalks and curb ramps, shared use paths, and accessways. These facility types comprise the majority of Normal's existing walkway network, described below.

Map 1 shows the existing walkway network in Normal and previously-proposed shared use path projects.

Sidewalks

Uptown Normal

A fairly complete sidewalk system (with sidewalks on both sides of streets) exists in Uptown Normal and in nearby older residential neighborhoods. Uptown Normal's sidewalk environment includes a variety of complementary pedestrian facilities such as ADA-compliant curb ramps, pedestrian-scale lighting, and amenities like benches and trash receptacles. Sidewalk widths vary by location, with the narrowest sidewalks measuring four feet wide (see Figure 2).

Figure 2. Portions of Main Street north of College Avenue have four-foot wide sidewalks

Sidewalk widths in and near Uptown vary by location. Just south of Illinois State University, sidewalks on the west side of Main Street are four feet wide, while sidewalks on the east side of the street widen to six feet. North of the University and south of Gregory Street, these widths switch, such that sidewalks on the west side are six feet wide and sidewalks on the east are four feet wide. In the ISU area, sidewalks are as wide as 14 to 18 feet, on W College Avenue and University Street. South of Uptown Normal, sidewalks on Linden Street are four feet wide (Figure 3).

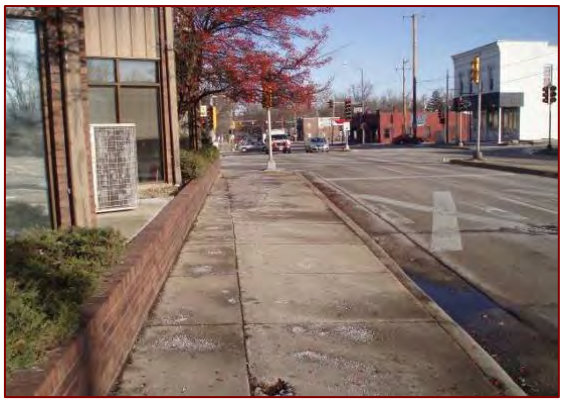


Figure 3. Sidewalk on Linden Street south of Uptown Normal

Western Normal

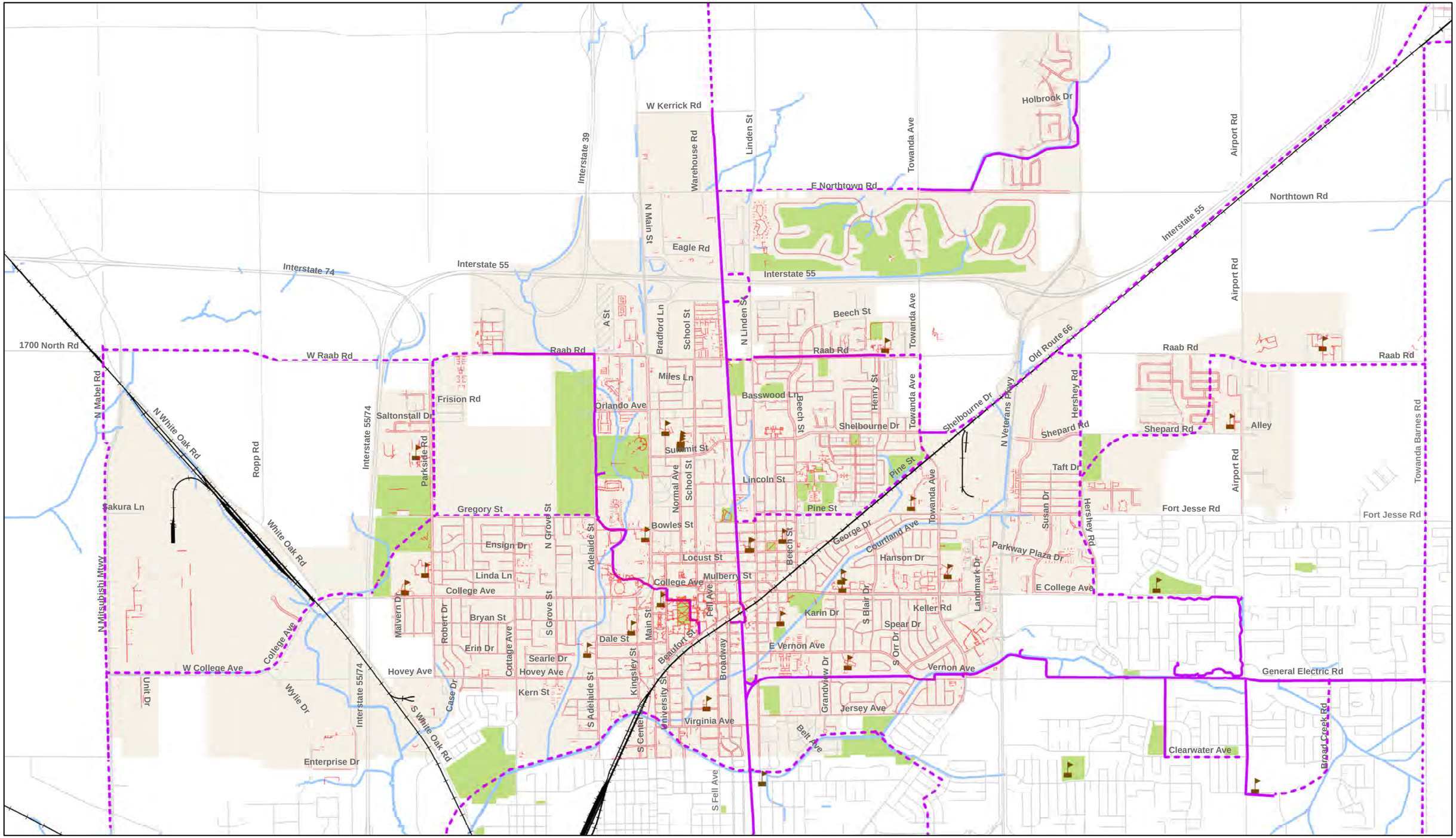
Most major streets in western Normal include sidewalks on both sides, while minor streets generally have sidewalks on one side only (with some segments lacking sidewalks altogether). Sidewalk and planter strip widths also vary depending on location. For instance, Adelaide Street includes four-foot wide sidewalks with four- to six- foot wide planter strips, while planter strips on Dale Street west of Main Street measure as much as 14 feet wide, see Figure). Parkside Road near Normal Community West High School also provides four-foot wide sidewalks with five-foot wide planter strips.

Figure 4. West of Main Street, the north side of Dale Street includes a 14-foot wide planter strip

Eastern Normal

The inner portions of eastern Normal benefit from a relatively complete sidewalk system, with sidewalks present on both sides of most major and minor streets. With the exception of several recently-constructed residential subdivisions Normal's far northeastern areas, the sidewalk system in outlying areas is somewhat fragmented. Notable major streets lacking sidewalks include Veterans Parkway and segments of Towanda Avenue and Raab Road. Similar to Uptown and western Normal, the presence and width of planter strips also varies. Willow Street east of Main Street for instance, includes a ten-foot wide planter strip (see Figure).

Figure 5. A ten-foot planter strip separates the sidewalk from Willow Street east of Main Street



Map 1. Existing Walkway Network

Normal Bicycle and Pedestrian Master Plan

Source: Town of Normal, Illinois
Author: HK
Date: July, 2009

- Existing Shared Use Path
- Existing Sidewalks
- Previously Proposed Shared Use Path
- Schools
- Parks
- Normal Town Boundary
- Streets
- Railroad
- Waterways

0 0.25 0.5 Miles

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The quality of intersections from a pedestrian perspective varies widely by location. The following sections describe general intersection conditions in Normal.

Crosswalks

Marked crosswalks exist at most intersections of major streets in Normal. The Town uses transverse markings, longitudinal markings, and combinations of both marking types. Transverse markings consist of two painted lines running parallel to a pedestrian's route of travel while crossing the street. The majority of transverse crosswalks in Normal are six feet wide. Longitudinal markings, also known as zebra markings, consist of lines perpendicular to a pedestrian's travel path and are typically used near schools or at mid-block locations.

Figure 4. Longitudinal crosswalk on Adelaide Street at Dale Street near Oakdale Elementary School

Crosswalks Near Schools

Mentioned above, marked crosswalks near Normal schools typically include longitudinal markings providing higher-visibility cues to approaching motorists (see Figure 4). Crosswalk widths range from six to 12 feet wide.

Figure 5. Longitudinal crosswalk with white and fluorescent green markings on Vernon Avenue at the Constitution Trail

Constitution Trail Crossings

Marked crosswalks, often consisting of longitudinal markings, also exist where the Constitution Trail crosses major streets. Where the Constitution Trail crosses Vernon Avenue, for instance, a longitudinal crosswalk is provided with high visibility coloration (Figure 5). This crosswalk also includes pavement markings warning pedestrians to "look" before crossing Vernon Avenue. A similar crosswalk is also provided for trail users at Willow Street.

Curb Ramps

Curb ramps represent a fundamental element of an accessible public realm. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access.

Curb ramps with detectable warning strips exist at many intersection corners (Figure 6). However, some intersections provide ramps on a few corners only or lack ramps entirely. It should be noted that the Town of Normal often integrates curb ramp upgrades and retrofits into larger sidewalk reconstruction projects and street resurfacing projects.

Figure 6. The intersection of Gregory and Main streets includes curb ramps and pedestrian-activated push buttons

Signals and Other Pedestrian Crossing Elements

Most signalized intersections in Normal include pedestrian-activated signals or have pre-timed signal phasing allowing pedestrian crossing movements concurrent with parallel vehicle movements. Additional signal technologies, such as pedestrian countdown signals, exist in areas with more intense pedestrian activity such as the intersection of College Avenue and University Street near ISU.

Pedestrians also benefit from grade-separated crossings, such as an undercrossing passing beneath the Main Street at College Avenue intersection. This feature provides a seamless pedestrian connection between ISU and Uptown Normal.

Shared Use Paths

The Constitution Trail runs through the heart of Normal and provides the backbone for a potential network of off-street shared use paths (see Figure 7). A joint venture of the Town of Normal and City of Bloomington, the original trail was developed in 1989. In 2000, the White House Millennium Council designated the Constitution Trail a "Millennium Trail" as it serves to celebrate the history and character of the Bloomington-Normal area.

Figure 7. The Constitution Trail is the centerpiece of Normal's current walkway and bikeway network

The trail is now 24 miles long, with 13 miles in Normal. It runs east-west from south of the Normal Parks and Recreation Annex to Towanda Barnes Road in Bloomington, and north-south along the abandoned 1850 Union Pacific (formerly Illinois Central Gulf) railroad from Kerrick Road, through Uptown Normal, to just south of Oakland Avenue in Bloomington. Several additions have been made, including a trail segment from Normal Town Hall to Heartland Community College through the Illinois State University (ISU) campus and Fairview Park, approximately 3.3 miles in length.

A 10-foot wide hard-surface facility, the Constitution Trail is designed to accommodate walking, jogging, biking and cross-country skiing. Serving both commuters and recreation

users, the trail provides amenities such as trash receptacles, picnic tables, shelters, restrooms, and benches. The trail is officially closed one hour after sunset and snow is not cleared in the winter.

The Uptown Normal segment of the Constitution Trail is currently under re-construction. It will be located within the median of Constitution Boulevard between Beaufort and Mulberry streets (Figure 8). The 3.5 mile section of trail from Kerrick Road to Uptown Normal is two feet wider than other portions of the trail.

Figure 8. The Constitution Trail is being re-constructed within the median of Constitution Boulevard in Uptown Normal

Accessways

Accessways are short sidewalk or shared use path segments providing direct pedestrian and bicycle connections to destinations that would otherwise require out-of-direction travel on the surrounding street system. Accessways commonly connect cul-de-sac streets with paths, schools or nearby streets to minimize pedestrian and bicycle travel distance in areas with limited street system connectivity.

Numerous accessways provide connections between local streets and the Constitution Trail (see Figure 9). Accessways also provide pedestrian routes to school, such as:

- The bridge linking Oakdale Avenue and Ruston Avenue with Oakdale Elementary
- A route to Chiddix Junior High School from the west end of Karin Drive (Figure 10).

Accessways also connect cul-de-sacs, such as:

- The accessway between Basswood Lane and Beechwood Court
- Several streets in Eagles Landing
- Collie Ridge at Shelbourne Drive

Figure 9. Accessway connecting Irving Street with the Constitution Trail

Figure 10. Accessway located west of Karin Drive, leading to Chiddix Junior High School

Bikeways

Several types of "bikeways" exist, as defined by federal and state bicycle planning and design guides and manuals. Bikeways generally are distinguished as preferential roadways accommodating bicycle travel, with accommodation taking the form of bicycle route designation, bike lane striping, or shared use paths to physically separate cyclists from motorists. Map 2 shows the existing bikeway network in Normal.

The Constitution Trail is Normal's primary designated bikeway. Aside from the trail, Normal currently lacks a formalized on-street bikeway system. Rather, bicyclists share streets with motorists. Most lower-order streets in Normal can be classified as "shared roadways." Typically the most common type of bikeway, shared roadways accommodate vehicles and bicycles in the same travel lane. The most suitable roadways for shared vehicle/bicycle use are those with lower posted speeds (25 MPH or less) or lower traffic volumes (3,000 Average Daily Traffic volumes or less).

The League of Illinois Bicyclists (LIB) has prepared a map showing "more comfortable on-road routes." These streets include:

- Beech Street
- Henry Street
- Locust Street/Old Fort Jesse Road
- Blair Drive
- Jersey Avenue
- Adelaide Street

Figure 11. Eight-foot wide shoulders exist on Main Street near Interstate 55, which could accommodate bicycle travel

Although bicyclists and motorists can satisfactorily share travel lanes on most streets, higher vehicle volumes and speeds on other corridors indicate a potential need for enhanced bicyclist accommodations (for example, separation from motorists or traffic calming). Some of Normal's major roads provide shoulders to accommodate bicycle travel, such as eight-foot wide shoulders on Main Street near Interstate 55 (Figure 11).

Many regions use striped bike lanes to designate bicyclists' space in the roadway. They have been shown to increase ridership and appeal to commuters, who desire a direct route to major destinations. The 2007 *Main Street: A Call for Investment* P*lan* recommends bike lanes for much of the length of Main Street.

Bike Parking

Bike parking is a critical component of a community's bikeway network and can strongly influence one's decision whether to complete a trip via bicycle. Some bike racks are provided in Uptown Normal along Beaufort Street (see Figure), in a few other sidewalk locations, and at local schools. Bike parking is otherwise lacking in most other parts of the community.

Normal's Municipal Code requires that new developments provide:

- One bike parking space per 50 vehicle parking spaces (min. 1; max. 20)
- In Traditional Neighborhood Districts, "all nonresidential buildings shall include an area for parking bicycles … [that] must include at least one bike rack with locking area."

The quality of existing bike parking facilities varies by location, particularly due to the style of rack chosen and/or placement of the rack. Some existing racks near commercial areas are considered substandard because they do not provide sufficient points of contact to support a bicycle at two points. In other words, they do not allow a bicycle frame and at least one wheel to be locked to the rack without the use of a long bicycle cable or mounting the bicycle over the rack.

Informal bike parking (bikes being locked to hand rails, street signs, light poles and other objects) indicates where there is a demand for additional bike parking supply. Some bikes have been informally parked on Beaufort Street in Uptown Normal (Figure 13), suggesting that insufficient formal bike parking is being provided or that it is not conveniently located in close proximity to a storefront or building entrance.

Figure 12. Bike rack on Beaufort Street in Uptown Normal

Figure 13. Bicycle locked to a lamp post on Beaufort Street in Uptown Normal

Pedestrian and Bicyclist Destinations

It is particularly important for the walkway and bikeway networks to provide access to destinations popular among pedestrians and bicyclists. Within Normal, popular destinations include:

- Educational facilities including ISU, Heartland College, elementary, junior high and high schools
- Employment centers including: BroMenn Medical Center, Unit 5 schools and the Mitsubishi Motors North America manufacturing facility
- Commercial areas including those along Veterans Parkway, near Raab Road at Main Street, College Hills Mall and neighborhood commercial areas
- Normal Public Library
- Uptown Normal
- Rural roadways on the community's outskirts for recreational cyclists
- Nearby communities (e.g., Bloomington)
- Major employers (e.g., State Farm, Country Insurance, Eastland Mall)
- Natural areas outside Normal including Tipton Park, Lake Bloomington and Evergreen Lake

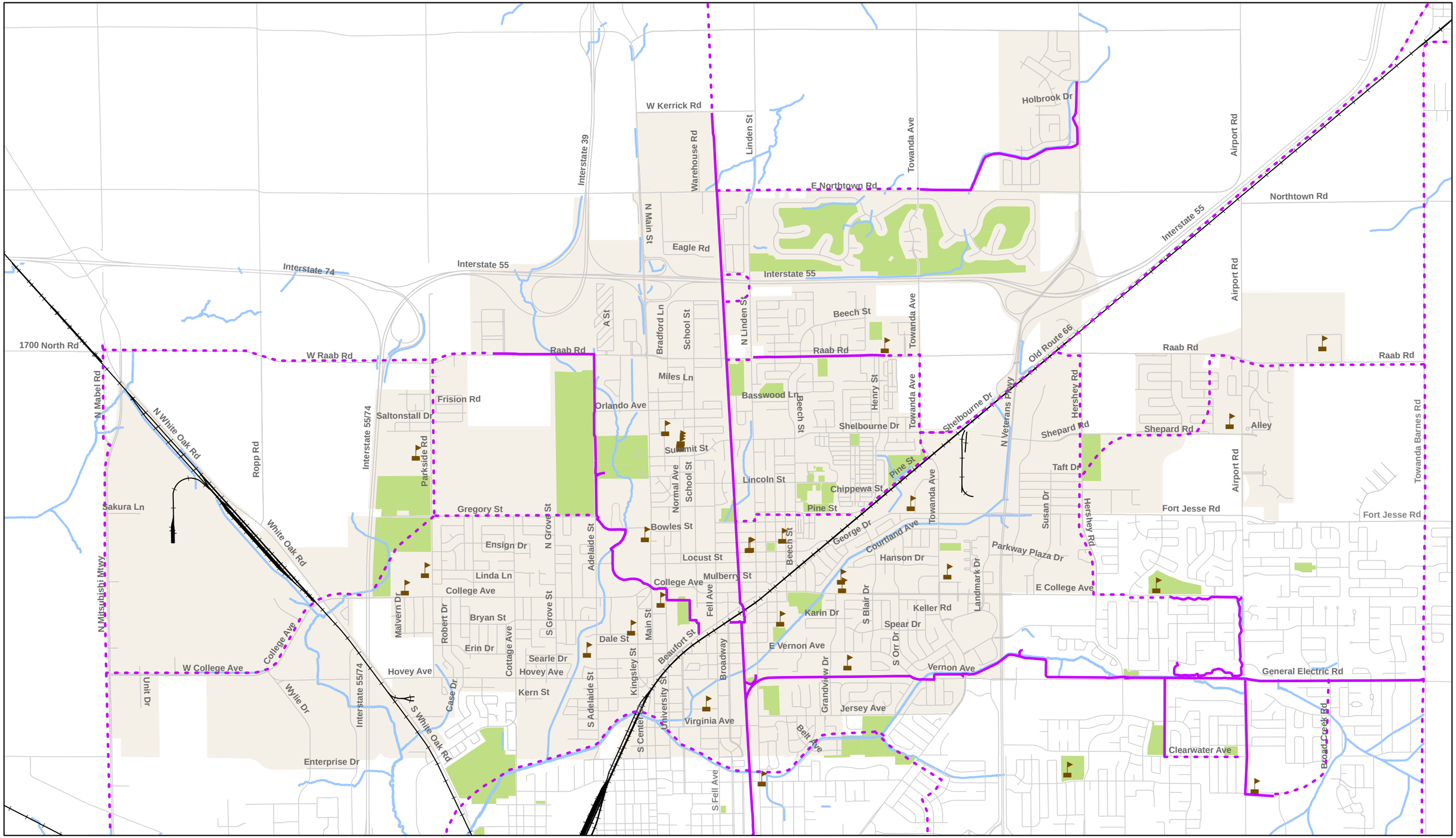
Transit Connections

Ensuring a strong pedestrian and bicycle link to transit is an important part of making non-motorized transportation a part of daily life in Normal. There are several main components of bicycle and pedestrian-transit integration:

- Allowing bicycles on transit
- Providing benches, shelters, posted schedules, bicycle parking and other features at transit stops
- Improving connections between walkways, bikeways and transit

Figure 14. Most BNPTS buses include racks with a capacity for two bicycles

The quantity and quality of pedestrian infrastructure along bus routes varies by location. Streets along some routes have sidewalks on both sides, such as Parkside Road and Main Street. Streets along other routes have sidewalks on one side only, including segments of Adelaide Street and Raab Road. Most stops only include a bus route sign and lack other passenger infrastructure such as shelters, posted maps and schedules.



Map 2. Existing Bikeway Network

Normal Bicycle and Pedestrian Master Plan
Source: Town of Normal, Illinois
Author: HK
Date: July, 2009

- Existing Shared Use Path
- Previously Proposed Shared Use Path
- Schools
- Parks
- Normal Town Boundary
- Streets
- Railroad
- Waterways

0 0.25 0.5 Miles

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Most Bloomington-Normal Public Transit System (BNPTS) buses include bike racks (Figure 14). Fare is $1.00 for an adult, and there is no additional charge for bicycles. Buses are authorized to pick up passengers at non-designated stops. Between 9:30 PM and 1:00 AM Monday through Saturday, buses run an after-hours program, providing a curb-to-curb shared ride service to all locations within the Bloomington-Normal city limits. After-hours buses do not have bicycle racks.

The Bloomington-Normal Public Transit System (BNPTS) operates eleven fixed bus routes providing connections to intermodal transfer centers and other communities. In Normal, routes include:

- School Street to just north of Raab Road
- Main Street to ISU and turning west on Raab Road to Heartland College
- College Avenue to Parkside Road, turning around north of Parkside Elementary and Junior High Schools
- Adelaide Street to Hovey Avenue, White Oak Road and points south
- Vernon Avenue eastward into Bloomington
- Linden Street/Beech Street to Raab Road and Lindbergh Boulevard
- Willow Street to Fort Jesse Road, Shepard Road and south on Hershey Road

BNPTS also operates the Redbird Campus Express bus system for ISU students. The service is free and runs from 7:30 AM to 7:00 PM Monday through Friday. It serves the immediate campus area and is available during the school year. Buses are not equipped with bicycle racks.

The Bloomington-Normal Amtrak station is located in Uptown Normal and connects to the BNPTS system. The station is situated on Amtrak's Texas Eagle line, providing direct service between Chicago and Los Angeles, and more-frequent service between Chicago and St. Louis. The station also serves airport shuttles and interstate and regional buses.

The Town plans to build a multi-modal center west of the Children's Discovery Museum and north of the Union Pacific Railroad. The center will serve Amtrak High Speed Rail, interstate and regional buses, airport shuttles, BNPTS buses, taxis and bicycles. The facility will also serve as a park-and-ride, with 280 vehicle parking places. Specific bicycle accommodations are undetermined, however bike racks, lockers, and shower facilities have been proposed.

Connections to Schools

Students, whether in elementary school, high school, or at the university level, traditionally are more likely to walk or bike than other populations. It is therefore critical for the walkway and bikeway networks to provide safe and convenient access to schools. The following sections briefly describe the existing walking and bicycling environment near Normal schools.

Northern Normal

Praireland Elementary School, Fairview Elementary School, and Calvary Baptist Academy are located in northern Normal. Sidewalks on E Raab Road lead to Praireland Elementary School, and a signalized transverse crosswalk aids pedestrians along the route. In addition, a ten-foot wide path runs along the north side of Raab Road leading to the school, and an accessway runs from Pfitzer Road through the parking lot. Fairview Elementary School is located within a residential neighborhood with low-volume streets. Main Street has sidewalks on both sides, and the signalized intersection of Main Street at Orlando Avenue facilitates east-west crossings for students at nearby schools. School Street, which provides direct access to Calvary Baptist Academy, includes sidewalks on both sides.

Eastern Normal

In eastern Normal, students attending Normal Community High School most likely travel on Raab Road, which lacks sidewalks and pedestrian crossing treatments. Near Grove Elementary School, Airport Road has a sidewalk on one side and a pedestrian accessway connecting to the residential area on Meadow Lark Road. Sugar Creek Elementary School is in a predominantly residential and commercial area, with both sides of nearby Towanda Avenue providing sidewalks. In addition, an accessway through Sugar Creek Elementary School's parking lot leads to a signalized crossing on Towanda Avenue.

Western Normal

In western Normal, Parkside Elementary and Junior High Schools are located on major streets with sidewalks. Streets in nearby residential neighborhoods have sidewalks on one or both sides, while most intersections provide marked crosswalks.

Uptown Normal

Epiphany Catholic School is located along E College Avenue, which has sidewalks; however there are no direct connections to the neighborhoods immediately surrounding the school to the northwest (which is separated by a creek). A crosswalk is provided at the signalized intersection of College Avenue at Grandview Drive. Within the center of town, schools are generally located in residential neighborhoods with crosswalks and signals to aid pedestrian crossings at major streets. Accessways also link neighborhoods with walkable, low-volume streets and schools.

Figure 15. A relatively complete sidewalk system exists on most streets, such as North Street, near the ISU campus

Illinois State University Campus

The ISU campus benefits from a generally-complete bikeway and walkway network, with sidewalks and paths providing direct connections between campus buildings (Figure 15). Crosswalks are located at most major street crossings, and a pedestrian/bicycle under-crossing passes beneath the Main Street at College Avenue intersection, connecting the campus's east

and west sides. Sidewalks along College Avenue are fairly wide through the University area.

Additionally, bike parking is located adjacent to most building entrances (Figure 16).

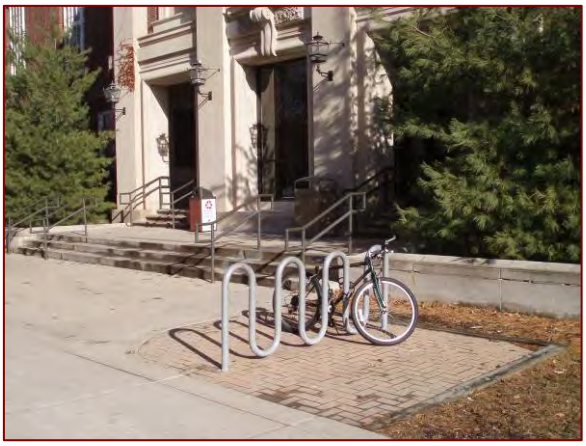

Figure 16. Bike racks are conveniently placed near most ISU campus building entrances

System Strengths and Weaknesses

This section provides an analysis of the existing conditions for walkways and bikeways in Normal, and outlines improvement opportunities. The section also identifies some potential barriers to accommodating and encouraging bicycle and pedestrian trips, which this Plan seeks to overcome.

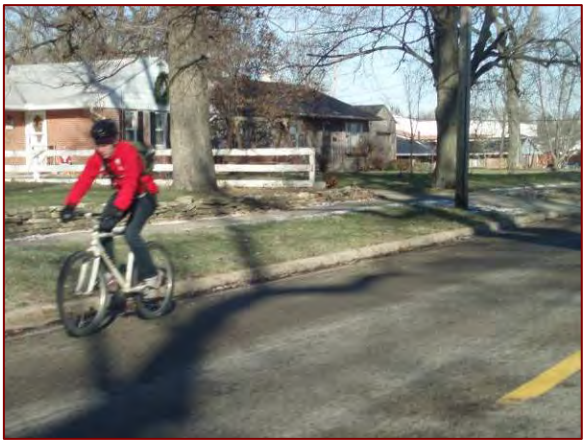

Figure 17. Lower-volume streets, such as School Street, offer a bicycle-friendly environment

System Strengths

Various characteristics foster an environment where bicycling and walking is safe and enjoyable in Normal. These system strengths are described below.

Topography

The topography of Normal is relatively flat, with few challenging hills to deter bicycling or walking. In addition, the flat terrain allows for long sight distances and allows motorists time to react to obstructions on the road.

Uptown Normal Land Use Characteristics

Land use characteristics, particularly along North and Beaufort streets in Uptown Normal, foster a pedestrian-friendly environment. For instance, buildings fronting the sidewalk edge create a sense of tight urban form and an inviting pedestrian atmosphere. The presence of angled on-street parking on Beaufort Street also buffers foot traffic from adjacent motor vehicle traffic, although that is soon to be replaced with parallel parking. Walking and bicycling as a means for running errands are also encouraged through the grouping of diverse land uses in the Uptown area.

Presence of Walk- and Bike-Friendly Streets

Most residential areas benefit from a bicycle- and pedestrian-friendly environment. As most homes in Normal are located on low-volume streets with relatively complete sidewalks, bicyclists and pedestrians of all ages and skills can get around most neighborhoods comfortably and safely.

Towanda Avenue north of Interstate 55 serves as an "urban escape route" for bicyclists. This relatively low-volume street provides a connection between Normal and surrounding rural areas. School Street and Broadway are also low-volume streets popular with bicyclists (Figure 17).

Accessways also provide convenient walking and bicycling connections in areas with limited street system connectivity. Accessways exist throughout Normal, connecting pedestrians and bicyclists with trails, parks, schools, neighborhoods and other destinations.

Figure 18. Recently-completed section of the Constitution Trail along Raab Road near Heartland College

Recent Walkway/Bikeway Improvements

The recently-constructed Constitution Trail segment along Raab Road has improved non-motorized connections to Heartland College (Figure 18). Additionally, the existing sidewalk environment on Towanda Avenue north of Vernon Avenue is excellent, with signalized crossings and curb ramps at the crossing with Van Maur Drive.

Sidewalks have generally been built in conjunction with newer residential neighborhoods, particularly subdivisions in Northeast Normal. Also, the ongoing Uptown revitalization project has and will continue to dramatically improve the walkability of the Town's center.

Figure 19. Marked crosswalk and warning signage on Willow Street at the Constitution Trail

Use of Warning Signage at Trail/Roadway Crossings

Most streets approaching the Constitution Trail include warning signage alerting motorists to the presence of bicyclists and pedestrians (Figure 19).

Figure 20. The Constitution Trail provides several grade-separated crossings at major streets

Presence of Grade-Separated Trail Crossings

In several locations, the Constitution Trail travels over or under major streets, providing safe and comfortable crossing conditions for trail users (see Figure 20).

Presence of Pedestrian Crossing Treatments

Mid-Block Crossings

Mid-block crossings exist in several locations (e.g., along Main Street). Several schools have nearby mid-block crossings such as Towanda Avenue at Sugar Creek Elementary School, Adelaide Street at Oakdale Elementary School, and Kingsley Street at Kingsley Junior High School.

Pedestrian Countdown Signals

A pedestrian countdown signal shows the amount of time a pedestrian has to cross a street before the light changes. This aids pedestrians in deciding whether to start a crossing movement, and is an important accommodation at intersections where pedestrians cannot see traffic signals oriented toward motorists. The intersection of College Avenue and University Street provides a pedestrian countdown signal (Figure 21). Additional pedestrian countdown signals are currently being installed throughout the Town.

Figure 21. Pedestrian countdown signal at the intersection of College Avenue at University Street

Presence of Available Right-of-Way for Future Bikeways and Walkways

Normal has a significant opportunity to develop additional bikeways and walkways in the future, including along the community's waterway corridors. For instance, Sugar Creek in western Normal is a potential shared use path opportunity. However, an agreement with the Bloomington and Normal Reclamation District (BNWRD) would be necessary as much of the creek land is within BNWRD right-of-way.

Utility corridors (for example the north side of College Avenue west of Interstate 55/74) are an additional potential area for walkway and bikeway facility development. The future extension of Cottage Avenue between Gregory Street and Raab Road also presents an excellent opportunity to develop a walking and bicycling environment along this new roadway.

Opportunities to Better Utilize Existing Roadway Space

Several roadways in Normal appear to have more vehicle capacity than is currently needed. This excess roadway space could be better utilized to enhance multi-modal access and mobility. Bicycle facilities on these streets could be developed through relatively simple treatments, such as roadway re-striping. These treatments are very cost-effective, as they require only pavement re-striping.

System Weaknesses

Described below, pedestrians and bicyclists in and around Normal face a variety of challenges.

Barriers

Residents of Normal cite major roads as barriers to bicycling and walking. This is particularly due to higher vehicle speeds and volumes, which create uncomfortable and potentially unsafe crossing conditions.

Veterans Parkway serves as a major barrier due to the lack of bicycle or pedestrian facilities along and across the highway. Interstate 55/74 is also a barrier to bicycle and pedestrian movement, as there are few available crossings on Normal's north and west sides.

Figure 22. The Union Pacific Railroad represents a barrier to bicyclists and pedestrians

The Union Pacific Railroad represents another significant barrier to non-motorized transportation in Normal, as at-grade railroad crossing opportunities are limited to major roads that currently have minimal pedestrian or bicycle facilities (see Figure 22).

Limited Street System Connectivity

Although streets are well-connected in Uptown Normal, there is minimal east-west connectivity in other areas of the town, particularly for bicyclists. In both directions, roads providing the most connectivity and covering longer distances tend to be high-volume streets lacking bicycle facilities. Some of these major streets include Vernon Avenue, College Avenue, Hovey Avenue, Fort Jesse Road, Raab Road, and Shepard Road. Schools tend to be located along these major streets, and where no accessways are provided, students must travel out-of-direction and along major streets to access the school.

Certain parts of town are also less-connected to the central area. Northeastern Normal is separated from Uptown by Veterans Parkway, Old Route 66 and the Union Pacific Railroad. Similarly, western Normal is separated by White Oak Road, the Norfolk Southern Railroad, and Interstate 55/74.

Lack of Wayfinding Tools

Normal's walkway and bikeway system could benefit from signage and other wayfinding tools to orient users and direct them to and through major destinations like Uptown, ISU, surrounding schools, parks, and commercial areas.

As it travels through ISU campus, the Constitution Trail lacks clear wayfinding signage to help trail users navigate through the area.

Discontinuous Shared Use Path System

Although the Town of Normal has made significant progress toward completing a comprehensive shared use path system, several major gaps remain. One notably discontinuous area includes the Constitution Trail at Vernon Avenue (Figure 23). Through these areas, non-motorized users must negotiate major roadways with high vehicle speeds and volumes. In some places, crossings are not provided, and in others marked crosswalks require path users to wait for long periods until cross-traffic has stopped to allow them to pass.

Figure 23. Approaching Vernon Avenue from the west, Constitution Trail users must follow a narrow sidewalk before crossing the roadway

User Conflicts on Trails

Conflicts often arise between faster-moving cyclists and slower-moving pedestrians along the Constitution Trail, particularly where it passes through ISU and areas where it will receive more use. Normal should consider implementing programs to address "trail etiquette" by educating trail users about where they should be located and how to safely pass other trail users.

Maintenance Issues

Described below, several maintenance issues complicate pedestrian and bicycle travel on the existing walkway and bikeway networks in Normal. These issues include faded crosswalks, snow and ice removal, and damaged or deteriorated sidewalks and trails.

Crosswalk Issues

At many intersections, crosswalks are difficult to see for approaching motorists. Crosswalk bars on many of the town's longitudinal (also known as "ladder style") crosswalks are fairly narrow. Furthermore, crosswalk bars have faded or have been worn out by vehicle tires in several locations.

Figure 24. Snow and ice accumulation on the Constitution Trail creates hazardous walking and bicycling conditions

Snow and Ice Accumulation

Snow and ice represent major challenges to walking and bicycling. When snowplows remove snow and ice from

roadways, it is usually deposited on roadway edges and on sidewalks. This creates a very difficult walking environment, forcing many pedestrians to walk in the road.

Trails are not plowed in the winter, often forcing walkers and cyclists to use roadways (many of which lack pedestrian or bicycle facilities). Snow and ice occasionally render the Constitution Trail impassable for cyclists while also creating hazardous walking conditions for pedestrians (Figure 24).

Figure 25. Damaged sidewalk on Willow Street's north side east of Main Street

Damaged/Deteriorated Sidewalks

Existing sidewalks in some parts of the community suffer from cracking, heaving, and/or vegetation growing between pavement seams (e.g., the north side of Willow Street east of Main Street, see Figure 25). Uneven pavement joints (often caused by tree roots below the sidewalk) create tripping hazards and complicate travel for wheelchair users. Water ponding on sidewalk surfaces can further challenge walking, especially when ponding water freezes in cold weather.

Damaged/Deteriorated Trails

Pavement cracking and heaving is occurring in some locations on the Constitution Trail, breaking the smoothness of the pavement.

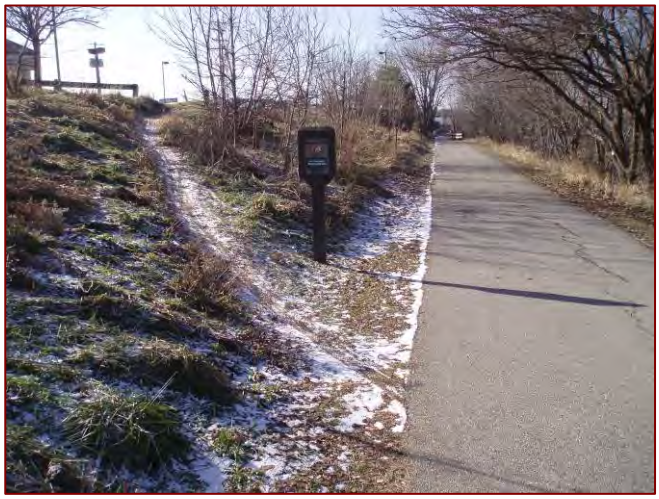

Figure 26. Non-motorized users have created informal paths between the Constitution Trail and commercial areas near Veterans Parkway

Driver Behavior

In Normal, motorists often disregard marked crosswalks and other warning devices. The fact that motorists often ignore marked crosswalks and warning signs is particularly evident where the Constitution Trail crosses major and minor streets, and requires that trail users wait until the road is clear before proceeding across the street.

Motorists' lack of compliance with posted speeds is another safety concern, particularly to bicyclists riding on the shoulder of major roads.

Demonstrated Demand for More Bicycle and Pedestrian Facilities

The presence of informal paths (also known as "demand paths") in some areas indicates a demand for pedestrian and bicycle facilities where they currently do not exist, or where formalized facilities require users to follow circuitous routes to overcome relatively short

distances. This is particularly evident near schools and across open spaces, where pedestrians take short-cuts to access shopping centers or bus stops (Figure 26).

Demand paths can also be found where the Constitution Trail passes within close proximity of nearby streets or commercial areas, but where accessways or other connections do not exist. An example of this is west of Veterans Parkway, where trail users take short cuts to nearby commercial areas.

Uncomfortable Walking and Bicycling Environment along High-Volume Roadways

Large vehicles (e.g., trucks, buses, and recreational vehicles) and high vehicle speeds and volumes create challenging, uncomfortable, and potentially unsafe walking and bicycling conditions on major streets. These conditions present additional challenges on major roads with minimal or no bicycle or pedestrian facilities. Example corridors include Raab Road, Vernon Avenue, and White Oak Road. Airport Road is heavily congested near Normal Community High School and does not provide sidewalks on its entire length. Fort Jesse Road similarly has sidewalks on only one side, with few crossing opportunities.

Figure 27. The lack of roadway shoulders on White Oak Road creates an uncomfortable and potentially unsafe bicycling environment

Streets without paved roadway shoulders present challenging bicycling conditions, as cyclists must ride in the roadway with motorists. White Oak Road (Figure 27) and Old Route 66 in northeast Normal (under McLean County and IDOT jurisdiction) are examples of roadways lacking shoulders of sufficient width for bicycling.

Uncomfortable Sidewalk Environment in Some Areas

Pedestrians experience an uncomfortable environment on streets with narrow sidewalks and on high-volume streets lacking buffers between sidewalks and vehicle traffic. Most sidewalks in Normal are relatively narrow (four feet wide). Many communities have a standard width of six feet and allow five feet where it is deemed appropriate in physically-constrained locations. Wider sidewalks enable two people (including wheelchair users) to walk side-by-side or pass each other comfortably, creating a more attractive and user-friendly walking environment.

Fragmented Sidewalk Network in Some Areas

Discussed earlier, some areas of Normal benefit from a fairly complete sidewalk network while in other areas the system is fragmented. Generally, a relatively complete sidewalk system exists in Uptown Normal, while many streets in outer areas do not have sidewalks.

Sidewalk Obstructions

Although sidewalks exist on numerous streets, their use is occasionally hindered by obstructions such as vegetation, utility poles, fire hydrants and other items. An example of this is on Adelaide Street south of Bryan Street (Figure 28). Additionally, overgrown vegetation obstructs sidewalks and paths in some areas, forcing pedestrians to walk in the planter strip or the road.

Figure 28. Utility pole obstructing the sidewalk on Adelaide Street south of Bryan Street

Difficult Crossings

Pedestrians face a variety of difficult street crossing conditions, including high-volume streets and interchange areas.

High-Volume Streets

Crossing Veterans Parkway and other major roadways is challenging for pedestrians and bicyclists due to relatively long distances between signalized intersections and marked crossings. This creates challenges for pedestrians traveling east-west across the roadway corridor. High vehicle speeds and lengthy distances between signalized intersections discourage pedestrians from walking to services along this corridor. In some cases, pedestrians choose to dart across the roadway to reach their desired destinations.

Figure 29. The northern crosswalk on Main Street at Willow Street does not align with the curb ramp, creating difficulties for mobility-impaired pedestrians

Difficulties for Disabled Pedestrians

Pedestrians with disabilities experience crossing difficulties in some parts of Normal. Curb ramps at some intersections are in poor condition or disrepair, while other intersections lack curb ramps altogether. In some cases, marked crosswalks lead to sidewalks with no curb ramps, or are not aligned with existing curb ramps (e.g., the northwest corner of Main Street at Willow Street, see Figure 29). This can make traveling by wheelchair or motorized mobility device challenging, if not impossible. Visually- and mobility-impaired pedestrians also experience difficulty navigating through intersections with curb ramps oriented diagonally toward the intersection's center rather than toward a crosswalk.

Interchange Areas

Pedestrians face crossing difficulties at highway interchange areas. Channelized right turns at these intersections induce higher vehicle turning speeds, especially for motorists entering

freeway on-ramps from the local street network. Broad vehicle turning radii at ramp termini also create excessively long vehicle/pedestrian conflict zones, as in the case of the Interstate 55 ramps at Main Street and at Veterans Parkway.

Lack of On-Street Bikeways

Mentioned earlier, Normal lacks a formalized on-street bikeway system. The town has an extensive shared use path system, but there are no formal on-street bikeway connections to the trails. This creates difficulties for people who do not live directly adjacent to a trail.

Review of Existing Plans and Legislation

Current legislation and policies in the Town of Normal, McLean County, the State of Illinois, and other relevant agencies and jurisdictions informed the recommendations presented in this Plan. The legislation and policy review also considered whether existing policies adequately provide for the development of bicycle and pedestrian facilities. The Project Team reviewed following plans:

- *Bloomington-Normal Bicycle-Pedestrian Plan (1997)*
- *Town of Normal Bicycle and Pedestrian Focus Group Report (2008)*
- *Main Street: A Call for Investment (2007)*
- *Uptown Redevelopment Plan(2008)*
- *Town of Normal Community Investment Plan (2008-2013)*
- *Town of Normal Parks & Open Space Master Plan (2005)*
- *Town of Normal Comprehensive Plan (2006)*
- *Long-Range Transportation Plan 2035 for the Bloomington-Normal Urbanized Area (2007)*
- *Bloomington-Normal Community Transportation Needs Assessment (2002)*
- *Master Plan: Achieving Distinctiveness and Excellence in Form, Function and Design at Illinois State University (2000-2020)*
- *McLean County Regional Greenways Plan (1997)*
- *MCRPC Transportation Improvement Program FY 2009-2010*

A detailed description of existing planning and legislation guidance relevant to this Plan is provided in Appendix B. Specific recommendations for ensuring that policies and legislation in Normal are supportive of walking and bicycling can be found in Chapter 7.

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Chapter 3. User Needs Assessment

This chapter presents an overview of the needs of existing and potential pedestrians and bicyclists in Normal. Adequately identifying user needs enables system planners and policy-makers to develop logical solutions for improving the community's walkway and bikeway network. The chapter first describes general bicyclist types and their associated needs, then it outlines a demand analysis that was used to estimate existing and future walking and bicycling demand.

The third part of this analysis uses reported crash data supplied by the Town of Normal for crashes involving pedestrians or bicyclists from 2005 through 2007. Analyzing crash data sheds light on potential streets or intersections that should be targeted for improvements. Increasing safety for pedestrians and bicyclists yields tremendous potential to increase the rate of non-motorized use (e.g., more people are willing to walk bicycle if they believe that it is a safe activity). Improving conditions at known problem sites is therefore a key element of this Plan.

Needs and Types of Bicyclists

It is important to understand that the needs and preferences of bicyclists vary depending on the cyclist's skill level and the type of trip a rider wishes to take. For example, bicyclists who ride for recreational purposes may prefer scenic, winding, off-street trails, while bicyclists who ride to work or for errands may prefer more direct on-street bicycle facilities. Child bicyclists, seniors, and adults new to bicycling may prefer shared use paths, while adult bicyclists with more experience may prefer bicycle lanes. Cyclists also include utilitarian cyclists who choose to live with one fewer car and people who ride because they have no other transportation option due to economic reasons. A bicycle plan should consider these differences when planning a system that serves all user types. The following sections describe the different types of bicyclists, the different reasons for bicycling, and the respective needs of these categories of bicyclists.

Needs of Casual and Experienced Riders

For the purposes of this Plan, bicyclists are separated into two skill levels: casual and experienced. Casual bicyclists typically include youth, adults and seniors who are intermittent riders. Some casual bicyclists, such as youths under driving age, may be unfamiliar with operating a vehicle on roads and related laws. Experienced bicyclists typically include commuters, long-distance road bicyclists, racers, and those who use their bicycle as a primary means of transportation. Table 1 summarizes the needs of casual and experienced bicyclists.

Table 1. Characteristics of Casual and Experienced Bicyclists

Casual Riders	Experienced Riders
Prefer off-street shared use paths or bike lanes along low-volume, low-speed streets	Prefer on-street or bicycle-only facilities as opposed to shared use paths
May have difficulty gauging traffic and may be unfamiliar with the rules of the road. May walk bicycle across intersections	Comfortable riding with vehicles on streets. Negotiate streets like a motor vehicle, including "taking the lane" and using left-turn pockets
May use a less direct route to avoid Arterials with heavy traffic volumes	May prefer a more direct route
May ride on sidewalks and ride the wrong way on streets and sidewalks	Avoid riding on sidewalks or on shared use paths. Rides with the flow of traffic on streets
May ride at speeds comparable to walking, or slightly faster than walking	Ride at speeds up to 20 MPH on flat ground, up to 40 mph on steep descents
Bicycle for shorter distances: up to 2 miles	May cycle longer distances, sometimes more than 100 miles

The casual bicyclist will benefit from route markers, shared use paths, bike lanes on lower-volume streets, traffic calming, and educational programs. Casual bicyclists may also benefit from a connected network of marked routes leading to parks, schools, shopping areas, and other destinations. To encourage youth to ride, routes must be safe enough for their parents to allow them to ride. The experienced bicyclist will benefit from a connected network of bike lanes on higher-volume arterials, wider curb lanes and loop detectors at signals. The experienced bicyclist who is primarily interested in exercise will benefit from loop routes leading back to their point of origin. Due primarily to the existing Constitutional Trail, the Town of Normal offers many opportunities for casual bicyclists. In several locations, the Constitution Trail is accessible from residential neighborhoods. Many experienced bicyclists, including those who bicycle longer distances to commute for exercise or training, also use the Constitution Trail. This combination of fast-moving bicyclists on training rides with slower-moving casual bicyclists and pedestrians may result in user conflicts.

Characteristics of Recreational and Utilitarian Trips

For purposes of this Plan, bicycle trips are separated into two trip types: recreational and utilitarian. Recreational trips can range from a 50-mile weekend group ride along rural roads to a short family outing to a local park, and all levels in between. Many utilitarian trips are made by commuter bicyclists, who are a primary focus of State and Federal bicycle funding, as well as bicyclists going to school, shopping or running other errands. Utilitarian cyclists include those who choose to live with one less car as well as those who have no other alternative transportation due to economic reasons.

Table 2 summarizes general characteristics of recreational and utilitarian bicycle trips.

Table 2. Characteristics of Recreational and Utilitarian Bicycle Trips

Recreational Trips	Utilitarian Trips
Directness of route not as important as visual interest, shade, protection from wind	Directness of route and connected, continuous facilities more important than visual interest, etc.
Loop trips may be preferred to backtracking	Trips generally travel from residential to shopping or work areas and back
Trips may range from under a mile to over 50 miles	Trips generally are 1-5 miles in length
Short-term bicycle parking should be provided at recreational sites, parks, trailheads and other activity centers	Short-term and long-term bicycle parking should be provided at stores, transit stations, schools, workplaces
Varied topography may be desired, depending on the skill level of the cyclist	Flat topography is desired
Cyclists may be riding in a group	Cyclists often ride alone
Cyclists may drive with their bicycles to the starting point of a ride	Cyclists ride a bicycle as the primary transportation mode for the trip; may transfer to public transportation; may or may not have access to a car for the trip
Trips typically occur on the weekend or on weekdays before morning commute hours or after evening commute hours	Trips typically occur during morning and evening commute hours (commute to school and work); shopping trips also occur on weekends
Cyclists' preferred type of facility varies, depending on the skill level of the cyclist	Generally use on-street facilities, may use trails if they provide easier access to destinations than on-street facilities

Recreational bicyclists' needs vary depending on their skill level. Road bicyclists out for a 100-mile weekend ride may prefer well-maintained roads with wide shoulders and few intersections, with few stop signs or stop lights. Casual bicyclists out for a family trip may prefer a quiet shared use path with adjacent parks, benches, and water fountains.

Utilitarian bicyclists have needs that are more straightforward. Key commuter needs are summarized below:

- Commuter routes should be direct, continuous, and connected
- Protected intersection crossing locations are needed for safe and efficient bicycle commuting
- Bicycle commuters must have secure places to store their bicycles at their destinations
- Bicycle facilities should be provided on major streets

The Town of Normal's trail system provides excellent access to several parks, recreation areas, and Uptown. However, not all neighborhoods have easy bicycle access to employment centers, schools and shopping. For casual recreational riders, this may not be a serious

deterrent, since they may be willing and able to drive their bicycle to the trailhead. However, this may not be an option for experienced recreational riders or commuters, as they generally would like to use their bicycle for the whole trip. Bicycle-friendly on-street connections between residential areas and the trails and between residential areas and shopping and commute centers would likely increase the prevalence of bicycle commuting, as well as increase the prevalence of recreational riding.

Predicting Walking and Bicycling Demand

When the Normal Bicycle and Pedestrian Master Plan is implemented, more Normal residents will choose to walk and bicycle, rather than driving for commuting, shopping and recreation. This shift can be directly translated into reduced vehicle miles traveled and results in air quality benefits by reducing emissions.

A variety of demand models are often used to quantify usage of existing bicycle facilities and to estimate the potential usage of new facilities. The purpose of these models is to provide an overview of the demand and benefits for bicycling and walking in Normal. As with all models, the results show a range of accuracy that varies based on a number of assumptions and available data. The models used for this study incorporated information from existing publications as well as data from the U.S. Census 2005-2007 American Community Survey (ACS) three-year estimate. All data assumptions and sources are noted in the tables following each section of the analysis.

Existing Pedestrian and Bicycle Demand

The Town of Normal pedestrian and bicycle demand models consist of several variables, including the commuting patterns of working adults and predicted travel behaviors of area college students and school children. For modeling purposes, the study area included all Normal residents according to the 2005-2007 ACS. The year 2007 was used as the baseline for the demand analysis, as it was the most recent year for which data was available.

For this analysis, population data for the existing labor force (including the number of workers and percentage of pedestrian and bicycle commuters) were obtained from the 2007 ACS findings for Normal. In addition to people commuting to the workplace via walking or by bicycle, the model also incorporates a portion of the labor force working from home. Specifically, it was assumed that about a quarter of people working from home would make at least one walking trip, and another five percent would make at least one bicycling trip during the workday.

The 2007 ACS was also used to estimate the number of school children in Normal. This figure was combined with data from National Safe Routes to School surveys, which found that approximately 11 percent of school children walk to and from school every day. College students constitute a third variable in the model due to the presence of Illinois State University, Heartland Community College and Lincoln College in Normal. Enrollment information for those schools was obtained from their websites and is shown in Table 3.

Table 3. College and University Enrollment in Normal and Bloomington, 2007-2008

College/University	2007-2008 Enrollment
Illinois State University	20,419
Heartland Community College	1,661
Lincoln College	550
Total	**22,630**

Data from the Federal Highway Administration regarding walking and bicycling mode share in university communities was used to estimate that 60 percent of students commuting to college walk to school. While this number may be appropriate for the large, centrally-located ISU where a large proportion of students live on campus, it is unlikely that such a large proportion of students at Heartland College walk. The walking mode split for Heartland College was therefore assumed to be five percent of students. The 2001 *National Household Transportation Survey* found that commute trips (including work and school trips) only comprise approximately a third of total trips; trips for shopping, recreation and socializing are a significantly greater proportion of total trips than just commuting, as reported by the ACS. Table 4 shows results of the pedestrian demand model and identifies the variables and assumptions used in the model.

For the bicycling model, many of the same assumptions from the pedestrian model were used. The National Safe Routes to School surveys found that approximately two percent of school children bike to school. For university communities, the Federal Highway Administration found that ten percent of college students bicycle. Again, the large proportion of trips that are non-commute requires a multiplier of 2.73 to estimate the number of total bicycle trips in Normal. Table 5 summarizes results and assumptions of the bicycle demand model and the estimated existing daily bicycle trips in Normal.

The tables indicate that almost 131,000 walking trips occur in the Normal area each day, along with over 20,000 bicycle trips. The largest group of pedestrians are college students (more than 13,500), and the largest walking trip purpose is for non-commute trips (more than 96,000). Most bicycle commute trips are made by college students (more than 2,000). These numbers are applicable to weekdays only, and averaged over the course of the year.

Table 4. Existing Pedestrian Demand Model Results

Variable	Quantity	Source
Study area population	50,398	ACS 2005-2007 for the Town of Normal
Employed population	25,001	ACS 2005-2007 Population of workers over 16
Walk-to-work mode share	12.4%	ACS 2005-2007 Means of transportation to work for workers 16 and older
Number of walk-to-work commuters	3,111	(employed persons) * (walking mode share)
Work-at-home mode share	1.8%	ACS 2005-2007 Means of transportation to work for workers 16 and older
Number of work-at-home walk commuters	115	Assumes 25% of population working at home makes at least one daily walking trip
Transit-to-work mode share	1.9%	ACS 2005-2007 Means of transportation to work for workers 16 and older
Transit pedestrian commuters	387	Assumes 80% of transit riders access transit by foot
School children, ages 6-14	5,377	ACS 2005-2007 School enrollment by level of school
School children walking mode share	11.0%	*National Safe Routes to School surveys*, 2003
School children walk commuters	591	(school children pop.) * (walking mode share)
Number of college students	22,630	School enrollment at ISU, Heartland Normal Campus, and Lincoln Normal Campus
Estimated college walking mode share	60.0% - ISU & Lincoln	*National Bicycling & Walking Study*, FHWA, Case Study No. 1, 1995
	5% - Heartland	Based on lack of on-campus housing
College walk commuters	13,578	(college student pop.) * (walking mode share)
Total number of walk commuters	17,616	(walk-to-work trips) + (school trips) + (college trips) + (utilitarian trips)
School and commute walking trips subtotal	35,232	Total walk commuters x 2 (for round trips)
Other utilitarian and discretionary trips		
Ratio of "other" trips to commute trips	2.73	*National Household Transportation Survey*, 2001
Estimated non-commute trips	96,184	(school and commute trips) * 2.73
Current Estimated Daily Pedestrian Trips:	**131,416**	

Table 5. Existing Bicycle Demand Model Results

Variable	Quantity	Source
Study area population	50,398	ACS 2005-2007 for the Town of Normal
Employed population	25,001	ACS 2005-2007 Population of workers over 16
Bike-to-work mode share	1.2%	ACS 2005-2007 Means of transportation to work for workers 16 and older
Number of bike-to-work commuters	301	(employed persons) * (bicycling mode share)
Work-at-home mode share	1.8%	ACS 2005-2007 Means of transportation to work for workers 16 and older
Number of work-at-home bike commuters	23	Assumes 5% of population working at home makes at least one daily bicycle trip
Transit-to-work mode share	1.9%	ACS 2005-2007 Means of transportation to work for workers 16 and older
Transit bicycle commuters	48	Assumes 10% of transit riders access transit by bicycle
School children, ages 6-14	5,377	ACS 2005-2007 School enrollment by level of school
School children bicycling mode share	2.0%	*National Safe Routes to School surveys*, 2003
School children bike commuters	108	(school children pop.) * (bicycling mode share)
Number of college students	22,630	School enrollment at ISU, Heartland Normal Campus, and Lincoln Normal Campus.
Estimated college bicycling mode share	10.0%	*National Bicycling & Walking Study*, FHWA, Case Study No. 1, 1995
College bicycling commuters	2,263	(college student pop.) * (bicycling mode share)
Total number of bike commuters	2,694	(bike-to-work trips) + (school trips) + (college trips) + (utilitarian trips)
School and commute bicycling trips subtotal	5,389	Total bicycle commuters x 2 (for round trips)
Other utilitarian and discretionary trips		
Ratio of "other" trips to commute trips	2.73	*National Household Transportation Survey*, 2001
Estimated non-commute trips	14,712	(school and commute trips) * 2.73
Current Estimated Daily Bicycle Trips	**20,101**	

Current Air Quality Benefits

In addition to models estimating existing and future demand for bikeway facilities, a variety of models can also quantify the benefits of such facilities. The expected number of walking and biking trips produced as soon as a new facility opens can be directly translated into reduced vehicle trips. This number can be used to determine the approximate reduction in vehicle miles traveled (VMT), which has the direct effect of reducing vehicular emissions.

The number of reduced vehicle trips, VMT and the ensuing vehicle emissions reduction was estimated based on the results of the demand models described above. It was assumed that about 73 percent of pedestrian and bicycle trips would directly replace vehicle trips for adults and college students. For school children, the reduction was assumed to be 53 percent.

ACS 2007 Travel to Work data were used to determine average trip lengths in Normal. The average travel time in minutes reported for bicyclists and pedestrians was 10.6 minutes, which roughly translates to a half-mile for pedestrians (assuming a 3 MPH walking speed) and slightly more than two miles for bicyclists (assuming a 12 MPH riding speed). However, these distances only account for commuting trips, which tend to be shorter than other trip types, particularly recreational. The analysis estimated that the average pedestrian round trip is roughly 1 mile in length for adults, whereas for children the distance is one-half mile. A bicycle roundtrip distance of four miles was used for adults and college students, and one mile for school children. The vehicle emissions reduction estimates also incorporated calculations commonly used in other models.

Table 6 and Table 7 show the model of vehicle trips and miles reduction, as well as the resulting air quality benefits of existing walking and bicycling, respectively. From the estimate of current levels of bicycling and walking in Normal, estimated bicycling and walking currently remove almost 15,000 vehicle trips per weekday, translating to an annual reduction of nearly four million vehicle trips and 2,500 tons of emissions.

Table 6. Estimated Vehicle Trips, Miles Reduction and Air Quality Benefits from Existing Pedestrian Trips

Reduced Vehicle Trips and Miles from Existing Pedestrian Trips		
Variable	**Quantity**	**Source**
Reduced Vehicle Trips per Weekday	12,929	Assumes 73% of walking trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	3,347,367	Reduced number of weekday vehicle trips multiplied by 261 (weekdays in a year)
Reduced Vehicle Miles per Weekday	12,585	Assumes average round trip travel length of 1 mile for adults/college students and 0.5 mile for school children
Reduced Vehicle Miles per Year	3,284,606	Reduced number of weekday vehicle miles multiplied by 261 (weekdays in a year)
Air Quality Benefits from Existing Pedestrian Trips		
Variable	**Quantity**	**Source**
Reduced HC (lb/weekday)*	78	(daily mileage reduction) * (0.0062 lb per reduced mile)
Reduced CO (lb/weekday)†	580	(daily mileage reduction) * (0.046 lb per reduced mile)
Reduced NOX (lb/weekday)‡	39	(daily mileage reduction) * (0.003 lb per reduced mile)
Reduced CO2 (lb/weekday)§	11,528	(daily mileage reduction) * (0.916 lb per reduced mile)
Reduced HC (tons/year)	10	(yearly mileage reduction) * (0.0062 lb per reduced mile) / (2000 lbs per ton)
Reduced CO (tons/year)	76	(yearly mileage reduction) * (0.046 lb per reduced mile) / (2000 lbs per ton)
Reduced NOX (tons/year)	5	(yearly mileage reduction) * (0.003 lb per reduced mile) / (2000 lbs per ton)
Reduced CO2 (tons/year)	1,504	(yearly mileage reduction) * (0.916 lb per reduced mile) / (2000 lbs per ton)

* Hydrocarbons
† Carbon Monoxide
‡ Nitrous Oxides
§ Carbon Dioxide

Table 7. Estimated Vehicle Trips, Miles Reduction and Air Quality Benefits from Existing Bicycle Trips

Reduced Vehicle Trips and Miles from Existing Bicycle Trips		
Variable	**Quantity**	**Source**
Reduced Vehicle Trips per Weekday	2,050	Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	535,175	Reduced number of weekday vehicle trips multiplied by 261 (weekdays in a year)
Reduced Vehicle Miles per Weekday	7,752	Assumes average round trip travel length of 4 miles for adults/college students and 1 mile for school children
Reduced Vehicle Miles per Year	2,023,291	Reduced number of weekday vehicle miles multiplied by 261 (weekdays in a year)
Air Quality Benefits from Existing Bicycle Trips		
Variable	**Quantity**	**Source**
Reduced HC (lb/weekday)**	48	(daily mileage reduction) * (0.0062 lb per reduced mile)
Reduced CO (lb/weekday)††	357	(daily mileage reduction) * (0.046 lb per reduced mile)
Reduced NOX (lb/weekday)‡‡	24	(daily mileage reduction) * (0.003 lb per reduced mile)
Reduced CO2 (lb/weekday)§§	7,1011	(daily mileage reduction) * (0.916 lb per reduced mile)
Reduced HC (tons/year)	6	(yearly mileage reduction) * (0.0062 lb per reduced mile) (2000 lbs per ton)
Reduced CO (tons/year)	47	(yearly mileage reduction) * (0.046 lb per reduced mile) (2000 lbs per ton)
Reduced NOX (tons/year)	3	(yearly mileage reduction) * (0.003 lb per reduced mile) (2000 lbs per ton)
Reduced CO2 (tons/year)	927	(yearly mileage reduction) * (0.916 lb per reduced mile) (2000 lbs per ton)

** Hydrocarbons
†† Carbon Monoxide
‡‡ Nitrous Oxides
§§ Carbon Dioxide

Potential Future Walking and Bicycling Trips

Estimating future benefits requires additional assumptions regarding population and anticipated commuting patterns in 2025 for Normal. The variables used as model inputs generally resemble the variables used in the demand model discussed earlier and represent a realistic, achievable goal of what the daily number of pedestrian and bicycle trips could be with a more complete walkway and bikeway system. Future population and employment projections developed by McLean County were used in this model.

The *Town of Normal Comprehensive Plan* projects Normal's 2025 population to be about 62,300. Employment in the Town is predicted to increase to approximately 35,000 jobs as suburbs grow and commuting to the town increases. The population of school children is assumed to maintain its proportion, or about 10.7 percent of the total population. Based on *The Master Plan: Achieving Distinctiveness and Excellence in Form, Function and Design at Illinois State University (2000)*, enrollment at ISU is expected to remain stable. The other universities do not have expansion plans, therefore the population of college students was assumed to remain relatively constant.

Comparing mode split in the region between the 2000 Census and 2007 American Community Survey indicates trends that may continue in the future. Table 8 shows that transit use, bicycling and walking have increased in Normal since 2000.

Table 8. Percent Change in Mode Split, 2000 to 2007

Variable	2000 Census		2007 ACS		Percent Change, 2000 to 2007
	Number	Percent	Number	Percent	
Population, workers 16+	23,193	-	25,001	-	-
Public Transportation	341	1.5%	484	1.9%	31.67%
Bicycle	173	0.7%	301	1.2%	61.41%
Walk	2,555	11.0%	3,111	12.4%	12.96%
Work at home	585	2.5%	458	1.8%	-27.37%

For the model, the walking and bicycling mode shares were increased to also address the higher use that will be potentially generated by the addition of new facilities and enhancements to the existing system. The estimated proportion of residents taking transit to work was slightly increased, and the population working from home was assumed to remain relatively constant. In addition, it was assumed the rate of elementary and high school students walking and bicycling to school increased dramatically, based on experience with Safe Routes to School Programs. Participating students in Marin County increased walking by 64 percent and bicycling by 114 percent.[3] This large increase is likely to taper off over time, and is likely to be smaller in Normal, considering weather and housing density.

Table 9 summarizes data on potential future pedestrian demand in the year 2025, while Table 10 shows the results of the demand model predicting 2025 bicycle demand. Both of these analyses assume a more complete pedestrian and bicycle network and concurrent

[3] Marin County Bicycle Coalition, 2001. *Safe Routes to School demonstration final project.* Marin.

program development to encourage use. The models predict that over 150,000 pedestrian trips and 25,000 bicycle trips will occur in Normal each day by 2025.

Table 9. Future Pedestrian Demand Model Results

Variable	Quantity	Source
Future study area population	62,300	*Town of Normal Comprehensive Plan*
Future employed population	35,000	*Town of Normal Comprehensive Plan*
Future walk-to-work mode share	14.8%	Increase from previous mode split due to mode split trends and improvements in the pedestrian network (1% increase over 18 years)
Future number of walk-to-work commuters	5,180	(employed persons) * (walking mode share)
Future work-at-home mode share	1.8%	Remaining stable from ACS 2007
Future number of work-at-home walk commuters	160	Assumes 25% of population working at home makes at least one daily walking trip
Future transit-to-work mode share	5.0%	Increase from previous mode split due to mode split trends and improvements in the transit network
Future transit pedestrian commuters	1,400	Assumes 80% of transit riders access transit by foot
Future school children, ages 6-14 (grades K-8)	6,647	Maintains the proportion of total population who are school children at 10.7%
Future school children walking mode share	15.0%	*Based on experience with other Safe Routes to School programs*
Future school children walk commuters	997	(school children pop.) * walking mode share)
Future number of college students in study area	22,630	*The Master Plan: Achieving Distinctiveness and Excellence in Form, Function and Design at Illinois State University* (2000); assumes that enrollment will remain constant
Future estimated college walking mode share	60.0% - ISU & Lincoln	*National Bicycling & Walking Study*, FHWA, Case Study No. 1, 1995
	5% - Heartland	Based on lack of on-campus housing
Future college walk commuters	13,331	(college student pop.) * (walking mode share)
Future total number of walk commuters	21,068	(walk-to-work trips) + (school trips) + (college trips) + (utilitarian trips)
Future total daily walking trips	42,137	Total walk commuters x 2 (for round trips)
Other utilitarian and discretionary trips		
Ratio of "other" trips to commute trips	2.73	*National Household Transportation Survey*, 2001
Estimated non-commute trips	115,033	(school and commute trips) * 2.73
2025 Estimated Daily Pedestrian Trips:	**157,107**	

Table 10. Future Bicycling Demand Model Results

Variable	Quantity	Source
Future study area population	62,300	*Town of Normal and City of Bloomington Comprehensive Plans*
Future employed population	35,000	*Town of Normal and City of Bloomington Comprehensive Plans*
Future bike-to-work mode share	2.5%	1% increase over 18 years increased slightly from previous mode split due to trends and improvements in the bikeway network
Future number of bike-to-work commuters	875	(employed persons) * (bicycling mode share)
Future work-at-home mode share	1.8%	Remaining stable from Census 2000 and ACS 2007
Future number of work-at-home bike commuters	64	Assumes 10% of population working at home makes at least one daily bicycling trip
Future transit-to-work mode share	5.0%	Increase from previous mode split due to mode split trends and improvements in the transit network
Future average daily transit bicycle commuters	438	Assumes 10% of transit riders access transit by bicycle
Future school children, ages 6-14 (grades K-8)	6,647	Maintains the proportion of total population who are school children at 10.7%
Future school children bicycling mode share	3.0%	*Portland Safer Routes to School Survey*, Spring 2007
Future school children bike commuters	199	(school children pop.) * (bicycling mode share)
Future number of college students in study area	22,630	*The Master Plan: Achieving Distinctiveness and Excellence in Form, Function and Design at Illinois State University* (2000); assumes that enrollment will remain constant
Future estimated college bicycling mode share	10.0%	*National Bicycling & Walking Study*, FHWA, Case Study No. 1, 1995.
Future college bike commuters	2,263	(college student pop.) * (bicycling mode share)
Future total number of bicycle commuters	3,402	(bike-to-work trips) + (school trips) + (college trips) + (utilitarian trips)
Future total daily bicycling trips	6,803	Total bike commuters x 2 (for round trips)
Other utilitarian and discretionary trips		
Ratio of "other" trips to commute trips	2.73	*National Household Transportation Survey*, 2001
Estimated non-commute trips	18,572	(school and commute trips) * 2.73
2025 Estimated Daily Bicycle Trips:	**25,375**	

Potential Air Quality Improvements

Based on population growth and the expected increase in walking and bicycling, in the future bicycling and walking together will replace about 18,000 weekday vehicle trips, eliminating more than 11 million vehicle miles traveled per year, shown in Table 11. Walking and bicycling in Normal will prevent almost 41,500 pounds of vehicle emissions from entering the ambient air each weekday and more than 5,400 tons per year. Pedestrian and bikeway network enhancements are expected to generate more walking and bicycling trips in the future. This growth is expected to improve air quality by further reducing the number of vehicle trips, vehicle miles traveled, and associated vehicle emissions.

Table 11. Estimated Vehicle Trips and Miles Reduction from Future Pedestrian Trips

Reduced Vehicle Trips and Miles from Future Pedestrian Trips		
Variable	**Quantity**	**Source**
Reduced Vehicle Trips per Weekday	15,181	Assumes 73% of walking trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	3,962,112	Reduced number of weekday vehicle trips multiplied by 261 (weekdays in a year)
Reduced Vehicle Miles per Weekday	31,899	Assumes average round trip travel length of 1 mile for adults/college students and 0.5 mile for schoolchildren
Reduced Vehicle Miles per Year	8,325,667	Reduced number of weekday vehicle miles multiplied by 261 (weekdays in a year)
Air Quality Benefits from Future Pedestrian Trips		
Variable	**Quantity**	**Source**
Reduced HC (lb/weekday)*	197	(daily mileage reduction) * (0.0062 lb per reduced mile)
Reduced CO (lb/weekday)†	1,470	(daily mileage reduction) * (0.046 lb per reduced mile)
Reduced NOX (lb/weekday)‡	98	(daily mileage reduction) * (0.003 lb per reduced mile)
Reduced CO2 (lb/weekday)§	29,220	(daily mileage reduction) * (0.916 lb per reduced mile)
Reduced HC (tons/year)	26	(yearly mileage reduction)*(0.0062 lb per reduced mile) (2000 lbs per ton)
Reduced CO (tons/year)	192	(yearly mileage reduction)*(0.046 lb per reduced mile) (2000 lbs per ton)
Reduced NOX (tons/year)	13	(yearly mileage reduction)*(0.003 lb per reduced mile) (2000 lbs per ton)
Reduced CO2 (tons/year)	3,813	(yearly mileage reduction)*(0.916 lb per reduced mile) (2000 lbs per ton)

* Hydrocarbons
† Nitrogen Monoxide
‡ Nitrous Oxides
§ Carbon Dioxide

Table 12. Estimated Vehicle Trips and Miles Reduction from Future Bicycle Trips

Reduced Vehicle Trips and Miles from Future Bicycle Trips		
Variable	**Quantity**	**Source**
Reduced Vehicle Trips per Weekday	2,763	Assumes 73% of bicycle trips replace vehicle trips for adults/college students and 53% for school children
Reduced Vehicle Trips per Year	721,040	Reduced number of weekday vehicle trips multiplied by 261 (weekdays in a year)
Reduced Vehicle Miles per Weekday	10,733	Assumes average round trip travel length of 4 miles for adults/college students and 1 mile for schoolchildren
Reduced Vehicle Miles per Year	2,801,409	Reduced number of weekday vehicle miles multiplied by 261 (weekdays in a year)
Air Quality Benefits from Future Bicycle Trips		
Variable	**Quantity**	**Source**
Reduced HC (lb/weekday)*	66	(daily mileage reduction) * (0.0062 lb per reduced mile)
Reduced CO (lb/weekday)†	495	(daily mileage reduction) * (0.046 lb per reduced mile)
Reduced NOX (lb/weekday)‡	33	(daily mileage reduction) * (0.003 lb per reduced mile)
Reduced CO2 (lb/weekday)§	9,832	(daily mileage reduction) * (0.916 lb per reduced mile)
Reduced HC (tons/year)	9	(yearly mileage reduction)*(0.0062 lb per reduced mile) (2000 lbs per ton)
Reduced CO (tons/year)	65	(yearly mileage reduction)*(0.046 lb per reduced mile) (2000 lbs per ton)
Reduced NOX (tons/year)	4	(yearly mileage reduction)*(0.003 lb per reduced mile) (2000 lbs per ton)
Reduced CO2 (tons/year)	1,283	(yearly mileage reduction)*(0.916 lb per reduced mile) (2000 lbs per ton)

* Hydrocarbons
† Nitrogen Monoxide
‡ Nitrous Oxides
§ Carbon Dioxide

Safety Analysis

Safety is a major concern of both existing and potential bicyclists and pedestrians. For those who currently walk or bike regularly, safety is typically an on-going concern or even a distraction. For those who do not walk or ride, it is one of the most compelling reasons not to do so.

This section evaluates existing conditions with respect to bicycle and pedestrian safety in Normal. The evaluation included a review of representative existing bicycle education programs being offered in Normal and surrounding areas. An analysis of crash data in Normal between 2005 and 2007 also

indicates which intersections and other locations are particularly problematic. In addition, feedback from the December 2008 community workshop helped identify problem areas and needed safety countermeasures.

Existing Bicycle Education Programs

While no formal bicycle education programs exist in Normal, several organizations encourage and educate residents about bicycling. The League of Illinois Bicyclists (LIB) is an active organization that provides information, maps, club rides, and safety education in Illinois. The organization has developed a short video on motorist-vehicle safety.4 In addition, The McLean County Wheelers is a club that sponsors rides in the area. In Spring 2008, they ran a "Win a Bike" essay contest.

Crash Data Analysis

This analysis is based on collision data provided by Town of Normal Staff. In the period from 2005 through 2007, 105 crashes involving a bicyclist or a pedestrian were reported in Normal. Reported crashes remained steady at approximately 35 per year for those three years. The majority of reported crashes occurred at intersections as shown on Map 3. Locations that experienced more than two crashes during that time period include:

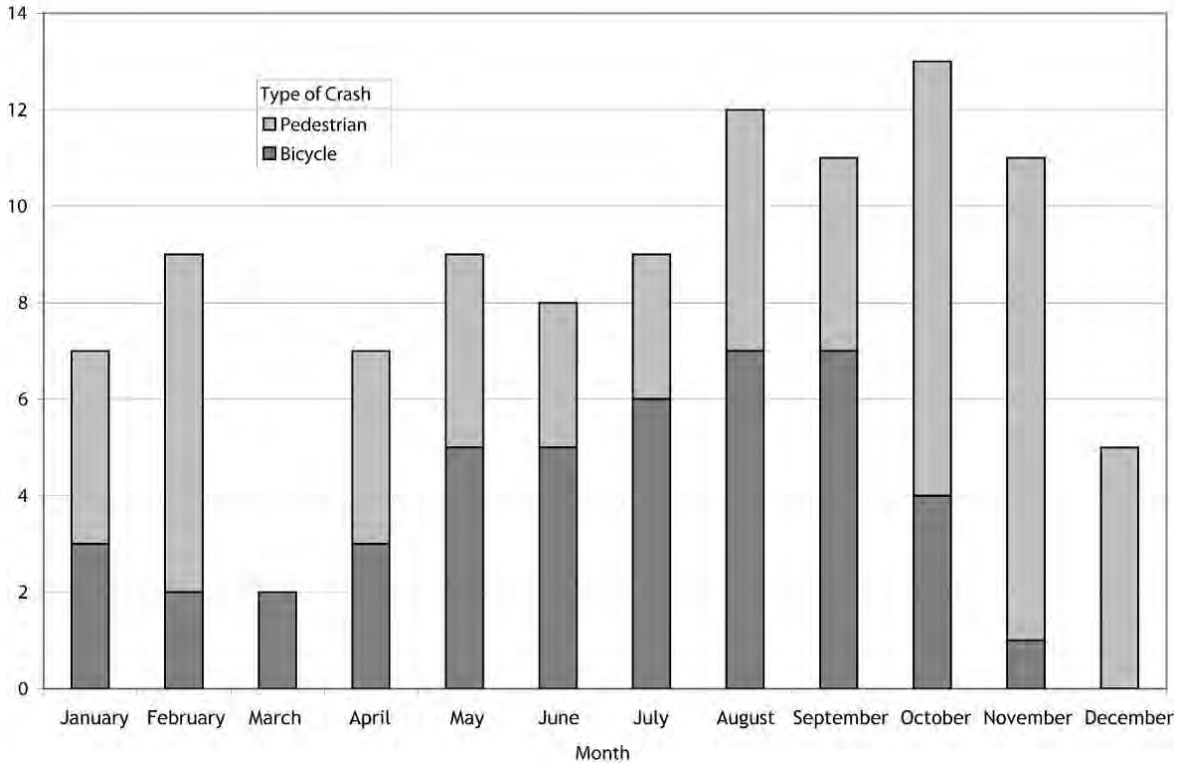
- Main Street at Gregory Street
- Linden Street at Vernon Avenue
- University Street at College Avenue
- 300 N Greenbriar Drive
- Fell Avenue at North Street
- Beaufort Street at University Street

Furthermore, many crashes occurred along the same corridors. College Avenue experienced the most total crashes (20), followed by Main Street (16), Linden Street (14), Fell Avenue (nine), University (nine), Beaufort Street (eight) and Vernon Avenue (eight). Other streets with several crashes include Greenbriar Drive, Gregory Street, North Street, Parkside Road, School Street, Willow Street, Hovey Avenue, Mulberry Street, Raab Road, and Towanda Avenue. Map 3 shows the location of crashes by severity.

Most reported crashes occurred in the center of town, near Illinois State University and Uptown Normal. This trend may correlate with higher levels of walking and bicycling activity in these areas. Between 2005 and 2007, crashes occurred most commonly during the late summer and early spring, with the fewest pedestrian crashes occurring in March, as shown in Figure 30. Crashes involving bicyclists were lower from November through April, possibly correlating with seasonal variations in the frequency of walking and bicycling.

[4] Available at: http://www.bikelib.org/video/

Figure 30. Reported Pedestrian and Bicycle Crashes by Month, 2005-2007



Town of Normal staff track the severity of a crash by recording whether it resulted in an individual being transported to the hospital or if a fatality was involved. The severity of reported crashes is shown in Figure 31. Between 2005 and 2007, one pedestrian was involved in a fatal crash, 35 were transported to the hospital, and 22 refused medical assistance or had no injury. Nineteen bicyclists were transported to the hospital and 24 refused medical assistance or had no injury. No bicyclists were involved in fatal crashes.

Figure 31. Severity of Crashes by Year, All Reported Crashes, 2005-2007

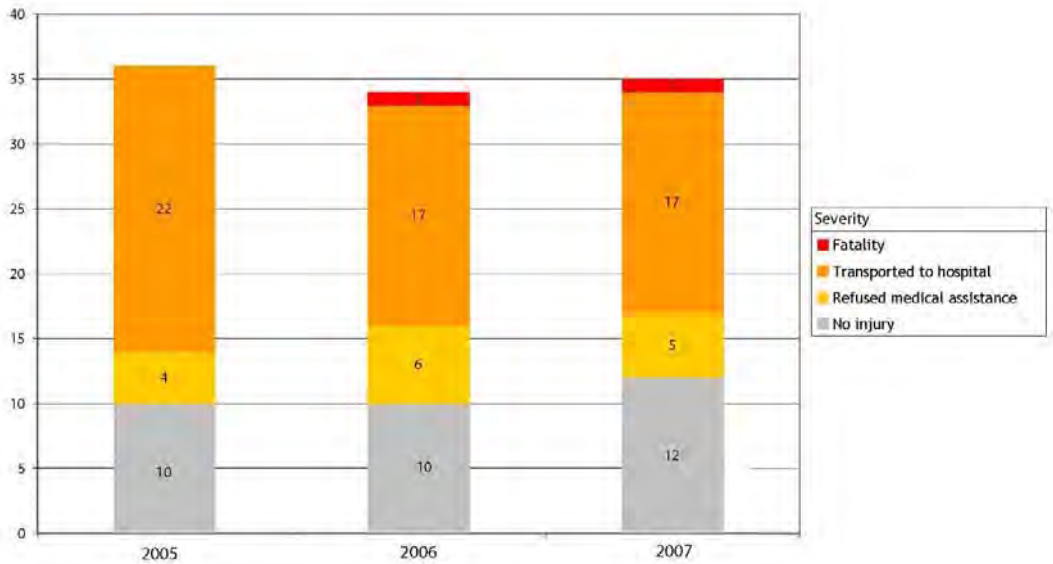
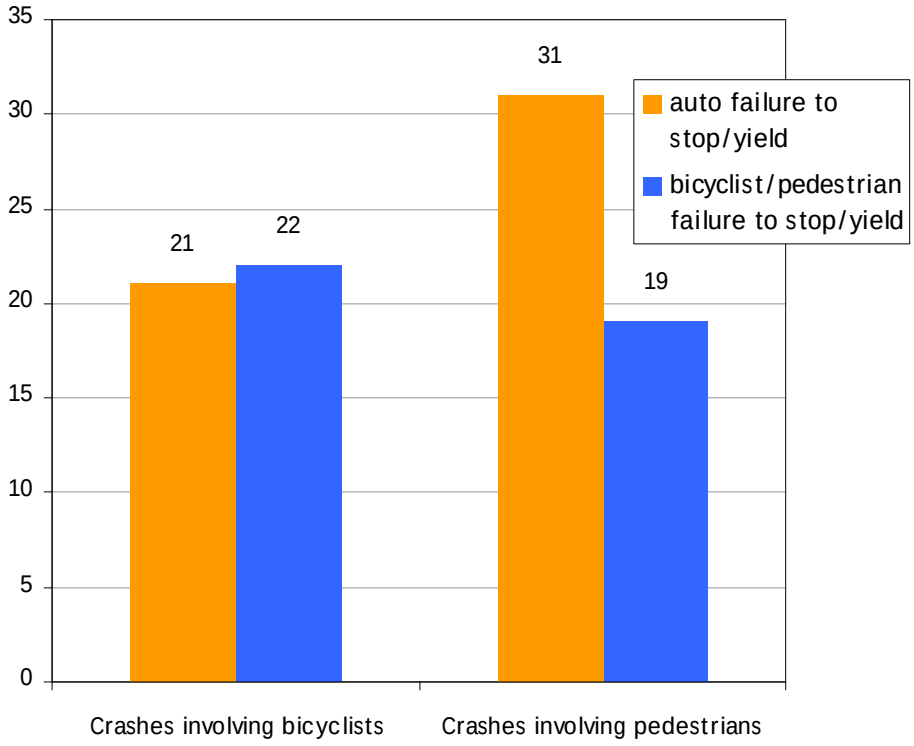


Figure 32 summarizes contributing crash causes. The majority of reported crashes were caused by motorists failing to yield to pedestrians. Forty-six crashes involved a motorist failing to yield, and another 18 were due to the pedestrian or bicyclist failing to stop or yield to a motorist.

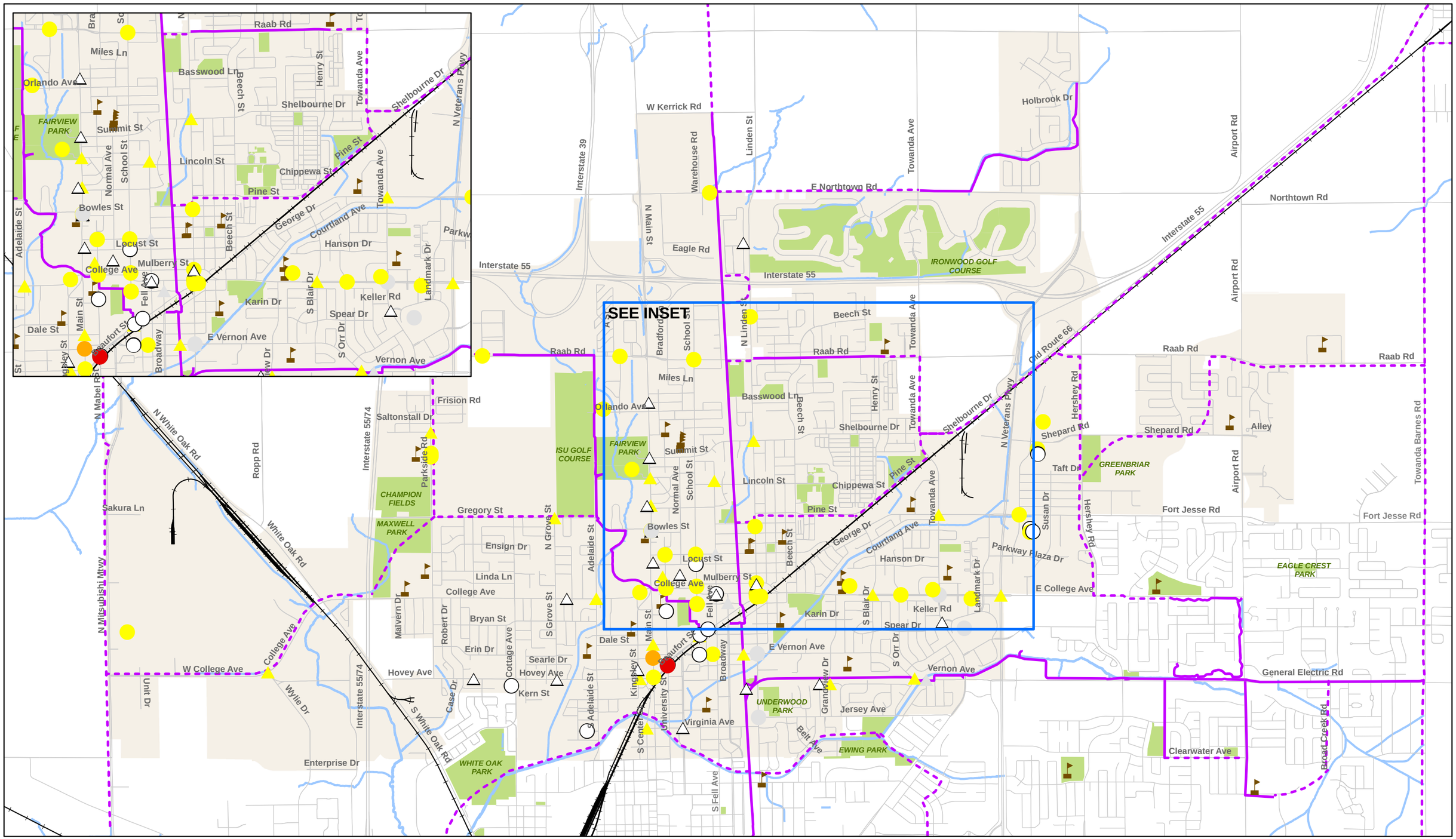
Overall, 58 crashes involved pedestrians during this time period. Nine of these crashes were caused by pedestrians failing to stop or yield.[5] Pedestrians walking in the road caused four reported crashes. In at least one case, the pedestrian was walking in the street due to a sidewalk closure. In addition, six pedestrian crashes involved a child, and nine occurred in parking lots.

Crashes involving bicyclists totaled 45, with seven due to a cyclist's failure to yield and another 14 due to a cyclist's failure to stop. Three crashes occurred when a bicyclist was riding on the wrong side of the road, and another was due to a bicyclist riding in the wrong lane. Other contributing causes included a motorist not paying attention, neither party paying attention, and a fence obscuring the cyclist's and motorist's view of each other.

Figure 32. Cause of Crash by Type, 2005-2007



[5] Note: Crashes identified as being caused by "pedestrian failure to stop or yield" likely occurred when a pedestrian crossed a street against a light or at a mid-block location.



Map 3. Reported Crash Locations (2005-2007)

Normal Bicycle and Pedestrian Master Plan
Source: Town of Normal, Illinois
Author: HK
Date: July, 2009

Pedestrian Collisions
- No injury
- Refused medical attention
- Transported to hospital
- Transported to hospital (2 people)
- Fatality

Bicycle Collisions
- No injury
- Refused medical attention
- Transported to hospital

- Existing Shared Use Path
- Previously Proposed Shared Use Path
- Schools
- Parks
- Normal Town Boundary
- Streets
- Railroad
- Waterways

0 0.25 0.5 Miles

alta PLANNING + DESIGN

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The analysis reveals that opportunities exist to increase pedestrian and bicycle safety in Normal. Providing adequate sidewalks or bike lanes could have prevented ten of the reported crashes. Clarifying which party has the right-of-way in potential conflict areas could also improve safety by regularizing interactions. Finally, increasing the visibility of pedestrians and cyclists with signage and pavement markings would remind drivers to be aware of other, more vulnerable roadway users.

A few limitations of this data should be noted. Crashes involving bicyclists or pedestrians often do not result in injury requiring hospitalization or in property damage, and these may not be reported. Contributing cause information was recorded in police reports, which in some cases may not adequately specific.

Community Safety Concerns

Community members' feedback regarding safety concerns was gathered as part of the first Normal Bicycle and Pedestrian Master Plan Community Workshop, held in December 2008. Safety issues that were discussed included conflicts between bicyclists and pedestrians (e.g., along the Constitution Trail) and conflicts between motorized and non-motorized travelers.

Community members identified difficult roadway crossings at various locations, including along Veterans Parkway, on Main Street near Fairview Park, and on Gregory Street at Adelaide Street. Difficult bicycling conditions were identified on Raab Road between the existing Constitution Trail segments, on Towanda Avenue between Vernon Avenue and Interstate 55.

Community members also had the opportunity to suggest system improvements. Signage and pavement markings were determined to be a good short-term strategy to increase the visibility of pedestrians and bicyclists. Other recommended policies and programs included increased enforcement of laws requiring motorists to yield to pedestrians, bike safety education, encouragement programs for school children, and establishing standards for bike lane width as new bike lanes are constructed in Normal.

Workshop participants were also asked to complete a questionnaire discussing their thoughts on Normal's existing bicycle/pedestrian system, and to provide input on what could make the system better. Responses to the question, "What would make bicycling and walking safer in Normal?" are shown below. Responses generally fell into categories of engineering, education/signage, enforcement and maintenance.

Engineering issues:

- More on-street bike lanes
- Safer crossings of Veterans Parkway
- Improved access through Uptown Normal
- Improved crossings of Fort Jesse Road
- Improved routes to Normal's west side
- More designated pedestrian crossings
- Better connections between White Oak Park and Constitution Trail
- Traffic calming measures
- Improved on-street connections to the Constitution Trail
- Improved pedestrian crossing treatments on roadways leading to the Constitution Trail

- Improved bicycle/pedestrian/transit facilities on north-south roadways
- Dedicated bike lanes on higher-volume streets
- Constitution Trail extension to the west side of town
- "Complete Streets" treatments on all roadways in Normal
- A more streamlined connection between the Constitution Trail and ISU
- Improved pedestrian connections between hotels and surrounding areas

Education/signage issues:

- Education of all transportation users
- Education of cyclists (to ride more predictably)
- Improved bicyclist behavior on trails to minimize conflicts with pedestrians
- Posted "trail etiquette" signs intended for bicyclists, walkers, joggers
- Warning signage alerting motorists to the presence of bicyclists
- Bicycle/pedestrian wayfinding signage

Enforcement issues:

- Motorists' and bicyclists' compliance with traffic laws
- Motorists' compliance with crosswalks
- Increased enforcement of traffic laws
- Reduced speed limits

Maintenance issues:

- Upgrade damaged pavement and potholes where street pavement abuts concrete curb gutters
- Snow/ice removal from Constitution Trail
- Ordinance requiring property owners to clear sidewalks of snow and ice
- Trimming of overgrown vegetation that impedes pedestrian movement on sidewalks

Chapter 4. Recommended Walkway and Bikeway Network

Normal has potential to build on the existing walkway and bikeway networks and transform itself into a community where walking and bicycling for transportation and recreation are popular activities. This chapter lays out a 20-year plan for completing this system of walkways and bikeways. The recommended network builds upon previous and on-going local and regional planning efforts, and reflects the extensive input offered by Town staff, the Master Plan Steering Committee, bicycle/pedestrian stakeholder groups, and Normal residents.

The recommended walkway and bikeway network includes a comprehensive and diverse set of pedestrian and bicycle facilities connecting key destinations in and around Normal. System improvements include upgrading intersections for safer bicycle and pedestrian crossings, establishing pedestrian priority corridors to target sidewalk infill, establishing a formalized bikeway system, and other non-infrastructure projects to encourage bicycling and walking. Suggested improvements include low-cost measures yielding immediate results, such as spot-infill of sidewalks and re-striping of streets to accommodate bike lanes. Other suggested improvements, such as expanding the local trail system, represent longer-term strategies for transforming Normal into a truly bicycle- and pedestrian-friendly community.

This chapter contains a long list of suggested improvements, yet projects at the top of the priority list will substantially improve the walking and bicycling environment within the first five years of Plan implementation. Chapter 5 describes programmatic strategies to enhance Normal's walking and bicycling environment. This chapter is organized into walkway and bikeway improvements, first discussing best practice design guidelines for each proposed facility type and then specifically suggesting where the Town could implement each of these designs. It should be noted that final pedestrian and bicycle facility design will be subject to relevant standards (e.g., IDOT) depending on their location.

Recommended Walkway Improvements

The recommended pedestrian network builds upon Normal's existing system of sidewalks, shared use paths, and other pedestrian infrastructure elements currently in place. Map 4 depicts recommended pedestrian system improvements, which include intersection improvements and "pedestrian priority corridors" to target sidewalk infill and spot improvements.

Best practice design guidelines are based on guidance from the *Manual on Uniform Traffic Control* Devices (MUTCD), *Americans with Disabilities Act* (ADA) standards and guidelines, *American Association of State Highway and Transportation Officials* (AASHTO) bicycle and pedestrian facility design guidelines and other relevant design manuals. The sections following describe pedestrian improvements and proposed projects in greater detail.

Sidewalks

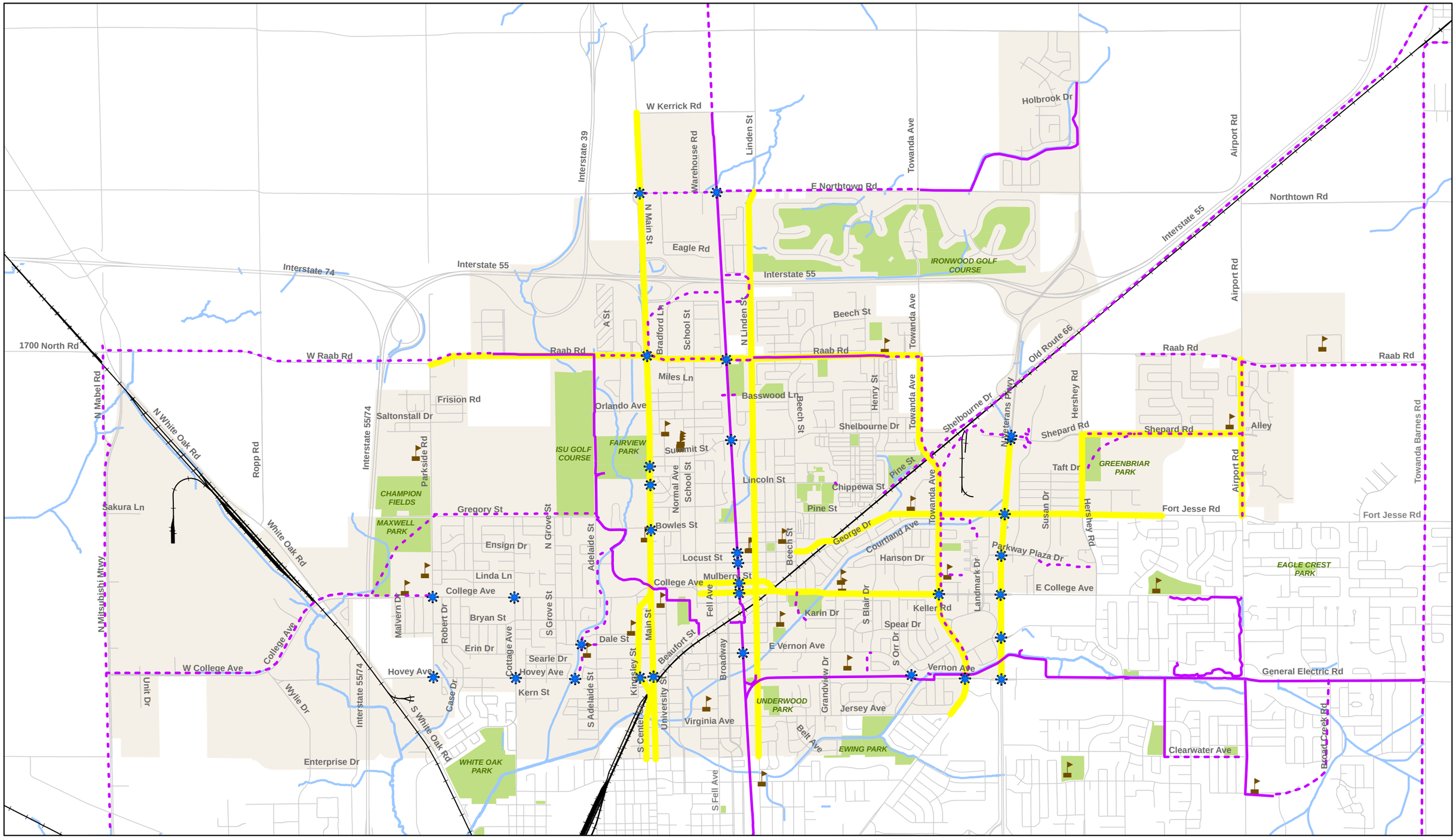
Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel that is separated from vehicle traffic. Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped planting strip area. Sidewalks are a common application in urban and suburban environments but are less common in rural areas and environments where objections to the "urban" character of sidewalks can arise. In rural areas, pedestrian travel commonly occurs along the shoulder of the roadway, which is often unpaved.

Installing new sidewalks can be costly, particularly if drainage improvements such as undergrounding of roadside culverts and installation of curb/gutter are part of the design. However, fixing short gaps in an existing sidewalk network is important to maximize system continuity and can be relatively low-cost. Alternatives to sidewalks in rural areas include pedestrian paths separated from a roadway by a bioswale (to serve drainage purposes), or traffic-calming measures on low-volume streets where pedestrians share the road with motorists.

Figure 33 and Figure 34 show examples of poorly-designed and well-designed sidewalks, respectively. This section addresses design considerations contributing to a good pedestrian environment both along sidewalks and at intersections.

Figure 33. Narrow sidewalks are often blocked by utilities and do not provide adequate pedestrian space

Figure 34. A well-designed sidewalk provides plenty of pedestrian space, as well as trees, bike parking, and a planter zone



Map 4. Proposed Walkway Network

Normal Bicycle and Pedestrian Master Plan

Source: Town of Normal, Illinois
Author: HK
Date: July, 2009

- Existing Shared Use Path
- Existing Sidewalks

Proposed Walkways
- Shared Use Path
- Pedestrian Priority Corridors
- Intersection Improvements

- Schools
- Parks
- Normal Town Boundary

- Streets
- Railroad
- Waterways

0 0.35 0.7 Miles

alta PLANNING + DESIGN

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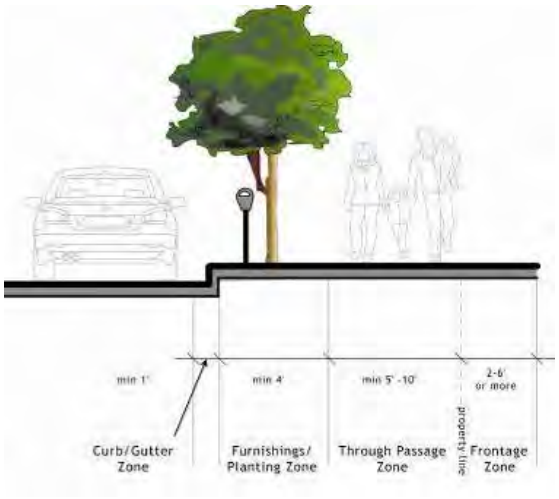
Sidewalk Design Guidelines

The sidewalk corridor is the portion of the pedestrian realm between the roadway edge and right-of-way boundary, generally along the sides of streets. A variety of considerations are important in sidewalk design. Providing adequate and accessible facilities should lead to increased numbers of people walking, improved safety, and the creation of social space. Attributes of well-designed sidewalks include the following:

- ***Accessibility***: A network of sidewalks should be accessible to all users and meet ADA requirements.
- ***Adequate width***: Two people should be able to walk side-by-side and pass a third person comfortably, and different walking speeds should be possible. In areas of intense pedestrian use, sidewalks should be wider to accommodate the higher volume of walkers.
- ***Safety***: Design features of the sidewalk should allow pedestrians to have a sense of security and predictability. Sidewalk users should not feel they are at risk due to the presence of adjacent traffic.
- ***Continuity***: Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.
- ***Landscaping***: Plantings and street trees within the roadside area should contribute to the overall psychological and visual comfort of sidewalk users, without providing hiding places for attackers.
- ***Social space***: Sidewalks should be more than areas to travel; they should provide places for people to interact. There should be places for standing, visiting, and sitting. The sidewalk area should be a place where adults and children can safely participate in public life.
- ***Quality of place:*** Sidewalks should contribute to the character of neighborhoods and business districts and strengthen their identity.

The following sections describe specific sidewalk elements in greater detail.

Zones in the Sidewalk Corridor

Design Summary	Design Examples
The Sidewalk Corridor is typically located within the public right-of-way between the curb or roadway edge and the property line. The Sidewalk Corridor contains four distinct zones: the Curb Zone, the Furnishings Zone, the Through Pedestrian Zone, and the Frontage Zone, shown right. The Curb Zone Curbs prevent water in the street gutters from entering the pedestrian space, discourage vehicles from driving over the pedestrian area, and facilitate street sweeping. In addition, the curb helps to define the pedestrian environment within the streetscape, although other designs can be effective for this purpose. At the corner, the curb is an important tactile element for pedestrians who are finding their way with the use of a cane. The Furnishings/Planting Zone The Furnishings Zone buffers pedestrians from the adjacent roadway and is also the area where elements such as street trees, signal poles, utility poles, street lights, controller boxes, hydrants, signs, parking meters, driveway aprons, grates, hatch covers, and street furniture are properly located. This is the area where people alight from parked cars. The Through Pedestrian Zone The Through Pedestrian Zone is the area intended for pedestrian travel. This zone should be entirely free of permanent and temporary objects. The Frontage Zone The Frontage Zone is the area between the Through Pedestrian Zone and the property line. This zone allows pedestrians a comfortable "shy" distance from the building fronts in areas where buildings are at the lot line or from elements such as fences and hedges on private property.	 Sidewalk Zones  This sidewalk has plantings in the furnishing zone and in the frontage zone and provides sufficient through passage zone width

Sidewalk Widths

Design Summary

Proposed sidewalk guidelines apply to new development and depend on available street width, motor vehicle volumes, surrounding land uses, and pedestrian activity levels. Standardizing sidewalk guidelines for different areas of the Town, dependent on the above listed factors, ensure a minimum level of quality for all sidewalks.

Generally, sidewalks should be at least six feet wide, exclusive of the curb and other obstructions. This width:

- Enables two pedestrians (including wheelchair users) to walk side-by-side or to pass each other comfortably
- Allows two pedestrians to pass a third pedestrian without leaving the sidewalk

The table to the right provides guidance for minimum sidewalk widths by street type.

In some cases, it is possible to increase the dimensions of the sidewalk corridor, either through acquisition of right-of-way or public walkway easements, or by re-allocation of the overall right-of-way (such as by narrowing roadway travel lanes or reducing the number of lanes). As part of a roadway reconstruction project on a street with a narrow sidewalk corridor, project planners should first analyze the impact of reclaiming a portion of the existing right-of-way. If this proves impractical, the feasibility of acquiring additional right-of-way should be examined. Acquisition should be considered where its cost is reasonable in proportion to the overall project cost.

In the case of infill development, the dedication of public right-of-way or the granting of a public walkway easement to widen the sidewalk corridor may be included as a requirement for obtaining a building permit or land use approval.

Design Examples

Recommended Minimum Sidewalk Widths by Street Type:

	Curb	Planting Strip (Buffer)	Sidewalk Width
Arterial and Collector Street	1 ft.	2-4 ft.	8 ft.*
Local Neighborhood Street	0-1 ft.	0-2 ft.	5 ft.*
Commercial Walkways	1 ft.	2-4 ft.	6-10 ft.

*Note: short sidewalk segments can have narrower widths in physically-constrained areas.

Example of a sidewalk with trees and sufficient space for pedestrians to walk together

Sidewalk Surfaces

Design Summary	Design Examples
Sidewalk surfaces should be smooth and continuous. It is also desirable that the sidewalk surface be stable, firm and slip resistant. Preferred materials include Portland Cement Concrete (PCC) and Asphalt Concrete (AC). PCC provides a smooth, long-lasting and durable finish that is easy to grade and repair. AC has a shorter life expectancy but may be more appropriate in less urbanized areas and in park settings. Crushed aggregate may also be used as an all-weather walkway surface in park areas, but this material generally requires a higher level of maintenance to maintain accessibility. The *Americans with Disabilities Act* allows a maximum two percent cross-slope on sidewalks and other walkways. Where sidewalks meet driveways, curb cuts or intersections, a three-foot wide area should be maintained with a two percent cross-slope.	 Concrete is often used as a trail material and can be used for sidewalks  Asphalt is a common sidewalk surfacing material

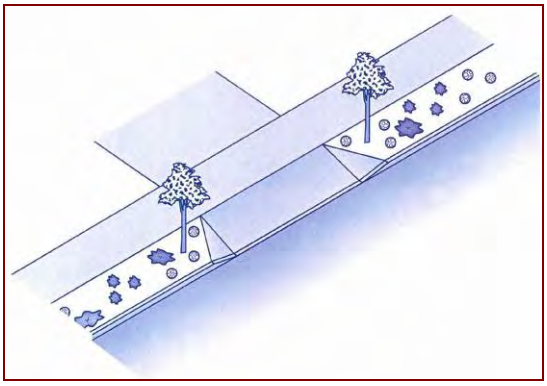
Addressing Sidewalk Obstructions

Design Summary	Design Examples

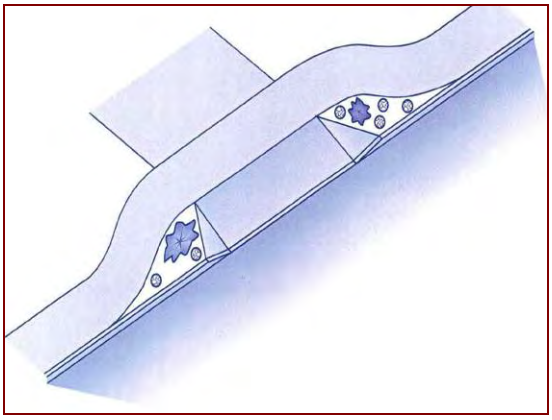
Obstructions to pedestrian travel in the sidewalk corridor typically include sign posts, utility and signal poles, mailboxes, fire hydrants and street furniture. Obstructions should be placed between the sidewalk and the roadway to create a buffer for increased pedestrian comfort. When sidewalks abut perpendicular or angle on-street parking, wheelstops should be placed in the parking area to prevent parked vehicles from overhanging in the sidewalk. When sidewalks abut hedges, fences, or buildings, an additional two feet of lateral clearance should be added to provide appropriate shy distance.

Driveways represent another sidewalk obstruction, especially for wheelchair users. The following techniques can be used to accommodate wheelchair users at driveway crossings:

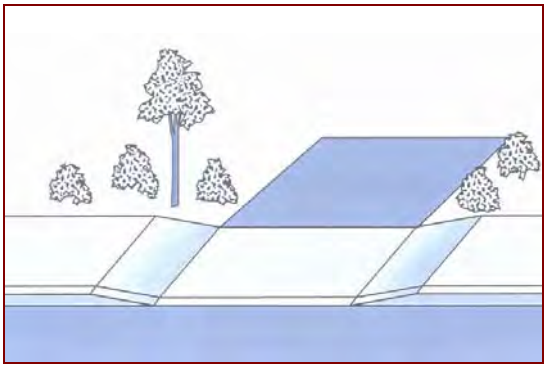
- Reducing the number of accesses reduces the need for special provisions. This strategy should be pursued first.
- Constructing wide sidewalks avoids excessively steep driveway slopes. The overall width must be sufficient to avoid an abrupt driveway slope.
- Planter strips allow sidewalks to remain level, with the driveway grade change occurring within the planter strip (top graphic at right).
- Where constraints preclude a planter strip, wrapping the sidewalk around the driveway has a similar effect (middle graphic at right). However, this method may have disadvantages for visually-impaired pedestrians who follow the curb line for guidance.
- When constraints only allow curb-tight sidewalks, dipping the entire sidewalk at the driveway approaches keeps the cross-slope at a constant grade (bottom graphic at right). However, this may be uncomfortable for pedestrians and could create drainage problems behind the sidewalk.



Driveway apron utilizing the planting strip



Sidewalk wrapped around driveway



Entire sidewalk dips at driveway

Sidewalk Maintenance

Design Summary

Sidewalk surfaces that have settled or heaved over time can be a significant barrier for pedestrians. Surfaces that are smooth when newly installed may not stay that way, particularly where masonry units are installed without an adequate subbase. Knowledgeable design, wise material selection, good construction practices, and regular maintenance procedures can help ensure that differences in level between adjacent units do not exceed the limits of usability. Surface provisions for an accessible route limit allowable vertical differences in level between abutting surfaces.

Root Protection

Most sidewalk damage is caused as subsurface roots become thicker, lifting up the concrete slabs. To prevent extensive sidewalk damage, the appropriate rootstocks should be chosen for trees planted at each location. Trees and rootstocks that have extensive, shallow root systems should not be planted adjacent to sidewalks. Also, tree selection should be made based on the available soil, water and light conditions, and most importantly, the width of the planting strip.

Subsurface tree roots can lift concrete sidewalk slabs, causing the surface to become uneven

Plantings

Street trees are a highly desirable part of the pedestrian environment, especially large-canopied shade trees. Tree limbs should be trimmed to leave at least eight feet of clear space above the sidewalk. Where mature trees are in place, root barriers, root pruning techniques, and interlocking sidewalk pavers could be used to minimize damage.

Grates

All grates within the sidewalk should be flush with the level of the surrounding sidewalk surface, and should be located outside the Through Pedestrian Zone. Ventilation grates and tree well grates shall have openings no greater than ½" in width.

Designers should consider using tree well grates or treatments such as unit pavers in high pedestrian use areas.

Tree well grates should be flush with the sidewalk surface

Hatch Covers

Hatch covers should be located within the sidewalk Furnishings Zone. Hatch covers must have a surface texture that is rough, with a slightly raised pattern. The surface should be slip-resistant even when wet. The cover should be flush with the surrounding sidewalk surface.

Intersections

In general, pedestrians are not inclined to travel very far out-of-direction to access a designated crosswalk, so providing sufficient crossings is critical for a safe pedestrian environment. Crosswalks can also be designed for increased visibility of pedestrians, and curb ramps as well as vehicle turning radii should also be considered for the pedestrian environment.

In areas of high pedestrian use, where priority is given to walking trips by Town policies, it may be appropriate to design for the convenience of pedestrians when considering signal placement and timing, even if it means reducing the efficiency of vehicle progression. For example, longer pedestrian phases may be desirable.

Intersection Design Guidelines

Attributes of pedestrian-friendly intersection design include:

- **Clear Space** — Corners should be clear of obstructions. They should also have enough room for curb ramps, for transit stops where appropriate, and for street conversations where pedestrians might congregate.
- **Visibility —** It is critical that pedestrians on the corner have a good view of vehicle travel lanes and that motorists in the travel lanes can easily see waiting pedestrians.
- **Legibility —** Symbols, markings, and signs used at corners should clearly indicate what actions the pedestrian should take.
- **Accessibility —** All corner features, such as curb ramps, landings, call buttons, signs, symbols, markings, textures, must meet accessibility standards.
- **Separation from Traffic —** Corner design and construction must be effective in discouraging turning vehicles from driving over the pedestrian area.

Although some intersections in Normal create challenging pedestrian crossing conditions, improvement opportunities exist. This Plan proposes an overall strategy to improve intersections and other pedestrian crossings throughout the town through a variety of treatments. Most intersections that could benefit from improvements are located on streets with higher vehicle speeds and volumes, higher pedestrian volumes, limited sight distance, and/or other conditions complicating pedestrian crossing movements.

Improving Visibility at Crossings

At signalized intersections, all crosswalks should be marked. At un-signalized intersections, crosswalks should be marked in the following situations:

To help orient pedestrians find their way across a complex intersection;

To show pedestrians the shortest route with the least exposure to vehicular traffic; and

To help position pedestrians where they can best be seen by oncoming traffic.

Several provisions can increase safety for all roadway users by clearly marking or increasing the visibility of a crossing location, or by providing a pedestrian refuge island, as described below

Mid-block Crossings

Crosswalks can be provided at mid-block locations if sufficient pedestrian demand exists or where pedestrians would be required to walk out-of-direction to access a crosswalk at an intersection. Mid-block crossings should be aligned where possible with logical pedestrian travel patterns. Mid-block crossings should always include pavement markings and warning signs.

High-Visibility Crosswalks

Where there is poor motorist awareness of an existing crossing or at high-use locations such as a school crosswalk or a crossing of the Constitution Trail, high-visibility crosswalks can increase safety for pedestrians and bicyclists. High-visibility crosswalks are particularly important along routes to school to improve visibility of school children.

Flashing Warning Signs and In-Street "Yield to Pedestrians" Signs

Another method for increasing the visibility of a crossing, flashing warning signs call attention to the pedestrian crossing location. They can be continuous, timed for rush hours, or activated by a pedestrian push-button.

In-Street Yield to Pedestrian Signs are flexible plastic "paddle" signs installed in the center of a roadway to enhance a crosswalk at uncontrolled crossing locations

Pedestrian Refuge Islands

Pedestrian refuge islands minimize pedestrian exposure at a crossing by shortening the crossing distance and increasing the number of available gaps for crossing. Refuge islands allow pedestrians to make a crossing in multiple stages by focusing on one direction of traffic at a time.

Signal Accommodation for Pedestrians

Pre-timed signals accommodate pedestrian crossings through automatic "phasing" concurrent with parallel vehicle traffic, while at actuated signals pedestrians usually push an activation button to trigger the walk signal. Providing adequate pedestrian crossing time is a critical element of the walking environment at signalized intersections. The MUTCD recommends traffic signal timing to assume a pedestrian walking speed of 4' per second, meaning that the length of a signal phase with parallel pedestrian movements should provide sufficient time for a pedestrian to safely cross the adjacent street. At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3' per second may be assumed.

Pedestrian-Activated Push Buttons

A push button permits the signal controller to detect pedestrians waiting to cross. When push buttons are used, they should be located so that someone in a wheelchair can reach the button from a level area of the sidewalk without deviating significantly from the natural line of travel into the crosswalk.

Pedestrian signal buttons are used in cases where actuated signals for the signal controller detect the presence of pedestrians. Where needed, pedestrian call buttons should be located to meet the following criteria:

- The closest push button to a crosswalk should call the pedestrian signal for that crosswalk;
- An arrow should indicate which crosswalk the button will affect;
- The push button should be visible to a pedestrian facing the crosswalk, unless space constrains placement; and
- The push button must be accessible from the landing at the top of the curb ramp or the dropped landing of a parallel curb ramp.

Leading Pedestrian Interval (LPI)

An LPI gives pedestrians an advance walk signal before the motorist signal releases vehicle traffic, which makes pedestrians more visible to motorists.

Audible Pedestrian Signal

Audible signals provide a cue to visually-impaired pedestrians that there is a 'Walk' signal. Audible signals typically include chirping sounds and or a pre-recorded voice indicator, which are activated by the pedestrian push-button.

The MUTCD states that installation of audible signals should be based on an engineering study considering:

- Potential demand or requests for accessible pedestrian signals
- The complexity of intersection geometry
- Traffic volumes when pedestrians might be present including periods of low traffic volumes or high turn-on-red volumes
- The complexity of traffic signal phasing

Pedestrian Countdown Signals

The countdown signal displays the number of seconds remaining for an individual to complete his or her crossing. This feature allows pedestrians of all walking speeds to determine if they complete their crossing movement during the current signal phase or wait for the next cycle.

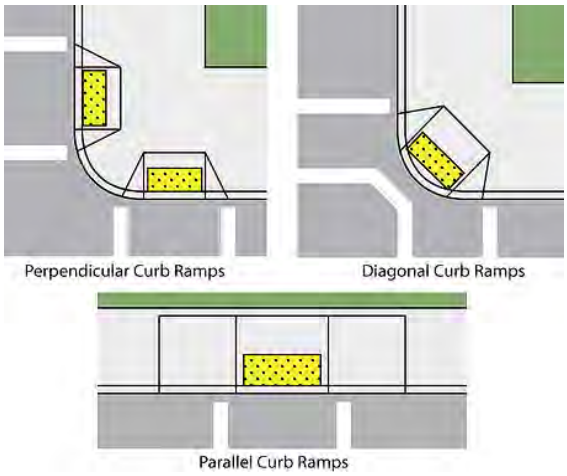
ADA-Compliant Curb Ramps

Design Summary

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. There are a number of factors to be considered in the design and placement of curb ramps at corners. Properly designed curb ramps ensure that the sidewalk is accessible from the roadway. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access.

The ADA defines two types of curb ramp systems, "perpendicular ramps" and "parallel ramps" (see right). The first provides a ramp into a crosswalk, while the second provides a ramp into a landing that is flush with the street surface, sometimes called a "dropped landing."

Design Examples



Curb ramp design options

Discussion

Every curb ramp must have a landing at the top and at the bottom. The maximum ramp slope in the right-of-way is 1:12 with a cross slope of no more than 1:50. The minimum width of a ramp should be 3'-0".

The landing at the top of a ramp should be at least 4'-0" long and at least the same width as the ramp itself. It should slope no more than 1:50 in any direction.

If the ramp runs directly into a crosswalk, the landing at the bottom will be in the roadway. The landing, 4'-0" long, should be completely contained within the crosswalk and should not have a running slope of greater than 1:20.

If the ramp lands on a dropped landing within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 5'-0" long and at least as wide as the ramp, although a width of 5'-0" is preferred. The landing should not slope more than 1:50 in any direction.

A single landing may serve as the top landing for one ramp and the bottom landing for another.

Example of an ADA-compliant curb ramp

Curb Ramp Maintenance

It is critical that the interface between a curb ramp and the street be maintained adequately. Asphalt street sections typically have a shorter life cycle than a concrete ramp. Potholes in the asphalt at the foot of the ramp can catch the front wheels of a wheelchair, causing it to tip over.

In some cases, existing ramps and streets create a tipping hazard because of a sharp change in slope. As an interim solution, this sharp transition can be eased with a tapered infill of asphalt at the foot of the ramp.

Modifying Wide Corners

Design Summary

In general, the smaller the curb radius, the better for pedestrians. In comparison to a large curb radius, a tight curb radius:

- provides additional pedestrian space;
- allows more flexibility in the placement of curb ramps;
- results in a shorter crosswalk; and
- requires vehicles to reduce speed while turning.
- is beneficial to street sweeping operations

Historically, roadway design standards have called for wide curb radii at intersections to increase capacity for motor vehicles. As a result, many of Normal's intersections have corners that force pedestrians to walk longer to cross the street than at intersections with smaller turning radii. This design also allows vehicles to make right-turns at relatively high speeds.

Discussion

Choosing a Curb Radius

Several factors govern the choice of curb radius in any given location:

- the turning radius of the design vehicle;
- the geometry of the intersection;
- street classification; and
- whether on-street parking or a bike lane (or both) exists between the travel lane and the curb.

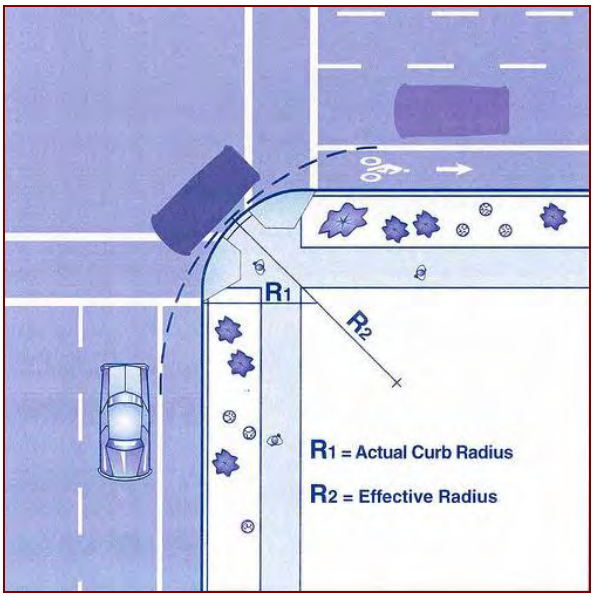
The presence of a lane for parking or bicycles creates an "effective curb radius" that allows the designer to choose a radius for the curb that is smaller than the turning radius required by the design vehicle.

The designer must balance all factors, keeping in mind that the chosen radius should be the smallest possible. The radius may be as small as 3'-0" where there are no turning movements, or 5'-0" where there are vehicle turning movements and there is adequate street width and a larger effective curb radius created by parking or bike lanes.

Parking Control and Corner Radii

Designers sometimes consider that on-street parking will begin or end at the point of tangency or point of curvature of the corner radius. In practice, this point is not always evident in the field. Parking control should not be a factor in selecting curb radius.

Design Examples



Actual versus effective curb radius

This corner was reconstructed to reduce the speed of turning cars and to provide additional pedestrian space

Modifying Wide Corners (continued)

Modifying the Curb

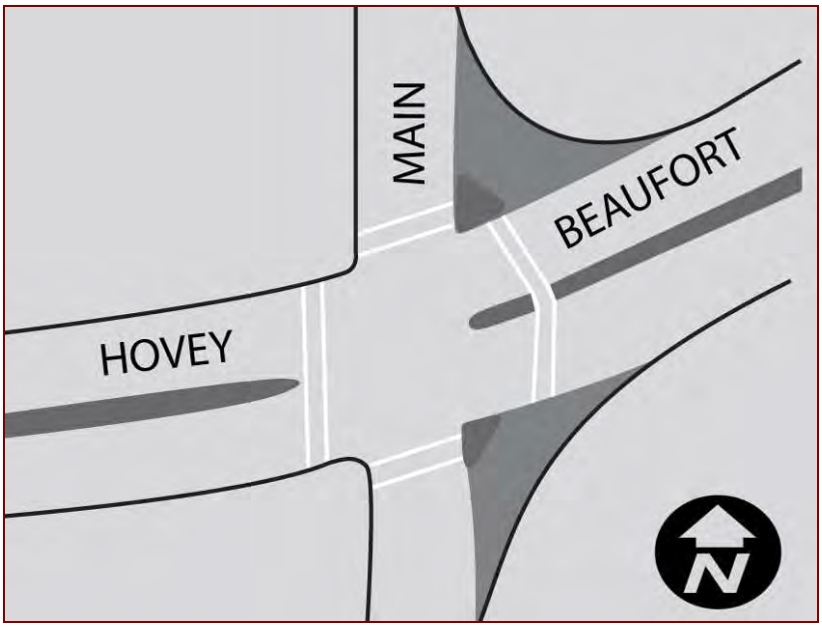
At some intersections where wide curb radii induce higher vehicle turning speeds, the recommendation is to rebuild corners to reduce speeds and render the intersection safer for all users. This treatment was recommended in Normal's *Main Street Redevelopment Plan*.

Two methods can be used to reduce curb radii and increase safety for pedestrians crossing the street.

Design Example: Main Street at Hovey/Beaufort

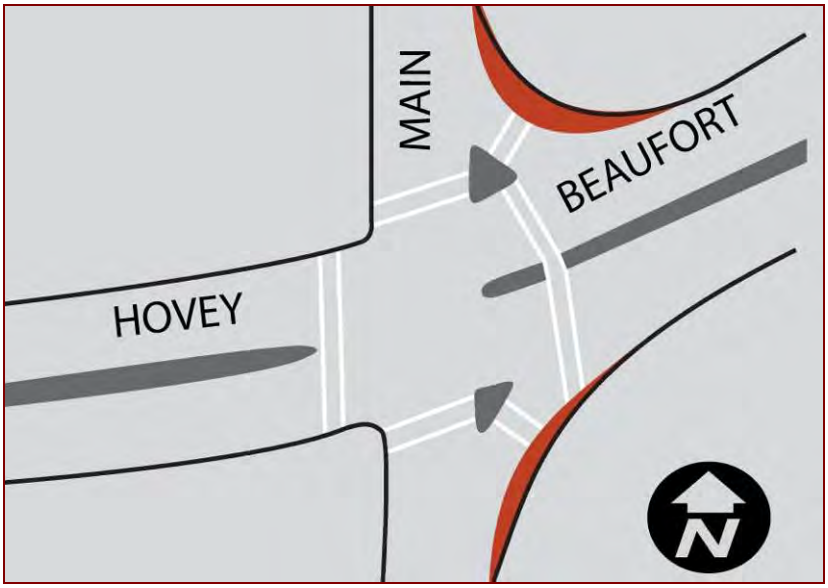
Curb Reconstruction

Curb reconstruction (shown to the right) is the recommended approach, as the removal of the right-turn slip lane forces automobiles to reduce speed while making turning maneuvers. This approach also shortens the crossing pedestrian distance.



Soft Curbs

The alternative to curb reconstruction is to narrow the right turn slip lane with a soft curb, which vehicles can cross over (shown right). This visual narrowing will reduce vehicle turning speeds and encourage drivers to be more cautious in approaching intersections. It also allows emergency vehicles to make the turn at-high speed.



Pedestrian Priority Corridor Recommendations

Normal benefits from a relatively complete sidewalk system in several areas (particularly Uptown Normal), while streets in some outlying areas have fragmented sidewalks or no sidewalks at all. As a result, the major challenge lies in retrofitting existing streets where sidewalks are fragmented or lacking altogether and in areas where significant redevelopment is not expected to occur. Several corridors have been identified as potentially benefiting from targeted pedestrian improvements, including sidewalk infill and widening as well as intersection improvements. Intersections along these corridors should also receive additional pedestrian treatments, described earlier. Table 13 and Map 4 show the corridors where the Town of Normal should concentrate its sidewalk and intersection improvements first.

Table 13. Recommended Priority Pedestrian Corridors

Street	From-To
Main Street/Kingsley Street	South town limits to Raab Road
College Avenue/Mulberry Street	School Street to Hershey Road
Towanda Avenue	Jersey Avenue to Raab Road
Raab Road	Parkside Road to Towanda Avenue
Linden Street	South town limits to Northtown Road
Willow Street/Fort Jesse Road	Beech Street to Northpointe Drive
Airport Road	Fort Jesse Road to Raab Road
Hershey Road	Fort Jesse Road to Raab Road
Shepard Road	Hershey Road to Airport Road
Veterans Parkway	Vernon Avenue to Shepard Road

Intersection Improvement Recommendations

Although many intersections throughout Normal could be targeted for enhancements, the intersections identified on the Proposed Walkways Map (Map 4) were recognized by Town staff and residents as having a relatively high importance. Most highlighted intersections are located on streets with wide cross-sections (e.g., with multiple travel lanes in each direction), higher vehicle speeds and volumes, and/or other conditions complicating pedestrian crossing movements. Among the intersections highlighted for improvements are those located along Veterans Parkway. It should be noted that several proposed intersection improvement projects are located on the "pedestrian priority corridors" described above, providing opportunities to combine projects and streamline corridor improvements.

In addition, this Plan recommends intersection improvements where the Constitution Trail crosses major streets. Specific locations include:

- Northtown Road
- Raab Road
- Shelbourne Drive
- Willow Street
- Locust Street
- Vernon Avenue
- College Avenue
- Mulberry Street

Shared Use Paths

Shared use paths (also referred to as "trails" and "multi-use paths") are often viewed as recreational facilities, but they are also important corridors for utilitarian trips. Shared use paths serve both bicyclists and pedestrians and provide additional width over a standard sidewalk. These facilities may be constructed adjacent to roads, through parks or open space areas, along creeks, or along linear corridors such as abandoned railroad lines. In rural areas, shared use paths can serve as an alternative to formal curb, gutter and sidewalks. If an asphalt or concrete surface is not desired, paths can be constructed with decomposed granite or another aggregate material to better fit in with the rural environment. Regardless of the type, paths constructed next to the road must have some type of vertical (e.g., curb or barrier) or horizontal (e.g., landscaped strip) buffer separating the path area from adjacent vehicle travel lanes.

Shared Use Path Design Guidelines

Shared use paths can provide a desirable facility particularly for novice riders, recreational trips, and cyclists of all skill levels preferring separation from traffic. Shared use paths should generally provide directional travel opportunities not provided by existing roadways. Elements that enhance shared use path design include:

- Frequent access points from the local road network; if access points are spaced too far apart, users will have to travel out of direction to enter or exit the path, which will discourage use
- Directional signs to direct users to and from the path
- High building standards to allow heavy maintenance equipment to use the path without causing it to deteriorate
- Few at-grade crossings with streets or driveways
- Path terminus that is easily accessible to and from the street system, preferably at a controlled intersection or at the beginning of a dead-end street. If poorly designed, the point where the path joins the street system can put pedestrians and cyclists in a position where motor vehicle drivers do not expect them
- Identification and addressing of potential safety and security issues up front
- Separate bicycle and pedestrian ways to reduce conflicts whenever possible, and especially where heavy use can be expected

Shared Use Paths Along Roadways

The AASHTO *Guide for the Development of Bicycle Facilities* generally recommends against the development of shared use paths directly adjacent to roadways. Also known as "sidepaths", these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where cyclists enter or leave the path. This can also result in an unsafe situation where motorists entering or crossing the roadway at intersections and driveways do not notice bicyclists coming from their right, as they are not expecting traffic coming from that direction. Stopped cross-street

motor vehicle traffic or vehicles exiting side streets or driveways may frequently block path crossings. Even bicyclists coming from the left may also go unnoticed, especially when sight distances are poor. Additional concerns about shared use paths directly adjacent to roadways (e.g., with minimal or no separation) include:

- Half of bicycle traffic would ride against the normal flow of vehicle traffic, contrary to the rules of the road.
- When the path ends, cyclists riding against traffic tend to continue to travel on the wrong side of the street, as do cyclists making their way to the path. Wrong-way bicycle travel is a major cause of vehicle/bicycle crashes.
- At intersections, motorists crossing the path often do not notice bicyclists approaching from certain directions, especially where sight distances are poor.
- Bicyclists on the path are required to stop or yield at cross-streets and driveways, unless otherwise posted.
- Stopped vehicles on a cross-street or driveway may block the path.
- Because of the closeness of vehicle traffic to opposing bicycle traffic, barriers are often necessary to separate motorists from cyclists. These barriers serve as obstructions, complicate facility maintenance and waste available right-of-way.
- Paths directly adjacent to high-volume roadways diminish users' experience by placing them in an uncomfortable environment. This could lead to a path's underutilization.

As bicyclists gain experience and realize some of the advantages of riding on the roadway, some riders stop using paths adjacent to roadways. Bicyclists may also tend to prefer the roadway as pedestrian traffic on the shared use path increases due to its location next to an urban roadway. When designing a bikeway network, the presence of a nearby or parallel path should not be used as a reason to not provide adequate shoulder or bike lane width on the roadway, as the on-street bicycle facility will generally be superior to the "sidepath" for experienced cyclists and those who are cycling for transportation purposes. Bike lanes should be provided as an alternate (more transportation-oriented) facility whenever possible. Shared use paths may be considered along roadways under the following conditions:

- The path will generally be separated from all motor vehicle traffic
- Bicycle and pedestrian use is anticipated to be high
- To provide continuity with an existing path through a roadway corridor
- The path can be terminated at each end onto streets with good bicycle and pedestrian facilities, or onto another well-designed path
- There is adequate access to local cross-streets and other facilities along the route
- Any needed grade separation structures do not add substantial out-of-direction travel
- The total cost of providing the proposed path is proportionate to the need

These issues should be carefully considered as the Town of Normal develops shared use paths along roadways.

Shared Use Paths

Design Summary

Width:

- 10' is the minimum allowed for a two-way shared use path and is only recommended for low traffic situations
- 12' is recommended in most situations
- 12-14' or greater is recommended for heavy use situations with high concentrations of multiple users such as joggers, bicyclists, rollerbladers and pedestrians.

Lateral Clearance:

- A 2' or greater shoulder on both sides

Overhead Clearance:

- Clearance to overhead obstructions should be 8' minimum, with 10' recommended.

Separation From Roadway:

- 5' min. buffer should separate the path from the edge of the roadway, or a physical barrier of sufficient height should be installed where a shared use path must be adjacent to a roadway

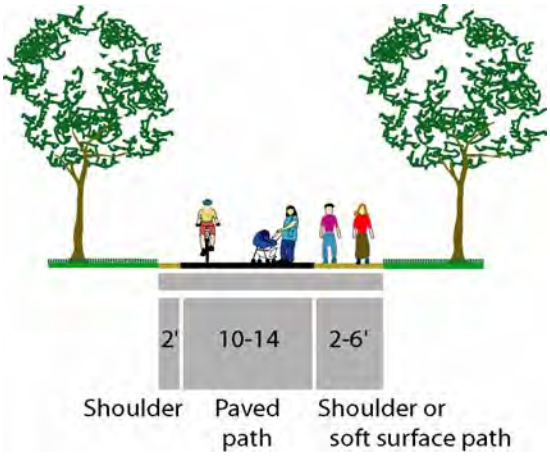
Discussion

Asphalt is the most common surface for shared use paths. However, the material composition and construction methods used can substantially affect the longevity of the pathway. Thicker asphalt sections and a well-prepared subgrade will reduce deformation over time and reduce long-term maintenance costs.

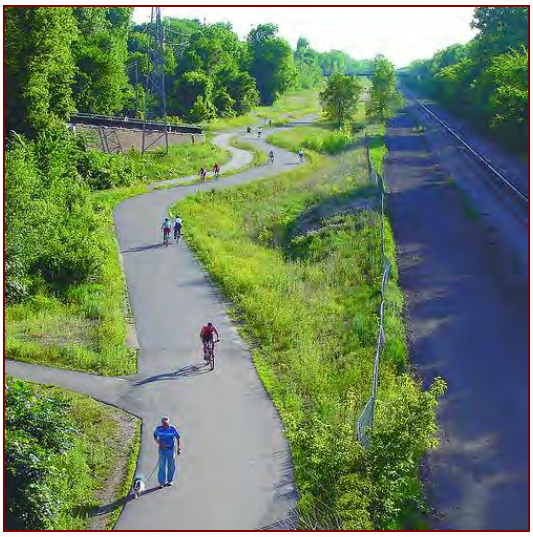
The use of concrete surfacing for paths has proven to be the most suitable for long-term use. Using modern construction practices, concrete provides a smooth ride with low maintenance costs. Concrete paths can be placed with a slip-form paver. The surface must be cross-broomed. Crack-control joints should be saw-cut, not troweled. Concrete paths cost more to build than asphalt paths but do not become brittle, cracked and rough with age, or deformed by roots

Shared use paths should be designed with sufficient surfacing structural depth for the subgrade soil type to support maintenance and emergency vehicles. Where the path must be constructed over a very poor subgrade (wet and/or poor material), treatment of the subgrade with lime, cement or geotextile fabric should be considered.

Design Examples



Recommended shared use path design



The Cedar Lake Regional Trail in Minneapolis, MN has sufficient width to accommodate a variety of users

Shared Use Path Recommendations

The Constitution Trail, a popular and well-used facility, is the backbone of Normal's shared use path system. Additional paths will create a comprehensive network of trails for recreation and commuting purposes.

Most of the shared use path recommendations in this Plan represent components of longer corridors comprised of varying bicycle and pedestrian facility types. While many of the longer proposed trails are likely to be used primarily for recreational purposes, many of the shorter and connecting shared use paths should be considered commuter routes.

Proposed shared use path locations are shown on Map 4. Several shared use paths are recommended in western and northern Normal, including along Raab Road, Airport Road, Shepard Road (between Greenbriar and Airport), Northtown Road, connecting Main/Raab to the Constitution Trail, and along other corridors.

Accessways

Accessways provide direct routes between residential areas, retail and office areas, institutional facilities, industrial parks, transit streets, neighborhood activity centers, and transit oriented developments. Accessways are necessary where routes for pedestrians and bicyclists are not otherwise provided by the street system, particularly in neighborhoods with a disconnected street grid that requires both out-of-direction travel and walking or biking on a major street. Accessways should be considered when 'desire lines' or informal, unauthorized and unmaintained paths have been created. These routes are intended to provide safe, direct, and convenient connections to reduce out-of-direction travel and make walking and bicycling easier.

Accessway Design Guidelines

The design of accessways varies according to the functional classification of the facility as well as the expected user group. Safety for bicyclists and pedestrians on these routes is paramount, as they often intersect busy roadways, are located in residential areas without regular surveillance, and can be quite dark.

Accessways

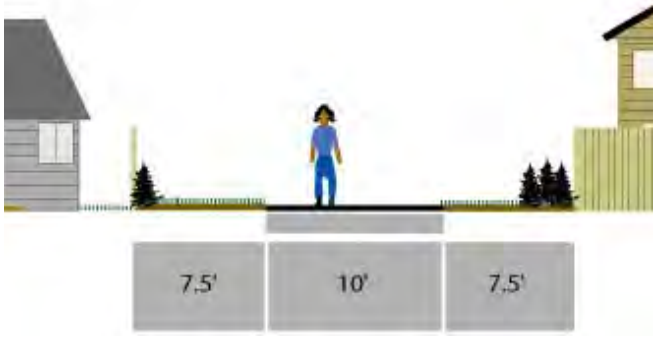
Design Summary

Width

The appropriate width of an accessway depends on the predicted usage.

- 12' right-of-way with a centered 8' wide paved surface and two 2' planter strips is appropriate for a heavily-used accessway
- 8' is the minimum width generally recommended
- Narrower widths can be acceptable in less-heavily trafficked physically-constrained areas. If such a trail is long, bulb-outs should be provided to allow pedestrians to pass each other

Design Examples



Preferred accessway design

Discussion

Surface

Pervious surface materials such as pervious concrete and interlocking pavers are ideal for accessways, as they reduce rainwater runoff into neighboring yards. If the accessway is built to accommodate all users, including pedestrians with disabilities, bicyclists, strollers, and roller-skaters, it should not exceed a 5% slope.

Fencing

As a general policy, fencing requests should be reviewed on case-by-case bases. If credible evidence suggests that trespassing and crime issues on a specific property result from an accessway, then installation of fencing should be considered. There are numerous fencing types that can be considered. Solid fencing that does not allow any visual access to the trail should be discouraged. Fencing that allows a balance between the need for privacy, while simultaneously allowing informal surveillance of the accessway should be encouraged. If fencing is requested purely for privacy reasons, vegetative buffers should be considered.

This accessway connects two cul-de-sac streets

Recommended Bikeway Improvements

Although Normal currently lacks a comprehensive bikeway network, the Town has potential to create an excellent system. The recommended bicycle network builds upon the system of previously-proposed improvements. The network has been developed to fill system gaps, continue expansion of the regional trail network, formalize existing routes used by bicyclists, and improve access between residential, employment, civic, and commercial destinations.

Map 5 depicts the recommended bikeway network for Normal. Similar to today, shared use paths would comprise the region's future off-street bikeway system. Depending on their location and context, Normal's on-street bikeway network would include the following facilities:

- **Bike Lanes:** Designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and also include pavement stencils. Bike lanes are most appropriate on streets where higher traffic volumes and speeds indicate a need for greater separation.
- **Shared Lane Markings**: Shared lane markings (also known as "sharrows") are high-visibility pavement markings that help position bicyclists within a shared vehicle/bicycle travel lane. These markings are typically used on streets where dedicated bike lanes are desirable but are not possible due to physical or other constraints.
- **Bicycle Boulevards:** Bicycle Boulevards are developed through a combination of traffic calming measures and other streetscape treatments, and are intended to slow vehicle traffic while facilitating safe and convenient bicycle travel. Appropriate treatments depend on several factors including traffic volumes, vehicle and bicycle circulation patterns, street connectivity, street width, physical constraints, and other parameters.
- **Signed Connections:** A signed connection accommodates vehicles and bicycles in the same travel lane (similar to a Bicycle Boulevard, but treatments focus exclusively on wayfinding amenities). The most suitable roadways for signed connections are those with low posted speeds or low traffic volumes. In addition to bicycle wayfinding signs, signed connections may also include on-street pavement markings to serve as a route reinforcement tool.
- **Cycle Tracks:** A cycle track is a hybrid type bicycle facility combining the experience of a separated path with the on-street infrastructure of a conventional bike lane. Cycle tracks provide exclusive space for bicycles that is physically separated from pedestrians and cars.

It is important to note that bicycles are permitted on all roads in the state of Illinois. As such, Normal's entire street network is effectively the community's bicycle network, regardless of whether or not a bikeway stripe, stencil, or sign is present on a given street. The designation of certain roads as bike routes is not intended to imply that these are the only roadways intended for bicycle use, or that bicyclists should not be riding on other streets. Rather, the designation of a network of on-street bikeways recognizes that certain roadways are preferred bicycle routes for most users, for reasons such as directness or access to significant destinations, and allows Normal to then focus resources on building out this primary network.

Bike Lanes

Designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and also include pavement stencils. Bike lanes are most appropriate on arterial and collector streets where higher traffic volumes and speeds warrant greater separation.

Most commuter bicyclists would argue that on-street facilities are the safest and most functional facilities for bicycle transportation. Bicyclists have stated their preference for marked on-street bike lanes in numerous national surveys. The fact is that many bicyclists – particularly less experienced riders – are far more comfortable riding on a busy street if it has a striped and signed bike lane. Part of the goal of this Plan is to encourage new riders, and providing marked facilities such as bike lanes is one way of helping to persuade residents to give bicycling a try.

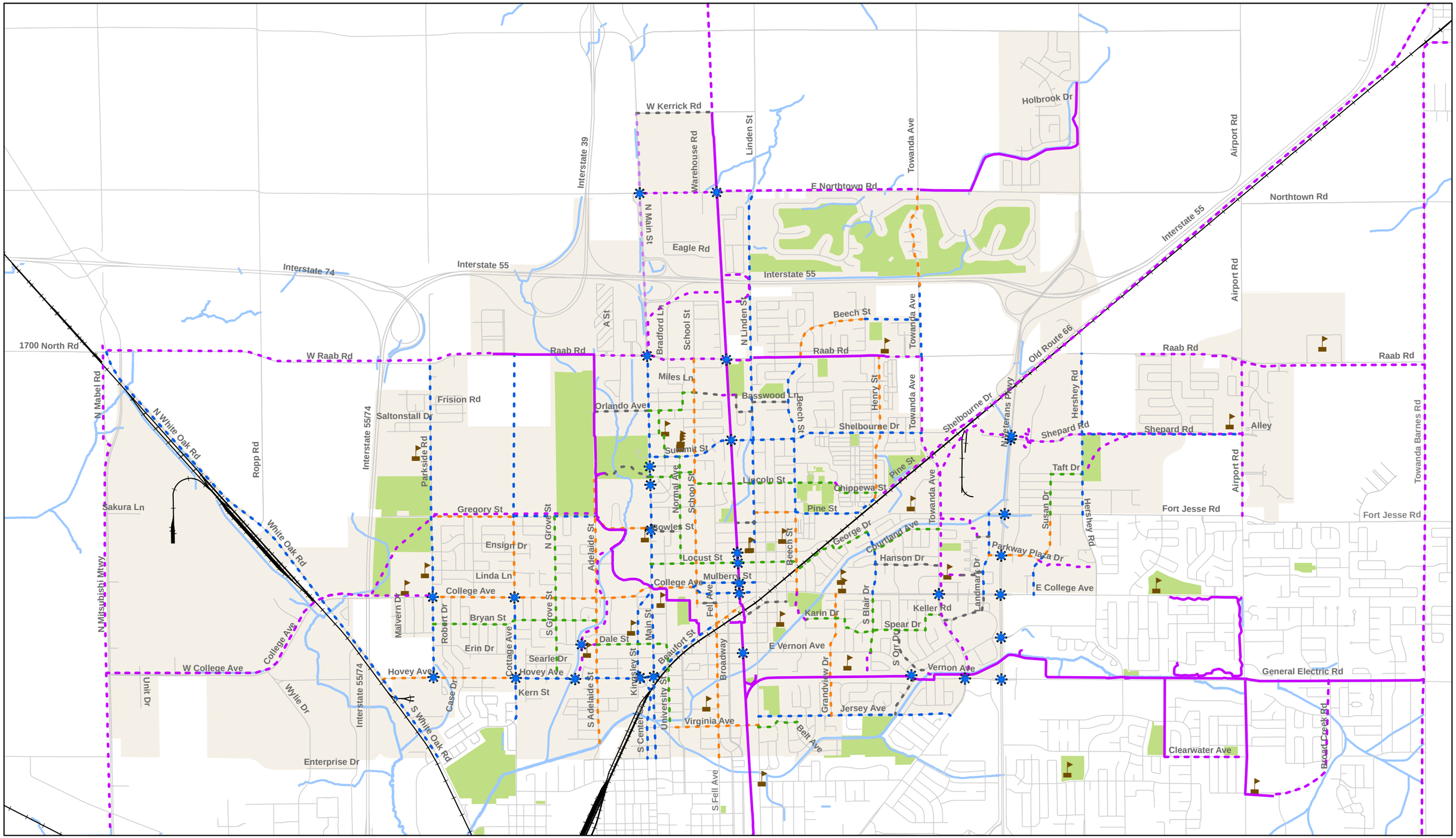
If properly designed, bike lanes can increase safety and promote proper riding. For this reason, bike lanes are desirable for bicycle commute routes along major roadways. Bike lanes help to define the road space for bicyclists and motorists, reduce the chance that motorists will stray into the cyclists' path, discourage bicyclists from riding on the sidewalk, and remind motorists that cyclists have a right to the road. One key consideration in designing bike lanes in an urban setting is to ensure that bike lanes and adjacent parking lanes have sufficient width so that cyclists have enough room to avoid a suddenly opened vehicle door.

Bike Lane Design Guidelines

Bike lanes have been developed in a large variety of configurations and can have special characteristics including coloring if beneficial.

The AASHTO *Guide for the Development of Bicycle Facilities* guidance notes that "longitudinal pavement markings should be used to define bicycle lanes." The guideline states that "if used, the bicycle lane symbol marking shall be placed immediately after an intersection and other locations as needed. The bicycle lane symbol marking shall be white. If the word or symbol pavement markings are used, Bicycle Lane signs shall also be used, but the signs need not be adjacent to every symbol to avoid overuse of the signs."

The following pages describe guidelines for implementing bike lanes on streets with on-street parking (both parallel and diagonal) and without parking. Additional sheets highlight particular considerations for bike lanes, including conflicts with right-turning motorists, left-turning bicycle movements, bike lanes at intersections, and innovative techniques for improving bike lane visibility (including colored bike lanes and bike boxes). The following sections discuss a variety of methodologies for retrofitting bike lanes to existing roadways.



Map 5. Proposed Bikeway Network

Normal Bicycle and Pedestrian Master Plan

Source: Town of Normal, Illinois
Author: HK
Date: July, 2009

- Existing Shared Use Path

Proposed Bikeways

- Shared Use Path
- Cycle Track
- Bike Lane
- Shared Lane Markings
- Bike Boulevard
- Signed Connection
- Proposed Intersection Improvements
- Schools
- Parks
- Normal Town Boundary
- Streets
- Railroad
- Waterways

0 0.25 0.5 Miles

alta PLANNING + DESIGN

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Bike Lane Adjacent to On-Street Parallel Parking

Design Summary

Bike Lane Width:

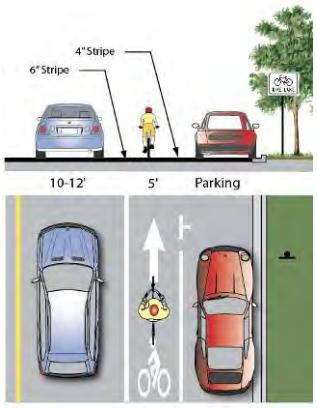
- 5' recommended when parking stalls are marked
- 7' maximum (may encourage vehicle loading in bike lane)
- 12' for a shared lane adjacent to a curb face or 11' minimum for a shared bike/parking lane where parking is permitted but not marked on streets without curbs

Discussion

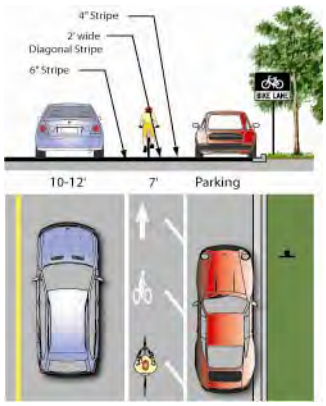
Bike lanes adjacent to on-street parallel parking are common in the United States and can be dangerous for bicyclists if not designed properly. Crashes caused by a suddenly opened vehicle door are a common hazard for bicyclists using this type of facility. Wide bike lanes may encourage the cyclist to ride farther to the right (door zone) to maximize distance from passing traffic.

Wide bike lanes may also cause confusion with unloading vehicles in busy areas where parking is typically full. Some alternatives include:

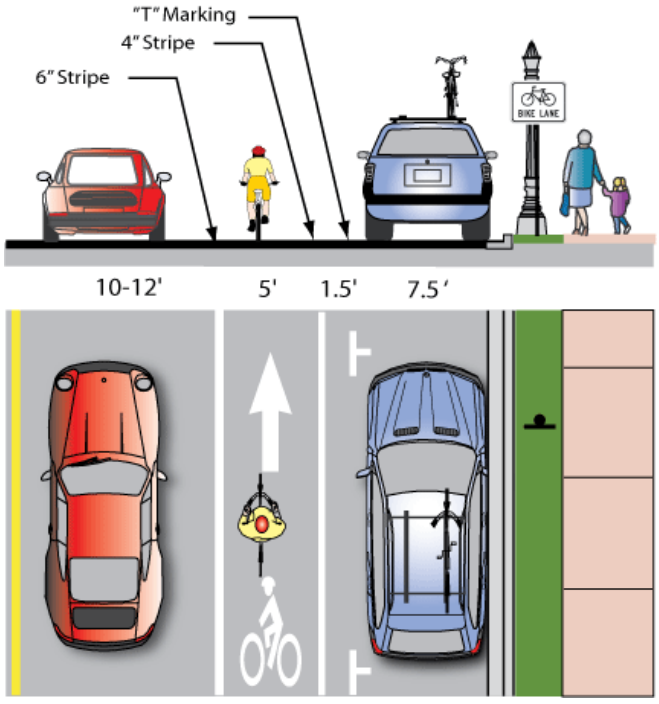
- Installing parking "T's" and smaller bike lane stencils placed to the left (see graphic at top left)
- Using diagonal stripes to encourage cyclists to ride on the left side of the bike lane (shown top right; this treatment is not standard and should be studied before use)
- Provide a buffer zone (preferred design; shown lower right). Bicyclists traveling in the center of the bike lane will be less likely to encounter open car doors. Motorists have space to stand outside the bike lane when loading and unloading.



Minimum Design



Maximum Width



Preferred Design (if space is available)

Bike Lane Adjacent to On-Street Parallel Parking (continued)

Additional Discussion - Bike Lane Adjacent to On-Street Parallel Parking	Design Examples
From AASHTO Guide for the Development of Bicycle Facilities: ▪ *"If parking is permitted, the bike lane should be placed between the parking area and the travel lane and have a minimum width of 5'. Where parking is permitted but a parking stripe or stalls are not utilized, the shared area should be a minimum of 11' without a curb face and adjacent to a curb face. If the parking volume is substantial or turnover is high, an additional 1'- 2' of width is desirable."*	 Bike lane with parking "T's" to minimize the danger of 'dooring' from cars parked too close to the bike lane  Extra-wide bike lane with signage to clarify the parking area

Bike Lane Adjacent to On-Street Diagonal Parking

Design Summary

Bike Lane Width:

- 5' minimum
- White 4" stripe separates bike lane from parking bays
- Parking bays are sufficiently long to accommodate most vehicles (vehicles do not block bike lane)

Discussion

In areas with high parking demand such as urban commercial areas, diagonal parking can be used to increase parking supply. Conventional "head-in" diagonal parking is not compatible or recommended in conjunction with high levels of bicycle traffic or with the provision of bike lanes as drivers backing out of conventional diagonal parking spaces have poor visibility of approaching bicyclists.

The use of 'back-in diagonal parking' or 'reverse angled parking' is recommended over head-in diagonal parking. This design addresses issues with diagonal parking and bicycle travel by improving sight distance between drivers and bicyclists and has other benefits to vehicles including:

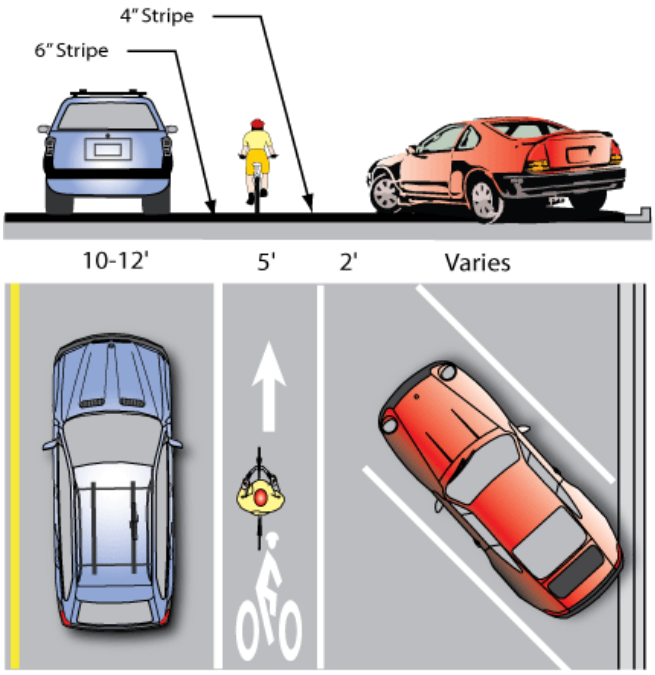
- loading and unloading of the trunk occurs at the curb, not in the street
- passengers are directed by open doors towards the curb
- no door conflict with bicyclists.

While there may be a learning curve for some drivers, using back-in diagonal parking is typically an easier maneuver than conventional parallel parking.

Guidance

This treatment is currently slated for inclusion in the 2009 AASHTO *Guide for the Development of Bicycle Facilities*

Design Examples



Recommended Design

'Back-in' diagonal parking is safer for cyclists than 'head-in' diagonal parking due to visibility

Bike Lane Without On-Street Parking

Design Summary

Bike Lane Width:

- 4' minimum when no gutter is present (rural road sections)
- 5' minimum when adjacent to curb and gutter (3' more than the gutter pan width if the gutter pan is wider than 2')

Recommended Width:

- 6' where right-of-way allows

Maximum Width:

- 8' adjacent to arterials with high travel speeds (45 mph+)

Discussion

Wider bike lanes are desirable in certain circumstances such as on higher speed arterials (45 mph+) where a wider bike lane can increase separation between passing vehicles and cyclists. Wide bike lanes are also appropriate in areas with high bicycle use. A bike lane width of 6 to 8 feet makes it possible for bicyclists to ride side-by-side or pass each other without leaving the bike lane, increasing the capacity of the lane. Appropriate signing and stenciling is important with wide bike lanes to ensure motorists do not mistake the lane for a vehicle lane or parking lane.

Guidance

AASHTO *Guide for the Development of Bicycle Facilities*

Design Examples

Recommended Design

Streets without on-street parking tend to be larger roads with higher vehicle speeds, and wider bike lanes are recommended

Bike Lanes at Intersections With Right Turn Pocket

Design Summary

Bike Lane Width:

- Bike lane should be at least 4' wide (5' preferred)

Discussion

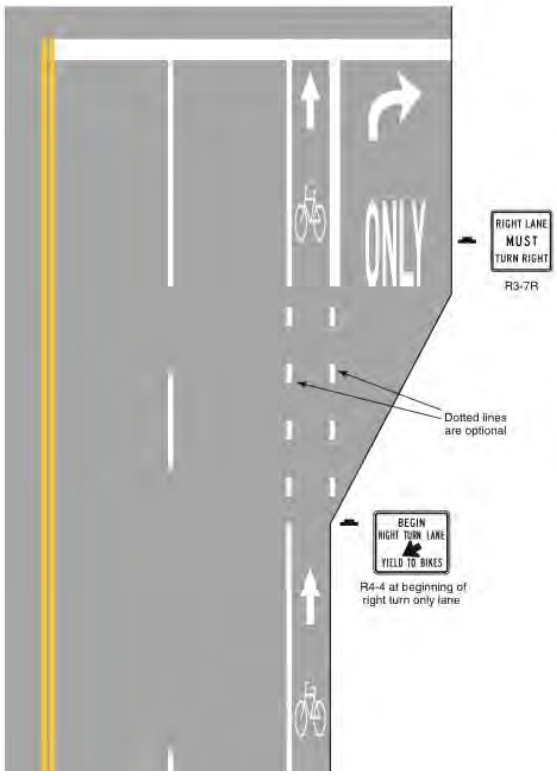
The appropriate treatment at right-turn lanes is to place the bike lane between the right-turn lane and the right-most through lane or, where right-of-way is insufficient, to drop the bike lane entirely approaching the right-turn lane. The design (right) illustrates a bike lane pocket, with signage indicating that motorists should yield to bicyclists through the conflict area. While the dashed lines in this area are currently an optional treatment, it is recommended that they be an integral part of any intersection with this treatment in Normal.

Dropping the bike lane is not recommended and should only be done when a bike lane cannot be accommodated at the intersection.

Guidance

AASHTO *Guide for the Development of Bicycle Facilities*

Design Examples



Recommended Design

Continuing a bike lane straight while providing a right-turn pocket reduces bicycle/motor vehicle conflicts

Shared Bicycle/Right Turn Lane

Design Summary

Width:

- Shared turn lane – min. 12'width
- Bike lane pocket – min. 4'-5' preferred

Discussion

This treatment is recommended at intersections lacking sufficient space to accommodate a standard bike lane and right turn lane.

The shared bicycle/right turn lane places a standard-width bike lane on the left side of a dedicated right turn lane. A dashed strip delineates the space for bicyclists and motorists within the shared lane. This treatment includes signage advising motorists and bicyclists of proper positing within the lane.

Case studies cited by the Pedestrian and Bicycle Information Center indicate that this treatment works best on streets with lower posted speeds (30 MPH or less) and with lower traffic volumes (10,000 ADT or less).

Advantages of the shared bicycle/right turn lane:

- Aids in correct positioning of cyclists at intersections with a dedicated right turn lane but insufficient space for a dedicated bike lane
- Encourages motorists to yield to bicyclists when using the right turn lane
- Reduces motor vehicle speed within the right turn lane

Disadvantages/potential hazards:

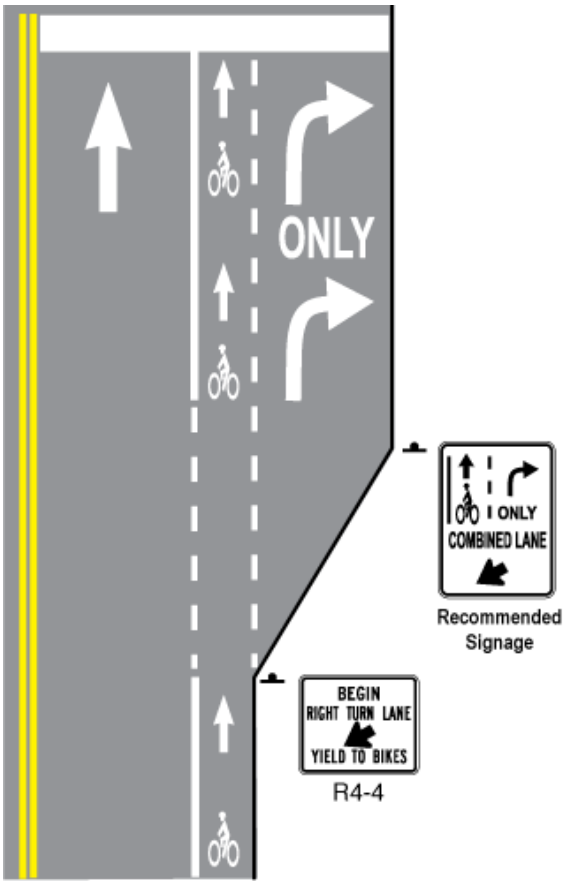
- May not be appropriate for high-speed arterials or intersections with long right turn lanes
- May not be appropriate for intersections with large percentages of right-turning heavy vehicles

Guidance

Coverage in the draft 2009 AASHTO *Guide For the Development of Bicycle Facilities*

Previously implemented in: City of San Francisco; City of Eugene, Oregon

Design Examples



Recommended Design

Shared bicycle/right turn lanes require warning signage as well as pavement markings

Colored Bike Lanes in Conflict Areas

Discussion

Cyclists are especially vulnerable at locations where the volume of conflicting vehicle traffic is high and where the vehicle/bicycle conflict area is long. Some cities are using colored bike lanes to guide cyclists through major vehicle/bicycle conflict points. These conflict areas are locations where motorists and cyclists must cross each other's path (e.g., at intersections or merge areas). Colored bike lanes typically extend through the entire bicycle/vehicle conflict zone (e.g., through the entire intersection, or through the transition zone where motorists cross a bike lane to enter a dedicated right turn lane.

Guidance

Although colored bike lanes are not an official standard at this time, they continue to be successfully used in cities, including Portland, OR, Philadelphia, PA, Cambridge, MA, Toronto, Ontario, Vancouver, BC and Tempe, AZ. This treatment typically includes signage alerting motorists of vehicle/ bicycle conflict points. Portland's *Blue Bike Lane* report found that significantly more motorists yielded to bicyclists and slowed or stopped before entering the conflict area after the application of the colored pavement.

Color Considerations:

There are three colors commonly used in bike lanes: blue, green, and red. All help the bike lane stand out in conflict areas. Green is the color recommended for use in Normal.

Advantages of colored bike lanes at conflict points

- Draws attention to conflict areas
- Increases motorist yielding behavior
- Emphasizes expectation of bicyclists on the road

Disadvantages / potential hazards

- Not currently an adopted standard marking in the U.S.

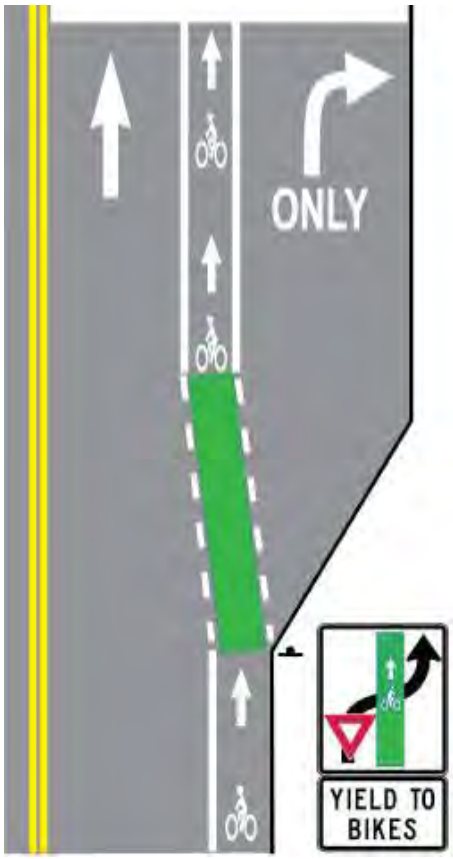
Guidance

This treatment is not currently present in any state or federal design standards.

The City of Colombia, MO is currently testing this application for possible inclusion In the 2009 MUTCD update.

Portland Office of Transportation (1999). *Portland's Blue Bike Lanes: Improved Safety through Enhanced Visibility*. Available: www.portlandonline.com/shared/cfm/image.cfm?id=58842

Design Examples



Recommended Design

Portland, OR has implemented blue bike lanes and has since changed to green

Bike Box

Design Summary

Bike Box Dimensions:

- 14' deep to allow for bicycle positioning.

Signage:

Appropriate signage as recommended by the MUTCD applies. Signage should be present to prohibit 'right turn on red' and to indicate where the motorist must stop.

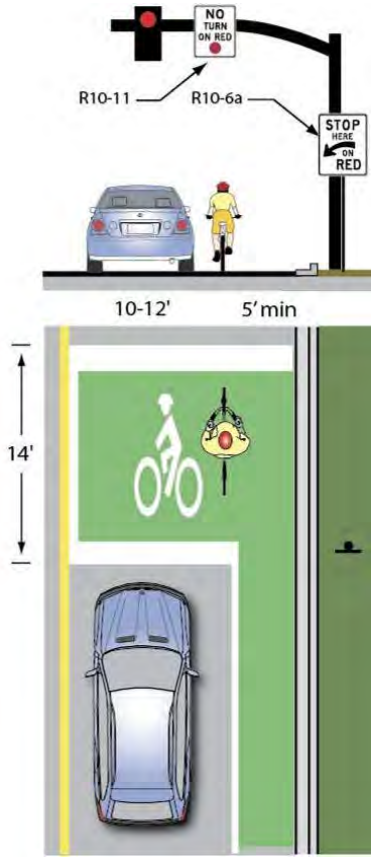
Discussion

A bike box is generally a right angle extension of a bike lane at the head of a signalized intersection. The bike box allows bicyclists to move to the front of the traffic queue on a red light and proceed first when that signal turns green. Motor vehicles must stop behind the white stop line at the rear of the bike box.

Bike boxes can be combined with dashed lines through the intersection for green light situations to remind right-turning motorists to be aware of bicyclists traveling straight, similar to the colored bike lane treatment described earlier. Bike Boxes can be installed with striping only or with colored treatments to increase visibility.

Bike Boxes should be located at signalized intersections only, and right turns on red should be prohibited. On roadways with one travel lane in each direction, the bike box also facilitates left turning movements for cyclists.

Design Examples



Recommended Design

Bike boxes have been installed at several intersections in Portland, OR where right-turning motorists conflict with through bicyclists

Retrofitting Existing Streets with Bike Lanes

This section describes several strategies for retrofitting bike lanes to existing streets. Most major streets in Normal are characterized by conditions (e.g., high vehicle speeds and/or volumes) for which dedicated bike lanes are appropriate to accommodate safe and comfortable riding. Although opportunities to add bike lanes through roadway widening may exist in some locations, most major streets in Normal pose physical and other constraints requiring street retrofit measures within existing curb-to-curb widths. As a result, many of the recommended measures effectively reallocate existing street width through striping modifications to accommodate dedicated bike lanes.

Although largely intended for major streets, these measures may be appropriate on some lower-order streets where bike lanes would best accommodate cyclists.

Roadway Widening

Design Summary

Bike Lane Width:

- 6' preferred
- 4' minimum (see bike lane guidance)

Discussion

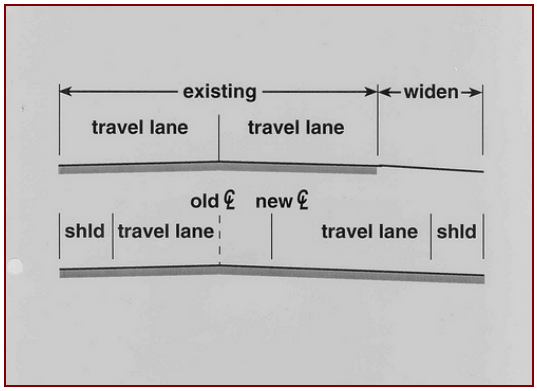
Bike lanes could be accommodated on several streets with excess right-of-way through shoulder widening. Although street widening incurs higher expenses compared with re-striping projects, bike lanes could be added to streets currently lacking curbs, gutters and sidewalks without the high costs of major infrastructure reconstruction.

As a long-term measure, the Town of Normal should find opportunities to add bike lanes to other major streets where they are needed. Opportunities include adding bike lanes as streets and bridges are widened for additional auto capacity or as property development necessitates street reconstruction.

Guidance

AASHTO *Guide for the Development of Bicycle Facilities*

Design Example



Design guidance for widening roadway shoulders to accommodate bicycles

Roadway widening is preferred on roads lacking curbs, gutters and sidewalks

Lane Narrowing (Road Diet 1)

Design Summary

Vehicle Lane Widths:

- Before: 12 to 15 feet; after: 10 to 11 feet

Bike Lane Width:

- See bike lane design guidance

Discussion

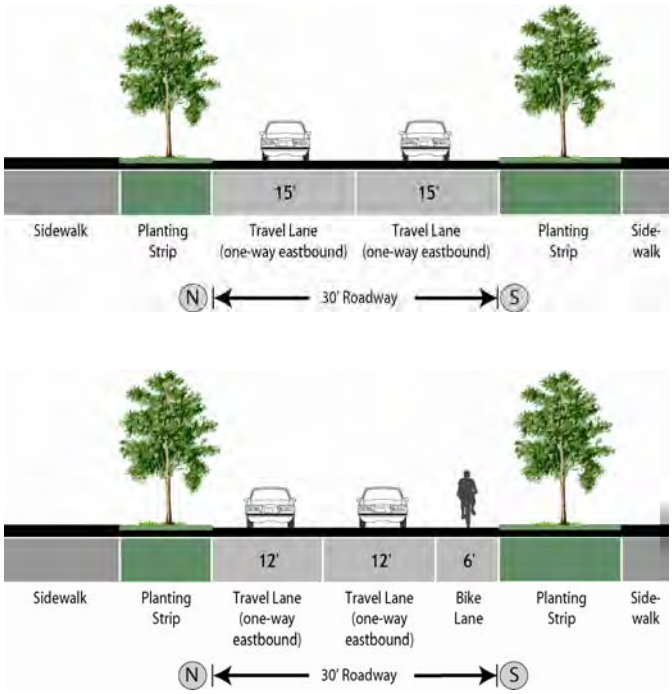
Also called a 'Road Diet', lane narrowing utilizes roadway space that exceeds minimum standards to create the needed space to provide bike lanes. Many Normal roadways have existing lanes that are wider than those prescribed in local and national roadway design standards. Most standards allow for the use of 11-foot and sometimes 10-foot wide travel lanes to create space for bike lanes.

Special consideration should be given to the amount of heavy vehicle traffic and horizontal curvature before the decision is made to narrow travel lanes. Center turn lanes can also be narrowed in some situations to free up pavement space for bike lanes.

Design Example

This street previously had 13' lanes, which were narrowed to accommodate bike lanes without removing a lane

Recommended Design



Example of vehicle travel lane narrowing to accommodate bike lanes

Lane Reconfiguration (Road Diet 2)

Design Summary

Vehicle Lane Widths:

- Width depends on project. No narrowing may be needed if a lane is removed.

Bike Lane Width:

See bike lane design guidance

Design Example

This road was re-striped to convert four vehicle travel lanes into three travel lanes with bike lanes

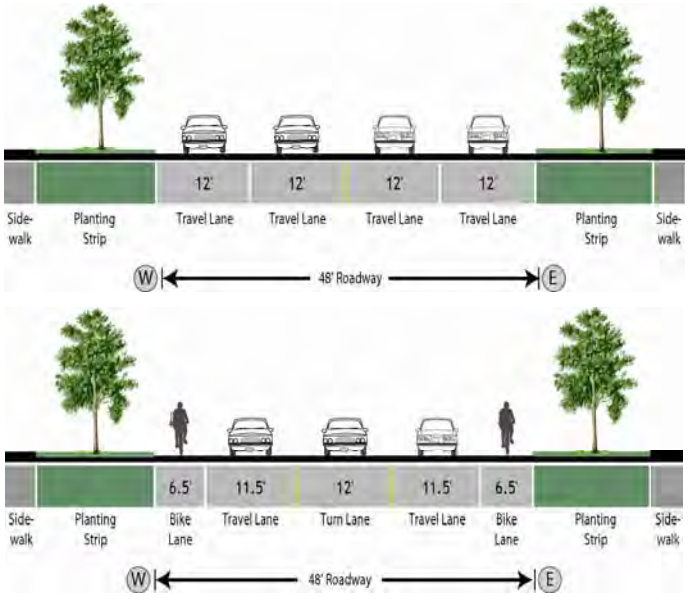
Discussion

The removal of a single travel lane will generally provide sufficient space for bike lanes on both sides of a street. Streets with excess vehicle capacity provide opportunities for bike lane retrofit projects. Depending on a street's existing configuration, traffic operations, user needs, and safety concerns, various lane reduction configurations exist. For instance, a four-lane street (with two travel lanes in each direction) could be modified to include one travel lane in each direction, a center turn lane, and bike lanes. Prior to implementing this measure, a traffic analysis should identify impacts.

Guidance

This treatment is currently slated for inclusion in the 2009 AASHTO *Guide for the Development of Bicycle Facilities*

Recommended Design



Example of vehicle travel lane reconfiguration to accommodate bike lanes

Parking Reduction (Road Diet 3)

Design Summary

Vehicle Lane Widths:

Width depends on project. No narrowing may be needed depending on the width of the parking lane to be removed.

Bike Lane Width:

See bike lane design guidance

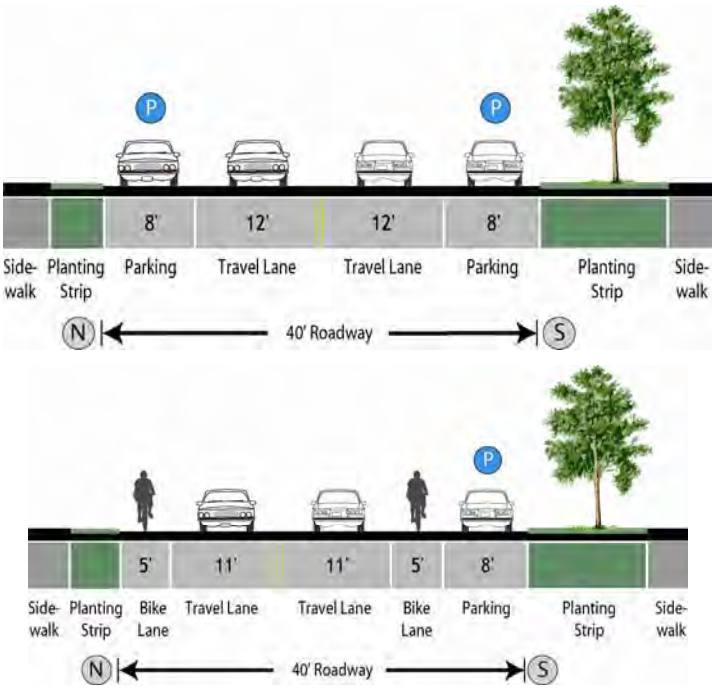
Discussion

Bike lanes could replace one or more on-street parking lanes on streets where excess parking exists and/or the importance of bike lanes outweighs parking needs. For instance, parking may be needed on only one side of a street (see right). Eliminating or reducing on-street parking also improves sight distance for cyclists in bike lanes and for motorists on approaching side streets and driveways. Prior to reallocating on-street parking for other uses, a parking study should be performed to gauge demand.

Design Example

Some streets may not require parking on both sides

Recommended Design



Example of parking removal to accommodate bike lanes

Bike Lane Recommendations

Normal's major streets currently lack dedicated bike lanes. Safely accommodating bicyclists on major roadways is important for several reasons. First, major streets generally offer the most direct routes between bicyclist destinations while providing better connectivity compared with lower-order streets. Consequently, commuter cyclists and those traveling longer distances often gravitate to these routes. Second, the commercial character of major streets (e.g., employment, shopping, etc.) makes these corridors destinations in and of themselves. To safely accommodate bicyclists on corridors with current or anticipated high traffic volumes, bike lanes are proposed on several major streets throughout Normal. In developing the proposed bike lane network, consideration was given to several factors, including:

- Gaps in the existing bikeway system
- Previous and on-going planning efforts identifying the need for bike lanes on specific streets
- Planned street improvements that will or could include bike lanes as part of construction
- Whether an existing street could be retrofitted to include bike lanes
- Planned land development projects with the potential to increase bicycle travel demand on major streets

Normal's bike lane implementation projects would primarily occur through roadway re-striping. Depending on funding or other constraints, bike lane project implementation could occur in multiple phases. Streets in Normal that could be retrofitted with bike lanes through parking reduction include:

- Beech Street – Shelbourne to Raab
- Blair Drive – College to Fort Jesse
- Jersey Avenue – Linden to Towanda
- Parkside Road – Hovey to Gregory
- Summit Street/Shelbourne Drive – Main to Walnut
- Linden Street – Pine to Shelbourne

Locations where bike lanes could be accommodated through narrowing existing vehicle travel lanes include:

- College Avenue – Broadway to Linden
- Linden Street – Cypress to Pine
- Mulberry Street – Linden to School
- Shepard Road – Hershey to Airport

Bike lanes could also be achieved through vehicle travel lane reductions, noted below.

Three-to Two-Lane Road Diet:

- Beaufort Street – School to Fell
- College Avenue – School to Broadway
- Gregory Street – Cottage to Adelaide
- Shelbourne Drive – Walnut to Beech

Four-to Three-Lane Road Diet:

- Beaufort Street – Main to School
- Beech Street – Pine to Shelbourne
- Cottage Avenue – Martin Luther King Jr. to College
- Hovey Avenue – Cottage to Main
- Landmark Drive – College to Fort Jesse
- Linden Street – Shelbourne to Raab
- Parkside Road – Gregory to Raab
- Shelbourne Drive – Beech to Towanda

Bike lanes could be accommodated on Main Street between College Avenue and Raab Road in the form of a five-to-four lane road diet, which includes the construction of a center median. The graphics in Appendix C lay out specifically how the Town of Normal could retrofit bike lanes to the roadways listed above.

Bike lanes are recommended through shoulder widening at the following locations:

- White Oak Road – Martin Luther King Jr. to Raab
- Cottage Avenue future street extension – Gregory to Raab
- Linden Street – Raab to Northtown
- Towanda Avenue – Raab to south of Interstate 55 bridge
- Hershey Road –Fort Jesse to Raab

Figure 35. Bike lanes will be added to Main Street as part of a corridor-wide redevelopment plan

Main Street Corridor

The *Main Street: A Call for Investment* Plan makes suggestions regarding bicycle facilities along Main Street (Figure 35). Most of the suggested improvements are included in this Plan; however some deviations from the Main Street Plan are recommended. One modification would provide 6.5-foot wide bike lanes compared with six-foot wide lanes proposed in the Main Street Plan. This difference is due to the anticipated popularity of the facility, the need to provide adequate width to minimize conflicts with motor vehicles, and the availability of roadway space. Another difference is that this Plan proposes dedicated bicycle facilities on the corridor's entire length, rather than forcing cyclists to share the road with motorists in some locations. Bike lanes could be retrofitted on Main Street by reducing travel lane or median widths in some locations. Cycle tracks, described later, are proposed on the corridor's far northern end.

Shared Lane Markings

Shared lane markings (also known as "sharrows") are high-visibility pavement markings that help position bicyclists within the travel lane. These markings are often used on streets where dedicated bike lanes are desirable but are not possible due to physical or other constraints. Sharrows are placed strategically in the travel lane to alert motorists of bicycle traffic, while also encouraging cyclists to ride at an appropriate distance from the "door zone" of adjacent parked cars. Placed in a linear pattern along a corridor (typically every 100-200 feet), sharrows also encourage cyclists to ride in a straight line so their movements are predictable to motorists. These pavement markings have been successfully used in many small and large communities throughout the U.S. Shared lane markings made of thermoplastic tend to last longer than those using traditional paint.

Shared Lane Markings Design Guidelines

The following page provides design guidance for shared lane markings.

Shared Lane Markings

Design Summary

Door Zone Width:

The width of the door zone is generally assumed to be 2.5 feet from the edge of the parking lane.

Recommended Placement:

- At least 11' from face of curb (or shoulder edge) on streets with on-street parking
- At least 4' from face of curb (or shoulder edge) on streets without on-street parking

Discussion

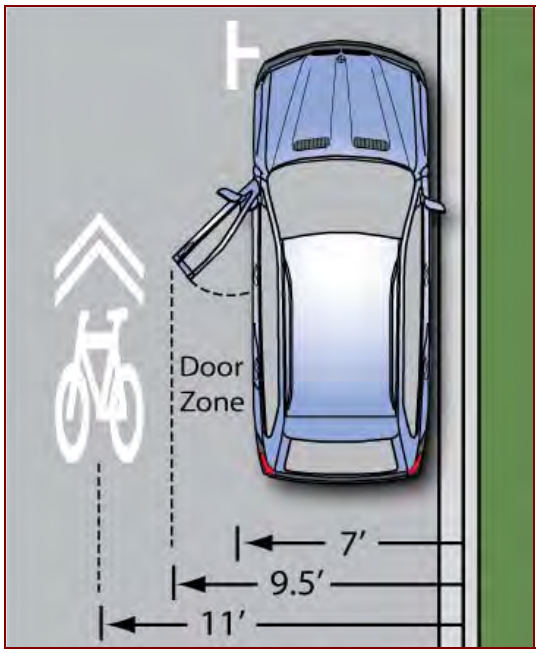
The Draft 2009 MUTCD language notes that sharrows should not be placed on roadways with a speed limit over 35 MPH, and that when used, the marking should be placed immediately after an intersection and spaced at intervals no greater than 250 feet thereafter.

Placing shared lane markings between vehicle tire tracks (if possible) will increase the life of the markings.

Guidance

The shared lane marking is not currently an adopted standard marking. The National Committee on Uniform Traffic Control Devices (NCUTCD) has recommended to the Federal Highway Administration (FHWA) that this marking be included in the next edition of the MUTCD, expected to be published in 2009.

Design Examples



Shared lane marking placement guidance for streets with on-street parking

Shared lane markings can be used minor and major roadways

Shared Lane Marking Recommendations

Shared lane markings are recommended at the following locations in Normal:

- Adelaide Street - North of Gregory to Warriner
- Beaufort Street - Fell to Constitution Trail
- Beech Street - Pine to College
- Beech Street - Raab to Pfitzer
- College Avenue - Parkside to School
- Cottage Avenue - Gregory to College
- Fell Avenue - North to Division
- Grandview Drive - College to Jersey
- Gregory Street - Parkside to Cottage
- Gregory Street - Adelaide to Main
- Henry Street - Raab to Pine
- Hovey Avenue - White Oak to Cottage
- Parkway Plaza Drive - Landmark to Susan
- Pine Street - Linden to Beech
- School Street - Raab to North
- Susan Drive - Fort Jesse to Parkway
- Towanda Avenue - Northtown to Interstate 55
- Virginia Avenue - University to Linden

In addition to the corridors listed above, shared lane markings could also serve as an interim/experimental treatment on streets eventually targeted for bike lane retrofits.

Bicycle Boulevards

Bicycle Boulevards are low-volume streets where motorists and bicyclists share the same space. A motorist will usually have to cross over into the adjacent travel lane to pass a bicyclist unless a wide outside lane or shoulder is provided.

Traffic calming and other treatments along the corridor reduce vehicle speeds so that motorists and bicyclists generally travel at the same speed, creating a safer and more comfortable environment for all users. Bicycle Boulevards also incorporate treatments to facilitate safe and convenient crossings where bicyclists must traverse major streets. Bicycle Boulevards work best in well-connected street grids where riders can follow reasonably direct and logical routes with few "twists and turns." Boulevards also work best when higher-order parallel streets exist to serve thru vehicle traffic.

Why Bicycle Boulevards are Important

Bicycle Boulevards serve a variety of purposes:

- **Parallel major streets lacking dedicated bicycle facilities:** Higher-order streets such as arterials and major collectors typically include major bicyclist destinations (e.g., commercial and employment areas, and other activity centers). However, these corridors often lack bike lanes or other dedicated facilities thereby creating an uncomfortable, unattractive and potentially unsafe riding environment. Bicycle Boulevards serve as alternate parallel facilities allowing cyclists to avoid major streets for longer trip segments.

- **Parallel major streets with bicycle facilities that are uncomfortable for some users:** Some cyclists may not feel comfortable riding in bike lanes on major streets for various reasons, including high traffic volumes and vehicle speeds, conflicts with motorists entering and leaving driveways, and/or conflicts with buses occupying the bike lane while loading and unloading passengers. Children and less-experienced riders might find these environments especially challenging. Utilizing lower-order streets, Bicycle Boulevards provide alternate route choices for bicyclists uncomfortable using the major street network. It should be noted however that bike lanes on major streets provide important access to key land uses, and the major street network often provides the most direct routes between major destinations. For these reasons, Bicycle Boulevards should complement a bike lane network and not serve as a substitute.
- **Ease of implementation on most local streets:** Bicycle Boulevards incorporate cost-effective and less physically-intrusive treatments than bike lanes and cycle tracks. Most streets could be provided relatively inexpensive treatments like new signage, pavement markings, striping and signal improvements to facilitate bicyclists' mobility and safety. Other potential treatments include curb extensions, medians, and other features that can be implemented at reasonable cost and are compatible with emergency vehicle accessibility.
- **Benefits beyond an improved bicycling environment:** Residents living on Bicycle Boulevards benefit from reduced vehicle speeds and thru traffic, creating a safer and more-attractive environment. Pedestrians and other users can also benefit from boulevard treatments (e.g., by improving the crossing environment where boulevards meet major streets).

Bicycle Boulevards can employ a variety of treatments from simple signage to traffic calming and/or pavement stenciling. The level of treatment to be provided for a specific location or corridor depends on several factors, discussed on the following pages.

Bicycle Boulevard

Design Summary

Bicycle Boulevards generally are installed on minor or local roadways. No standard design exists. See following page for additional guidance.

Discussion

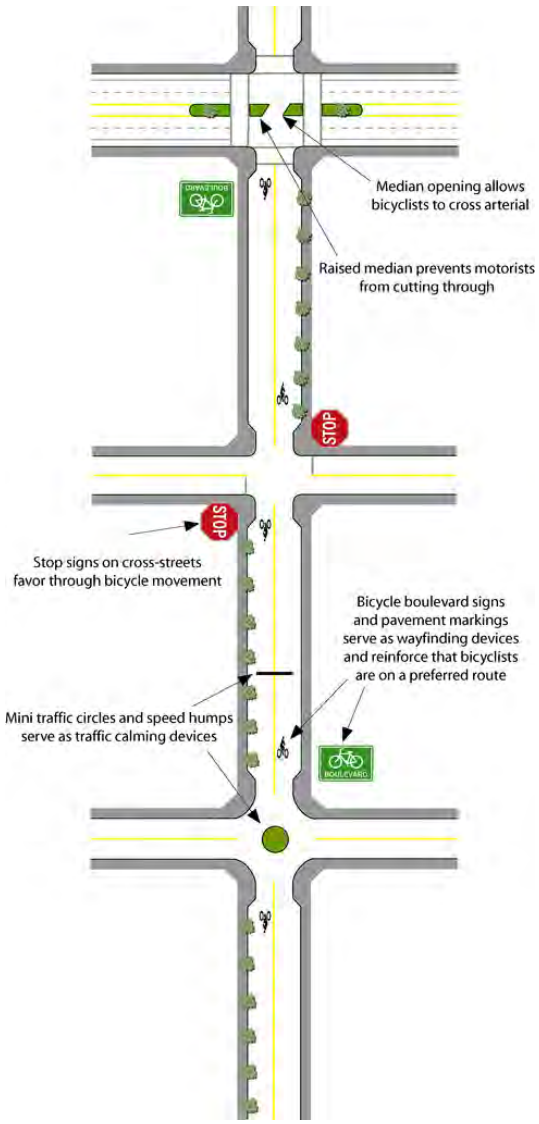
Treatments for Bicycle Boulevards fall within five main "application levels" based on their level of physical intensity, with Level 1 representing the least physically-intensive treatments that could be implemented at relatively low cost. Identifying appropriate application levels for individual Bicycle Boulevard corridors provides a starting point for selecting appropriate site-specific improvements. The five Bicycle Boulevard application levels include the following:

- Level 1: Signage
- Level 2: Pavement markings
- Level 3: Intersection treatments
- Level 4: Traffic calming
- Level 5: Traffic diversion

These treatments are discussed in more detail on the following pages.

Design Example

Bicycle boulevards are low-speed streets that provide a comfortable and pleasant experience for novice cyclists

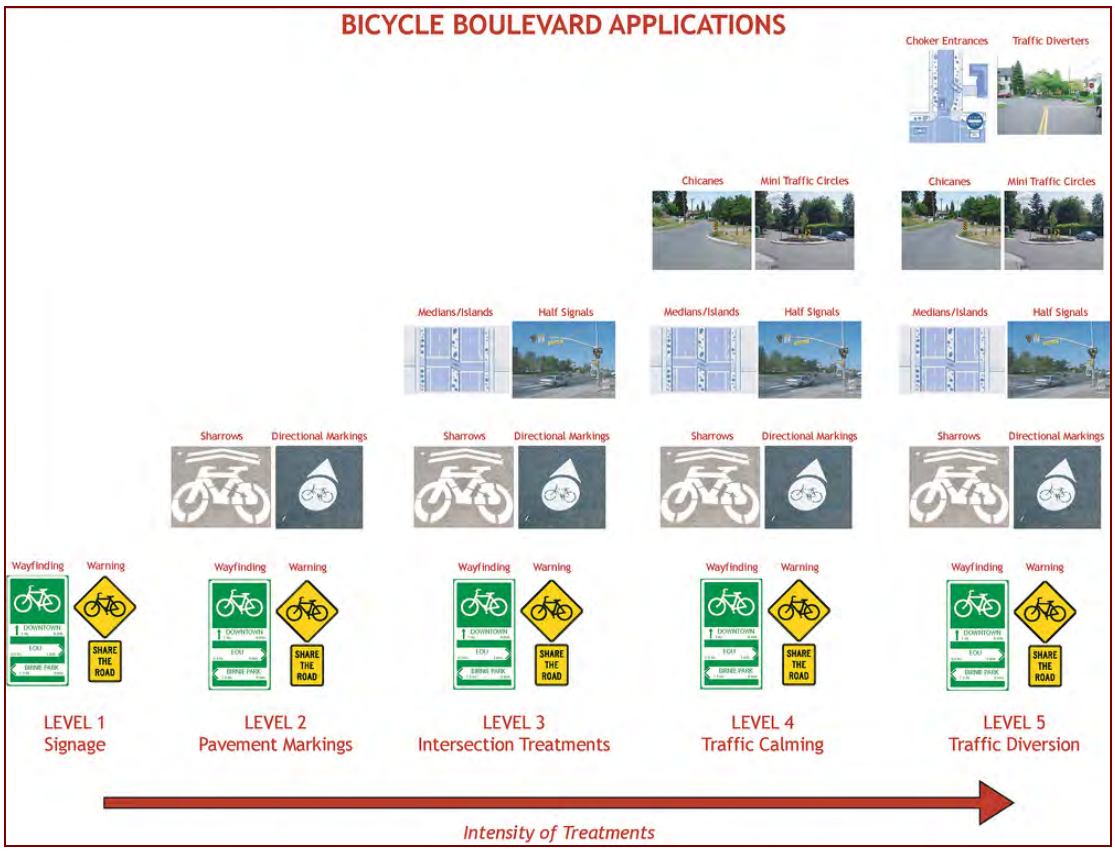


Sample Bicycle Boulevard Treatments

Guidance

Coverage in the draft 2009 AASHTO *Guide For the Development of Bicycle Facilities*

Bicycle Boulevard (continued)



It should be noted that corridors targeted for higher-level applications would also receive relevant lower-level treatments. For instance, a street targeted for Level 3 applications should also include Level 1 and 2 applications as necessary. It should also be noted that some applications may be appropriate on some streets while inappropriate on others. In other words, it may not be appropriate or necessary to implement all "Level 2" applications on a Level 2 street. Furthermore, several treatments could fall within multiple categories as they achieve multiple goals. To identify and develop specific treatments for each Bicycle Boulevard, the Town of Normal should involve the bicycling community and neighborhood groups. Further analysis and engineering work may also be necessary to determine the feasibility of some applications.

Level 1: Bicycle Boulevard Signing

Design Summary

Signage is a cost-effective yet highly-visible treatment that can improve the riding environment on a Bicycle Boulevard network.

Design Example

Bicycle Boulevard wayfinding sign in Berkeley, CA

Guidance

AASHTO *Guide for the Development of Bicycle Facilities*

Potential MUTCD-Approved Signage Options

(not comprehensive)

Additional Warning Signage Options

(not comprehensive)

Level 1: Bicycle Boulevard Signing (continued)

Wayfinding Signs

Wayfinding signs are typically placed at key locations leading to and along Bicycle Boulevards, including where multiple routes intersect and at key bicyclist "decision points." Wayfinding signs displaying destinations, distances and "riding time" can dispel common misperceptions about time and distance while increasing users' comfort and accessibility to the Boulevard network.

Wayfinding signs also visually cue motorists that they are driving along a bicycle route and should correspondingly use caution. Note that too many signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists and pedestrians, rather than per vehicle signage standards.

Wayfinding signs help bicyclists stay on designated bicycle routes

Warning signs

Warning signs advising motorists to "share the road" and "watch for bicyclists" may also improve bicycling conditions on a Bicycle Boulevard network. These signs are especially useful near major bicycle trip generators such as schools, parks and other activity centers. Warning signs should also be placed on major streets approaching Bicycle Boulevards to alert motorists of bicyclist crossings.

'Share the Road' signage can remind both bicyclists and motorists to watch for other vehicles

Level 2: Bicycle Boulevard Pavement Markings

Pavement Markings

On-Street Parking Delineation

Delineating on-street parking spaces with paint or other materials clearly indicates where a vehicle should be parked, and can discourage motorists from parking their vehicles too far into the adjacent travel lane. This helps cyclists by maintaining a wide enough space to safely share a travel lane with moving vehicles while minimizing the need to swerve farther into the travel lane to maneuver around parked cars. In addition to benefiting cyclists, delineated parking spaces also promote the efficient use of on-street parking by maximizing the number of spaces in high-demand areas.

Example of On-Street Parking Delineation

Bicycle Boulevard/Directional Pavement Markings

Directional pavement markings (also known as "Bicycle Boulevard markings") lead cyclists along a Boulevard and reinforce that they are on a designated route. Markings can take a variety of forms, such as small bicycle symbols placed every 600-800 feet along a linear corridor, as currently used on Portland, Oregon's Boulevard network (see right).

When a Bicycle Boulevard follows several streets (with multiple turns at intersections), additional markings accompanied by directional arrows are provided to guide cyclists through turns and other complex routing areas. Directional pavement markings also visually cue motorists that they are traveling along a bicycle route and should exercise caution.

Bicycle Boulevard directional marker

Shared Lane Markings

As previously discussed, shared lane markings are often used on streets where dedicated bike lanes are desirable but not possible due to physical or other constraints. Such markings delineate specifically where bicyclists should operate within a shared vehicle/bicycle travel lane.

Shared Lane Markings could be used as Bicycle Boulevard markings. See Shared Lane Marking Design Guidelines for additional information on this treatment.

Shared lane marking

Level 3: Bicycle Boulevard Intersection Treatments

Design Summary

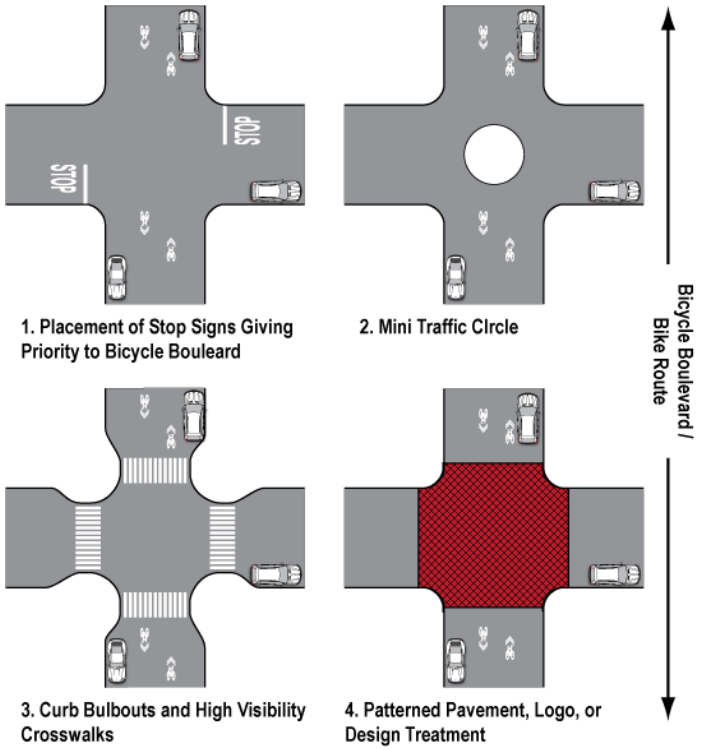
Intersection treatments represent a critical component of Bicycle Boulevards. Intersection traffic controls favoring thru bicycle movement on the boulevard facilitate continuous and convenient bicycle travel. Intersection treatments also provide convenient and safe crossings where boulevards intersect major roads. The following sections discuss various intersection improvement tools.

Guidance

Berkley Bicycle Boulevard Design Tools and Guidelines Available at:
webserver.ci.berkeley.ca.us/uploadedFiles/Public_Works/Level_3_-_General/ch4_.pdf

Design Example

Intersection treatments are critical to bicyclists' safety on Bicycle Boulevards



Levels of Bicycle Boulevard intersection treatments

Level 3: Bicycle Boulevard Intersection Treatments (continued)

Stop Signs on Cross-Streets

The installation of stop signs on cross streets along a Bicycle Boulevard maximizes thru bicycle connectivity and momentum and forces motorists crossing the facility to stop and proceed when safe.

This treatment should be used judiciously. It can be combined with traffic-calming efforts to prevent excessive vehicle speeds on the Bicycle Boulevard.

Stop signs are relatively inexpensive treatments that are quite effective at minimizing bicycle and cross-vehicle conflicts. However, placing stop signs at all intersections along Bicycle Boulevards may be unwarranted as a traffic control device.

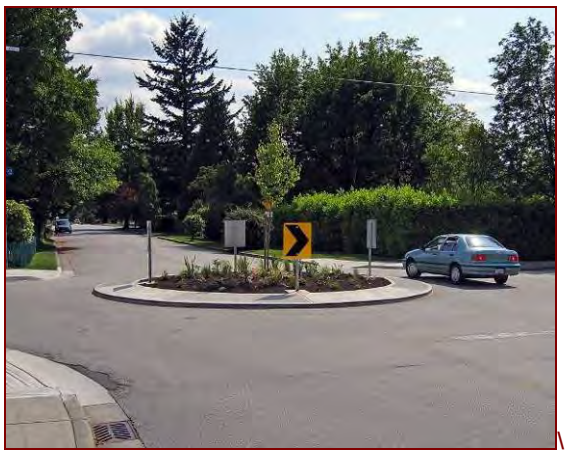
Stop signs effectively minimize conflicts at low-volume intersections

Mini Traffic Circle

Typically, mini traffic circles are implemented where the Bicycle Boulevard intersects a local street or even a Collector if ADT is less than 2,000. Stop signs may be added on the cross streets if necessary, otherwise all traffic yields. Signage and striping treatments should be implemented based on expected traffic volumes.

For example, the circle itself may be appropriate for local intersections with very low ADT, while increased signage and splitter striping may be appropriate experiencing higher traffic volumes. Mini traffic circles can be landscaped for added visual impact and traffic calming effect. This treatment should be designed with adequate curb radii for emergency vehicle access.

Mini traffic circles are very effective at reducing though bicycle and cross vehicle conflicts and add overall traffic calming in all directions. Mini traffic circles have a moderate cost (approx $20,000 per intersection).



Mini traffic circles require that both bicyclists and motorists slow down and watch for conflicts

Level 3: Bicycle Boulevard Intersection Treatments (continued)

Curb Bulb-Outs and High-Visibility Crosswalks

These treatments are appropriate for Bicycle Boulevards near activity centers that may generate large amounts of pedestrian activity, such as schools or commercial areas. The bulb-outs should only extend across the parking lane and should not obstruct bicyclists' path of travel or the travel lane. This treatment may be combined with a stop sign on the cross street if necessary.

Curb bulb-outs and high-visibility crosswalks both calm traffic and also increase the visibility of pedestrians waiting to cross the street. However, they may impact on-street parking.

Curb bulb-outs can be a good location for pedestrian amenities, including street trees, newspapers and benches

Treatment 4: Patterned Pavement, Logo, or Design Treatment

Intersections that also serve as gateways to neighborhoods, schools, or commercial centers may be treated with a special design consisting of colored pavers, imprinted asphalt, or other adhesive patterns to provide added emphasis. This treatment adds special attention to an intersection and acts as a traffic calming device.

Patterned pavement acts as a traffic calming device and also enhances the look and feel of an intersection. These treatments can be community-building activities and provide a sense of place.

Example of patterned pavement used for traffic calming purposes

Level 3: Bicycle Boulevard Intersection Treatments (continued)

Bicycle Left-Turn Lanes

Bike Turn Pocket Width:

The bike turn pockets should be at least 5 feet wide, with a total of 11 feet for both turn pockets and center striping

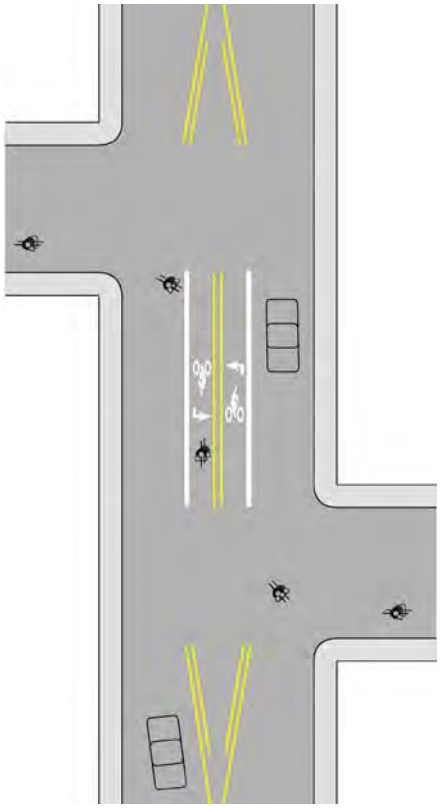
Discussion

Bicycle Boulevards crossing major streets at offset intersections can incorporate "bicycle left-turn lanes" to facilitate easier bicyclist crossings. Similar to medians/refuge islands, bicycle left-turn lanes allow the crossing to be completed in two phases. A bicyclist on the Bicycle Boulevard could execute a right-hand turn onto the cross-street, and then wait in a delineated left-turn lane (if necessary to wait for a gap in oncoming traffic).

Guidance

Coverage in the draft 2009 AASHTO *Guide For the Development of Bicycle Facilities*

Design Examples



Recommended Design

Example of bicycle left-turn lanes

Level 3: Bicycle Boulevard Intersection Treatments (continued)

Bicycle Left Turn Pocket

Bike Lane Width:

4’ minimum

5’ preferred

Discussion

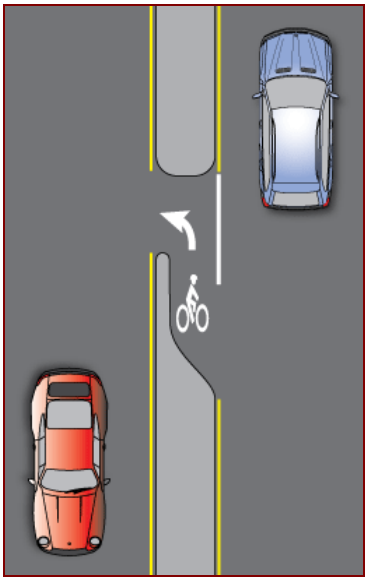
A bike-only left-turn pocket permits bicycle left turn movements while restricting vehicle left turn movements. If the intersection is signal-controlled the left turn pocket may have a left arrow signal, depending on bicycle and vehicle volumes. Signs should be provided that prohibit motorists from turning, while allowing access to bicyclists. Bicycle signal heads may also be used at busy or complex intersections. Ideally, the left turn pocket should be protected by a raised curb, but the pocket may also be defined by striping if necessary.

Because of the restriction on vehicle left-turning movements, this treatment also acts as traffic diversion.

Guidance

Coverage in the draft 2009 AASHTO *Guide For the Development of Bicycle Facilities*

Design Examples



Recommended Design

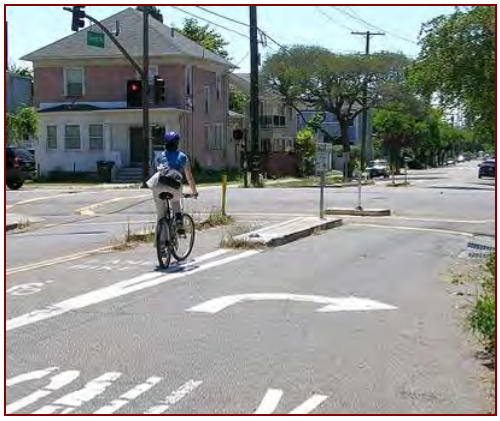
This bike-only left-turn pocket guides cyclists along a popular bike route

Level 3: Bicycle Boulevard Intersection Treatments (continued)

Signal Detection and Placement of Bicyclists

Easy and accurate detection by a traffic signal controller can be provided by way of one of the following:

- An embedded loop with placement and sensitivity to detect a bicycle via video detection technology or a bicyclist-activated push button (as long as they do not require cyclists to dismount or make unsafe leaning movements). These devices should be placed as close to the street as possible in a location that is unobstructed by parked vehicles or motorists making right-hand turns.
- Safe location to wait for green signal: bicyclists awaiting a green light should not block vehicle right turns (if allowed). Lane width, stenciling, or a bike box can help with lane positioning and traffic flow.



Half-Signals

In situations where there are few crossable gaps and where vehicles on the major street do not stop for pedestrians and cyclists waiting to cross, "half signals" could be installed to improve the crossing environment. Half signals include pedestrian and bicycle activation buttons and may also include bicycle loop detectors on the Bicycle Boulevard approach. Many of these models have been used successfully for years overseas, and their use in the U.S. has increased dramatically over the last decade.

Medians/Refuge Islands

At uncontrolled intersections of Bicycle Boulevards and major streets, a bicycle crossing island can be provided to allow cyclists to cross one direction of traffic at a time when gaps in traffic allow. The bicycle crossing island should be at least 8' wide (measured perpendicular to the centerline of the major road) to be used as the bike refuge area. Narrower medians can accommodate bikes if the holding area is at an acute angle to the major roadway, which allows stopped cyclists to face oncoming motorists. Railings can also be provided so bicyclists do not have to put their feet down, thus making it quicker to start again. Crossing islands can be placed in the middle of the intersection, prohibiting left and thru vehicle movements.

Level 4: Bicycle Boulevard Traffic Calming

Traffic calming treatments on Bicycle Boulevards improve the bicycling environment by reducing vehicle speeds to the point where they generally match cyclists' operating speeds, enabling motorists and cyclists to safely co-exist on the same facility. Specific traffic calming treatments are described below.

Chicanes

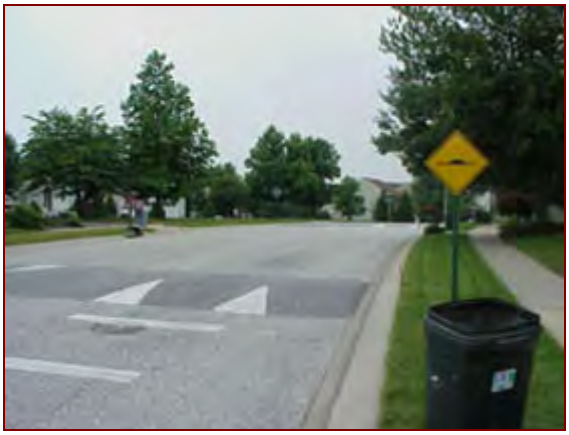
Chicanes are a series of raised or delineated curb extensions on alternating sides of a street forming an S-shaped curb, which reduce vehicle speeds through narrowed travel lanes (see right). Chicanes can also be achieved by establishing on-street parking on alternate sides of the street. These treatments are most effective on streets with narrower cross-sections.

Mini Traffic Circles

Mini traffic circles are raised or delineated islands placed at intersections, reducing vehicle speeds through tighter turning radii and narrowed vehicle travel lanes (see right). These devices can effectively slow vehicle traffic while facilitating all turning movements at an intersection. Mini traffic circles can also include a paved apron to accommodate the turning radii of larger vehicles like fire trucks or school buses.

Speed Humps

Shown right, speed humps are rounded raised areas of the pavement requiring approaching motor vehicles to reduce speed. These devices also discourage thru vehicle travel on a street when a parallel route exists.



Level 5: Bicycle Boulevard Traffic Diversion

Traffic diversion treatments maintain thru bicycle travel on a street while physically restricting thru vehicle traffic. These treatments direct thru vehicle traffic onto parallel higher-order streets while accommodating bicyclists and local vehicle traffic on the Bicycle Boulevard. Traffic diversion is most effective when higher-order streets can sufficiently accommodate the diverted traffic associated with these treatments.

Choker Entrances

Choker entrances are intersection curb extensions or raised islands allowing full bicycle passage while restricting vehicle access to and from a Bicycle Boulevard. When they approach a choker entrance at a cross-street, motorists on the Bicycle Boulevard must turn onto the cross-street while cyclists may continue forward. These devices can be designed to permit some vehicle turning movements from a cross-street onto the Bicycle Boulevard while restricting other movements.

Traffic Diverters

Similar to choker entrances, traffic diverters are raised features directing vehicle traffic off the Bicycle Boulevard while permitting thru travel.

Advantages:

- Provides safe refuge in the median of the major street so that bicyclists only have to cross one direction of traffic at a time; works well with signal-controlled traffic platoons coming from opposite directions
- Provides traffic calming and safety benefits by preventing left turns and/or thru traffic from using the intersection

Disadvantages:

- Potential motor vehicle impacts to major roadways, including lane narrowing, loss of some on-street parking and restricted turning movements
- Crossing island may be difficult to maintain and may collect debris

Bicycle Boulevard Recommendations

Normal generally benefits from a well-connected system of lower-volume streets that, with the addition of relatively small-scale treatments, could become spectacular Bicycle Boulevards for riders of all ages and skills. Bicycle Boulevard recommendations throughout the community are shown on Map 4.

Specific Bicycle Boulevard recommendations in Normal include:

- Orlando Avenue/Aurora Way/Warren Avenue – Main to School
- McKinley Street/Clay Street/Lincoln Street – Main to One Normal Plaza
- Chippewa Street – Redman to Henry
- Bryan Street/Dale Street/University Street/ Belt Drive – Parkside to Towanda
- Grove Street – Hovey to Gregory
- Locust Street/Old Fort Jesse Road/Harter Lane/George Drive/Courtland Avenue– Main to Towanda
- Karin Drive/Centennial Avenue/Spear Drive/Hammitt Drive/Keller Road – Victor to Towanda
- Normal Avenue/Bakewell Street – Locust to Orlando
- Blair Drive – Vernon to College
- Susan Drive/Taft Drive – Fort Jesse to Hershey

Signed Connections

Signed connections provide routes between popular bikeways and major destinations. Signed connections are generally located on streets with higher automobile volumes than Bicycle Boulevards, but less than on routes with shared lane markings.

Signed connections in Normal should include wayfinding signage to help cyclists navigate between major bikeways and nearby destinations, and along roadway segments between more well-defined bikeways (e.g., bike lanes or shared use paths).

Signed Connection Recommendations

Signed connections are recommended for Normal's bikeway network to provide access between various bikeways and destinations.

Signed connections are recommended in the following areas:

- Orlando Avenue – Constitution Trail to Main
- Fairview Park Service Road – Constitution Trail to Main
- Bowles Street – Main to Normal
- Kerrick Road – Main to the Constitution Trail
- Sycamore Street /Linden Street – Constitution Trail to Pine
- Arborwalk Drive – North Branch Sugar Creek Trail to Landmark
- Hanson Drive – Blair to Towanda
- Hunt Drive – Sugar Creek Elem to Landmark
- Parkinson Street /Dewey Street – Constitution Trail to Maple
- Brookwood Drive– Jersey to Constitution Trail
- North Street – Fell to School
- Schroeder Drive/Orr Drive – Constitution Trail accessway to Spear
- Watkins Drive/College Hills Mall Loop/Landmark Drive – Towanda to College

Cycle Tracks

A cycle track is an exclusive bicycle facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. Cycle tracks have different forms, but all share common elements. Cycle tracks provide space that is intended to be exclusively or primarily for bicycles and are separated from vehicle travel lanes, parking lanes and sidewalks. Cycle tracks can be either one-way or two-way, on one or both sides of a street, and are separated from vehicles and pedestrians by pavement markings or coloring, bollards, curbs/medians or a combination of these elements.

Cycle Track Design Guidelines

While only recently implemented in the United States, cycle tracks have been used in European countries for several decades. The cycle track design guidance provided in the following pages was developed using European experience applied to situations in the U.S.

Cycle Tracks

Design Summary

Cycle Track Width:

- 7 foot minimum to allow passing and obstacle avoidance
- 12 foot minimum for two-way facility

Discussion

Cycle tracks provide increased comfort for bicyclists and greater clarity about expected behavior on the part of cyclists and motorists. Properly designed cycle tracks eliminate conflicts between bicycles and parked cars by placing the cycle track on the inside of the parking lane. They also provide adequate space to remove the danger of "car dooring." Danish research has shown that cycle tracks can increase bicycle ridership 18 to 20 percent, compared with the five to seven percent increase associated with bike lanes.

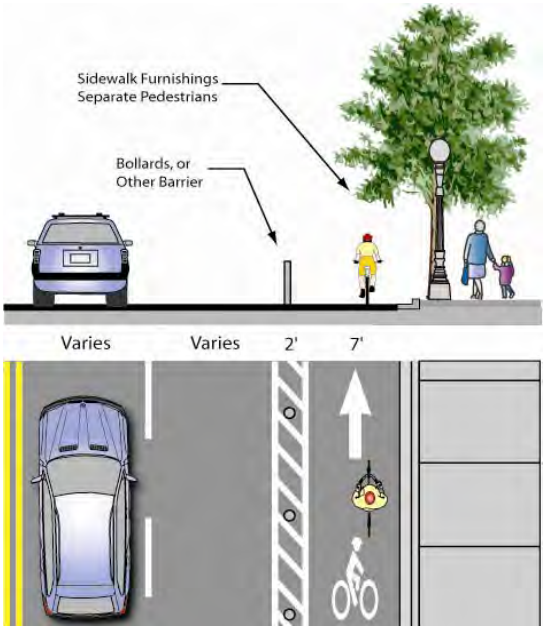
However, bicyclists are less visible to motorists as are they not traveling directly alongside one another, leading to increased vulnerability at intersections. In addition, regular street sweeping trucks cannot maintain the cycle track; smaller street sweepers are required. Finally, conflicts with pedestrians and boarding or deboarding bus passengers can occur, particularly on cycle tracks that are un-differentiated from the sidewalk or that are between the sidewalk and a transit stop.

Cycle tracks should be clearly marked where cars will cross them

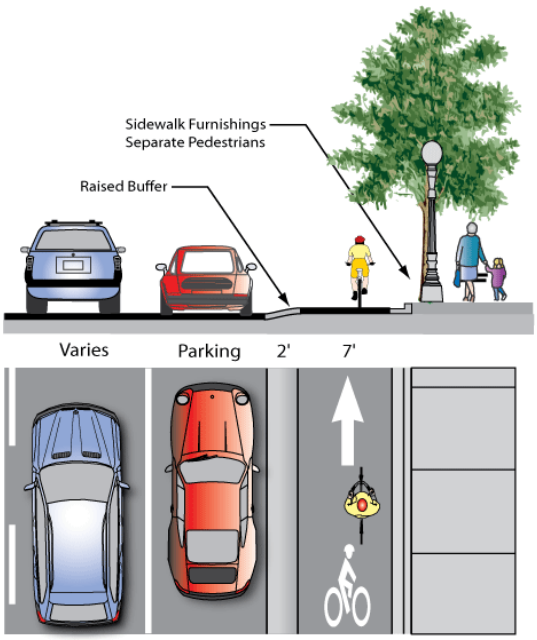
Guidance

This treatment is not currently present in any state or federal design standards

Design Examples



Recommended Design – without on-street parking



Recommended Design – with on-street parking

Cycle Tracks (continued)

Separation

Cycle tracks can be separated from vehicle traffic by a barrier or through grade-separation. Physical barriers can include bollards, parking, a planter strip, an extruded curb, or parking. Cycle tracks using barrier separation typically share the same elevation as adjacent travel lanes.

Openings in the barrier or curb are needed at driveways or other access points. The barrier should be dropped at intersections to allow vehicle crossing. Grade-separated cycle tracks should incorporate a rolled curb (right), which allows cyclists to enter or leave the cycle track at will and enables motorists to drive over it at intersections and crossings.

When on-street parking is present, it should separate the cycle track from the roadway. The cycle track should have a 2-foot buffer between parking and the cycle track to minimize the hazard of opening car doors to passing cyclists.

Cycle tracks with vertical separation from the roadway can utilize a mountable curb enabling bicyclists to enter and leave the cycle track

Placement

Cycle tracks should be placed along slower speed urban/suburban streets with long blocks and few driveways or mid-block access points for vehicles. Cycle tracks located on one-way streets will have fewer potential conflicts than those on two-way streets. A two-way cycle track is desirable when there are more destinations on one side of a street or if the cycle track will connect to a shared use path or bicycle facility on one side of the street.

Cycle tracks should only be constructed along corridors with adequate right-of-way. Sidewalks or other pedestrian facilities should not be narrowed to accommodate the cycle track as pedestrians will likely walk on the cycle track if sidewalk capacity is reduced. Visual and physical cues (e.g., pavement markings) should be used to warn drivers and instruct bicyclists where they should be moving.

Intersections

Cycle tracks separate cyclists and motor vehicles to a greater degree than bike lanes. This produces added comfort for cyclists on the cycle track, but it creates additional considerations at intersections that must be addressed. A right-turning motorist conflicting with cycle track users represents the most common conflict. Both roadway users have to expand their visual scanning to see potential conflicts. To address this issue, several treatments can be applied at intersections:

- **Protected Phases at Signals**: With this treatment, left- and right-turning movements are separated from conflicting thru movements. The use of a bicycle signal head is required in this treatment to ensure all users know which signals to follow. Demand-only bicycle signals can be implemented to reduce vehicle delay and prevent an empty signal phase from regularly occurring. With this scenario, a push button or imbedded loop within the cycle track should be available to actuate the signal. If many cyclist left turns are expected, this movement should be given its own signal phase and push button. This treatment requires additional signal phases and could potentially increase vehicle delays.
- **Advanced Signal Phases:** Signalization can also be set to provide cycle track users a green phase in advance of vehicle phases.
- **Unsignalized Treatments:** Warning signs, special markings and the removal of on-street parking (if present) in advance of the intersection can all raise visibility of cyclists.
- **Access Management:** Reducing the number of potential conflict points can also benefit a cycle track corridor. Medians, driveway consolidation, or restricted movements reduce the potential for conflict.

Cycle Track Recommendations

As a relatively new treatment in the United States, cycle tracks represent an important and innovative opportunity for Normal to develop a world-class bicycle facility. The recommended locations for cycle tracks in Normal are along streets with sufficient right-of-way to accommodate this treatment, and have limited vehicle access points (e.g., side streets or driveways) that create user conflicts. The recommended treatment for cycle tracks in Normal is a raised bike lane with bollards providing physical separation in key locations.

The segment of Main Street north of Raab Road exhibits characteristics suitable for cycle track installation (e.g., minimal driveways and intersections). Installation of cycle tracks would create a safer and more comfortable bicycling environment, thereby potentially reducing demand for vehicle travel on this corridor.

Route 66 Bikeway

Development of the Route 66 Bikeway through Normal yields tremendous potential for the Town to realize the extensive recreation and economic benefits of bicycling. Regional and national efforts are currently underway to develop a formalized bicycle route along the historic highway corridor linking Chicago with Los Angeles, California. Nationally, the American Cycling Association is working with AASHTO to develop a designated U.S. Bicycle Route System (USBRS). The planning effort currently stands at the "corridor level", and is intended to provide state departments of transportation and local partners guidance to identify specific routing options. The Route 66 Bikeway, passing directly through Normal, represents a prominent element of the USBRS.

Regionally, MCRPC completed the *Project Development Report: U.S. Route 66 Bikeway,* a detailed document containing design drawings for the Bikeway's routing through unincorporated McLean County. The Report does not specify specific routing through Normal and Bloomington, though it is assumed the existing Constitution Trail would serve as a key element. Approaching Normal from the northeast, the Report depicts a shared use path paralleling Old Route 66, terminating west of Towanda Avenue at a new trailhead.

The Normal Bicycle and Pedestrian Master Plan proposes an on-street bikeway linking the proposed shared use path with the existing Constitution Trail. From the trailhead west of Towanda Avenue, cyclists would follow the proposed "Lincoln Corridor", consisting of Bicycle Boulevard treatments along Lincoln and Chippewa streets. Identified as a top priority project in this Plan, the corridor takes advantage of lower-volume streets attractive to cyclists of all ages and confidence levels. Developing this critical link would bring Normal one step closer to completing a high-profile bikeway through the community. A separate section in this Plan describes the proposed Lincoln Corridor in greater detail.

To maximize the Route 66 Bikeway's recreational, educational, and other elements, the Town of Normal should develop interpretive signage or other features along the route. Equally important, wayfinding signage should be installed to serves as a route reinforcement to for users. The Town should consider using signage currently under development for the USBRS.

Bicycle Parking

This section outlines design guidance for providing high-quality bicycle parking. Bicycle parking can be broadly defined as either short-term or long-term parking:

- **Short-term parking:** Bicycle parking meant to accommodate visitors, customers, messengers and others expected to depart within two hours; requires approved standard rack, appropriate location and placement, and weather protection.
- **Long-term parking:** Bicycle parking meant to accommodate employees, students, residents, commuters, and others expected to park more than two hours. This parking is to be provided in a secure, weather-protected manner and location.

Short-Term Parking

Short-term bicycle parking facilities are intended to provide short-term bicycle parking, and include racks which permit the locking of the bicycle frame and at least one wheel to the rack and support the bicycle in a stable position without damage to wheels, frame or components. Short-term bicycle parking is currently provided at no charge at various locations in Normal. Such facilities should continue to be free, as they provide minimal security, but encourage cycling and promote proper bicycle parking.

Figure 36 illustrates appropriate rack design elements, while Table 14 summarizes recommended bike rack placement guidelines.

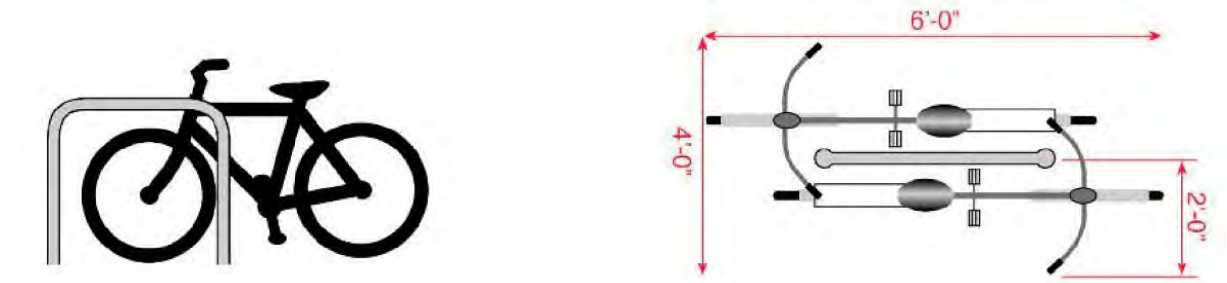


Figure 36. Inverted "U" Rack

Table 14. Bicycle Rack Placement Guidelines

Design Issue	Recommended Guidance
Minimum Rack Height	To increase visibility to pedestrians, racks should have a minimum height of 33 inches or be indicated or cordoned off by visible markers.
Signing	Where bicycle parking areas are not clearly visible to approaching cyclists, signs at least 12 inches square should direct them to the facility. The sign should include the name, phone number, and location of the person in charge of the facility, where applicable.
Lighting	Lighting of not less than one foot-candle illumination at ground level should be provided in all bicycle parking areas.
Frequency of Racks on Streets	In popular retail areas, two or more racks should be installed on each side of each block. This does not eliminate the inclusion of requests from the public which do not fall in these areas. Areas officially designated or used as bicycle routes may warrant the consideration of more racks.
Location and Access	Access to facilities should be convenient; where access is by sidewalk or walkway, ADA-compliant curb ramps should be provided where appropriate. Parking facilities intended for employees should be located near the employee entrance, and those for customers or visitors near main public entrances. (Convenience should be balanced against the need for security if the employee entrance is not in a well traveled area). Bicycle parking should be clustered in lots not to exceed 16 spaces each. Large expanses of bicycle parking make it easier for thieves to operate undetected.
Locations within Buildings	Provide bike racks within 50 feet of the entrance. Where a security guard is present, provide racks behind or within view of a security guard. The location should be outside the normal flow of pedestrian traffic.
Locations near Transit Stops	To prevent bicyclists from locking bikes to bus stop poles - which can create access problems for transit users, particularly those who are disabled - racks should be placed in close proximity to transit stops where there is a demand for short-term bike parking.
Locations within a Campus-Type Setting	Racks are useful in a campus-type setting at locations where the user is likely to spend less than two hours, such as classroom buildings. Racks should be located near the entrance to each building. Where racks are clustered in a single location, they should be surrounded by a fence and watched by an attendant. The attendant can often share this duty with other duties to reduce or eliminate the cost of labor being applied to bike parking duties; a cheaper alternative to an attendant may be to site the fenced bicycle compound in a highly visible location on the campus. For long-term parking needs of employees and students, attendant parking and/or bike lockers are recommended.
Retrofit Program	In established locations, such as schools, employment centers, and shopping centers, the Town should conduct bicycle parking audits to assess bicycle parking availability and access, and add additional bicycle racks where necessary.

Where the placement of racks on sidewalks is not possible (e.g., due to narrow sidewalk width, sidewalk obstructions, or other issues), bicycle parking can be provided in the street where on-street vehicle parking is allowed. Two possible options for creating parking in the street include clustered racks in a vehicle parking space protected by bollards or curbs (see Figure 37), and racks installed on sidewalk curb extensions where adequate sight distance exists. Installing bicycle parking directly in a car parking space incurs only the cost of the racks and bollards or other protective devices.

Figure 37. On-street bicycle parking

A curb extension is more expensive to install, and can be prohibitively expensive if substantial drainage and/or utility work is necessary. Costs may be less if the curb extension is installed as part of a larger street or pedestrian improvement project. While on-street bicycle parking may take space away from the automobile parking, there are ways to mitigate auto parking loss: Additional auto parking spaces can be created by consolidating driveways, moving fire hydrants, or otherwise finding places where it may be possible to permit auto parking where it is currently prohibited. Options for combining bicycle and motorcycle parking also exist.

On-street bicycle parking may be installed at intersection corners or at mid-block locations. Mid-block on-street parking may be closer to cyclists' destinations, although it could force cyclists to dismount and walk to the parking site if access from the street is difficult or dangerous. Combining a mid-block pedestrian crossing with mid-block on-street parking could mitigate this situation.

Long-Term Parking

Long-term bicycle parking facilities are intended to provide secure long-term bicycle storage. Long-term facilities protect the entire bicycle, its components and accessories against theft and against inclement weather, including snow and wind-driven rain. Examples include lockers, check-in facilities, monitored parking, restricted access parking, and personal storage.

Figure 38. Bike lockers at a transit station

Long-term parking facilities are more expensive to provide than short-term facilities, but are also significantly more secure. Although many bicycle commuters would be willing to pay a nominal fee to guarantee the safety of their bicycle, long-term bicycle parking should be free wherever automobile parking is free. Potential locations for long-term bicycle parking include transit stations, large employers and institutions where people use their bikes for commuting, and not consistently throughout the day (see Figure 38). An advantage of lockers is that they can be configured to more easily accommodate different styles of bicycles, such as recumbent bicycles (see Figure 39).

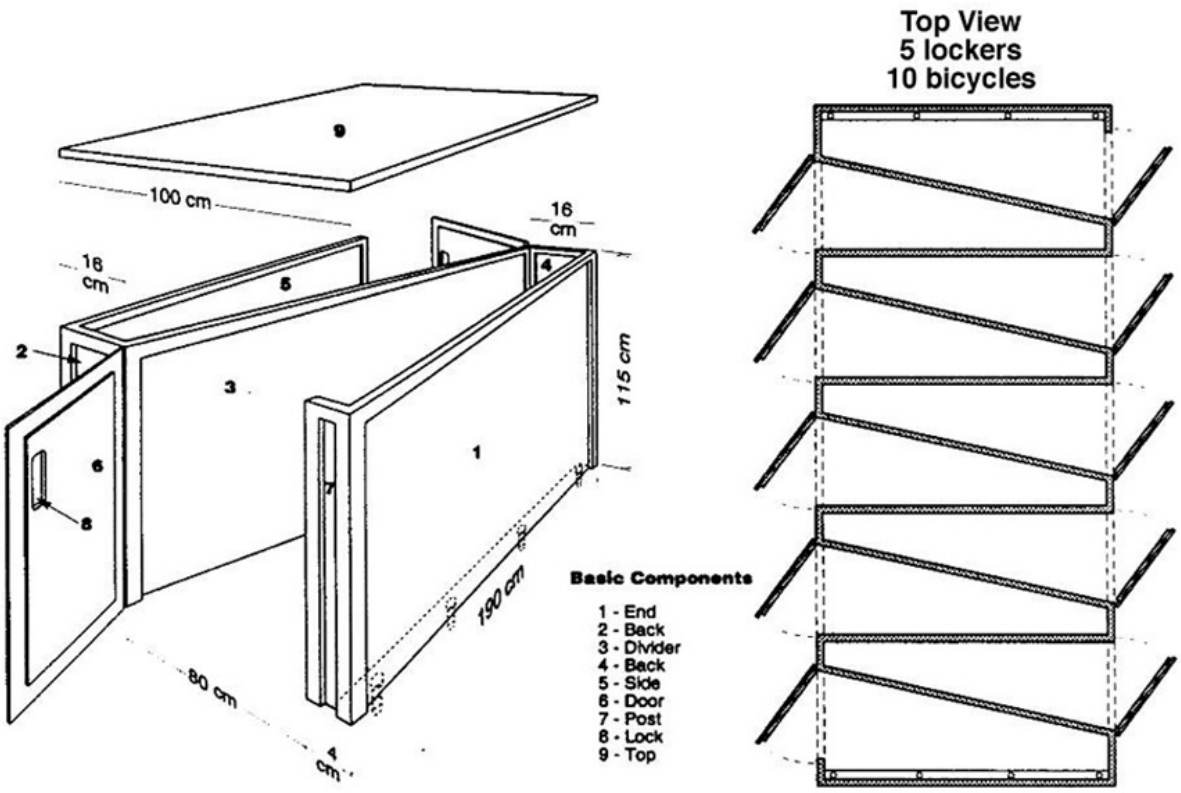


Figure 39. Typical bike locker dimensions

Normal's bicycle parking is generally adequate for current use within the Uptown area and near ISU; however, there are locations in other parts of town where bicycle parking is missing, lacking or difficult to access.

Bikeway Maintenance

This section presents guidelines for incorporating bicycle facilities into construction, maintenance and repair activities. The guidelines are presented as a menu of options and considerations for maintenance activities, and not strict guidelines. The Town of Normal should consider these recommended guidelines and implement them as possible within budget constraints. Safety for all road users is the top priority during construction and repair activities.

Bikeway Maintenance - Street Construction and Repair

Safety of all roadway users should be considered during road construction and repair. Wherever bicycles are allowed, measures should be taken to provide for the continuity of a bicyclist's trip through a work zone area. Only in rare cases should pedestrians and bicyclists be detoured to another street when travel vehicle lanes remain open. To accommodate bicyclists through various lane closures and detours, the following actions are recommended:

- Bicyclists should not be led into conflicts with work site vehicles, equipment, moving vehicles, open trenches or temporary construction signage
- Efforts should be made to re-create the bike lane (if one exists) to the left of the construction zone if enough space exists and it is safe to do so
- Where there is insufficient space to provide a bike lane adjacent to the construction zone, then a standard –width travel lane should be considered. If steel plating is used, special care should be taken to ensure that bicyclists can traverse the plates safely.
- Contractors performing work for Normal should be made aware of the needs of bicyclists and be properly trained in how to safely route bicyclists through or around work zones

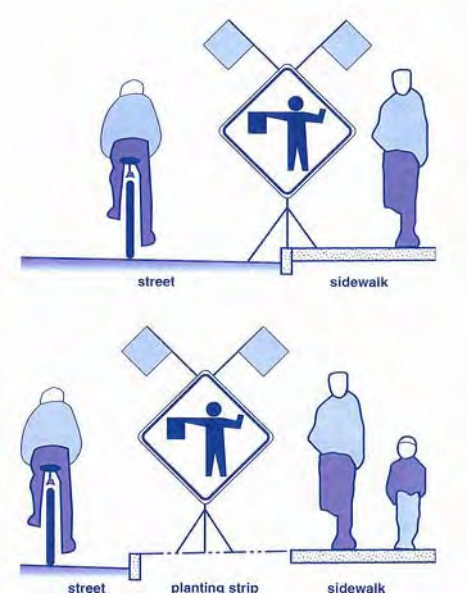
Signage Actions

Signage related to construction activities should be placed in a location that does not obstruct the path of bicyclists or pedestrians, including bike lanes, wide curb lanes, or sidewalks. In areas where there are grades, signs may be placed at the street-side edge of sidewalks so as not to encroach onto a bike lane.

Detour and closure signage related to bicycle travel may be included on all bikeways where construction activities occur. Signage should also be provided on all other roadways.

The following MUTCD signs should be used:

- W21-4A: Road Work Ahead
- W20-5: Right Lane Closed
- W4-2: Lane Shift, Left Sign
- W11-1: Bicycle Warning Sign
- W16-1: Share The Road



Proper Signage Placement

Open Trenches

Plates used to cover trenches are typically not flush with the pavement and have a 1"-2" vertical transition on the edges. This can puncture a hole in a narrow bicycle tire and cause a cyclist to lose control due to the shock of the vertical transition.

At such places, bicyclists often are left to their own devices to merge with vehicles in the adjacent travel lane. The interim condition of trenches during non-construction hours also impacts bicyclist travel. Although a common practice is to use steel plates during non-construction hours, these plates can be dangerously slippery, particularly when wet.

The Town of Normal should consider:

- Ensuring that steel plates used during construction activities do not have a vertical edge greater than ¼" without an asphalt lip
- Using non-skid steel plates with no raised steel bar on top
- Requiring temporary asphalt (cold mix) around plates to create a smooth transition and ensure the plates stay in place
- Using steel plates only as a temporary measure during construction, not for extended periods

Bikeway Maintenance – Regular Maintenance

Like all roadways, bicycle facilities require regular maintenance. This includes sweeping, maintaining a smooth roadway, ensuring that the gutter-to-pavement transition remains relatively flat, and installing bicycle-friendly drainage grates. Pavement overlays should be used as a good opportunity to improve bicycle facilities. The following recommendations are provided as a menu of options for Normal to consider as it augments and enhances its maintenance capabilities. Many of the recommendations listed below are already part of Normal's regular maintenance activities.

Sweeping

Bicyclists often avoid shoulders and bike lanes filled with sanding materials, gravel, broken glass and other debris; they will ride in the roadway to avoid these hazards, causing conflicts with motorists. Debris from the roadway should not be swept onto sidewalks (pedestrians need a clean walking surface), nor should debris be swept from the sidewalk onto the roadway. A regularly scheduled inspection and maintenance program helps ensure that roadway debris is regularly picked up or swept.

Action items involving sweeping activities include:

- Establish a seasonal sweeping schedule that prioritizes roadways with major bicycle routes
- Sweep walkways and bikeways whenever there is an accumulation of debris on the facility
- In curbed sections, sweepers should pick up debris; on open shoulders, debris can be swept onto gravel shoulders
- Pave gravel driveway approaches to minimize loose gravel on paved roadway shoulders
- Provide extra sweeping in the Fall in areas where leaves accumulate in bike lanes

Roadway Surface

Bicycles are much more sensitive to subtle changes in roadway surface than are motor vehicles. Various materials are used to pave roadways, and some are smoother than others. Compaction is also an important issue after trenches and other construction holes are filled. Uneven settlement after trenching can affect the roadway surface nearest the curb where bicycles travel. Sometimes compaction is not achieved to a satisfactory level, and an uneven pavement surface can result due to settling over the course of days or weeks.

Recommended action items involving maintaining the roadway surface include:

- On all bikeways, use the smallest possible chip for chip sealing bike lanes and shoulders
- Ensure that on new roadway construction, the finished surface on bikeways does not vary more than ¼"
- Maintain a smooth surface of all bikeways that is free of potholes
- Maintain pavement so ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings
- Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred

Bikeway Maintenance – Regular Maintenance (continued)

Gutter-to-Pavement Transition

On streets with concrete curbs and gutters, 1'-2' of the curbside area is typically devoted to the gutter pan, where water collects and drains into catch basins. On many streets, the bikeway is situated near the transition between the gutter pan and the pavement edge. It is at this location that water can erode the transition, creating potholes and a rough surface for travel.

The pavement on many streets is not flush with the gutter, creating a vertical transition between these segments. This area can buckle over time, creating a hazardous environment for bicyclists. Since it is the most likely place for bicyclists to ride, this issue is significant for bike travel.

Action items related to maintaining a smooth gutter-to-pavement transition include:

- Ensure that gutter-to-pavement transitions have no more than a ¼" vertical transition
- Examine pavement transitions during every roadway project for new construction, maintenance activities, and construction project activities that occur in streets

Drainage Grates

Drainage grates are typically located in the gutter area near the curb of a roadway. Drainage grates typically have slots through which water drains into the municipal stormwater system. Many grates are designed with linear parallel bars spread wide enough for a tire to become caught so that if a bicycle were to ride on them, the front tire would become caught and fall through the slot. This would cause the cyclist to tumble over the handlebars and sustain potentially serious injuries.

The Town of Normal should consider the following:

- Continue to require all new drainage grates be bicycle-friendly, including grates that have horizontal slats on them so that bicycle tires do not fall through the vertical slats
- Creating a program to inventory all existing drainage grates, and replace hazardous grates as necessary

Pavement Overlays

Pavement overlays represent good opportunities to improve conditions for cyclists if done carefully. A ridge should not be left in the area where cyclists ride (this occurs where an overlay extends part-way into a shoulder bikeway or bike lane). Overlay projects offer opportunities to widen a roadway or to re-stripe a roadway with bike lanes.

Action items related to pavement overlays include the following:

- Extend the overlay over the entire roadway surface to avoid leaving an abrupt edge
- If there is adequate shoulder or bike lane width, it may be appropriate to stop at the shoulder or bike lane stripe, provided no abrupt ridge remains
- Ensure that inlet grates, manhole and valve covers are within ¼ inch of the pavement surface
- Pave gravel driveways to property line to prevent gravel from spilling onto shoulders or bike lanes

Bikeway Maintenance – Regular Maintenance (continued)	
Signage	
Bike lanes, shared shoulders, Bicycle Boulevards and paths all have different signage types for wayfinding and regulations. Such signage is vulnerable to vandalism or wear requiring regular maintenance and replacement as needed.	The Town of Normal should consider the following: • Occasionally check regulatory and wayfinding signage placed along bikeways for signs of vandalism, graffiti, or normal wear • Replace signage along the bikeway network on an as-needed basis • Perform a regularly-scheduled check on the status of signage with follow-up as necessary • Create a Maintenance Management Plan
Landscaping	
Bikeways can be rendered inaccessible due to overgrown vegetation overgrowing. To prevent this, shoulder plants should be trimmed twice a year. After a flood or major storm, bikeways should be checked along with other roads, and fallen trees or other debris should be removed promptly.	Action items related to landscaping maintenance include: • Ensure that shoulder plants do not hang into or impede passage along bikeways • After major damage incidents, remove fallen trees or other debris from bikeways as quickly as possible
Maintenance Management Plan	
Bikeway users will need accommodation during construction and maintenance activities when segments of bikeways may be closed or unavailable to users. Users must be warned of impending bikeway closures and given adequate detour information to bypass the closed section. Users should be warned through the use of standard signing approaching each affected section (e.g., "Bike Lane Closed," "Trail Closed"), including (but not limited to) information on alternate routes and dates of closure. Alternate routes should provide a reasonable level of directness and equivalent traffic characteristics and be signed consistently.	Action items related to a Maintenance Management Plan include: • Provide fire and police departments with map of system, along with access points to gates/bollards • Enforce speed limits and other rules of the road • Enforce all trespassing laws for people attempting to enter adjacent private properties

Table 15 outlines the recommended frequency of regular maintenance activities for walkways and bikeways. Estimated costs of regular maintenance and funding strategies are discussed in Chapter 7.

Table 15. Recommended Walkway and Bikeway Maintenance Activities

Maintenance Activity	Frequency
Inspections	Seasonal – at beginning and end of Summer
Pavement sweeping/blowing	As needed, weekly in Fall
Pavement sealing, potholes	5 - 15 years
Culvert and drainage grate inspection	Before Winter and after major storms
Pavement markings replacement	1 – 3 years
Signage replacement	1 – 3 years
Shoulder plant trimming (weeds, trees, brambles)	Twice a year; middle of growing season and early Fall
Tree and shrub plantings, trimming	1 – 3 years
Major damage response (washouts, fallen trees, flooding)	As quickly as possible

Community-wide Improvements

The following recommendations outline supporting facilities for pedestrians and bicyclists.

Bicycle Wayfinding Signage Plan

The ability to navigate through a town or city is informed by landmarks, natural features, and other visual cues. Placing signs throughout the town indicating to bicyclists their direction of travel, location of destinations, and the riding time/distance to those destinations will increase users' comfort and accessibility to the bicycle system. Wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution. Signs shown in both Figure 40 and Figure 41 are MUTCD-approved for use along bicycle facilities.

Figure 40. Model MUTCD-Approved Wayfinding Signage

Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes. Too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists and pedestrians, rather than per vehicle signage standards.

Signage can serve both wayfinding and safety purposes including:

- Helping to familiarize users with the bikeway system
- Helping users identify the best routes to destinations
- Helping to address misperceptions about time and distance
- Helping overcome a "barrier to entry" for people who do not bicycle often (e.g., "interested but concerned" cyclists)

Costing about $125 each, wayfinding signs are a relatively cost-effective means for improving the walking and bicycling environment.

A community-wide Bicycle Wayfinding Signage Plan would identify:

- Sign locations along existing and planned bicycle routes
- Sign type – what information should be included and design features
- Destinations to be highlighted on each sign – key destinations for bicyclists
- Approximate distance and riding time to each destination

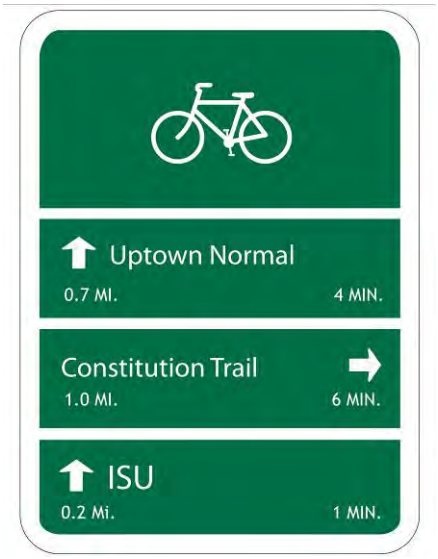


Figure 41. Wayfinding Signage Concept *(improved MUTCD exception of Sign D1-3c for State of Oregon)*

Normal should consider partnering with the City of Bloomington to conduct a joint twin-cities plan, which could serve bicyclists in both communities.

Shared Use Path Pavement Upgrades

The Constitution Trail is a critical element of Normal's bikeway and walkway system. However as previously noted, the trail surface is degrading due to weather, time and usage in some locations. This renders the trail inaccessible to pedestrians with disabilities and reduces comfort and safety for bicyclists using the trail.

Normal should maintain the Constitution trail by repairing or replacing areas where the path surface is damaged or deteriorated (e.g., where there is cracked/heaving pavement).

Crosswalk Marking Upgrades

As previously discussed, at some intersections in Normal, crosswalks have faded or are otherwise difficult to see. These locations could be targeted through a Crosswalk Marking Upgrade Program, which would re-stripe existing crosswalks with high-visibility markings. The Program should establish a goal highlighting the number of crossings to be upgraded each year.

Uptown Normal "Bike Oasis"

A bike oasis is a high-quality short-term bicycle parking facility, appropriate at major bicycle destinations such as Uptown Normal (Figure 42). A bike oasis can be built on a curb extension or on a wide sidewalk, where the oasis will not create conflicts with pedestrians.

Figure 42. A "Bike Oasis" provides a covered area for bike parking

Sidewalk Infill

A Sidewalk Infill Program places emphasis on completing sidewalk gaps along major pedestrian routes and near major pedestrian destinations.

Completing some sidewalk links can be challenging, especially in older residential areas where residents have developed fencing and landscaping within the public right-of-way and may consider those areas to be part of their personal space. In addition, some residents may not want traditional sidewalks due to the rural look of their neighborhoods and potential impacts to mature landscaping and trees. Regardless, the public right-of way that is generally located on either side of the paved driving and parking area is intended for walking, whether or not a sidewalk currently exists.

Normal should continue its existing Sidewalk Infill Program whereby Town staff periodically inventory the street network to identify sidewalk gaps and develop strategies, project prioritization criteria and funding for completing these gaps. Potential project prioritization criteria include filling gaps along key pedestrian routes, near major pedestrian trip generators like schools, and along streets with high vehicle volumes.

Damaged Sidewalk Repair/Replacement

Sidewalk surfaces become degraded over time, with tree roots, weather and other factors creating an uneven surface. Normal should continue its program of repairing/replacing damaged and deteriorated sidewalks where surfaces have cracked or pavement has heaved.

The Pedestrian Priority Corridors identified in this Plan should take priority for sidewalk infill and upgrades. After these, areas that have high pedestrian use or where the condition of sidewalks is particularly problematic should be targeted for improvements first.

ADA-Compliant Curb Ramp Upgrades

With the advent of the Americans with Disabilities Act (ADA) in 1990, the nation recognized the need to provide equal access to all residents. Since its inception, ADA has significantly changed design requirements for the construction of public space. However, much of the pedestrian environment built prior to the ADA's inception does not adequately accommodate people with disabilities. Normal's approach is to gradually change this situation through land development project requirements, unrelated capital street improvement projects, and capital projects that specifically retrofit antiquated public pedestrian facilities. Normal should continue this process and also target improvements along identified Pedestrian Priority Corridors and other high-pedestrian use locations.

It is important to note that a pedestrian environment that is strategically built to be accessible for people with disabilities is also more accessible for all. Curb ramps, for instance, can accommodate strollers, shopping carts and dollies for the movement of goods. Accessible intersection crossings can increase safety for people regardless of ability. In recognition of this, the Town's philosophical approach is to create pedestrian environments that are attractive, functional, and accessible to all people.

Transit Stop Upgrades

To increase safety for transit users and to encourage more transit use, Normal should work with BNPTS to upgrade existing transit stops. These upgrades would include shelters, benches, lighting, bike parking, posted maps and schedules, and trash receptacles. The Town should also consider the pedestrian environment approaching the transit stop, including adequate sidewalk widths and ADA-compliant curb ramps to help pedestrians access the stop.

Bike Racks on Buses

Integrating bicycles with transit combines the long-distance coverage of bus travel with the door-to-door service of bicycle riding. Transit use can overcome large obstacles to bicycling, including distance, hills, riding on busy streets, night riding, inclement weather, and breakdowns. Providing space for bicycles on buses can increase transit uses in lower-density suburban areas, where transit stops are beyond walking distance of many residents. People are often willing to walk only a quarter- to half-a-mile to a bus stop, while they might bike as much as two or more miles to reach the bus station. As the majority of bus stops in Normal lack long-term, secure parking options for bicycles, most people who ride to a bus stop will want to bring their bicycle with them on the transit portion of their trip.

Normal should work with BNPTS and ISU to retrofit the remaining transit and campus bus fleet with bike racks, enabling Normal residents and students to use transit in conjunction with bicycling.

At-Grade Railroad Crossing Upgrades

Bicycle wheels and tires are very susceptible to getting caught within the gap of a railroad flange. This situation occurs when a bicyclist is required to cross the tracks at an angle less than 60 degrees. When a track "catches" a wheel, a bicyclist may be thrown from his or her

bicycle and possibly suffer a severe, traumatic injury. Crossing treatments that reduce the number of situations in which bicyclists must cross railroad tracks at unsafe shallow angles will increase bicyclists' safety and comfort.

The Town of Normal should examine places where bikeways make at at-grade railroad crossings in order to provide safe bicycle crossings. Appropriate crossing treatments should facilitate right-angle turns by bicyclists as well as warning signs (Figure 43) and/or pavement markings that lead cyclists to cross the tracks at a safe angle. These improvements should be implemented by the Town in partnership with the Union Pacific Railroad and Norfolk Southern Railroad.

Figure 43. Warning signs can alert bicyclists to the danger of crossing railroad tracks

Drainage Grate Retrofits

The Town should continue its efforts to retrofit existing drainage grates as roads are being resurfaced. Drainage grates that have parallel metal strips prevent bicycle tires from slipping and significantly increases comfort and safety for bicyclists riding in the road. Figure 44 demonstrates examples of bicycle-safe drainage grate coverings.

Normal should establish a goal for the number of drainage grates to retrofit each year, conditional on funding. Retrofitting and replacing existing drainage grates will facilitate safe bicycle crossing movements.

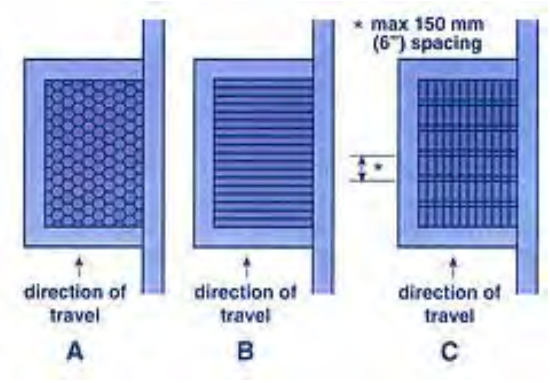


Figure 44. Examples of bicycle-safe drainage grates

ADA Improvements in Parks

Access for all users is a particularly important consideration for parks. As previously discussed, path and sidewalk surfaces degrade over time, and require regular maintenance and repair. Paved paths and sidewalks within parks should be retrofitted to meet ADA requirements.

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Chapter 5. Recommended Programs: Education, Enforcement, Encouragement, & Evaluation

The Normal recommended bicycle and pedestrian network should be complemented by programs and activities designed to promote walking and bicycling. There are many existing efforts to promote walking and bicycling in central Illinois, including efforts by local agencies, active community groups and individual residents. The Normal Bicycle and Pedestrian Master Plan recognizes these efforts and encourages the Town of Normal to support, promote and build upon these efforts.

Pedestrian and bicycle planning commonly talks about the five "Es": engineering, education, encouragement, enforcement and evaluation. While Chapter 4 describes engineering strategies for improving the pedestrian and bikeway network, this chapter addresses education, encouragement, enforcement and evaluation measures.

Existing Education and Outreach Efforts

The Town of Normal, in conjunction with various teaming partners, has produced a number of valuable educational materials aimed at pedestrians, bicyclists and motorists alike.

Existing Materials:

- Constitution Trail Map: http://www.normal.org/Files/trailmap.pdf
- Go to Trails Website: http://www.gototrails.com/

Existing Programs and Organizations

Clubs, Organizations, and Racing Teams

Several clubs have activities aimed at encouraging people to walk, ride bicycles, and participate in organized walks, runs, bicycle rides, and triathlons.

- McLean County Wheelers: http://www.mcleancountywheelers.com/
- Lake Run Club: http://www.lakerunclub.org/
- Friends of the Constitution Trail: http://www.constitutiontrail.org/
- Tri-Shark Triathlon Club: http://www.tri-shark.org/TriSharkClub2/Index.aspx
- Comlara Off-Road Bicycling Association: comlaramtb.com
- League of Illinois Bicyclists. www.bikelib.org/

LAB/LCI programs

The League of American Bicyclists (LAB) offers a Smart Cycling course that teaches adults and children to ride their bicycles safely and confidently (Figure 45). The Smart Cycling courses are taught by League Certified Instructors (LCIs). There is currently one League-Certified Instructor within 70 miles and seven league-certified instructors within 100 miles of Normal.[6]

Figure 45. A League of American Bicyclists Smart Cycling Training Course

Bicycle Rodeos

Bicycle Rodeos are a fun, simple event that teaches bicycle safety to younger children. They often include a helmet fitting, bicycle safety check, and obstacle course. The League of Illinois Bicyclists offers a Bicycle Rodeo train-the-trainer program to community groups, municipal staff, and wellness providers. This training is offered throughout the state and is administered by a League Certified Instructor.[7]

Bicycle Sharing

Illinois State University recently launched a bicycle sharing program called Reggie Ride. This is a free program for staff and students that repurposes abandoned bicycles left on campus. Bicycles are painted either red or white, reflecting ISU school colors. Red bicycles can be checked out for up to 48 hours with a student ID at the student center. White bicycles are designated for staff and faculty and are used to commute between buildings.[8]

[6] More information about LAB/LCI programs is available at: http://www.bikeleague.org/programs/education/index.php
[7] More information about bicycle rodeos is available at: http://www.bikelib.org/srts/training/index.htm
[8] More information bicycle sharing is available at: http://www.greenteam.ilstu.edu/initiatives/reggie_ride.shtml

Program Recommendations

Crosswalk Enforcement Actions	
Target audience	Motorists
Primary agency	Town of Normal Police Department
Partners	McLean County Unit #5 School District
Key elements	Plainclothes police officers or selected volunteer decoys attempt to cross streets and marked mid-block crossings. If motorists fail to yield to the pedestrian in a crosswalk, a second police officer issues a ticket.
Time frame	Annual, spring or fall (coupled with ISU's back to school dates) and McLean County Unit # 5 School District
Cost	$ - $$ (depending on design and scope)
Potential funding sources	Federal Highway Administration safety funding National Highway Traffic Safety Administration
Sample programs	Pedestrian and Bicycle Information Center website: http://www.walkinginfo.org/enforcement/programs-enforcement.cfm

Crosswalk enforcement actions (sometimes known as "pedestrian stings") raise public awareness about the legal obligation of motorists to stop for pedestrians at crosswalks. While crosswalk enforcement actions do result in tickets being distributed, the greater impact comes through media publicity of the event to reinforce the importance of motorists' obeying pedestrian crossing laws.

Most crosswalk enforcement sites are selected because they have been identified as locations where pedestrians have trouble crossing, and/or where a large volume of pedestrians (especially vulnerable pedestrians such as children and seniors) is expected. High-crash locations may also be candidates for enforcement actions. If locations near schools are selected, the best timing for an enforcement action is the back-to-school window just after school has begun for the year.

Plainclothes police officers or selected volunteer decoys attempt to cross at corners and marked mid-block crossings. If motorists fail to yield to the pedestrian in a crosswalk, a second police officer issues a ticket. Decoys may also be notable community members (such as the mayor or a well-known business leader) to increase media interest in the event.

The Town of Normal should conduct at least three crosswalk enforcement actions each year. Key locations include downtown, near an elementary school, and near ISU.

Normal Bike/Walk Central Website	
Target audience	Current and potential cyclists and walkers
Primary agency	Town of Normal
Partners	Green Team, Twin City Teen Council, Uptown Advisory Council, University Liaison Committee, Friends of the Constitution Trail, McLean County Wheelers, Lake Run Club, Tri-Shark Club
Key elements	Resources, maps and map orders, safety, events, groups
Time frame	Ongoing
Cost	$ - $$ (depending on design and scope)
Potential funding sources	Low cost; may not require outside funding
Sample programs	Vélo Québec website: http://www.velo.qc.ca/english/index.php

The Town of Normal already has numerous resources for cyclists and pedestrians, and more services and resources are planned for the future. Many cyclists or potential cyclists do not know where to turn to find out about laws, events, maps, tips, and biking groups. The Town of Normal should develop a "one-stop shopping" website aimed at pedestrians and bicyclists. A potential name is Normal Bike/Walk Central, though other names could be used. (The URL "http://www.bikewalknormal.org" is available at time of writing.)

The Normal Bike/Walk Central website should contain:

- A list of all **walking and bicycling groups**, including clubs, racing teams, and advocacy groups
- Information about specific **Normal Boards and Commissions** that discuss bicycle and pedestrian issues (how to get involved, meeting times and dates, agendas and minutes)
- Information about **current projects and how to get involved** (e.g., public meetings, comment periods)
- **Maps and brochures** (e.g., links to online maps and brochures, where to find in person, and how to request mailed materials)
- Links to **laws and statutes** relating to walking and bicycling
- Links to all relevant **local jurisdictions and their bicycle and pedestrian contacts** (City of Bloomington, McLean County, ISU's transportation office, etc.)
- Information about **walking and cycling events** (e.g., rides, classes, volunteer opportunities)
- A list of **local bike shops**, including phone number and address

- Relevant **phone numbers** (e.g., contact numbers to request pothole repair, parking enforcement, bike rack installation request, trail maintenance, etc.)

The website may also feature:

- Events calendar
- Request form for route planning assistance
- Message boards
- Blog featuring stories and news
- Photo galleries from events and submitted by readers
- Popular riding and walking routes

Note that these additional features may increase the cost to set up and maintain the website.

A one-stop bike/walk website will not be difficult to set up, but it will only be successful if the site is both easy to use and updated regularly. Corners should not be cut in either design or in maintenance of the site and its information. All Bike/Walk Central website content should be reviewed annually for accuracy.

The bicycle/pedestrian community can assist in keeping the site up to date. The Town of Normal should consider adding a standing agenda item for the applicable municipal committee (such as the Green Team) to discuss the Bike/Walk Central website in order to identify new content that should be added or out-of-date content that should be updated or removed.

Pilot SmartTrips Program	
Target audience	Normal residents who are interested in biking, walking and transit
Primary agency	Town of Normal
Partners	Transit agencies (e.g., BNPTS), Illinois State University, OSF St. Joseph's Medical Center, BroMenn Healthcare, State Farm Insurance, Country Insurance and Financial Services, Mitsubishi, community volunteers
Key elements	Outreach to a target geographic area promoting biking, walking and transit usage
Time frame	Program launch in late spring of selected year
Cost	$$$
Potential funding sources	Federal flexible transportation; public transportation funds; hospitals and insurance companies; health funds
Sample programs	Portland SmartTrips program: http://www.portlandonline.com/transportation/index.cfm?c=ediab

SmartTrips programs (also known as individualized social marketing programs) are encouragement programs based on saturating a target geographic area with resources to help residents reduce drive-alone trips and increase biking, walking, transit and carpool trips. SmartTrips programs have demonstrated a lasting reduction in drive-alone trips; for example, in Portland, OR target areas have experienced a ten percent reduction in motor vehicle traffic.

Programs offer residents maps, brochures and other printed materials, classes, guided rides and walks, and other tools and programs that make bicycling, walking and transit usage a more inviting travel option compared to drive-alone trips. Resources are often delivered to interested residents by bicycle (Figure 46).

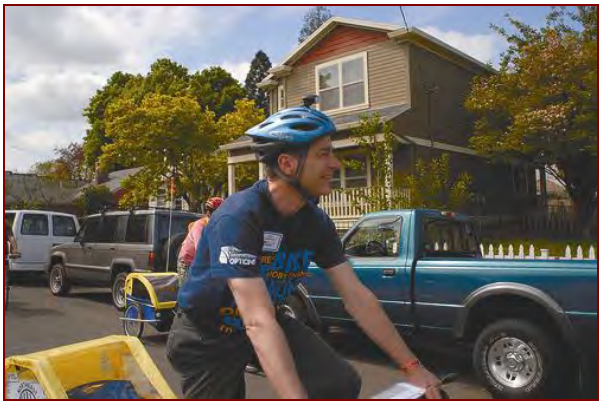


Figure 46. Maps and materials are delivered to interested residents by bike in the SmartTrips program

Compared to infrastructure improvements, these programs are scalable, flexible, inexpensive, and site-independent. Once the program has been established for a specific geographic target area, it can be run with low start-up costs in other target areas.

This model, however, is unlikely to be successful in areas that have failed to make initial infrastructure investments sufficient to provide a functional bicycling, walking and transit network. It is most effective as an approach that leverages investments in infrastructure, not one that replaces those investments.

One of the strengths of the individualized marketing model is that it reaches every resident with an appealing invitation to participate, but then focuses the bulk of resources on those who identify themselves as interested. The many classes, rides, and activities continue to be publicized and open to all, so residents have multiple opportunities to opt into the program. This focus allows for both broad reach and strategic investment.

It is recommended that the Town of Normal implement a pilot SmartTrips program in a limited geographic area (to be selected at time of program planning).

The program may include the following:

- Maps and brochures
- Classes, clinics, workshops
- Guided rides and walks
- Fun social events
- Giveaways (e.g., coupons, pedometers, etc.)
- Targeted outreach (e.g., Women on Bikes, Senior Strolls)
- Route planning help (bike, walking, or transit)

The exact program components and budget should be determined at time of program planning.

Perform Annual Bicycle and Pedestrian Counts	
Target audience	N/A
Primary agency	Town of Normal
Partners	Transit agencies (e.g., BNPTS), McLean County, Illinois State University
Key elements	Create a count database to track walking and bicycle trends and measure success of Pedestrian and Bicycle Master Plan
Time frame	Annually
Cost	$$ (for data collection and analysis)
Potential funding sources	Federal flexible transportation; public transportation funds; hospitals and insurance companies
Sample programs	National Bicycle & Pedestrian Documentation Project (http://www.fhwa.dot.gov/environment/bikeped/study/)

Many jurisdictions, including the Town of Normal, do not perform regular bicycle or pedestrian counts. As a result, they do not have a mechanism for tracking ridership and walking trends over time or for evaluating the impact of projects, policies, and programs.

It is recommended that the Town of Normal perform and/or coordinate annual counts of bicyclists and pedestrians according to national practices. The National Bicycle and Pedestrian Documentation Project (NBPD) has developed a recommended methodology, survey and count forms, and reporting forms. This approach may be modified to serve the needs and interests of individual jurisdictions. The NBPD was established to provide communities nationwide a consistent methodology for collecting bicycle and pedestrian data.

The Town of Normal should take the lead role in standardizing a regional approach to counts and surveys. Town staff may perform the counts themselves or assist partner agencies or volunteer groups in performing the counts. The Town of Normal should also handle tracking, analysis, and reporting.

If desired, further bicycle and pedestrian data collection opportunities may be pursued as well, including:

- Collect before-and-after bicycle/pedestrian/vehicle data collection on priority roadway projects
- Insert bicycle/pedestrian survey questions into any existing travel mode or town audit survey instrument
- Require counting of bicyclists/pedestrians in all traffic studies
- Purchase National Household Travel Survey add-on

Safe Routes to School – Phase 1	
Target audience	Parents, schoolchildren, administrators, Town planners & engineers
Primary agency	Town of Normal, McLean County Unit #5 School District, Metcalf School, Calvary Baptist Academy, Epiphany, The Mulberry School
Partners	Parent groups at schools, school neighbors
Key elements	Bicycle and pedestrian audit of infrastructure at elementary schools and recommended route maps
Time frame	Spring
Cost	$$ - $$$ (depending on number of schools included)
Potential funding sources	Illinois Safe Routes to School funding (http://www.dot.il.gov/saferoutes/saferouteshome.aspx)
Sample programs	Portland Safer Routes to School Program: http://www.trans.ci.portland.or.us/saferoutes/

Helping children walk and bicycle to school is good for children's health and can reduce congestion, traffic dangers and air pollution caused by parents driving children to school. Robust Safe Routes to School programs address all of the "Five E's" (Engineering, Education, Encouragement, Enforcement, and Evaluation).

The Town of Normal should work with the McLean County Unit 5 School District to implement the first phase of a Safe Routes to School Program. This phase will use a walkabout (also known as a bicycle and pedestrian audit) to assess walking and bicycling conditions of streets adjacent to elementary schools and create a school travel plan (Figure 47). Parents, students, neighbors, and Town planners and/or traffic engineers should be invited to join in the walkabout. Safety concerns, issues, and ideas should be recorded.

After the bicycle and pedestrian audit is conducted, parent maps for each elementary school showing recommended routes to reach school, along with high-traffic intersections and routes to avoid, should be produced and distributed.

As a final step, a school travel plan should be produced according to the Illinois Safe Routes to School funding requirements for each elementary school, including cost estimates and a prioritized project list. This infrastructure improvement plan will serve as a blueprint for future investments and can be used to apply for Illinois Safe Routes to School funding.

Figure 47. Students participate in a walkabout to evaluate pedestrian conditions

Media Safety Campaign	
Target audience	General public
Primary agency	Town of Normal
Partners	League of Illinois Bicyclists, Illinois Department of Transportation, Illinois State University
Key elements	Bicycling and Pedestrian Safety campaign with billboard, radio and/or TV spots
Time frame	Late spring or early summer, in conjunction with Bike to Work Month or back to school
Cost	$ - $$$ (depending on whether ad space is purchased or donated)
Potential funding sources	Local transit agencies (for donated airtime), traffic safety foundations and grant programs; hospitals and insurance companies
Sample programs	New York City Department of Transportation "Look" Safety Campaign: www.looknyc.org

A marketing campaign that highlights cyclists' safety is an important part of creating awareness of bicycling. Such campaigns are an effective way to reach the general public and reinforce other education and outreach messages.

A well-produced safety campaign will be memorable and effective. One stellar example is the "LOOK" campaign produced by the New York City Department of Transportation; it combines compelling ads with an easy-to-use website focused at motorists and cyclists (Figure 48).

It is recommended that the Town of Normal create a safety campaign similar to the "LOOK" campaign that places safety messages near high-traffic corridors (e.g., on billboards, in bus shelters, and in print publications). It is also suggested that this campaign be kicked off in conjunction with Bike to Work Month (May) or back to school in the fall.

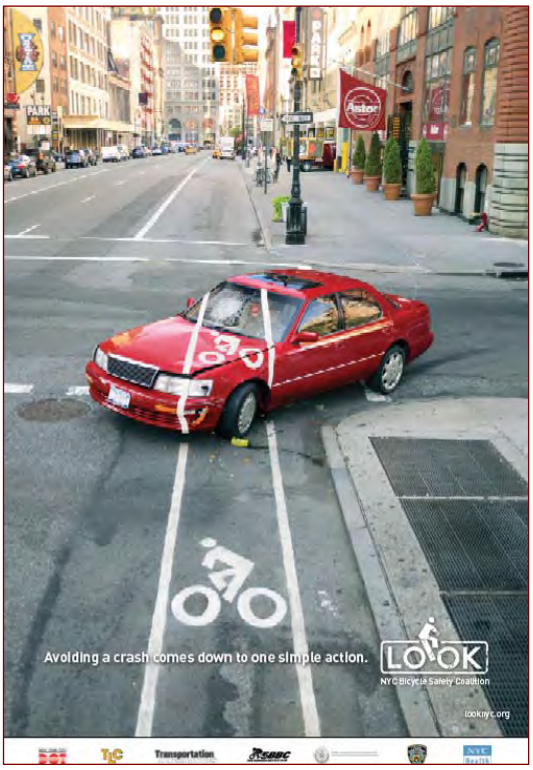


Figure 48. NYC's LOOK Bicycle Safety Campaign has developed posters and other graphics to promote safe driving around bike lanes

Update Bloomington-Normal Trail Map	
Target audience	Current and potential cyclists and walkers
Primary agency	McLean County Regional Greenways Committee, Friends of the Constitution Trail
Partners	Town of Normal, City of Bloomington
Key elements	Clear symbology, designations and services attractive for cyclists and walkers, good selection of routes
Time frame	One-time, with regular updates; can happen at any time
Cost	$$ - $$$
Potential funding sources	Parks and recreation funding, Safe Routes to School funding, private donors

One of the most effective ways of encouraging people to bike and walk is through the use of maps and guides showing the trail resources that exist in their community. Maps show walkers and bikers how easy it is to access different parts of the Town by bike or on foot (see Figure 49). Updating the Bloomington-Normal trail map can help promote tourism, encourage residents to walk and bicycle, and promote local business districts.

Once an updated map is in place, regular updates should be scheduled and a distribution plan should be created. Paper copies of the map may be distributed by the Town of Normal as well as through bike shops, community groups, and at events throughout the year. An electronic copy of the map should be posted on the Walk/Bike Central website (recommended earlier in this chapter).

Figure 49. A good map makes bicycling and walking easy and pleasurable for residents

Apply to become a Bicycle Friendly Community	
Target audience	League of American Bicyclists
Primary agency	Town of Normal
Partners	McLean County, League of Illinois Bicyclists
Key elements	Implement Pedestrian and Bicycle Master Plan, highlight implemented initiatives in the Bicycle Friendly Community Application
Time frame	One-time, with regular updates; can happen at any time
Cost	$
Potential funding sources	Little funding is required to complete application
Sample programs	http://www.bikeleague.org/programs/bicyclefriendlyamerica/

The League of American Bicyclists has a well-respected Bicycle-Friendly Communities award program. Communities fill out a detailed application that covers bike-related facilities, plans, education efforts, promotion initiatives, and evaluation work that has been completed by the jurisdiction. The award is designed to recognize progress that has been made, as well as to assist communities in identifying priority projects to improve bicycling conditions. Receiving the award is a media-worthy event, and may give elected officials the opportunity to receive media coverage for the positive work they are doing. Awards are granted for Bronze, Silver, Gold and Platinum bicycle-friendly communities.

It is recommended that the Town of Normal apply for bicycle-friendly community status after a substantial number of the bicycle improvements recommended in this Plan have been implemented. Town of Normal staff should obtain a copy of the application and review it annually to determine when the Town is ready to apply. The League may also be able to assist with a readiness assessment.

Complete Streets Policy	
Target audience	Town of Normal and McLean County planners and engineers
Primary agency	Town of Normal
Partners	Federal Highway Administration, Illinois Department of Transportation, McLean County, League of Illinois Bicyclists, health organizations, etc.
Key elements	Policy language that creates streets to work for all users, including drivers, freight, walkers, cyclists and transit riders
Time frame	One-time; can happen at any time
Cost	Minimal to adopt policy; potentially high to fully implement
Potential funding sources	N/A (policy effort)
Sample programs	http://www.completestreets.org/ contains sample policies and real-life examples

Complete Streets policies direct transportation planners and engineers to consistently design roadways with all users in mind (e.g., motorists, transit riders, pedestrians, bicyclists, older people, children, and people with disabilities). There are many ways to implement Complete Streets policies.

Once a policy is in place, training is recommended for professionals whose work will be affected by the policy (e.g., planners and engineers).

Guidance from the Complete Streets Coalition provides the following Principles:

- Complete streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street.
- Creating complete streets means changing the policies and practices of transportation agencies.
- A Complete Streets policy ensures that the entire right-of-way is routinely designed and operated to enable safe access for all users.
- Transportation agencies must ensure that all road projects result in a complete street appropriate to local context and needs.

Elements of a Good Complete Streets Policy:

- Specifies that 'all users' includes pedestrians, bicyclists, transit vehicles and users, and motorists, of all ages and abilities.
- Aims to create a comprehensive, integrated, connected network.
- Recognizes the need for flexibility: that all streets are different and user needs will be balanced.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right-of-way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards.
- Directs that complete streets solutions fit in with context of the community.
- Establishes performance standards with measurable outcomes.
- A recommended Complete Streets Policy for Normal is described in greater detail in Chapter 7 of this Plan.

SU Bike Orientation	
Target audience	ISU students, especially incoming freshmen
Primary agency	Town of Normal and ISU
Partners	Redbirds Cycling Club
Key elements	Bicycle safety & promotion orientation for incoming freshmen and returning students. Classes & clinics, materials, social events, rides.
Time frame	September, annually
Cost	$$
Potential funding sources	ISU parking fees, TDM funding sources
Sample programs	Stanford University Bike Program: http://transportation.stanford.edu/alt_transportation/BikingAtStanford.shtml

University students are ideal candidates for bicycling outreach programs; many students live near campus and may not own a car or choose not to drive. The Town of Normal should partner with Illinois State University to promote bicycling to students at the beginning of the school year.

The ISU Bike Orientation should include:

- **Bike maps and information** provided to incoming and returning students at the beginning of the year through school information packets
- **Flat clinics, bike legal clinics, and guided rides**, advertised through flyers, email and bulletin boards, and campus newspaper
- **Information tabling** at campus events and prominent locations (e.g., bookstore, quad) during the first few weeks of school
- A **Bikes at ISU web page** with links and more information

At-cost or low-cost **bike lights** sold at tabling events and through the campus bookstore

If desired, a "bike buddy" program may be implemented to match current cycling students with interested students. This can be a simple program where bicyclists wear a sticker that says "I bike to ISU. Ask me how." It could alternately be a more involved program that matches bike buddies with interested students who live in their neighborhood for mentoring. A bike buddy program would increase the cost of the program, but could be set up through the existing campus rideshare website.

Celebrate the Constitution Trail	
Target audience	All path users (especially cyclists)
Primary agency	Town of Normal
Partners	McLean County Regional Greenways Committee, Friends of the Constitution Trail
Key elements	Bell giveaway; maps and information; media outreach
Time frame	Summer, annually
Cost	$$
Potential funding sources	Local bike shops (in-kind donations); volunteer time contributions by local cycling and walking groups; in-kind or time contributions by Normal Police Department

It is recommended that the Town of Normal partner with the McLean County Regional Greenways Committee and the Friends of the Constitution Trail to host a "Celebrate the Constitution Trail" event that focuses on increasing awareness and usage of the trail. The celebration can be held in conjunction with other community events such as Cornfest or Walk and Bike to School month.

Potential opportunities include:

- Partner with Friends of the Constitution Trail to host guided walks and rides along the trail. Create themed walks and rides such as a Family Ride, a Bird-Spotting Stroll or a History Walk.
- Market "Celebrate the Constitution Trail" in the Normal Parks and Recreation newsletter and the Illinois Department of Natural Resources magazine.
- Host a bicycle bell and water bottle giveaway event on the Constitution Trail. A table should be set up with maps and brochures, and knowledgeable staff should be present to answer questions about the trail system, as well as answering general questions about walking and bicycling in Normal.

Participate in Walk Across Illinois	
Target audience	All residents of Normal
Primary agency	Town of Normal
Partners	Illinois Lt. Governors Office
Key elements	Encourage all residents of Illinois to increase their physical activity and track their progress
Time frame	Year round
Cost	Free
Potential funding sources	No funding needed. In-kind donations can be sought from local businesses in an effort to increase participation through incentives.
Sample programs	Walk Across Illinois: http://www.walkacrossillinois.org/

"Walk Across Illinois" is a free program administered by the Lt. Governors Office and the Active Transportation Alliance. The goal is to increase the activity level of all Illinois residents by encouraging them to walk 200 miles (roughly the distance across Illinois) within one year. The program is managed through an easy-to-use website that allows individuals to track their mileage.

It is recommended that the Town of Normal promote participation of the "Walk Across Illinois" program. The program can be used to promote walking to school, local businesses, along the Constitution Trail, etc.

Chapter 6. Project Prioritization

The Bicycle and Pedestrian Master Plan is a tool that allows Normal to focus and prioritize implementation efforts where they will provide the greatest community benefit. To further that aim, the infrastructure and programmatic recommendations are broken into short-term (five years or fewer), medium-term (five to ten years), and long-term projects (ten to 20 years) based on the need for a particular facility and Normal's ability to implement the planned improvement within the adopted Five-Year Work Plan that governs Normal roadway improvements.

This chapter describes the methodology used for prioritizing Normal's recommended walkway and bikeway projects and programs. The Project Team evaluated over 80 project ideas originating from previous local and regional planning efforts, the Steering Committee, resident input at community workshops, and other sources. The Project Team also considered walkway and bikeway improvements identified in the Needs Analysis discussed in Chapter 3 of this Plan.

Infrastructure Project Evaluation

The Project Team developed several evaluation criteria to identify and prioritize the proposed pedestrian and bicycle improvement projects. This approach was used to gauge the relative importance of each proposed walkway and bikeway project and helped inform potential funding allocation for pedestrian and bicycle system improvements. The criteria were applied in two ways:

- To lay out the best possible future pedestrian and bicycle network by identifying the features of a network most important to Normal residents
- To rank projects against each other as an indication of their relative importance

Table 16 lists the evaluation criteria used to prioritize potential projects. These ratings were considered together to prioritize projects. Projects fulfilling the greatest number of evaluation criteria received higher scores, correspondingly leading to higher rankings within the overall list. A detailed infrastructure project evaluation matrix is provided in Appendix D.

Table 16. Infrastructure Project Evaluation Criteria

Criterion	Measurement
Overcomes Barriers	How well does the project overcome a barrier in the current bicycle and pedestrian network?
System Connectivity	To what degree does the project fill a missing gap in the bicycle and/or pedestrian system?
Community Support	To what degree do Normal residents desire the proposed project? This criterion takes into account oral and written feedback received at the community workshops and through workshop questionnaires as well as previously-proposed bike/ped projects.
User Generator	To what degree will the project likely generate transportation or recreational usage based on population, corridor aesthetics, etc.?
Land Uses	How many user generators does the project connect to within reasonable walking or bicycling distance, such as schools, parks, Uptown, ISU, etc.?
Safety and Comfort	Can the project potentially improve bicycling and walking at locations with perceived or documented safety issues? This criterion takes into account available crash data as well as feedback from the Steering Committee and Normal residents.
Regional Benefit	To what degree does the project offer potential benefits to the wider, regional community by offering opportunities for increased connectivity to surrounding communities, other regional walkways/bikeways etc.?
Cost	What financial resources are needed to implement the project? Is the project cost prohibitive, or can it be implemented through grant funding or other opportunities?
Ease of Implementation	How difficult will it be to implement the project? This criterion takes into account constraints like topography, existing development, presence or lack of available right-of-way, and environmental and political issues.

The short-, medium-, and long-term priorities may change according to available funds, changing priorities, new roadway projects that coincide, new development and redevelopment opportunities, or other factors. It should be noted that the purpose of this exercise was to understand the relative priority of projects so that the Town may apportion available funding to the highest priority projects. Medium- and long-term projects are also important and may be implemented at any point in time as part of a development or public works project. The ranked lists should be considered a "living document" and should be frequently reviewed to ensure they reflect current Normal priorities.

Working closely with Town of Normal staff and the Steering Committee, the Project Team identified six specific projects for more-detailed consideration. These Top-Priority projects were repeatedly suggested throughout the planning process and are consistent with the goals developed for this Plan. This Top-Priority list also includes some projects already in the planning stages that could receive funding in the near future. In developing this list, the Project Team also considered the need for geographic distribution of walkway and bikeway improvements.

Table 17 lists the Top-Priority projects. It is important to remember that the bicycle/pedestrian system and the recommended Top-Priority projects serve as guidelines to those responsible for implementation. The system and segments themselves may change over time as a result of changing bicycling patterns, funding availability, and implementation constraints and opportunities. Top-Priority projects are discussed in greater detail later in

this chapter. Chapter 7 provides planning-level cost opinions for all projects and programs as well as funding and implementation strategies.

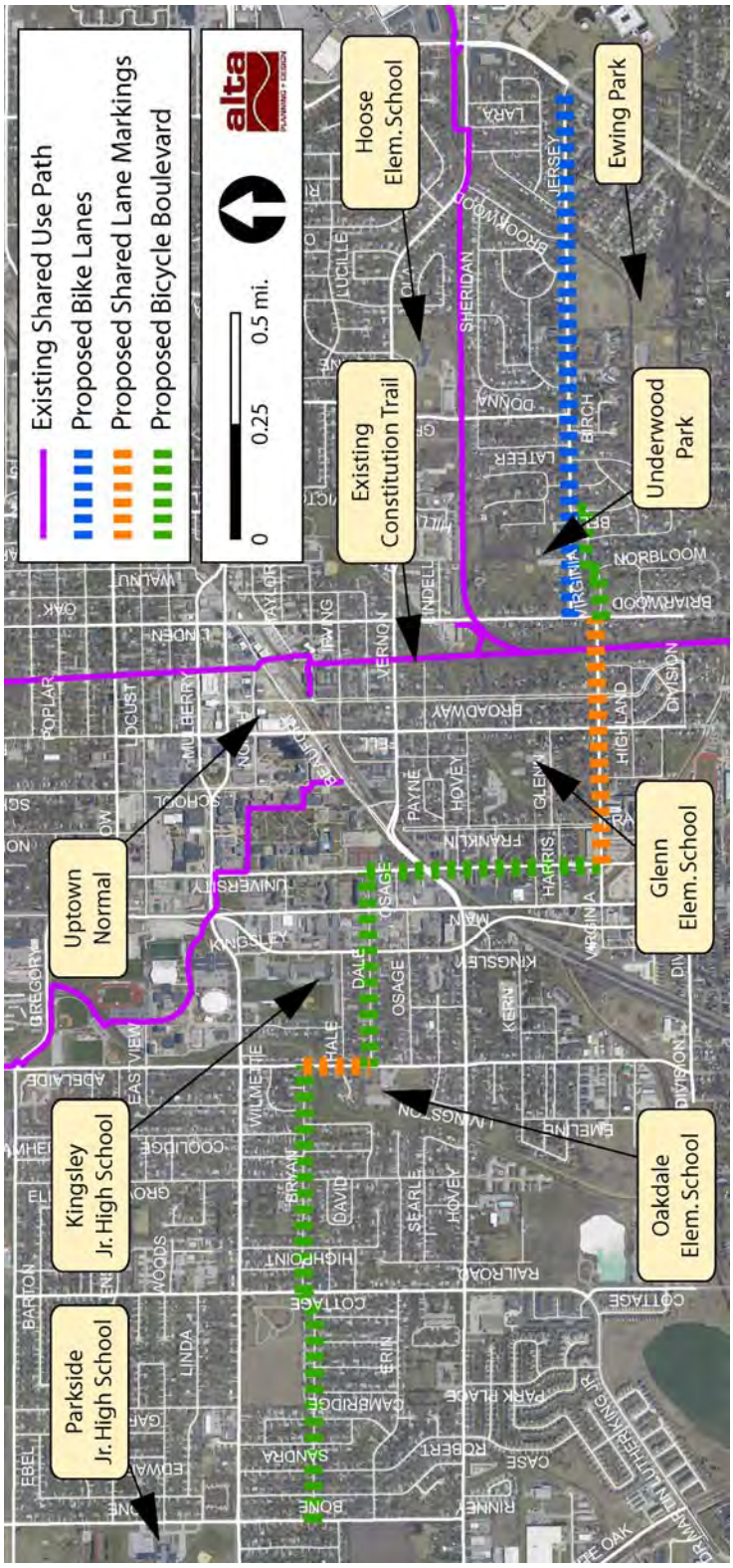
Table 17. Top-Priority Infrastructure Projects

Project Description	Facility Type
Southern Normal Corridor (Bryan/Dale/University/Virginia/Jersey)	On-street bikeway
Fell Avenue/School Street Corridor	On-street bikeway
Lincoln Corridor (Clay/Lincoln/Chippewa)	On-/off-street bikeway
College Avenue/Mulberry Street Corridor	On-street bikeway
Veterans Parkway Crossings	Intersection improvements

Top-Priority Infrastructure Project Description Sheets

The following pages provide project description sheets with specific recommendations and maps for the Top-Priority projects, which represent the first stage of Master Plan implementation. Specific recommendations were based on extensive field visits, high-resolution aerial photos, and discussions with local and regional planning staff and system users. Each map depicts the recommended walkway/bikeway under focus, as well as selected other nearby connections. Please refer to the larger system maps for the project's context within the overall surrounding walkway/bikeway network.

Southern Normal Corridor



Southern Normal Corridor (continued)

Description

This project would develop an east-west on-street bikeway across southern Normal following Bryan Street, Dale Street, University Street, Virginia Avenue, Jersey Avenue, and other local streets. Improvements would include Bicycle Boulevards, shared lane markings, and roadway re-striping to provide dedicated bike lanes.

Development of the Southern Normal Bikeway Corridor would substantially improve east-west connectivity for cyclists. The corridor passes within close proximity of numerous schools, parks, and Uptown Normal. The corridor also connects with other existing and planned bikeways, including the Constitution Trail.

Proposed Improvements

- Bicycle Boulevard on Bryan St. (Parkside Rd. to Adelaide St.)
- Shared lane markings on Adelaide St. (Bryan St. to Dale St., separate project), Virginia Ave. (University St. to Linden St.)
- Bicycle Boulevard on portions of Dale St., University St., and Belt Dr.
- Bike lanes (roadway re-striping) on Jersey Ave. (Linden St. to Towanda Ave.)

Potential Issues

- Intersection improvements on Dale St. at Kingsley St., and Dale St. at Main St. subject to IDOT approval
- Jersey Ave. bike lane retrofit would require parking removal on one side of street

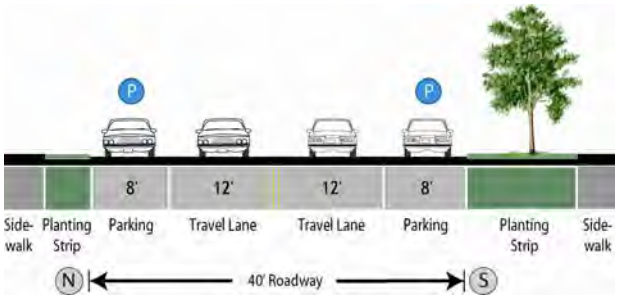
Lead Agency(ies)

Town of Normal

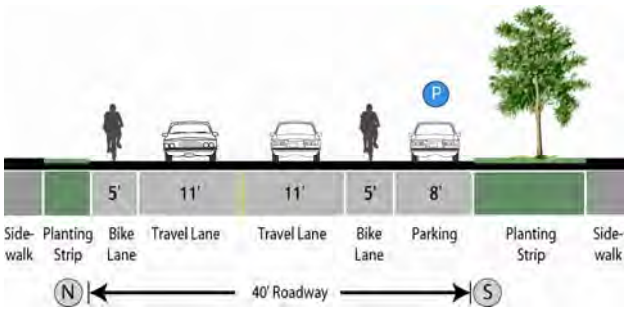
Planning-Level Cost Opinion

- $147,000 (Bryan St., Dale St., Belt Dr. Bicycle Boulevards)
- $3,500 (Virginia Ave. shared lane markings)
- $5,000 (Jersey Ave. bike lanes)

Relatively low traffic volumes contribute to Dale Street's bicycle-friendly character

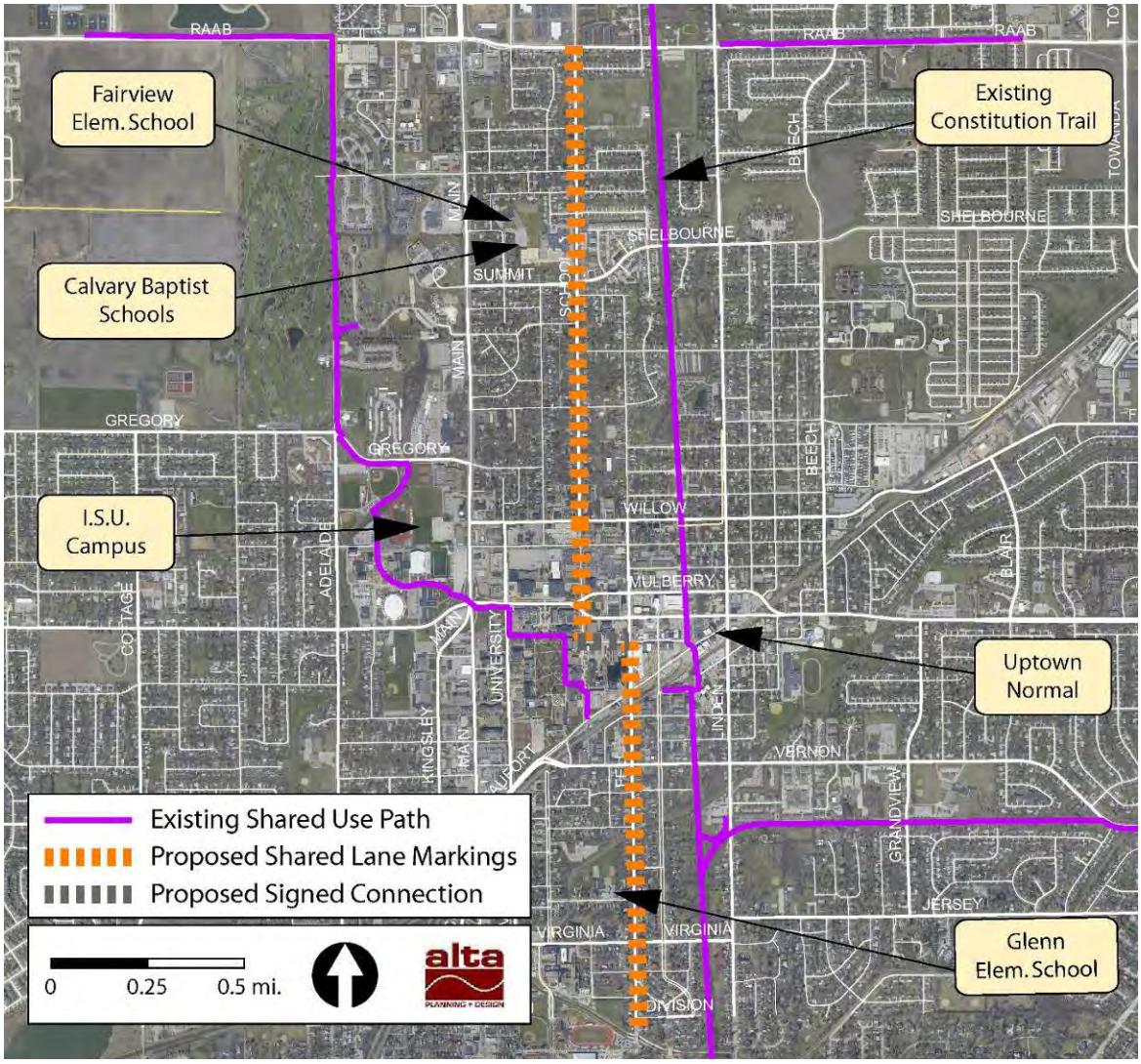


Jersey Ave. between Linden St. and Towanda Ave. (existing conditions)



Jersey Ave. between Linden St. and Towanda Ave. (with roadway re-striping to provide dedicated bike lanes)

Fell Avenue/School Street Corridor



Fell Avenue/School Street Corridor (continued)

Description

School Street and Fell Avenue combine to form a popular north-south bicycle route connecting Uptown Normal, ISU, elementary schools, and several neighborhoods in central Normal. The corridor also serves as an on-street alternative to the Constitution Trail. Although physical constraints preclude the addition of dedicated bike lanes, shared lane markings and supplemental signage could effectively serve bicyclists while enhancing motorists' awareness of bicyclists on this corridor.

In addition to connecting schools, neighborhoods and Uptown, an improved Fell Avenue/School Street corridor would link bicyclists with several other existing and planned bikeways, including eight proposed east-west corridors.

School Street (shown above) and Fell Avenue are popular north-south routes used by Normal cyclists

Proposed Improvements

- Shared lane markings on Fell Ave. (Normal southern town limits to North St.)
- Signed connection on North St. (School St. to Fell Ave.)
- Shared lane markings on School St. (North St. to Raab Rd.)

Potential Issues

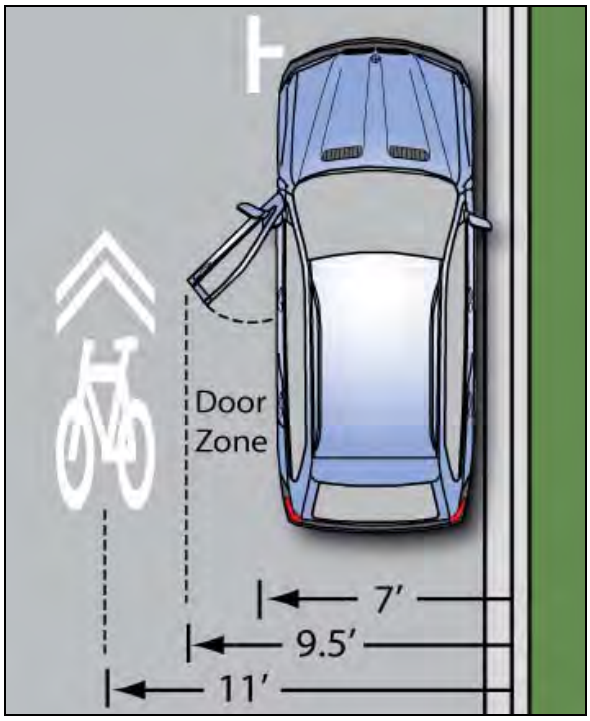
- Shared lane markings may require additional maintenance, given their placement within the wheelpaths of vehicles on the roadway
- The corridor may attract fewer novice and recreational riders given its proximity to the parallel Constitution Trail

Lead Agency(ies)

Town of Normal

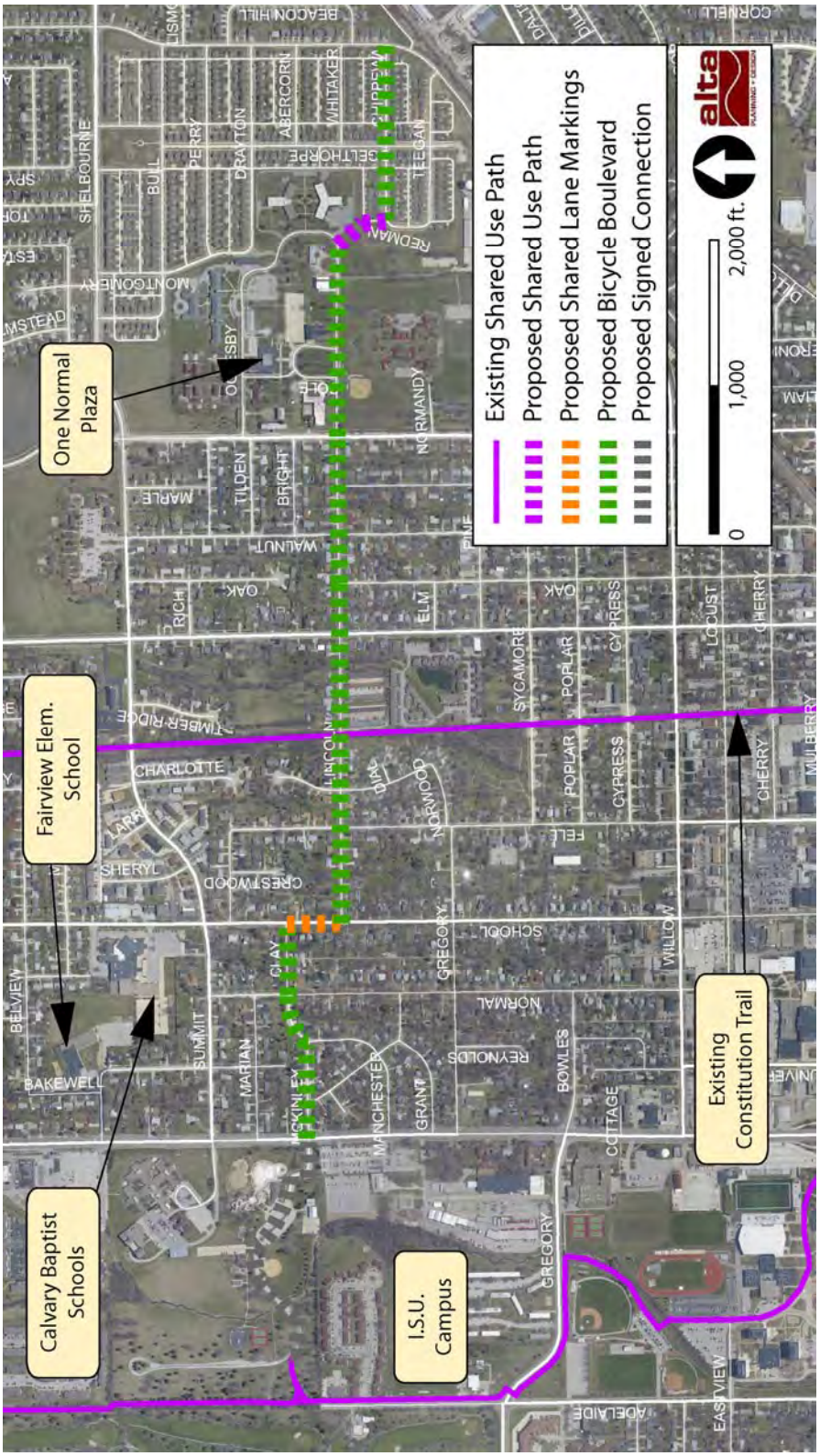
Planning-Level Cost Opinion

- $6,000 (Fell Ave. shared lane markings)
- $3,500 (North St. signed connection)
- $9,500 (School St. shared lane markings)



Shown above, the shared lane marking's center should be placed at least 11 feet from the face of curb on streets with on-street parking. The marking should be centered at least four feet from the curb on streets without on-street parking

Lincoln Corridor



Lincoln Corridor (continued)

Description

This project would utilize several bikeway facility types to develop an east-west bikeway following Fairview Park access road, Clay Street, Lincoln Street, Chippewa Street, and other local streets. Improvements would include signed connections, Bicycle Boulevard treatments, and a short shared use path segment to overcome limited street connectivity.

The Lincoln Corridor would formalize a much needed east-west bikeway connecting ISU with residential neighborhoods in central and eastern Normal. The bikeway would also connect with several parks, and existing and planned walkways and bikeways including the Constitution Trail.

Opportunities also exist to establish this route as part of the designated Route 66 Bikeway in Normal (connecting the Constitution Trail with the planned Route 66 Trail in Northeast Normal). This designation could also include educational and interpretive features celebrating the history of Route 66.

Proposed Improvements

- Signed connection on Fairview Park service road (ISU Golf Course to Main St.)
- Bicycle Boulevard on McKinley St. /Clay St. (Main St. to School St.)
- Shared lane markings on School St. (Clay St. to Lincoln St., as part of separate project)
- Bicycle Boulevard on Lincoln St. /Lincoln Ave. (School St. to Oglesby Ave.)
- Shared use path through One Normal Plaza (Lincoln Ave. to Chippewa St.)
- Bicycle Boulevard on Chippewa St. (Normal Fields to Henry St.)

Potential Issues

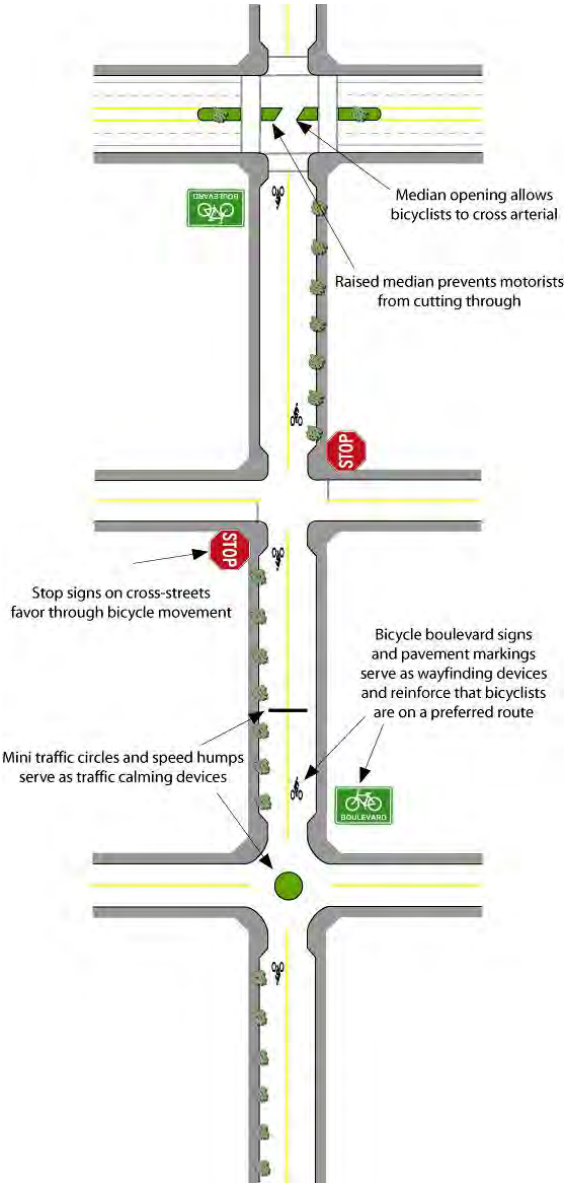
Easement or property acquisition may be necessary to develop a shared use path connection between Lincoln Ave. and Chippewa St. near Normal Fields (further property ownership analysis needed)

Lead Agency(ies)

Town of Normal

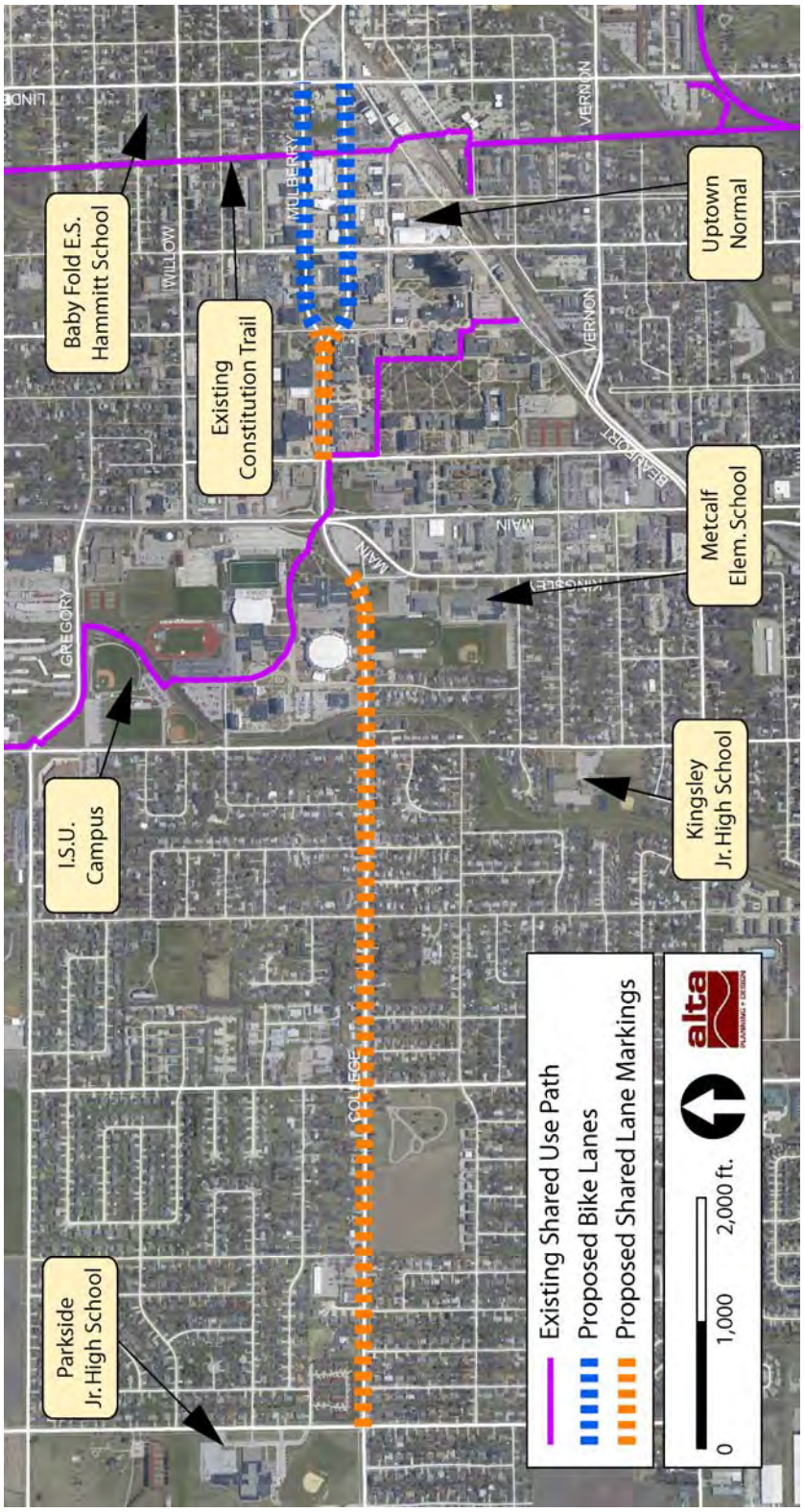
Planning-Level Cost Opinion

- $10,000 (Fairview Park service road signed connection)
- $77,000 (McKinley St., Clay St., Lincoln St., Lincoln Ave. Bicycle Boulevards)
- $10,500 (One Normal Plaza shared use path)
- $17,000 (Chippewa St. Bicycle Boulevard)



Bicycle Boulevards include a variety of improvements, including signage, pavement markings, intersection treatments, traffic calming, and in some cases, traffic diversion. Appropriate treatments depend on the specific corridor targeted for improvements.

College Avenue/Mulberry Street Corridor



College Avenue/Mulberry Street Corridor (continued)

Description

This project would add shared lane markings and bike lanes to the College Avenue/Mulberry Street corridor between Parkside Road and Linden Street. Shared lane markings would be added to College Avenue in western Normal between Parkside Road and School Street, except for the segment between Kingsley and University streets (where bicyclists would use the existing Constitution Trail segment near ISU). Sufficient curb-to-curb width exists on the College/Mulberry couplet in Uptown Normal to provide dedicated bike lanes through roadway re-striping.

Improvements to the College Avenue/Mulberry Street corridor would vastly improve east-west connectivity for Normal cyclists. The corridor passes within close proximity to several schools, ISU, and provides a direct link between western Normal and Uptown Normal. The corridor would also connect with several existing and proposed bikeways including the Constitution Trail.

Proposed Improvements

- Shared lane markings on College Ave. (Parkside Rd. to School St.)
- Bike lane (roadway re-striping) on College Ave. (School St. to Linden St.)
- Bike lane (roadway re-striping) on Mulberry St. (Linden Ave. to School St.)

Potential Issues

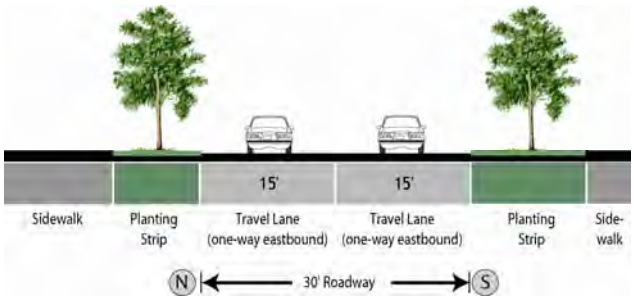
- One eastbound vehicle lane on College Ave. (between School St. and Broadway) would be converted to a 6.5-ft. wide bike lane and a 5-ft. wide striped buffer
- Potentially difficult eastbound bicyclist transitions between College Ave. and the Constitution Trail (ISU segment, as riders would need to cross vehicle traffic on College Ave.

Lead Agency(ies)

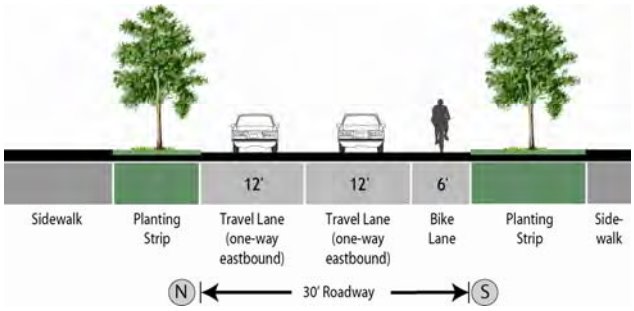
Town of Normal

Planning-Level Cost Opinion

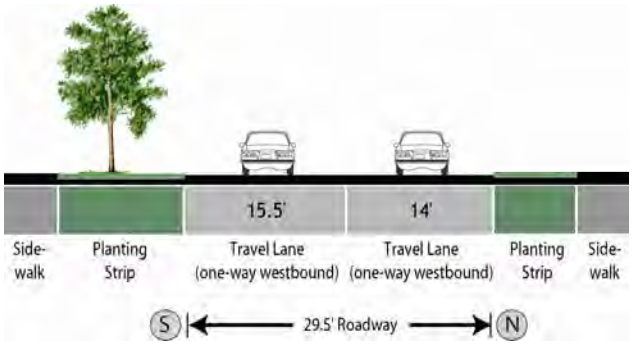
- $10,000 (College Ave. shared lane markings)
- $1,500 (College Ave./Mulberry St. couplet bike lanes)



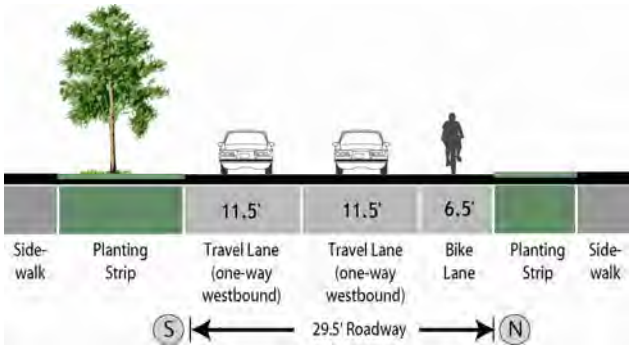
College Ave. between Broadway and Linden St. (existing conditions)



College Ave. between Broadway and Linden St. (with roadway re-striping to provide dedicated bike lane)

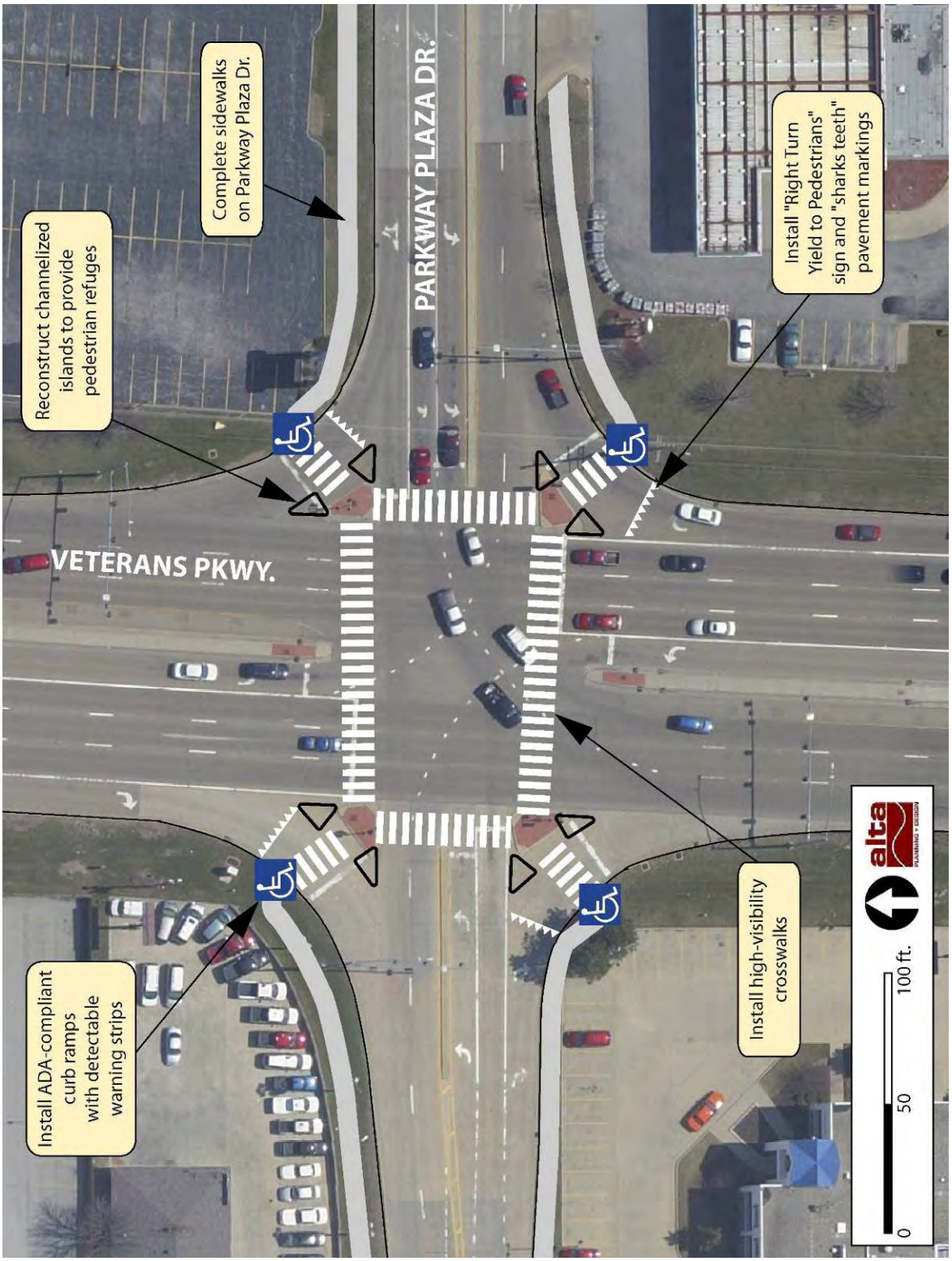


Mulberry St. between Linden St. and School St. (existing conditions)



Mulberry St. between Linden St. and School St. (with roadway re-striping to provide dedicated bike lane)

Veterans Parkway Crossings



Veterans Parkway Crossings (continued)

Description

Veterans Parkway represents a major barrier limiting east-west bicycle/pedestrian travel in Normal. Non-motorized users currently face a variety of challenges in this area, including prohibited crossing movements on most or all intersection legs, high vehicle turning speeds at channelized right turns, absence of sidewalks and other bicycle/pedestrian infrastructure in the intersections' vicinity, and motorists' occasional disregard of traffic control devices (e.g., running red lights).

Improved Veterans Parkway crossings would substantially enhance bicycle/pedestrian system connectivity, especially for east-west travelers. Upgraded crossings would also link several proposed east-west bikeways, including an on-street bikeway on Parkway Plaza Drive.

Proposed Improvements

Signal timing modifications: Includes "leading pedestrian interval" (signal releases pedestrian 3-4 seconds before adjacent vehicle traffic), sufficient "green time" to cross the roadway in a single crossing movement, eliminate "free right turn" signal phase

Accessible bicycle/pedestrian signals: Includes in-street bicycle loop detectors, pedestrian push buttons, pedestrian countdown signals, audible pedestrian signals

Modified/enhanced pavement markings and signage: Includes high-visibility crosswalks, relocated vehicle stop bars to accommodate new crosswalks, supplemental "yield" signs and markings near crosswalks at right turn areas

Sidewalks and curb ramps: Includes sidewalk infill in vicinity of intersections, ADA-compliant curb ramps with detectable warning strips

Channelized island reconstruction: To provide pedestrian refuges between through vehicle lanes and right-turn lanes

Note: A long-term measure could include removing channelized right turns, and tightening curb radii to facilitate slower vehicle right turn movements.

Potential Issues

- Potential right-of-way constraints near intersection corners
- "Leading pedestrian intervals" could impact vehicle traffic operations
- Additional crosswalk markings could require more-frequent maintenance
- All improvements along Veterans Parkway are subject to IDOT approval

Lead Agency(ies)

IDOT, Town of Normal

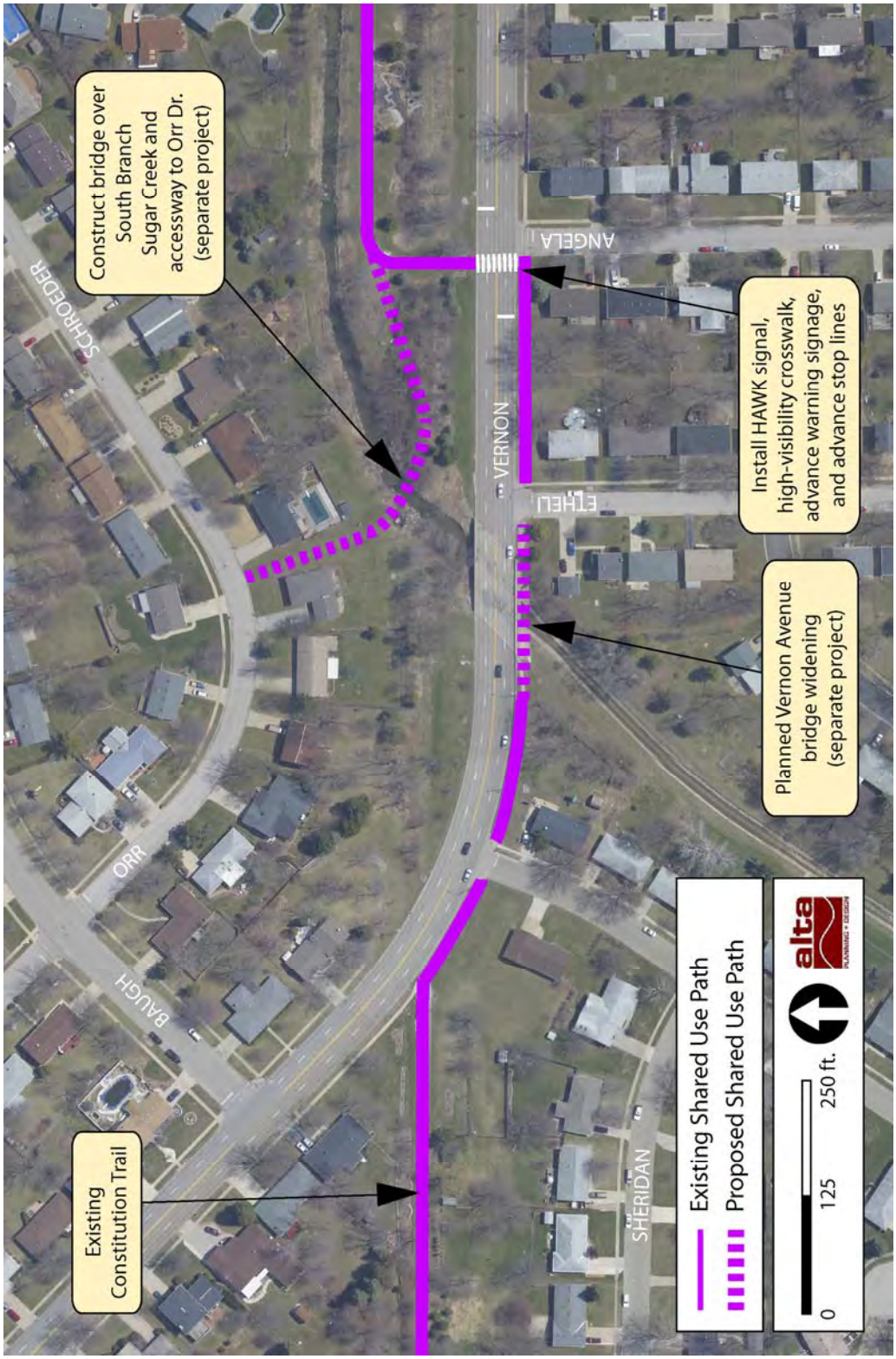
Planning-Level Cost Opinion

$25,000-$60,000 for each major intersection (cost does not include sidewalks near intersection)

Channelized right turns and "free right turn" signal phases induce high vehicle turning speeds, creating a difficult pedestrian crossing environment

Pedestrian countdown signals clearly indicate how much time remains for pedestrians to complete a crossing

Constitution Trail/Vernon Avenue Crossing



Constitution Trail/Vernon Avenue Crossing (continued)

Description

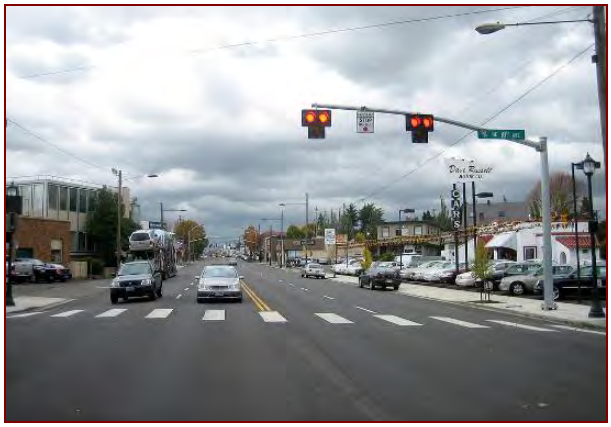
Normal residents cited the Constitution Trail/ Vernon Avenue crossing (in eastern Normal) as a major challenge facing bicyclists and pedestrians. Non-motorized users must share a narrow sidewalk on Vernon Avenue's south side to cross Sugar Creek, while the existing trail/roadway crossing provides minimal treatments.

This project would close a major trail gap by improving a critical trail/roadway crossing on the Constitution Trail. Specific improvements include upgrading the existing trail/roadway crossing with an innovative bicyclist/pedestrian-activated signal, a high-visibility crosswalk, advanced stop lines for motorists, and supplemental warning signage. These improvements will streamline bicycle/pedestrian connections to and across Vernon Avenue, while enhancing Constitution Trail access to/from surrounding neighborhoods.

Bicyclists and pedestrians must currently share a narrow sidewalk on Vernon Avenue's south side to cross Sugar Creek

Proposed Improvements

- High-Intensity Activated Crosswalk (HAWK) signal (see description at right at the current trail/roadway crossing location
- Advance warning signs and pavement markings approaching trail/roadway crossing location



A HAWK signal is a combination of a beacon flasher and traffic control signaling technique for marked crossings. The beacon signal consists of a traffic signal head with a red-yellow-red lens. The unit is normally off until activated by a pedestrian. When pedestrians wish to cross the street, they press a button and the signal begins with a flashing yellow indication to warn approaching motorists. The flashing yellow light is then followed by a solid yellow light, advising motorists to prepare to stop. The signal is then changed to a solid red, at which time the pedestrian is shown a WALK indicator. The beacon signal then converts to an alternating flashing red, allowing motorists to proceed after stopping at the crosswalk, while the pedestrian is shown the flashing DON'T WALK signal.

Potential Issues

The HAWK signal is not yet an adopted standard treatment in the MUTCD.

Lead Agency(ies)

Town of Normal

Planning-Level Cost Opinion

- $58,000 (HAWK signal and supplemental signage/pavement markings)

Supporting Programs Evaluation

Due to the differing nature and goals of education, enforcement, encouragement and evaluation strategies, recommended programs were evaluated with a different set of criteria than the infrastructure projects. Table 18 lists evaluation criteria used for prioritizing recommended programs.

Table 18. Supporting Programs Evaluation Criteria

Criterion	Measurement
Cost	What resources are required to implement the program? This criterion accounts for existing resources that can be used and the level of professional expertise required
Range of Influence	How many people are likely to be reached by the initiative?
Organizational Needs	What level of coordination with different municipal departments or community organization is needed?
Likely Impact	How significant is the program likely to be on influencing behavior change among participants?

Appendix D includes a detailed evaluation matrix of the recommended supporting bicycle and pedestrian programs.

Similarly to the infrastructure project evaluation, the Project Team used the evaluation process to determine the Top-Priority supporting programs. The three Top-Priority programs are shown in Table 19 and include crosswalk enforcement actions, development of a Complete Streets Policy, and updating the Bloomington-Normal Trail Map. All of these programs are low-cost strategies for supplementing the walkway and bikeway system that will reach a large number of residents.

Table 19. Top-Priority Program Recommendations

Program Description
Crosswalk Enforcement Actions
Develop a Complete Streets Policy
Update Bloomington-Normal Trail Map

Chapter 7. Implementation Plan

As described in Chapters 4 and 5, Normal's recommended walkway and bikeway system consists of a comprehensive network of sidewalks, on-street bikeways, shared use paths, and various programmatic measures. This chapter presents planning-level cost opinions for these proposed pedestrian and bicycle improvements, as well as for maintenance activities. Grant funding sources are identified on federal, state and local levels, as well as anticipated Town budget for improvements from existing revenue sources. An implementation strategy follows, presenting a targeted methodology for how Normal can implement projects and programs under different funding availability scenarios. Finally, the chapter closes with a discussion of supportive policies that can bolster and institutionalize the development of a high-quality walkway and bikeway network.

Cost Opinions

This section summarizes planning level cost opinions associated with the recommended pedestrian and bicycle improvement projects. Cost opinions were provided by Town of Normal Staff, as well as similar Bicycle/Pedestrian Master Plans and experience in nearby communities. Table 20 shows cost opinions for elements of pedestrian improvement projects, while Table 21 following shows costs for bicycle improvements.

Table 20. Costs for Pedestrian Improvements

Improvement	Unit	Planning-Level Cost Opinion
Pedestrian Refuge Island	EA	$8,000
High-Visibility Crosswalks	LF	$0.60
ADA-Compliant Curb Ramps	EA	$1,000
Pedestrian-Actuated Push Buttons	EA	$600
Audible Pedestrian Signal	EA	$500
Pedestrian Countdown Signal	EA	$800
Signal Timing Modification	EA	$1,000
Remove Existing Raised Median	LF	$25
Flashing Warning Lights	EA	$2,500
Warning Signs	EA	$600
Reconstruct Corners	LF	$45
Curb Extensions	EA	$12,500
Sidewalk Infill – 6' Width	LF	$30
Sidewalk Widening	LF	$21
Planter Strips	LF	$0.05
Remove Sidewalk Obstructions	EA	$1,000*

* Cost of sidewalk obstruction removal averages a variety of obstacles, from newspaper boxes that are inexpensive to relocate, to utility poles that can cost more than $1,500 to remove and replace.

Table 21. Unit Costs for Bicycle Improvements

Improvement	Unit	Planning-Level Cost Opinion
Shared Use Path (12' wide)	LF	$30
Roadway Re-Striping	LF	$0.50
Shoulder Widening	LF	$8
Shared Lane Markings*	LF	$0.80
Bicycle Boulevard**	LF	$9
Signed Connection	LF	$4
Bicycle Loop Detector†	EA	$2,500
Overcrossing	EA	$1,500,000
Trail Bridge	EA	$100,000
Roadway Bridge Widening	LF (longitudinal)	$3,000
HAWK Signal	EA	$40,000

* Includes pavement marking every 200' warning sign every 500.'
† Included in intersection project estimates.
** Includes 18 wayfinding/warning signs and 24 pavement markings per mile; also includes minor intersection treatments.

An overview of the phased cost opinions is presented at the beginning of this section, followed by specific project costs by facility type and phase. A discussion of potential funding sources for implementing projects in this Plan is provided later in this Chapter.

Cost Opinions Overview

The total implementation cost of the Normal Bicycle and Pedestrian Plan is estimated at approximately $31.5 million, as shown in Table 22. Short-term recommendations account for less than $1 million.

Table 22. Summary of Plan Cost Opinion

Phase	Pedestrian Projects*	Bicycle Projects†	Four "E's" Programs	Total Plan Cost
Short-Term	$473,000	$378,000	$30,000	$850,000
Medium-Term	$6,402,000	$3,672,000	$108,000	$10,158,000
Long-Term	$2,990,000	$5,238,000	$0	$8,490,000
Total	**$9,865,000**	**$9,288,000‡**	**$138,000**	**$19,498,000**

* Pedestrian projects include intersection improvements, pedestrian priority corridors, and community-wide improvements (see Table 23)
† Bicycle projects include bicycle corridor improvements and community-wide improvements (see Table 24).
‡ A considerable proportion of the long-term bikeway cost opinion is from the Phase II widening of the Towanda Avenue Bridge over I-55 to provide bike lanes ($1 million) and from the Bicycle/Pedestrian crossing of Veterans Parkway on the East-West Connector Trail ($2.6 million).

Dividing the costs out further, Table 23 presents the overview of costs for pedestrian projects summarized above. Costs include: intersection improvement costs from Table 25, pedestrian priority corridor costs (including length and construction cost from Table 26 and annual maintenance cost described later in this chapter), and community-wide improvement costs from Table 27.

Table 23. Planning-Level Cost Opinions for Pedestrian Projects

Phase	Intersection Improvements	Pedestrian Priority Corridors			Community-Wide Improvements
		Length (miles)	Construction Cost	Annual Maintenance	
Short-Term	$268,000	0	$0	$0	$205,000
Medium-Term	$176,000	16	$6,006,000	$822,000	$220,000
Long-Term	$0	5	$2,990,000	$329.000	$0
Total	**$444,000**	**22**	**$8,996,000**	**$1,152,000**	**$425,000**

Table 24 shows similar information for bicycle recommendations. Corridor costs include length and construction costs from Table 28, maintenance costs shown in Table 30, and community-wide improvement costs from Table 29.

Table 24. Planning-Level Cost Opinions for Bicycle Projects

Phase	Bicycle Corridor Improvements			Community-Wide Improvements
	Length (miles)	Construction Cost	Annual Maintenance	
Short-Term	10	$358,000	$25,000	$20,000
Medium-Term	41	$3,572,000	$103,000	$100,000
Long-Term	21	$5,238,000*	$52,000	$0
Total	**72**	**$9,168,000**	**$180,000**	**$120,000**

* A considerable proportion of the long-term bikeway cost opinion is from the Phase II widening of the Towanda Avenue Bridge over I-55 to provide bike lanes ($1 million) and from the Bicycle/Pedestrian crossing of Veterans Parkway on the East-West Connector Trail ($2.6 million).

Individual Project Cost Opinions

Table 25 through Table 29 list the recommended projects by category and include planning-level cost opinions. The cost opinions include contingency and construction management costs, which represent a proportion of the original project costs.

Table 25. Proposed Intersection Improvements

Project	Cost Opinion	Tier
Veterans Parkway at Fort Jesse Road	$29,000	Short-Term
Veterans Parkway at Jumer Drive	$26,000	Short-Term
Cottage Avenue at Hovey Avenue	$9,000	Short-Term
Veterans Parkway at Vernon Avenue	$26,000	Short-Term
Veterans Parkway at Parkway Plaza Dr	$33,000	Short-Term
Veterans Parkway at Shepard Road	$145,000	Short-Term
Constitution Trail (north/south segment) roadway crossings	$122,000	Medium-Term
Kingsley Street at Hovey Avenue	$48,000	Medium-Term
Parkside Road at Hovey Avenue	$6,000	Medium-Term

Table 26. Proposed Pedestrian Priority Corridors

Project	Length (miles)	Cost Opinion	Tier
Main Street/ Kingsley Street - south town limits to Raab Rd	5.2	$1,993,000	Medium-Term
College Ave/ Mulberry Street - School Street to Hershey Rd	2.0	$737,000	Medium-Term
Towanda Avenue - Jersey Avenue to Raab Road	2.4	$851,000	Medium-Term
Linden Street - south town limits to Northtown Road	3.6	$1,349,000	Medium-Term
Willow St/ Fort Jesse Rd - Beech St to Northpointe Drive	2.4	$898,000	Medium-Term
Hershey Road - Fort Jesse Road to Raab Road	1.0	$178,000	Medium-Term
Airport Road – Fort Jesse Road to Raab Road	1.0	$420,000	Long-Term
Shepard Road - Hershey Road to Airport Road	1.0	$329,000	Long-Term
Raab Road - Parkside Road to Towanda Avenue	3.1	$1,153,000	Long-Term
Veterans Parkway – Vernon Avenue to Shepard Road	1.5	$1,088,000	Long-Term

Table 27. Proposed Community-Wide Pedestrian Improvements

Project	Cost Opinion	Tier
Sidewalk infill	$100,000	Short-Term
Crosswalk marking upgrades	$20,000	Short-Term
Damaged sidewalk repair/replacement	$75,000	Short-Term
Drainage grate retrofits	$10,000	Short-Term
ADA improvements in parks	$50,000	Medium-Term
ADA-compliant curb ramp upgrades	$20,000	Medium-Term
At-grade railroad crossing upgrades	$50,000	Medium-Term
Transit stop upgrades	$100,000	Medium-Term

Table 28. Bikeway Improvement Projects

Project	Length (miles)	Cost Opinion	Tier
College Avenue/ Mulberry Street*	2.1	$12,000	Short-Term
McKinley Street/ Clay Street/ Lincoln Street/ Lincoln Avenue/ Chippewa Street	1.8	$114,000	Short-Term
Fell Avenue/ North Street/ School Street	1.9	$19,000	Short-Term
Bryan Street/ Dale Street/ University Street/ Virginia Avenue/ Belt Drive/ Jersey Avenue	4.1	$155,000	Short-Term
Constitution Trail at Vernon Avenue	N/A	$58,000	Short-Term
Main Street/ Kingsley Street	5.1	$377,000	Medium-Term
Hovey Avenue/ Beaufort Street	2.4	$12,000	Medium-Term
Linden Street: Cypress to Shelbourne	1.1	$4,000	Medium-Term
Raab Road: Constitution Trail to Linden Street	0.8	$188,000	Medium-Term
Route 66 Trail	0.2	$44, 000	Medium-Term
Constitution Trail/ Spear Drive Connector (includes bridge over Sugar Creek)	0.4	$27,000	Medium-Term
College Avenue: Mitsubishi Motorway to Parkside Road	2.3	$528,000	Medium-Term
Orlando Avenue/ Aurora Way/ Warren Avenue/ Heritage Road/ Regal Drive/ Basswood Lane	1.4	$73,000	Medium-Term
Kerrick Road	0.5	$14,000	Medium-Term
Sycamore Street/ Linden Street/ Pine Street	1.1	$99,000	Medium-Term
Gregory Street: Parkside to Normal	2.6	$245,000	Medium-Term
Susan Drive/ Taft Drive	1.0	$32,000	Medium-Term
Pheasant Run Creek Trail: Hovey Avenue to Constitution Trail (ISU campus)	1.0	$218,000	Medium-Term
Brookwood Drive	0.3	$8,000	Medium-Term
Parkinson Street/ Dewey Street	0.3	$9,000	Medium-Term
Karin Drive/ Centennial Avenue/ Spear Drive/ Hammitt Drive/ Keller Road	0.8	$54,000	Medium-Term
Towanda Avenue: Vernon to Raab	2.1	$485,000	Medium-Term
White Oak Road	3.3	$962,000	Medium-Term
Adelaide Street	1.7	$10,000	Medium-Term
Towanda Avenue at I-55 (Phase 1 – Shared Lane Markings)†	N/A	$500	Medium-Term
Cottage Avenue	2.3	$303,000	Medium-Term
Linden Street: Shelbourne to Raab	0.5	$2,000	Medium-Term
Hoose Elementary School campus/ Blair Drive	1.0	$66,000	Medium-Term
Towanda Avenue: I-55 to Northtown*	0.5	$3,000	Medium-Term
Sugar Creek Elementary Connector	0.3	$36,000	Medium-Term

Project	Length (miles)	Cost Opinion	Tier
Grandview Drive/ Karin Drive/ Beech Street	3.6	$77,000	Medium-Term
Airport Road	1.0	$26,000	Medium-Term
Locust Street/ Old Fort Jesse Road/ Harter Lane/ George Dr/ Courtland Avenue/ Arborwalk Drive/ Parkway Plaza Drive	3.0	$236,000	Medium-Term
Main Street: Raab Road to Constitution Trial	0.7	$171,000	Medium-Term
Parkside Road	2.0	$8,000	Long-Term
Linden Street: Raab to Northtown	1.1	$309,000	Long-Term
Oakdale Elem Accessway	0.1	$21,000	Long-Term
Summit Street/ Shelbourne Drive	1.7	$7,000	Long-Term
Raab Road: Hershey Road to Normal Community High	0.5	$106,000	Long-Term
Normal Avenue/ Bakewell Avenue	1.0	$65,000	Long-Term
Greenbriar Park Trail	0.4	$97,000	Long-Term
Hershey Road	2.9	$4,000	Long-Term
Raab Road: Mabel Road to Heartland College	2.4	$563,000	Long-Term
Towanda Avenue: Raab to I-55*	0.4	$129,000	Long-Term
Northtown Road‡	0.5	$110,000	Long-Term
Watkins Drive/ College Hills Mall Loop/ Landmark Drive	0.8	$12,000	Long-Term
Raab Road: Henry Street to Towanda Avenue	0.3	$58,000	Long-Term
East-West Connector Trail	2.1	$2,666,000	Long-Term
Hanson Drive	0.6	$17,000	Long-Term
Henry Street	0.9	$5,000	Long-Term
Maxwell Park Trail	0.7	$152,000	Long-Term
Shepard Road: Greenbriar to Airport	1.3	$91,000	Long-Term
Mitsubishi Motorway/Mabel Road	0.1	$32,000	Long-Term
Grove Street	1.0	$66,000	Long-Term
Towanda Avenue at I-55 (Phase 2 – Bridge Widening)	N/A	$1,066,000	Long-Term

* The proposed bikeway project on Mulberry Street could be constructed in conjunction with planned roadway improvements on Mulberry Street between Fell Avenue and the Union Pacific Railroad, budgeted for FY2009-2010.

† These projects could be combined with the planned roadway improvements on Towanda Avenue between Raab Road and Ironwood Country Club Drive, budgeted for FY 2011-2012 and FY 2012-2013.

‡ This project could be incorporated into roadway improvements on Northtown Road between Main Street and Towanda Avenue, budgeted for FY 2011-2012, FY 2012-2013 and FY 2013-2014.

Table 29. Costs for Community-Wide Bikeway Improvements

Project	Cost Opinion	Tier
Shared use path pavement upgrades	$20,000	Short-Term
Bicycle Wayfinding Signage Plan	$50,000	Medium-Term
Uptown Normal "Bike Oasis"	$50,000	Medium-Term

Maintenance Costs

On- and off-street walkways and bikeways require regular maintenance and repair as previously discussed in Chapter 5. Walkway maintenance includes: fixing potholes, sidewalk decay, damaged benches and re-striping crosswalks. Sidewalk repair is usually the responsibility of individual property owners, although the Town of Normal sponsors a 50/50 sidewalk program to provide half the funding required to install a new sidewalk.

On-street bikeways are typically maintained as part of standard roadway maintenance programs, and extra emphasis should be put on keeping bike lanes and roadway shoulders clear of debris and keeping vegetation overgrowth from blocking visibility or creeping into the roadway. Typical maintenance costs for on-street bikeway facilities are shown in Table 30.

Table 30. On-Street Bikeway Maintenance Frequency and Cost Opinions

Activity	Materials Type	Frequency	Cost Opinion
Pavement resurfacing	Asphalt	Every 20 years	$50,000/mile
	Concrete	Every 20 years	$50,000/mile
	Aggregate	Every 3 years	$3,000/mile
Pavement sweeping	All	Weekly/monthly as needed	Part of regular street sweeping activities
Snow removal	All	Weekly/as needed	Depends on conditions*, ~$146/mile
Tree/shrub trimming	All	5 months – 1 year	Part of regular street maintenance activities
Sign repair/ replacement	Worn	Every 10 years	$600/sign
	Stolen	As needed	$600/sign
Re-striping	Paint	Annually	$2,600/mile
	Thermoplastic striping	Every 10-15 years	$10,600/mile
	Move signs, patch and sweep	2 times/year	$200/mile

* Average estimated maintenance cost for snow removal in Mammoth, CA is $190 per hour of sidewalk with an assumed speed of 1.3 mph or $146 per mile, after each storm event.

Funding Sources

Acquiring funding for projects and programs is considerably more likely if it can be leveraged with a variety of local, state, federal and public and private sources. This section identifies potential matching and major funding sources available for bicycle and pedestrian projects and programs as well as their associated need and criteria.

Federal Funding Sources

Federal funding is primarily distributed through a number of different programs established by the Federal Transportation Act. The latest act, The Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU) was enacted in August 2005 as Public Law 109-59. SAFETEA-LU authorizes the Federal surface transportation programs for highways, highway safety, and transit for the five-year period 2005-2009.

In Illinois, Federal funding is administered through the State (IDOT). Most, but not all, of these funding programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system.

H.R. 1, The American Recovery and Reinvestment Act of 2009

The *American Recovery and Reinvestment Act* is commonly referred to as the 'Stimulus Bill' and was signed into law on February 13, 2009. The Act provides $64.1 billion for transportation and infrastructure investment "*to enhance the safety, security and efficiency of our highway, transit, rail, aviation, environmental, inland waterways, public buildings and maritime transportation infrastructure.*"

Local governments can use highway program funds for projects eligible for Surface Transportation Program funds (described later), including bicycle and pedestrian infrastructure. In addition, three percent or $10 million of the highway program funds are allocated to Transportation Enhancements (TE, also described later), including bicycle and pedestrian infrastructure. These funds will be administered through the TE committee and will go through TE or similar grant processes.

SAFETEA-LU

There are a number of programs identified within SAFETEA-LU that provide for the funding of bicycle and pedestrian projects, described in the following section.

Surface Transportation Program

The Surface Transportation Program (STP) provides states with flexible funds which may be used for a wide variety of projects on any Federal-aid Highway including the National Highway System, bridges on any public road, and transit facilities.

Bicycle and pedestrian improvements are eligible activities under the STP. This covers a wide variety of projects such as on-street facilities, off-road trails, sidewalks, crosswalks, bicycle and pedestrian signals, bike parking, and other ancillary facilities. SAFETEA-LU also

specifically clarifies that the modification of sidewalks to comply with *Americans with Disabilities Act* requirements is an eligible activity.

As an exception to the general rule described above, STP-funded bicycle and pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System. In addition, bicycle-related non-construction projects such as maps, coordinator positions, and encouragement programs are also eligible for STP funds.

Highway Safety Improvement Program

This program funds projects designed to achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways and walkways. This program includes the Railway-Highway Crossings Program and the High Risk Rural Roads Program and replaces the Hazard Elimination Program from TEA-21.

Transportation Enhancements

Administered by IDOT, this program is funded by a set-aside of STP funds. Ten percent of STP funds are designated for Transportation Enhancement Activities (TEAs), which include "*provision of facilities for pedestrians and bicycles, provision of safety and educational activities for pedestrians and bicyclists," and the "preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian and bicycle trails*." (23 USC Section 190 (a) (35)). The Illinois Transportation Enhancement Program (ITEP) provides funding for community-based projects that "*expand travel choices and enhance the transportation experience by improving the cultural, historic, aesthetic and environmental aspects of our transportation infrastructure*."

ITEP provides 80 percent reimbursement for project costs to project sponsors. Projects must provide a mode of transportation or make a facility more accommodating for pedestrians or bicyclists, be included in a local, regional or statewide plan, and include signing in bikeway projects for directions, permitted users and rules. These funds can be used to build a variety of pedestrian, bicycle, streetscape and other improvements that enhance the cultural, aesthetic, or environmental value of transportation systems. Projects must have a local government or state agency sponsor, and the statewide grant process is competitive.

Recreational Trails Program

The Recreational Trails Program of the Federal Transportation Bill provides funds to states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Example trail uses include hiking, bicycling, in-line skating, and equestrian use. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads.

Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails
- Purchase and lease of trail construction and maintenance equipment
- Construction of new trails, including unpaved trails
- Acquisition or easements of property for trails

- State administrative costs related to this program (limited to seven percent of a State's funds)
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds)

Safe Routes to School (SR2S)

Under the SR2S Program, Federal funds are administered by IDOT. The grants can be used to identify and reduce barriers and hazards to children walking or bicycling to school (70 to 90 percent of funds) or for non-infrastructure encouragement and education programs (10 to 30 percent). Eligible projects are fully funded with no local match requirement. One infrastructure and/or non-infrastructure application will be accepted, with three projects maximum that can be funded per school district. There is a $250,000 funding limit for the total infrastructure project application and $100,000 maximum for non-infrastructure projects.

IDOT combined the remaining SR2S funds for the Federal Fiscal Years 2008 and 2009 for the 2008 Funding Cycle. There was approximately $13 million available in 2008.

New Freedom Initiative

SAFETEA-LU creates a new formula grant program providing capital and operating costs to provide transportation services and facility improvements that exceed those required by the Americans with Disabilities Act.

Community Development Block Grants

The Community Development Block Grants program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. Federal Community Development Block Grant grantees may "*use Community Development Block Grants funds for activities that include (but are not limited to): acquiring real property; reconstructing or rehabilitating housing and other property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities; paying for planning and administrative expenses, such as costs related to developing a consolidated plan and managing Community Development Block Grants funds; provide public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs.*"

Rivers, Trails and Conservation Assistance Program

The Rivers, Trails and Conservation Assistance Program (RTCA) is a National Parks Service program providing technical assistance via direct staff involvement to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program provides only for planning assistance—there are no implementation monies available. Projects are prioritized for assistance based on criteria that include conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation, and focusing on lasting accomplishments.

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) is a Federally-funded program, providing grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. These funds are administered by the Illinois Department of Agriculture.

Transportation, Community and System Preservation Program

The Transportation, Community and System Preservation Program provides Federal funding for transit-oriented development, traffic calming and other projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers. The program is intended to provide communities with the resources to explore the integration of their transportation system with community preservation and environmental activities. The Transportation, Community and System Preservation Program funds require a 20 percent match.

The National Scenic Byways Program

Administered by the Federal Highway Administration (FHWA), the National Scenic Byways Program funds 80 percent of an eligible project's costs. Projects must be along a designated scenic highway and meet accessibility guidelines under ADA. Eligible projects include, "*Improvements for enhancing access to a recreation area include bicycle and pedestrian facilities … to the extent that the project and recreational area have a clear, demonstrated role in enhancing the byway traveler experience (rather than primarily serving the existing customer base of the operator of the recreational area).*"

State Funding Sources

Open Space Lands Acquisition and Development Program

A state-funded grant program, the Open Space Lands Acquisition and Development Program (OSLAD) provides funding to local governments for land acquisition and/or development of land for public parks and open space. It is funded by Illinois' Real-Estate Transfer Tax and provides funding assistance up to half of approved project costs. Grants can be awarded up to $750,000 for land acquisition and $400,000 for development or renovation.

Illinois Bicycle Path Grant Program

Created in 1990, the Illinois Bicycle Path Program is administered by the Illinois Department of Natural Resources (IDNR). The Program assists with the acquisition, construction and rehabilitation of public, non-motorized bicycle paths and directly related support facilities. Local government agencies with statutory authority can receive grant funding for up to half of approved project costs to acquire and develop public bicycle paths. This program is funded by vehicle title fees collected pursuant to Section 3-821 (f) of the Illinois Vehicle Code.

Local Funding Sources

Tax Increment Financing/Urban Renewal Funds

Tax Increment Financing (TIF) is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., sidewalk improvements) is constructed, surrounding property values generally increase and encourage development or redevelopment in the area. The increased tax revenues are then dedicated to finance the debt created by the original public improvement project. Tax Increment Financing typically occurs within designated Urban Renewal Areas (URA) that meets certain economic criteria and are approved by a local governing body. To be eligible for this financing, a project (or a portion of it) must be located within the URA.

The Illinois Tax Increment Association provides additional guidance for establishment of TIF zones and using the funding. The Town of Normal established a TIF district in 2003 as part of the Uptown Renewal Effort (Figure 50).

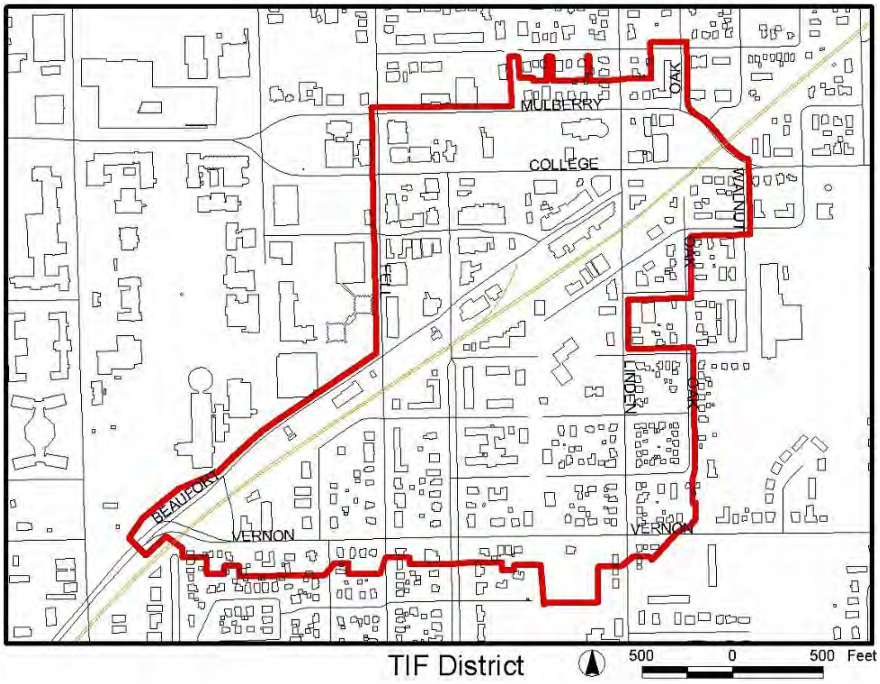


Figure 50. Uptown Normal's TIF District Boundaries[9]

Two additional TIF districts have been planned for the FY 2009-2014 Five-Year Budget. These include Main/Osage Redevelopment and Main/Interstate 55. Each district has money allocated to roadway projects, which could include sidewalks, curb ramps, and bicycle facilities. These areas represent important opportunities for Normal to provide high-quality bicycle and pedestrian connections. The Main/Osage TIF for example, includes segments of Beaufort, Main and Kingsley streets identified as on-street bikeways in this Plan (see Figure 51),.

[9] Source: http://www.normal.org/images/TIFDistrictMap.jpg

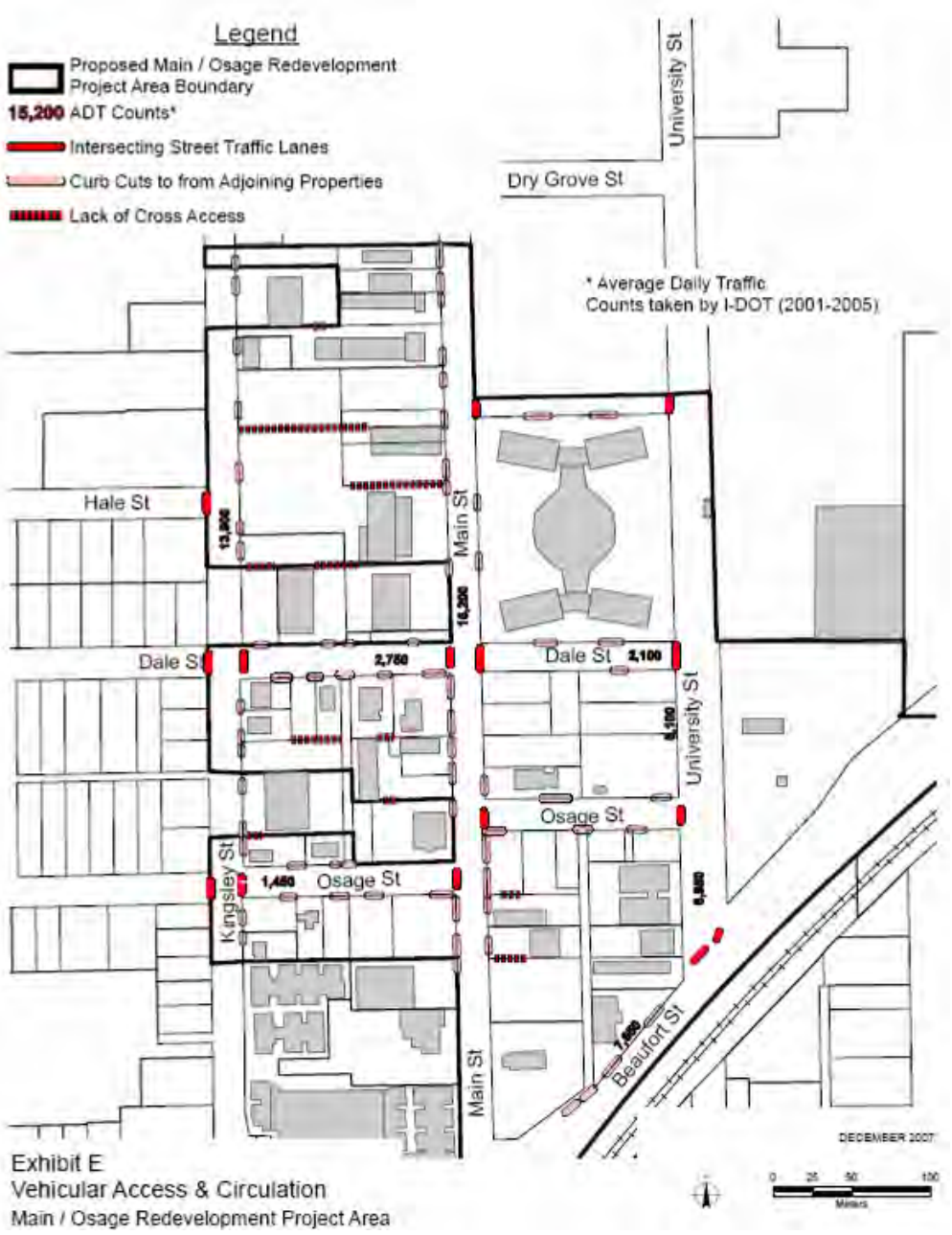


Figure 51. Vehicle Access & Circulation in Main/Osage Redevelopment[10] Project Area

[10] Source: Main/Osage TIF Plan (2008). Available at: http://www.normal.org/files/main%20osage%20tif%20plan.pdf

Storm Water Fund

The Town of Normal Storm Water Utility and Storm Water Fund "*provides for the management, protection, control, regulation, use, construction, and enhancement of the storm water system and facilities owned and operated by the Town*" (SEC. 7.30). Storm drains and grates in the town are installed through this fund. While not a significant source of capitol for bikeway projects, the Storm Water Fund can potentially be used to provide bicycle-safe drainage grates during regular repair or construction.

Business Improvement Districts

Pedestrian improvements can often be included as part of larger efforts aimed at business improvement and retail district beautification. Business Improvement Districts collect levies on businesses in order to fund area-wide improvements that benefit businesses and improve access for customers. These districts may include provisions for pedestrian and bicycle improvements, such as wider sidewalks, landscaping, and ADA compliance.

Other Local Sources

Residents and community members are excellent resources for garnering support and enthusiasm for a bicycle and pedestrian facility, and the Town of Normal should work with volunteers to substantially reduce implementation and maintenance costs. Local schools, community groups, or a group of dedicated neighbors may adopt project, possibly working with a local designer or engineer. Work parties can be formed to help clear the right-of-way for a new path or maintain existing facilities where needed. A local construction company could donate or discount services. Other opportunities for implementation will appear over time, such as grants and private funds. The Town should look to its residents for additional funding ideas to expedite completion of the bicycle and pedestrian system.

Other Funding Sources

American Greenways Program

Administered by The Conservation Fund, the American Greenways Program provides funding for the planning and design of greenways. Applications for funds can be made by local, regional or statewide non-profit organizations and public agencies. The maximum award is $2,500, but most awards range from $500 to $1,500. American Greenways Program monies may be used to fund unpaved trail development.

Bikes Belong Grant Program

The Bikes Belong Coalition of bicycle suppliers and retailers has awarded $1.2 million and leveraged an additional $470 million since its inception in 1999. The program funds corridor improvements, mountain bike trails, BMX parks, trails, and park access. It is funded by the Bikes Belong Employee Pro Purchase Program.

Future Potential Funding Sources

Complete Streets Act of 2008

The Complete Streets Act was proposed to the U.S. Senate on March 3, 2008, and would ensure that "*future transportation investments made by State Departments of Transportation and Metropolitan Planning Organizations create appropriate and safe transportation facilities for all those using the road – motorists, transit vehicles and riders, bicyclists, and pedestrians of all ages and abilities*."

Existing Town Revenues

Existing funding sources within the Town of Normal include a 1.25 percent local sales tax, a five percent utility tax, a two percent food and beverage tax, a six percent hotel/motel tax, and a 0.5 percent vehicle use tax. Normal can use this funding to construct bicycle facilities and develop programs over the next five years, which is the recommended timeframe associated with full implementation of the short-term Projects. Table 31 and Table 32 show the allocation of funding for roadway construction projects.

Funding source availability may vary from that shown in the tables, depending on how the State and Town apportion funding. These funds are generally available for environmental, feasibility, design, preliminary engineering and construction of pedestrian and bicycle facilities. Funds cannot be used to pay for a bicycle coordinator position, but some funding sources allow a portion of the monies to be used to administer the development and construction of specific bicycle facilities. It may be possible for Normal to receive enough grant funding to hire part-time or full-time staff to administer development and construction of all grant-funded bicycle/pedestrian projects.

Table 31. 2009-2014 Projected Bicycle and Pedestrian Funding Sources*

Funding	Revenue (FY 2009-2010)	Proposed (FY 2013-2014)	Description
001 – General Fund	$48,699,898	$55,528,413	Maintenance of streets, trails and parks
213 - Motor Fuel Tax Fund	$2,952,400	$1,912,500	Street improvements
250 – Park Land Dedication Fund	$42,000	$66,200	Parks and Recreation Dept. can potentially use this fund for acquisition of land for and construction of trails
333 – Uptown Roads	$2,243,000	$0	For Uptown Improvement Project, completed in 2010
380 – Uptown TIF Fund	$379,000	$1,333,000	The majority of these funds are already allocated
381 – Main & Osage TIF Fund	$0	$65,000	Project includes $6,000,000 for streets, sidewalks, curbs, gutters, utilities and pedestrian amenities over duration of project
382 – Main & I-55 TIF Fund†	$0	$130,000	Project includes $2,000,000 for streets, sidewalks, curbs, gutters, utilities and pedestrian amenities over duration of project

* Source: Town of Normal, Illinois Five Year Operating and Capital Improvement Budget (2009-2014). Available at: http://www.normal.org/Files/Budget2009-2014.pdf?B2=Accept+and+Download)
† Town of Normal Tax Increment Main/I-55 Redevelopment Plan. (2008) Available at: http://www.normal.org/files/main-i55%20tif%20plan.pdf

Table 32. Funding Allocation on Construction Services (2008-2014)

Project	Est. Expenditure (FY 2008-2009)	Proposed (FY 2009-2010)	Proposed (FY 2013-2014)
Traffic Signals Upgrading	35,520	21,200	22,800
Bridge Repair & Maintenance	31,180	49,450	22,515
Street Resurfacing	167,938	0	20,000
Sidewalks & Curbs	23,000	112,915	46,300
Curbs	27,500	25,000	25,000

Normal's existing revenue sources will require substantial supplemental funds from the previously-discussed grant sources. A complete table of which grants may be appropriate for each identified grant funding source is provided in Appendix E.

Implementation Policies

The Normal Bicycle and Pedestrian Master Plan provides the long-term vision for the development of a community-wide bikeway network usable by all residents for all trip types. Implementation of the Plan will take place in small steps over many years. The following strategies and action items are provided to guide Normal toward the vision identified in the Plan.

Strategy 1: Strategically Pursue Infrastructure Projects

Normal staff should strategically pursue infrastructure projects. Ideally, staff should pursue capital improvements funding or grant funding for short-term bicycle and pedestrian improvements first. However, if grant requirements or construction in conjunction with another roadway project make construction of a lower priority project possible, then the community should pursue funding sources for that project regardless of priority.

Action Items:

At the end of each fiscal year, Normal should publish a public report documenting the status and on-going actions for all bicycle and pedestrian projects. This report may be combined with the prioritization review discussed below.

Policy 1.1 Pursue capital improvements funding or grant funding for higher-priority bicycle and pedestrian improvements first.

Policy 1.2 In the case where grant requirements or construction in conjunction with another roadway project make construction of a lower priority project possible or required by law, pursue funding sources for that project regardless of priority.

Policy 1.3 Install approved bicycle and pedestrian projects simultaneous with road improvement projects scheduled in the same area, regardless of the priority placed upon the bicycle or pedestrian project.

Policy 1.4 Review current posted speeds on major streets; identify opportunities for posted speed reductions, especially on roadways where bicyclists and motorists will share the same lanes.

Policy 1.5 Publish a public report documenting the status and on-going actions for all bicycle and pedestrian projects at the end of each fiscal year.

Strategy 2: Regularly Revisit Project Prioritization

Projects have been prioritized based on system connectivity, overcoming barriers, community support, and other criteria described in Chapter 6. This list should be reviewed every fiscal year, with new projects added, completed projects removed, and the priorities revised as conditions change. This strategy also represents an opportunity to correspond with nearby jurisdictions to collaborate on regionally-important walkways and bikeways.

Action Items:

Annually review and update the bikeway and walkway project list with input from appointed persons within the Town of Normal, McLean County, and other relevant agencies. The updated list should be shared with the public.

Policy 2.1 Annually review and update the Bicycle and Pedestrian Master Plan project and program list.

Policy 2.2 Share updated Bicycle and Pedestrian Master Plan project list with the public and other jurisdictions, including McLean County and the City of Bloomington.

Policy 2.3 Review and update the Plan as needed, at a minimum of every five years.

Strategy 3: Integrate Bicycle Planning into Normal's Planning Processes

This Plan presents a vision for the future of bicycling in Normal. To ensure that that vision is implemented, the Plan must become a living document that is incorporated into the day-to-day activities of planning, design, funding, construction and maintenance in Normal. This plan recommends several ways for bicycle planning to be integrated into the planning process.

Action Items:

Policy 3.1 Incorporate a bicycle facilities checklist into the Plan review process.

Policy 3.2 Adopt a bicycle parking ordinance and other local policies that promote bicycling.

Policy 3.3 Consider adopting a "Complete Streets" policy to ensure that bicycle and pedestrian facilities are included in all major construction and reconstruction projects. Bicycle and pedestrian facilities should be addressed at the project scoping stage.

Policy 3.4 Require sufficient right-of-way to be set aside for bicycle and pedestrian facilities as redevelopment projects occur.

Policy 3.5 Ensure that appropriate bicycle and pedestrian facilities are built in new developments in accordance with this Plan and other relevant plans.

Strategy 4: Encourage Private Donors to Support the Walkway/Bikeway System

Many trails have a "Friends of" group that can provide volunteer construction and maintenance services as well as funding small projects, such as signage and wayfinding programs. Through such a program, or an "Adopt a Bikeway" program, corporations, institutions and individual private donors can support the existing and proposed walkway/bikeway system. This program can be leveraged to enhance maintenance through volunteer work and can connect philanthropy with fundraising to sustain the system.

Action Items:

Policy 4.1 Support the "Friends of the Constitution Trail" program and encourage corporations, institutions and individual private donors to support the existing and proposed walkway/bikeway system.

Policy 4.2 Leverage this program to enhance maintenance through volunteer work, and connect philanthropy with fundraising to sustain the system.

Policy 4.3 Evaluate opportunities for establishing a philanthropic giving program that can be used to support the construction and maintenance of Normal's walkways and bikeways.

Strategy 5: Implement Education, Encouragement and Enforcement Activities

Augment the expanded bicycle and pedestrian network with education, encouragement and enforcement activities to encourage more walking and cycling among Normal residents. These supporting programs are critical to the success of the Plan and have been prioritized based on ease of implementation and cost.

Action Items:

Policy 5.1 Pursue grant funding for higher-priority programs first.

Policy 5.2 Seek funding for other supporting programs as appropriate.

Policy 5.3 Work with schools, youth groups, and other parties to provide education and encouragement programs to Normal residents.

Policy 5.4 Work with the Police Department, media, advocacy and safety groups to create an educational program to educate pedestrians, bicyclists, and drivers of rights, responsibilities and safe practices to share the road comfortably and safely.

Recommended Complete Streets Policy

There is a growing movement in the U.S. to integrate non-motorized transportation in the planning, design and operation of roads, bridges and transit projects, called 'Complete Streets.' At the national level, the US Department of Transportation (USDOT) developed a model bicycle and policy framework in 2001. The policy is based on the principle that bicyclists and pedestrians have the right to move along or across all roadways unless specifically prohibited from doing so. The national policy has served as guidance for State DOT's and public works agencies throughout the U.S. It has recently evolved into the idea that streets are only complete when they address the needs of all modes of transportation, including walking and bicycling. This approach includes providing for transit, ADA compliance and facilities for people of all ages and abilities.

Complete Streets principles are "*federal, state, local, or regional level transportation laws, policies, or principles which ensure that the safety and convenience of all users of a transportation system, including pedestrians, bicyclists, public transit users, children, older individuals, motorists, and individuals with*

disabilities, are accommodated in all phases of project planning and development."[11] This section provides guidance for Complete Streets policy elements.

Elements of Complete Streets Policies[12]

1. The Principle

- Complete streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street.
- Creating complete streets means changing the policies and practices of transportation agencies.
- A complete streets policy ensures that the entire right of way is routinely designed and operated to enable safe access for all users.
- Transportation agencies must ensure that all road projects result in a complete street appropriate to local context and needs.

2. Elements of a Good Complete Streets Policy

A good complete streets policy:

- Specifies that 'all users' includes pedestrians, bicyclists, transit vehicles and users, and motorists of all ages and abilities.
- Aims to create a comprehensive, integrated, connected network.
- Recognizes the need for flexibility: that all streets are different and user needs will be balanced.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards.
- Directs that complete streets solutions fit in with context of the community.
- Establishes performance standards with measurable outcomes.

3. Implementation

An effective complete streets policy should prompt transportation agencies to:

- Restructure their procedures to accommodate all users on every project.
- Re-write their design manuals to encompass the safety of all users.

[11] H.R. 1445: Complete Streets Act of 2009, http://www.govtrack.us/congress/bill.xpd?bill=h111-1443
[12] Source: http://www.completestreets.org/changing-policy/policy-elements/

- Re-train planners and engineers in balancing the needs of diverse users.
- Create new data collection procedures to track how well the streets are serving all users.

What are the Benefits of Complete Streets?

Complete streets improve safety. They reduce crashes through safety improvements. One study found that designing for pedestrian travel by installing raised medians and redesigning intersections and sidewalks reduced pedestrian risk by 28 percent.[13] Complete streets also improve safety indirectly by increasing the number of people bicycling and walking. A recently published international study found that as the number and portion of people bicycling and walking increases, deaths and injuries decline.[14]

Complete streets encourage more walking and bicycling. Public health experts are encouraging walking and bicycling as a response to the obesity epidemic, and complete streets can help. One study found that 43 percent of people with safe places to walk within ten minutes of home met recommended activity levels, while just 27 percent of those without safe places to walk were active enough.[15] Residents are 65 percent more likely to walk in a neighborhood with sidewalks.[16] A study in Toronto documented a 23 percent increase in bicycle traffic after the installation of a bike lane.[17]

Complete streets can help ease transportation woes. Streets that provide travel choices can give people the option to avoid traffic jams, and increase the overall capacity of the transportation network. Several smaller cities have adopted complete streets policies as one strategy to increase the overall capacity of their transportation network and reduce congestion. An analysis by the Victoria Transportation Policy Institute found that non-motorized transportation options can replace some vehicle trips, and in urban areas where more people commute by foot or bicycle, people drive fewer miles overall.[18] In Portland, Oregon, a complete streets approach has resulted in a 74 percent increase in bicycle commuting in the 1990s.[19]

Complete streets help children. Streets that provide room for bicycling and walking help children get physical activity and gain independence. More children walk to school where there are sidewalks. Also, children who have and use safe walking and bicycling routes have a more positive view of their neighborhood.[20] Gaining in popularity across the country, Safe Routes to School programs, will benefit from complete streets policies that help turn all routes into safe routes.

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[13] M.R. King, J.A. Carnegie, and R. Ewing, "Pedestrian Safety Through a Raised Median and Redesigned Intersections" Transportation Research Board 1828 (2003): 56-66.
[14] Jacobsen, PL, "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Biking," Injury Prevention 9 (2003): 205-209.
[15] Powell, K.E., Martin, L., & Chowdhury, P.P. (2003). Places to walk: convenience and regular physical activity. American Journal of Public Health, 93, 1519-1521.
[16] Giles-Corti, B., & Donovan, R.J. (2002). The relative influence of individual, social, and physical environment determinants of physical activity. Social Science & Medicine, 54 1793-1812.
[17] St. George Street Revitalization. www.tc.gc.ca/programs/environment/UTSP/st.georgestreetrevitalization.htm
[18] Littman, Todd TDM Encyclopedia (ADONIS, 1999; Mackett, 2000; Socialdata Australia, 2000; Cairns et al, 2004).
[19] City of Portland, Office of Sustainable Development. Local Action Plan on Global Warming, 2005 Progress Report.
[20] Ewing, R. Will Schroeer, William Greene. School location and student travel: Analysis of factors affecting mode choice. Transportation Research Record: Journal of the Transportation Research Board, No. 1895, TRB, National Research Council, Washington, D.C., 2004, pp. 55–63.

Complete streets make fiscal sense. Integrating sidewalks, bike lanes, transit amenities, and safe crossings into the initial design of a project spares the expense of retrofits later. Jeff Morales, the Director of Caltrans when the state of California adopted its complete streets policy in 2001, said, "*By fully considering the needs of all non-motorized travelers (pedestrians, bicyclists, and persons with disabilities) early in the life of a project, the costs associated with including facilities for these travelers are minimized.*"[21]

Implementation Help

An effective complete streets policy should prompt transportation agencies to:

- Restructure their procedures to accommodate all users on every project
- Re-write their design manuals to encompass the safety of all users
- Re-train planners and engineers in balancing the needs of diverse users
- Create new data collection procedures to track how well the streets are serving all users

Policy Recommendations

America Bikes requests that Congress establish a series of performance measures for state and local agencies to ensure that bicycling and walking become safe and convenient options throughout the transportation system.

Policy 1. As an element of good roadway design, all projects involving new construction or reconstruction of roadways shall consider accommodation of bicyclists and pedestrians. This principle shall apply to all federal, state and local recipients of funds authorized under Titles 23 and 49, including federal land management agencies.

Exceptions to this requirement would be possible where:

- Bicyclists and/or pedestrians are not permitted to operate (e.g., on limited access highways).
- There is a demonstrable lack of need (e.g., in cul-de-sacs).
- Provisions would exceed a reasonable percentage of the overall costs of the project (e.g., 20 percent).

Municipal Code and Manual of Practice Update Recommendations

In addition to the above implementation policies for ensuring Plan implementation and for encouraging bicycling and walking in Normal, elements of the Municipal Code and Manual of Practice could be modified to be more supportive of walking and bicycling infrastructure and programs.

Code and Manual amendments are provided below in italics.

[21] http://www.americantrails.org/resources/trans/completestreets08.html

Municipal Code Updates

Bicycles

SEC. 23.8-4 REQUIRED USE OF BICYCLE LANES. When a bicycle lane exists, it shall be unlawful for any person to ride a bicycle in any portion of the roadway other than a bicycle lane, e*xcept under the following situations:*

1. *When approaching a place where a right turn is authorized.*
1. *When overtaking and passing another bicycle or vehicle proceeding in the same direction.*
2. *When preparing for a left turn at an intersection or into a private road or driveway.*
3. *When reasonably necessary to avoid conditions (including, but not limited to, fixed or moving objects, vehicles, bicycles, pedestrians, animals, surface hazards, or substandard width lanes) that make it unsafe to continue along the right-hand curb or edge. For purposes of this section, a "substandard width lane" is a lane that is too narrow for a bicycle and a vehicle to travel safely side by side within the lane.*

Pedestrians

SEC. 23.4-2 PEDESTRIANS CROSSING ROADWAY.

1. No pedestrian shall cross any street except at crosswalks if the pedestrian is within 150 feet of a marked crosswalk.

Manual of Practice Updates

Chapter 3: General Subdivision Design Standards

3.02 SUBDIVISION PRINCIPLES OF PLANNING. Basic consideration in the design of local circulation systems must recognize the factors of: (1) safety - for both vehicular and pedestrian traffic, (2) efficiency of service - for all users, (3) livability or amenities - especially as affected by traffic elements in the circulation system, and (4) economy - of both construction and use of land.

Principles pertaining to bicycle and pedestrian planning in subdivisions include:[22]

1. Adequate vehicular*, bicyclist* and pedestrian access should be provided to all parcels.

2. Local street systems should be designed to minimize through-traffic movements.

9. The local street system should be designed for a relatively uniform low volume of street traffic.

10. Local streets should be designed to discourage excessive speeds.

11. Pedestrian-vehicular conflict points should be minimized.

12. An optimum amount of space should be devoted to street uses.

[22] Only sections pertaining to pedestrians and/or bicyclists are included in this analysis; items are numbered as they are in the source documents.

28. Accessways should be provided in new developments to provide direct walking or bicycling connections to schools, community or retail centers or other destinations that otherwise would not be provided by the local street system.

Chapter 5: Design and Construction Standards for Sidewalks and Pedestrian Ways and Trails

DESIGN STANDARDS: Subdivisions shall be designed so that sidewalks or pedestrian ways are provided in such locations and in such a manner as to accomplish the following:

Sidewalks and pedestrian ways shall be not less than *five* (*5*) feet (*1.5m*) in width; except adjacent to arterial and collector streets, where sidewalks shall not be less than *eight* (*8*) feet (*2.4 m*) in width; and except in the B-2, Central Business District, where sidewalks shall not be less than six (6) feet (1.8m) in width.

Transverse slope on sidewalks, pedestrian ways and trails should not be less than 2% nor greater than 4%.

PEDESTRIAN PATH

A Pedestrian path *(also known as an "accessway")* is designed to provide safe, convenient routes for pedestrians. A pedestrian path is required for a block over 800 feet in length and is encouraged throughout the Traditional Neighborhood Development (TND). A pedestrian path should provide efficient connections to other paths or walkways and should be designed to maximize visibility and security.

Path Right-of-Way Width: 25 feet (not less than 20 feet)

Path Paving Width: 10 feet minimum

Recommended Internal Circulation Standards

Pedestrian circulation in larger residential and commercial developments is influenced by the infrastructure provided for the pedestrian and the infrastructure and design of the automotive circulation and parking. This sections recommends internal circulation standards to encourage and support walking and bicycling in Normal.

Automobile Infrastructure

Parking lots should be located in such a manner as to encourage pedestrian access to the development, connect uses to the street and decrease the distance between adjacent developments. To accomplish this, parking should be located behind and to the side of buildings wherever possible.

Landscaping should be provided between the pedestrian circulation system and automobile areas to provide protection, security and accessibility for the pedestrian. Parallel parking can also be used to buffer pedestrian routes from moving vehicles.

Pedestrian Infrastructure

An internal pedestrian circulation system should:

- Be barrier-free and designed for safety and security
- Ensure continuous sidewalks and safe crossing points
- Connect all uses within a development (buildings, parking areas, pad buildings etc.)
- Clearly link public sidewalks with all internal walkways
- Clearly link the individual sites within a development to each other and to surrounding off-site uses (mixed-use and residential areas)
- Be defined with landscaping, paving, and pedestrian scaled lighting

Pedestrian circulation routes should be composed of treated surfaces such as scored, brushed, stamped and colored concrete, or brick pavers in order to differentiate the pedestrian system from the auto system. Where pedestrian routes cross driveways or auto circulation route, a continuous raised crossing composed of a different paving material should be provided.

Pedestrian connections should be designed to provide the most direct route to BNPTS stops to avoid out-of-direction travel and minimize travel distance. Connections should be a continuation of the sidewalks and trail system to reduce dead-end paths.

To provide greater opportunity for pedestrian connectivity and to prevent autos from having to use the public street system to travel between adjacent developments, parking and pedestrian circulation should be designed to accommodate connections between developments.

Pedestrian circulation plans should be required with each large lot development. These plans must emphasize connectivity through sidewalk design, traffic circulation, landscaping, and lighting.

Construction of New Streets in New Rights-of-Way

All construction of new public streets will include sidewalk improvements on both sides.

Exception:

For new streets, provision of a sidewalk improvement on only one side will be considered under the following conditions:

- Right-of-way has severe topographic or natural resource constraints; or
- Street is a cul-de-sac with four or fewer dwelling units.

Street Improvements to Existing Rights-of-Way

All major improvements to existing streets will include sidewalk construction. Street improvements will be provided with sidewalk improvements on both sides of all streets in high pedestrian use areas and most walkways throughout the Town.

When the existing right-of-way is too narrow to accommodate both street and sidewalk improvements, the following steps to allow room for a sidewalk improvement should be considered:

- Acquire additional right-of-way or walkway easement
- Narrow existing roadway in accord with established minimum roadway standards

Exceptions:

For improvements to existing street rights-of-way and on walkways in high pedestrian use areas, approval for a sidewalk on only one side will be considered under the following conditions:

- Right-of-way has severe topographic or natural resource constraints
- For improvements to existing street rights-of-way on walkways in neighborhoods, approval for a sidewalk on only one side only will be considered under any of the following conditions:
- Right-of-way has topographic or natural resource constraints
- Right-of-way has existing development or mature landscaping constraints
- Street is a cul-de-sac with fewer than 20 dwelling units
- For improvements to existing street rights-of-way on neighborhood walkways, approval for providing no sidewalk will be considered under the following condition:
- Right-of-way has very severe topographic or natural resource constraints

Frontage Improvements on Existing Streets

Sidewalk improvements will be required as part of all new infill building development on existing streets to the extent practicable.

Where the existing road has no curb or is otherwise substandard and it is not practicable to construct full street improvements for a limited street segment, the Town Engineer may require an interim path to be constructed.

Exceptions:

A waiver of remonstrance, covenant or other legal agreement may be accepted in lieu of immediate sidewalk construction under either of the following conditions:

- The existing road has no curb or is otherwise substandard and it is not practicable to construct full street improvements or an interim path for a limited street segment
- Infill development of single-family residential use is proposed for three or fewer contiguous lots where the majority of lots on the block have already been developed and there is no pattern of existing sidewalk improvements in the area

Appendix A. Previously-Proposed Bicycle and Pedestrian Projects

The Project Team reviewed relevant background documents and plans to identify previously-proposed bicycle and pedestrian projects. These previous planning efforts helped inform the recommendations presented in this Plan, and were included as part of the evaluation process described in Chapter 6.

Bloomington-Normal Constitution Trail Map			
Project	**From-To**	**Type/ Description**	**Status**
College Avenue	Parkside Road - Mitsubishi Motorway	Road/trail	Proposed
Parkside Road	Raab Road - College Avenue West and Gregory Avenue route	Trail	Proposed
Raab Road West	Main Branch of the Constitution Trail - Mitsubishi Motorway North Trail	Trail	Proposed
Illinois State University	The portion of campus surrounded by University Street, Beaufort Street, School Street, and College Avenue. Connect to Constitution Trail Main Branch, University rec. facilities and University High School.	Unknown	Unclear
White Oak Road	College Avenue to Locust Street	Road/Trail	Proposed
Gregory Street	ISU route to College Avenue West and Parkside Road routes	Trail	Proposed
Towanda-Barnes Road	Constitution Trail at G.E. Road – potential Ireland Grove/Hamilton Road routes	Trail	Proposed
North Normal	Constitution Trail Main Branch– potential Route 66 Northeast route	Trail	Proposed
Northtown Road	Constitution Trail Main Branch – Towanda Avenue	Trail	Mostly Implemented
Towanda Avenue	Northtown Road to Shelbourne Drive	Trail preferred	Proposed
Northeast Normal	Taft Drive and Greenbriar Drive – intersection of rural routes 1700 N. and 1800 E.	Trail	Proposed
East College Avenue	Along the Hedgewood Subdivision	Trail	Proposed
East Hedgewood Subdivision	Completes Hedgewood Subdivision Loop (see above)	Trail	Existing - unclear
Route 66	Shelbourne Drive to the Village of Towanda	Trail	Proposed

Main Street: A Call For Investment

Project	From-To	Type/ Description	Status
Main Street	I-55 - Veterans	Bike lanes	Proposed
Raab Road	Main St – Const. Trail	Bicycle connection	Proposed
Virginia Avenue	Main St – Const. Trail	Bicycle connection	Proposed

Uptown Redevelopment Plan

Project	From-To	Type/Description	Status
Constitution Boulevard	Uptown Circle - Broadway	Two-way cycle track in median, sidewalks	Construction
Constitution Boulevard	Roundabout at Beaufort St/North Ave	Improved bicycle facilities through roundabout	Construction

FY 2007-2013 Community Investment Plan

Project	From-To	Type/Description	Status
Underwood Park Redevelopment Project	N/A	Critical	FY 2008-2009
Greenbriar Park Development	N/A	Critical	FY 2009-2011
Constitution Trail Repaving	Varies (unspecified)	Critical	FY 2008-2013 ($20,000 per year)
Miscellaneous Park ADA Improvements	Varies	Critical	FY 2008-2013 ($10,000 per year)
Maxwell Park Redevelopment	N/A	Flexible	FY 2012-2013
City Hall Sidewalk and Circle Drive Repair	N/A	Important	FY 2008-2009
Demo and Replace Bike Storage Shed	N/A	Important	FY 2008-2009
Route 66 Bike Trail	Adjacent to Route	Critical	FY 2013-2013
Wayfinding/Signage	N/A	Flexible	FY 2008-2009
Eagle's Landing Bike Trail*	Unknown	Important	FY 2011-2012

* The planned extension of the Constitution Trail at Eagles Landing was postponed due to lack of funding in the 2009-2010 budget

Town of Normal Parks & Open Space Master Plan

Project	Status
Extend Constitution Trail to ISU 1	Proposed
Create volunteer bike safety team to monitor Constitution Trail	Unknown
Conduct CPTED reviews of Constitution Trail safety	Unknown
Connect park open spaces to Constitution Trail	Proposed
Connect schools and retail uses to Constitution Trail	Proposed
Connect nearby towns to Constitution Trail	Proposed
Develop "loop system" for all trails in Normal	Proposed
Coordinate BNPTS bus routes with trail system	Unknown
Construct trails to parallel key traffic routes	Proposed

Long-Range Transportation Plan 2035 for the Bloomington Normal Urbanized Area

Currently Programmed Bicycle Projects	From-To	Type/Description	Status
Constitution Trail	Grove Street – Lafayette Street	New Bike Trail	FY 2007-2008
Route 66 Trail	Adjacent to Route 66 in Normal	New Bike Trail	FY 2013-2013
Constitution Trail	Lafayette Street – Hamilton Road	New Bike Trail	FY 2007-2008
Constitution Trail	East Side	New Bike Trail	FY 2007-2008

MCRPC Transportation Improvement Program FY 2009-2013

Projects in B-N Urban Area	Type	Status
Uptown Normal	Transit-Oriented Development including facilities for public transit, AMTRAK, shuttles, taxis, park-and-ride, pedestrians and bicyclists. Project includes office space, parking garage and adjacent street construction.	Proposed - unclear
Towanda Avenue	Traffic signal installation, intersection improvements (unspecified)	Proposed

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Appendix B. Background Data and Plans Review

BLOOMINGTON-NORMAL BICYCLE-PEDESTRIAN PLAN

The *Bloomington-Normal Bicycle-Pedestrian Plan*[23] is a 2007 update of the bicycle-pedestrian component of the 1994 Bloom*ington-Normal Urbanized Area Long Range Transportation Plan*. The Plan aims to maintain and enhance the standard of living for residents in the twin cities during a period of anticipated growth. The Plan's vision is of "*an interconnected system of bicycle-pedestrian routes that offer transportation alternatives and serve to reduce traffic congestion, prevent damage to the environment, promote physical health, and encourage social interaction.*" A relevant goal of this Plan is: *Improvement of air quality and reduction of traffic congestion through a decrease in automobile dependence by becoming a more bicycle-oriented environment that serves the economic, social, and environmental needs of the residents and visitors of Bloomington-Normal.*

The Plan outlines Objectives and supporting Strategies designed to implement this goal, which include:

- Objective: *A primary system of off-road bicycle-pedestrian routes supplemented by safe and direct on-road connections where off road facilities are not feasible.*
    - Strategy: *Identify routes that offer the potential for a high degree of off-road connectivity.*
- Objective: *Bicycle friendly streets that increase bicycle ridership.**
    - Strategy: *Remove parking along selected streets as appropriate and where feasible to provide for additional width for on road bicycling.**
    - Strategy: *Improve rail crossings, sewer grates, and traffic signals to better accommodate bicyclists.**
    - Strategy: *Provide adequate warning for bicyclists and motorists alike when approaching special transition areas such as bridges and structures that require narrowing of the road.*
    - Strategy: *Provide routine maintenance practices that include removal of debris.*
    - Strategy: *Restrict on-street parking to provide adequate width for on-road bicycling.**
    - Strategy: *Provide shoulders of sufficient width where feasible to accommodate bicyclists.**
- Objective: *Maximize the potential benefits of the Constitution Trail to provide greater recreational and commuter usage.**
    - Strategy: *Encourage the expansion of the Constitution Trail and the construction of additional trails as appropriate to provide improved access to more destinations.**

* Adapted from the 1994 *Long Range Transportation Plan for the Bloomington-Normal Urbanized Area.*

Objective: Adequate parking facilities for bicycles.

[23] http://www.mcplan.org/tran/bikeped/bike_ped_plan.shtml

    - Strategy: *Require minimum bicycle parking facilities dependent on the type of size of a given facility.*

- Objective: *An integrated transportation planning process that incorporates bicycle facilities planning with other modes to ensure early and ongoing provisions for bicycle transportation and to avoid the difficulties involved in retrofitting facilities.**
    - Strategy: *Provide for interdepartmental coordination in the planning and design of streets and street improvements.**

- Objective: *Adequate provisions for bicycling in newly developing areas.**
    - Strategy: *Require the provision of trails in developing areas.**

- Objective: *Bicycle trails and routes that are visibly safe and secure.**
    - Strategy: *Provide educational programs on trail use and safety.**
    - Strategy: *Increase the public awareness of bicycle police.**

- Objective: *Direct and continuous access to desired destinations.*
    - Strategy: *Ensure that construction and maintenance crews do not block or impede bicycle/pedestrian corridors and traffic.*

- Objective: *Land use patterns that are conducive to non-motorized travel.*
    - Strategy: *Identify locations for neighborhood-oriented commercial uses, parks, and schools within safe and easy walking distances of residential areas.*

The second goal of the Bloomington-Normal Bicycle-Pedestrian Plan is, "*An environment conducive to the safe, secure, and aesthetically desirable movement of pedestrian traffic.** The Objectives and Strategies to implement this goal are as follows:

- Objective: Improved accessibility to pedestrian oriented trails.*
    - Strategy: *Expand and develop multi-purpose trails to accommodate pedestrian needs for transportation and recreation use.**

- Objective: *Sidewalks of sufficient width on both sides of streets.**
    - Strategy: *Require sufficient sidewalk width and design standards in local subdivision ordinance.**

- Objective: *Street lighting that provides sufficient illumination for adequate night visibility, security, and safety.**
    - Strategy: *Maintain acceptable standards and requirements for sidewalk construction and street lighting in local subdivision ordinances.**

- Objective: *Safe and efficient pedestrian crossings at major street intersections, trail crossings, and other locations.*

* Adapted from the 1994 *Long Range Transportation Plan for the Bloomington-Normal Urbanized Area.*

  - Strategy: *Provide designated crosswalks at other major intersections to provide opportunities for pedestrians to safely cross thoroughfares without causing unreasonable disruptions vehicular traffic flows.**

- Objective: *Pedestrian corridors between residential and multi-use developments.*
  - Strategy: *Identify appropriate locations for multi-use and pedestrian oriented design.*

* Adapted from the 1994 Long Range Transportation Plan for the Bloomington-Normal Urbanized Area.

TOWN OF NORMAL BICYCLE AND PEDESTRIAN FOCUS GROUP REPORT (2008)

Organized by Normal Mayor Chris Koos, the Bicycle and Pedestrian Focus Group met between October 2007 and January 2008. The group's vision is, "*To promote and increase bicycle and pedestrian travel as a viable, convenient and safe transportation choice throughout the Town of Normal.*" The Normal Bicycle and Pedestrian Plan is being developed as a result of the recommendations from this working group. The goals of the group are as follows:

- *Promote health and fitness*
- *Decrease motor vehicle use*
- *Establish community awareness and interaction*
- *Increase the number and quality of bicycle and pedestrian trips*
- *Reduce the number of conflicts among motor vehicles, bicycles and pedestrians*
- *Implement pedestrian and bicycle planning and best practices*

The recommendations resulting from this Focus Group report are: (1) to establish a steering committee to partner with council and staff on bicycle and pedestrian issues; (2) to hire a consultant to assist in developing a five year plan with the objective of becoming designated as a "Bicycle Friendly Community" by the League of American Bicyclists; (3) to engage in an encouragement and safety education campaign; and (4) to better consolidate and coordinate existing information about non-motorized transportation. The group developed the following action steps:

- **Encouragement:** *Create an environment conducive to more bicycling and walking for fun, fitness and transportation.*
- **Education:** *Informed citizenry, knowledgeable police, legislators and public officials and better training for engineers and planners in facility design.*
- **Engineering:** *Creating a bicycle and pedestrian transportation system that allows users with varying abilities to safely and efficiently travel between destinations.*
- **Enforcement:** *Equitable and consistent enforcement of traffic laws affecting motorists, bicyclists and pedestrians.*
- **Evaluation:** *Regular monitoring and performance evaluation of our progress toward becoming a bicycle/pedestrian-friendly community.*

The group discussed using the Bicycle Level of Service (BLOS) methodology to evaluate bicycle routes for different categories of bicyclists. They also considered bicycle rodeos as an educational tool to encourage bicycling amongst school children. The Focus Group did not identify specific bicycle or pedestrian projects in Normal.

MAIN STREET: A CALL FOR INVESTMENT (2007)

The *Main Street Plan* was prepared for the City of Bloomington and Town of Normal, as well as Illinois State University (ISU), Illinois Wesleyan University (IWU) and BroMenn Healthcare by the McLean County Regional Planning Commission (MCRPC). Based on rigorous public involvement, the Plan outlines short-, medium- and long-term investment strategies that provide a comprehensive framework for the redesign of the public right of way.

A major goal of the Plan is to reclaim the corridor for pedestrians and bicyclists. Major bicycle and pedestrian recommendations include the following:

- *Re-stripe existing pavement for bike lanes, on-street parking*
- *Develop integrated Bike Plan for Bloomington and Normal*
- *Improve pedestrian access and circulation*
- *Implement wayfinding signage*

The Plan additionally recommends transportation demand management strategies, including car-sharing and improved transit, to reduce motor vehicle use in the twin cities.

The Plan's specific bicycle-related recommendations include bike lanes along Main Street, wider inside lanes to accommodate bicycle left turns, increased signage, and installation of bicycle parking. The bike lanes would transition to shared lane markings in some locations. At the Southbound couplet at Kelsey Street, the bicycle route would include a painted buffer area from the vehicular lanes. Figure 52 shows the bicycle facilities recommended for Main Street in this Plan.

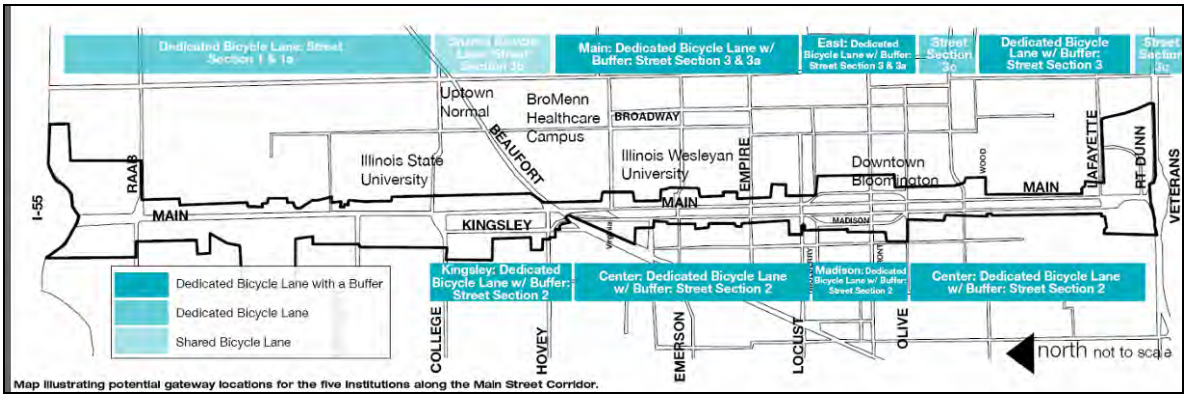

Figure 52. Main Street Bicycle Facility Recommendations

Accommodations for pedestrians in the Plan include completed sidewalks, a landscaped median, pedestrian refuge islands at key intersections, crosswalks, and streetscape and pedestrian amenities.

The *Main Street Plan* proposes bicycle connections between Main Street and the Constitution Trail on Raab, Virginia, Emerson, Empire, Lincoln, and Lafayette, although it does not specify specific facility types for these connections.

UPTOWN REDEVELOPMENT PLAN (2008)

The goals of the *Uptown Redevelopment Plan* are to review roadway and streetscape design, including pedestrian areas for the Town of Normal.

The Uptown Circle is proposed to reduce pedestrian and vehicle conflicts. Improvements to Constitution Boulevard include a trail running along the median of the road, and improved access to the Constitution Trail (illustrated in Figure 53).

Figure 53. Proposed Constitution Trail Design, *Uptown Redevelopment Plan*

Recommended streetscape design improvements include street trees, street furnishings, lighting, wayfinding and water features. The Plan also addresses pedestrian and business access during construction along major roads in the Town Center.

TOWN OF NORMAL COMMUNITY INVESTMENT PLAN

Designed to assist the Town Council with prioritization of major capitol investments in Fiscal Years 2008-2013, the Town of Normal Community Investment Plan (CIP) was prepared by Town staff. Projects are prioritized based on the following system:

- Priority 1 (Critical): *Project is believed to be critical or a top priority in the proposed year(s)*
- Priority 2 (Important): *Project should be completed with little deviation from the proposed year(s)*
- Priority 3 (Flexible): *Project that could be moved to a different year with little or no consequence*

Bicycle and pedestrian projects proposed in this document include: the Constitution Trail extension, the Route 66 Bike Trail, and the Eagle's Landing Bike Trail, which comprise almost $600,000 of funding during the five-year time-period.

TOWN OF NORMAL PARKS & OPEN SPACE MASTER PLAN (2005)

The Parks and Open Space Master Plan addresses planning for the 16 parks and over 600 acres of open space in Normal. The Plan was prepared for the Town of Normal Parks and Recreation Department.

A capital spending priority of this Plan includes extending the Constitution Trail as proposed in the Bloomington-Normal Bicycle-Pedestrian Plan. The community outreach process found that respondents supported this expansion, and improvements to the bicycle and pedestrian trail system "*consistently came up as a major asset to the parks and open space system.*" The

community also recognizes the Constitution Trail's importance for bicycle and pedestrian circulation, as well as for recreational use. According to the Plan, Normal recently received funding to expand the Trail to connect with ISU and northwestern Normal. The Plan highlights the challenges of extending the trail system and providing crossings of major streets and barriers, as well as the importance of identifying opportunities to develop these connections.

A mail-in survey found that paved walking and biking trails represented the most important park facility type to residents. Connectivity, an important Theme of the Plan, prioritizes separation of pedestrian and bicycle traffic, as well as providing signed bike routes connecting neighborhood parks, community parks, schools and greenway trails. The Plan also calls for establishing Normal as the "hub" of the regional trail system, which provides viable pedestrian and bicycling alternatives. It also highlights the importance of trail safety, including courtesy rules and design to minimize conflicts between modes. Connectivity actions include:

- ***Expand and Improve Constitution Trail***. *Extend Constitution Trail to link with the ISU campus and other schools in the northwest part of Town. Continue to develop its connection to the downtown redevelopment area. Bridge over physical barriers and widen the trail where use is greatest. Provide park related improvements where appropriate.*
- ***Connect all park open spaces with Constitution Trail***. *Extend Constitution Trail to all 16 Normal parks and open spaces. This will particularly benefit youths who cannot drive but participate in park recreation programs.*
- ***Connect school and commercial uses into Constitution Trail***. *Extend Constitution Trail to all Normal school facilities and to the commercial areas on College Avenue and Veterans Parkway. This will facilitate walking or bicycling to key destinations, as an alternative to driving.*
- ***Connect isolated trails into Constitution Trail***. *There are a number of residential subdivisions that have, or are planning to have, trails as part of the development. Interconnection to those trails will greatly expand the usefulness of those trails to local residents.*
- ***Connect nearby towns such as Towanda with Constitution Trail***. *Connecting nearby towns to Constitution Trail provides opportunities for extended recreation bicycling trips. A connection to Towanda could also highlight the history of Route 66.*
- ***Coordinate with BNPTS bus routes with existing and proposed Constitution Trail trailheads.*** *Coordination of the bus routes with Constitution Trail will help facilitate bicycle commuting trips. This coordination should also include bicycle racks on the buses so that commuters can combine cycle and bus segments of trips. Combining these modes of transportation extends the commuting distance for bicyclists.*
- ***Coordinate with the Town of Normal Traffic Engineering Department to develop a townwide bike route system that parallels key vehicular traffic routes.*** *Work with the Traffic Engineering Department to identify prime routes for vehicular traffic. Locate parallel bicycle trail routes that promote use of bicycles for key trips. When bicycles are used as an alternative to cars the vehicular congestion is reduced.*

- ***Develop a "loop system" that directs pedestrians/bicyclists to parks, cultural institutions, schools and commercial districts.*** *Promotion of a regional "loop system" of trails can help increase use and enjoyment of the trail system. This includes an overall loop around Bloomington/Normal and numerous "sub loops" within the larger loop.*
- ***Create a volunteer safety team that would regularly ride bike trails.*** *Patrols by a volunteer safety team significantly reduce the misuse of trails by wrongdoers and increase the safety for those who might have accidents while using the trails. In collaboration with the Town of Normal Police Department, conduct regular Crime Prevention Through Environmental Design (CPTED) reviews of the bike trail system to eliminate safety hazards. CPTED is a national program that sets recommended steps for improving security in parks and along the trail systems. These recommendations include line of sight, easily visible access points, signage promoting security, adequate illumination, periodic security evaluation, and general maintenance.*

The Plan lists existing trails and makes recommendations for trail extensions and future trails, as shown in Figure 54.

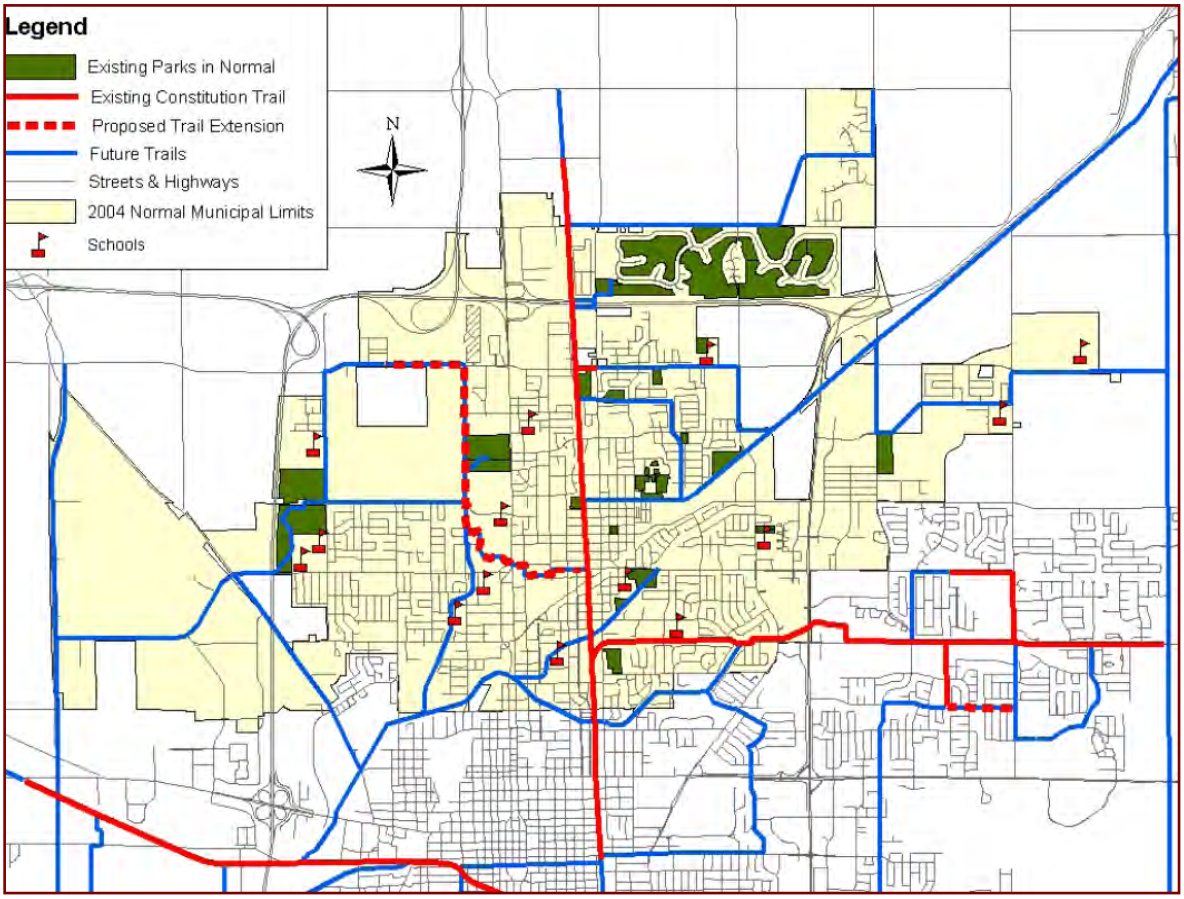

Figure 54. Existing and Proposed Bicycle Trails, *Parks and Open Space Master Plan*

TOWN OF NORMAL COMPREHENSIVE PLAN (2006)

The *Town of Normal Comprehensive Plan* was prepared by MCRPC in cooperation with the Town of Normal. The Plan seeks to efficiently accommodate the Town's expected growth while sustaining the community's high quality of life. It also serves as an advisory guide for making decisions on matters pertaining to the Town's future development.

Chapter Three, *Goals, Objectives and Policies* identifies the challenges facing Normal's trail system; modern subdivision design limits street connectivity and most commercial and public buildings are designed for easy automobile access but offer few bicycle accommodations. Objectives related to bicycle and pedestrian planning include:

- Objective: *A community designed to meet the needs of people first and business second, while effectively accommodating automobiles and other modes of transportation as well as pedestrians.*
- Objective: *A series of complete neighborhoods that provide abundant opportunities for social, cultural and economic interactions.*
- Objective: *Scenic open space as an integral component of the urban landscape that provides ample opportunities for active and passive recreation and defines and connects neighborhoods and centers of activity.*
- Objective: *Widespread accessibility to public places for the handicapped.*

The Downtown Revitalization element of the *Comprehensive Plan* includes the following objectives:

- *Well designed public spaces with public art, landscaping and pedestrian amenities which provide opportunities for social interaction and complement the variety of land uses.*
- *A center of transportation offering convenient access from a variety of transportation modes, including automobile, passenger rail, intercity bus, transit, bicycle and pedestrian.*

Chapter Four, *Future Growth and Implications*, has a section regarding bicycle and pedestrian facilities. This section highlights the need to provide bicycle and pedestrian transportation in developing areas. To this end, the Plan states that, "*Future trail segments will need to connect with existing segments to form a continuous trail network throughout the Town.*" In addition, "*Future development will need to accommodate the needs of bicycle and pedestrian transportation, and existing development will need to be retrofitted whenever possible, such as through developing trails along streams and greenway corridors.*"

Aside from these comments regarding general and off-street facilities, the Town of Normal Comprehensive Plan does not explicitly discuss bicycle or pedestrian facilities or accommodations.

LONG-RANGE TRANSPORTATION PLAN 2035 FOR THE BLOOMINGTON-NORMAL URBANIZED AREA (2007 Update)

The *Long-Range Transportation Plan 2035 for the Bloomington-Normal Urbanized Area* was prepared by the MCRPC, in cooperation with the City of Bloomington, Town of Normal, McLean County, Bloomington-Normal Public Transit System (B-NPTS), Central Illinois Regional Airport, the Illinois Department of Transportation (IDOT), and the Federal Highway Administration (FHWA). The objective for bicycle and pedestrian routes is for, "*A system of safe and efficient off-road bicycle trails, supplemented by safe and direct on-road connections where off-road facilities are not feasible, and that connect residential areas to major activity centers, newly developing areas and other modes of transportation, including automobile and transit."* The two policies linked to this Objective are:

- *Encourage bicycling and walking as viable alternative modes of transportation.*
- *Maintain data for calculation of Bicycle Level of Service on major street network and consider in the transportation planning process, to promote additional opportunities for bicycling commuters.*

Transportation safety is an explicit objective of this Plan, with specific action items as follows:

- *Reduce the number and severity of pedestrian, bicycle, and vehicular crashes in order to increase safety.*
- *Reduce the number of modal conflicts (e.g., grade crossings, pedestrian-bicycle, automobile-pedestrian, bus-bicycle, etc.).*
- *Increase pedestrian safety by continuing to maintain and expand street lighting and sidewalk systems in all areas.*
- *Increase pedestrian safety by reducing vehicular traffic in areas of high pedestrian volumes.*
- *Increase pedestrian safety by improving intersection markings and signage, especially in downtown areas.*
- *Increase pedestrian safety by improving intersection design to better accommodate pedestrians, especially in downtown areas.*
- *Increase pedestrian safety by promoting new technologies and designs in the creation and improvements of crosswalks.*
- *Establish a sidewalk system that provides safe routes to schools in all new neighborhood developments, as well as retrofitting existing neighborhoods.*

BLOOMINGTON-NORMAL COMMUNITY TRANSPORTATION NEEDS ASSESSMENT (2002)

Prepared by the Bloomington-Normal Public Transit System (B-NPTS), the *Bloomington-Normal Community Transportation Needs Assessment* provides a framework for investment in transit.

A survey conducted for the report found that 85 percent of commuters in the Town of Normal travel by vehicle, six percent walk, bike, or take transit, and two percent work at home. A web-based survey of the general public found that 70 percent feel that alternative forms of transportation such as carpools, vanpools, walking and cycling are important or very important.

The Assessment recommends building passenger shelters at all transit stops having more than 25 daily boardings, upgrading the two downtown transit centers with additional pedestrian amenities, and improving marketing of transit services, particularly targeting university students.

The report does not mention access to transit facilities by any mode, nor does it address equipping buses with bicycle racks.

ILLINOIS STATE UNIVERISTY MASTER PLAN 2000-2020

The *Master Plan: Achieving Distinctiveness and Excellence in Form, Function and Design at Illinois State University 2000-2020* provides a 20-year vision for the development of the University. The Plan establishes long-term design standards for facility development following ISU's strategic plan, *Educating Illinois: An Action Plan for Distinctiveness and Excellence at Illinois State University 2000-2007,* and *The Campaign for Illinois State University.*

A Goal of the Plan is to improve campus circulation, including ensuring that circulation patterns are friendly and accessible for pedestrians and bicyclists. The Plan aims *"to ensure that unobstructed travel patterns are efficient, aesthetic, and promote opportunities for university-community interactions."* This goal involves working with the Town and bringing the Constitution Trail through or close to the University. It also includes the action items of:

- *43. Implement actions associated with campus open spaces by:*
    - *Establishing design criteria for outdoor seating, trash receptacles, handrails, fences, banners, shrubs, and pedestrian-scale lighting.*
    - *Developing attractive green-space corridors around all edges of campus.*
- *46. Evaluate all areas of campus for accessibility by:*
    - *Addressing problem areas that include the approach on the north side of Milner Library and Bone Student Center/Braden Auditorium, the Student Accounts office, the College Avenue-University Street intersection, the College Avenue-Mulberry Street-School Street intersection, and the University crosswalk at University Street and Dry Grove.*
    - *Evaluating crosswalks, dangerous intersections and traffic signaling, primary walkways around and through buildings, sloping sidewalks, visual markers in open spaces (i.e.,*

planters), signage for accessible entrances and routes, and the locations of parking decks and bus stops relative to housing, classrooms, and other services.

- *Meeting or exceeding standards established by the Americans with Disabilities Act Accessibility Guidelines, (ADAAG, 36 CFR 1191) and the Illinois Accessibility Code (71 Illinois Administrative Code 400) for structures and paths of travel.*

- *47. Enhance campus circulation patterns and interactions by working with the Town of Normal to carefully consider extension of the Constitution Trail and its location in relation to Illinois State University.*

ISU's Plan does not include specific bicycle or pedestrian connections outside the University itself.

MCLEAN COUNTY REGIONAL GREENWAYS PLAN (1997)

Prepared by MCRPC in cooperation with the McLean County Greenways Coalition, the *McLean County Regional Greenways Plan* aims to meet growing demands for open space and recreational opportunities. The Plan presents the vision and recommendations for a regional system of greenways, developed through public input and assistance from the Illinois Department of Natural Resources. Plan Goals include conservation, environment and recreation; parks and recreation; implementation, management and coordination; legal issues, and educational issues.

Plan goals and objectives specifically relating to pedestrians and bicyclists include:

Conservation, Environment and Reservation

- *Goal: Protection of environmentally sensitive areas.*
  - *Objective: Development of additional trails and greenways to enhance the natural areas of the metropolitan area.*
- *Objective: Identification of cultural or historic sites that can be linked to greenways.*

Parks and Recreation

- *Goal: A regional park system that provides for a variety of active and passive recreational activities.*
    - *Objective: A reasonable number of facilities to accommodate both active and passive recreational needs.*
    - *Objective: A regional park system that is interconnected by a system of greenways and trails.*
    - *Objective: Public and private development of specialized outdoor recreational facilities linked to greenways and trails.*
    - *Objective: Intergovernmental coordination for the planning of parks, greenways, and trails.*

Implementation, Management and Coordination

- Goal: *Reservation of greenways as a consideration in the review of development and redevelopment projects.*
    - Objective: *Identification of development standards for greenways.*
    - Objective: *Identification of regional greenways and greenway linkages.*
- Goal: *A coordinated system of trails and greenways.*
    - Objective: *A management entity that includes representatives from local government to promote coordinated implementation of the greenways plan.*
    - Objective: *A process that integrates the interests of private landowners into the implementation of the greenways plan.*
    - Objective: *A program for funding the acquisition, development and maintenance of greenways.*
    - Objective: *A process of capital improvement funding to help implement the greenways plan.*
- Goal: *Beautification of private development.*

Legal Issues

- *Goal: Use of abandoned railroad rights of way for greenways and trails.*
    - *Objective: Cooperation and coordination with railroad companies in the acquisition of existing or future abandoned railroad rights of way.*

Education Issues

- *Goal: Public education on the benefits of greenways to the environment in terms of improved air and water quality, the local economy, aesthetics, and the overall quality of life.*

Greenway prioritization criteria consider benefits to multiple communities, completing gaps in existing greenways, creating new connections, providing a trail opportunity and potential for implementation, amongst other criteria.

MCRPC TRANSPORTATION IMPROVEMENT PROGRAM FY 2009-2013

The MCRPC Transportation Improvement Program (TIP) was prepared for the McLean County Transportation Study (MCTS) by MCRPC in cooperation with FHWA, the Federal Transit Administration (FTA), IDOT, B-NPTS, the City of Bloomington, the Town of Normal, and McLean County. The Program includes projects for all transportation modes. The two bicycle/pedestrian related projects are a transportation demand management (TDM) project in Uptown Normal and intersection improvements on Towanda Avenue (intersections not specified).

PROJECT DEVELOPMENT REPORT-U.S. ROUTE 66 BIKEWAY

Prepared in 2008 for MCRPC, the Project Development Report includes design drawings for a bikeway along Old Route 66 through portions of McLean County, outside Bloomington and Normal. The proposed bikeway is eight to ten feet wide with a three foot clearance area on either side. It begins on the north end of Normal, near Henry Street and Old Route 66.

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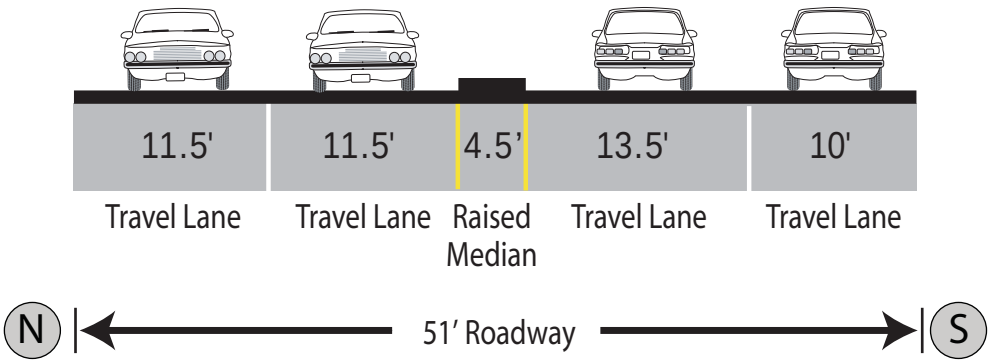
Appendix C. Bike Lane Retrofit Graphics

The bike lane retrofit graphics presented in this appendix are intended to serve as guidance as the Town of Normal implements the bike lane retrofit projects described in Chapter 4 and illustrated on Map 5. The graphics provide a snapshot of proposed roadway striping modifications at a specific point along each roadway corridor. Further feasibility analysis may be needed as physical conditions (e.g., curb-to-curb widths) may vary along each corridor.

Existing Conditions



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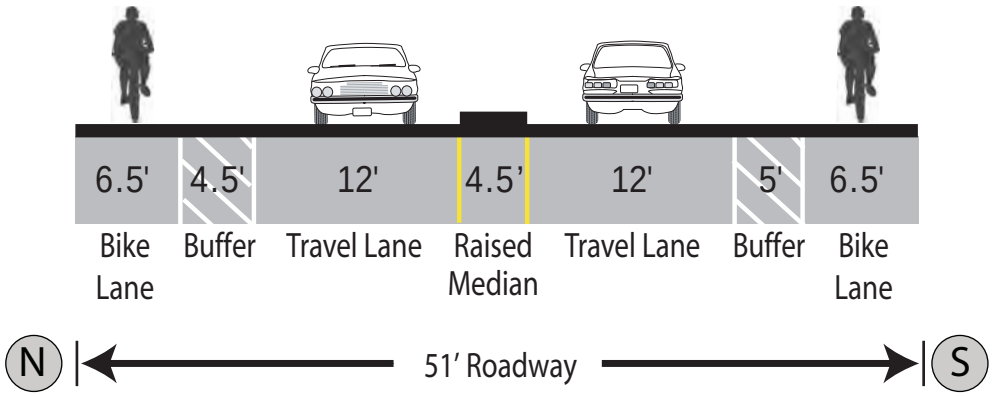
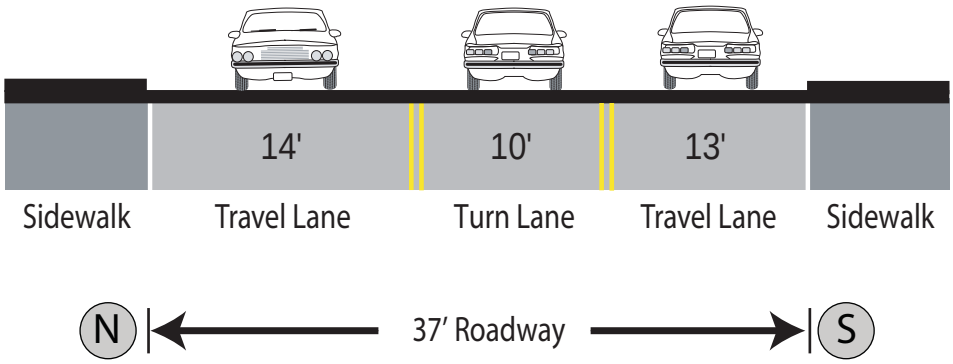


Beaufort Street - Main to School

Existing Conditions



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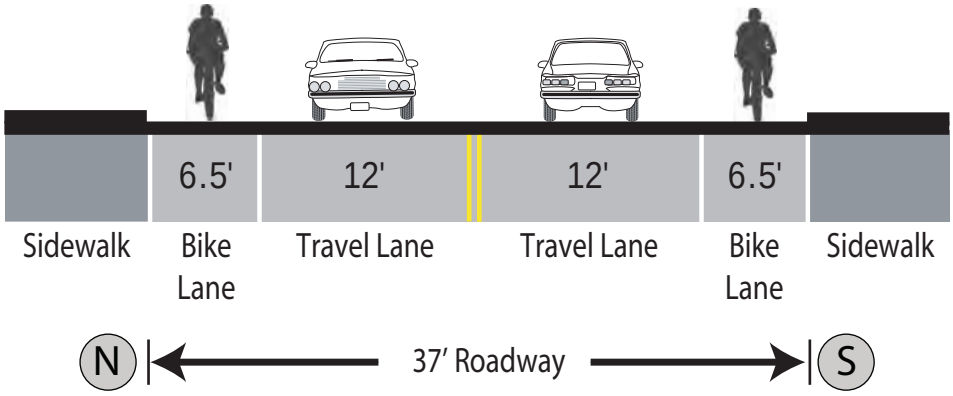
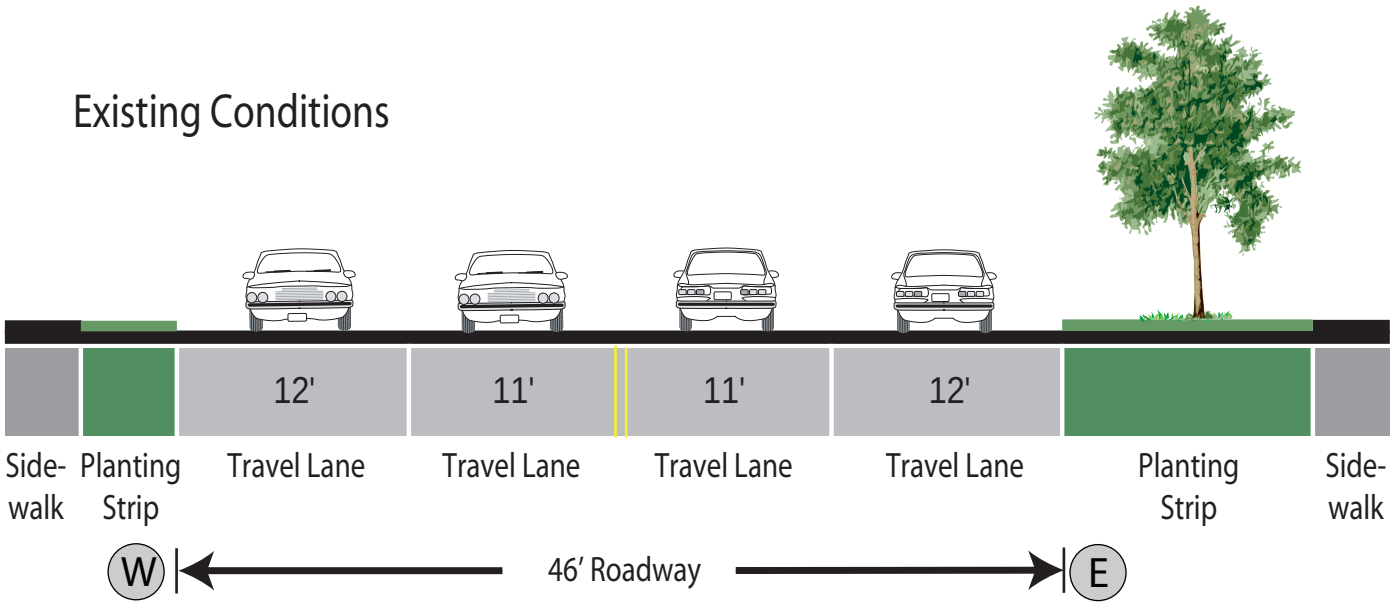


Beaufort Street - School to Fell

Existing Conditions



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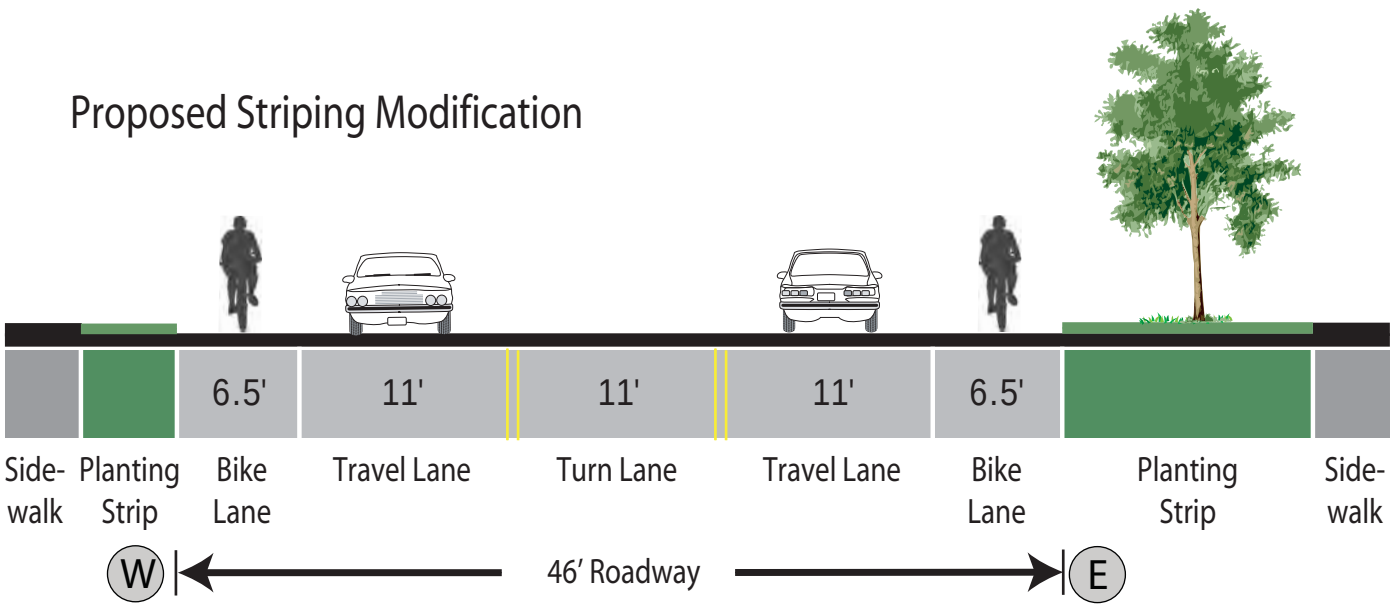

Beech Street - Pine to Shelbourne

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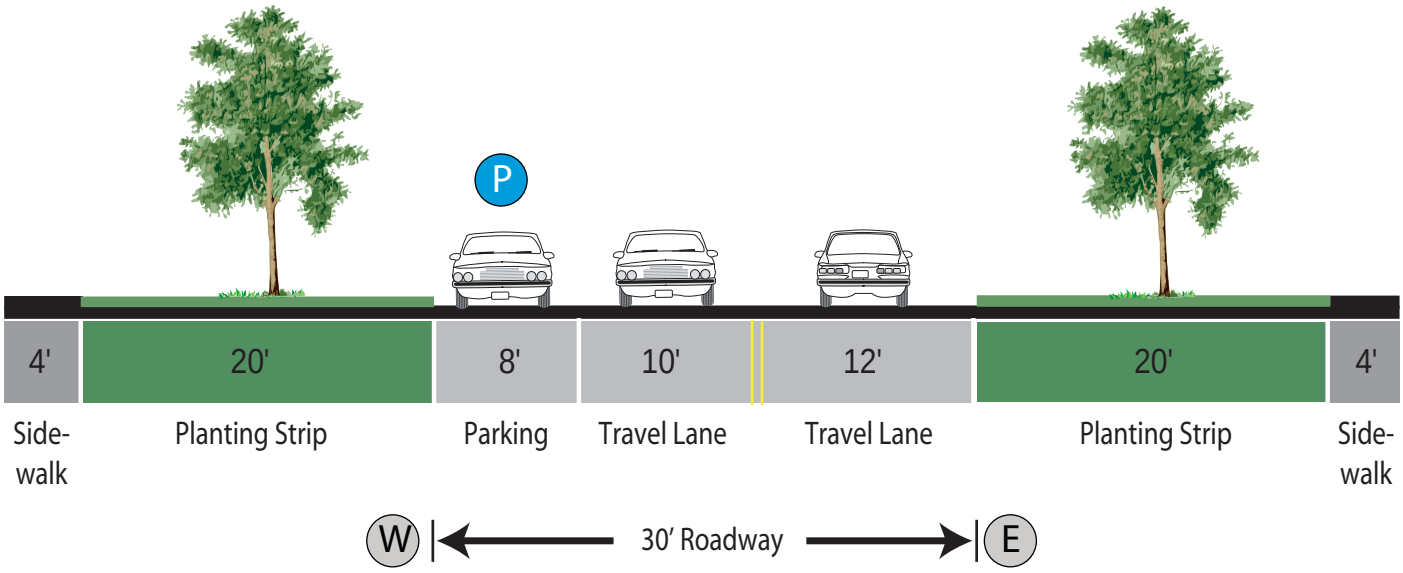

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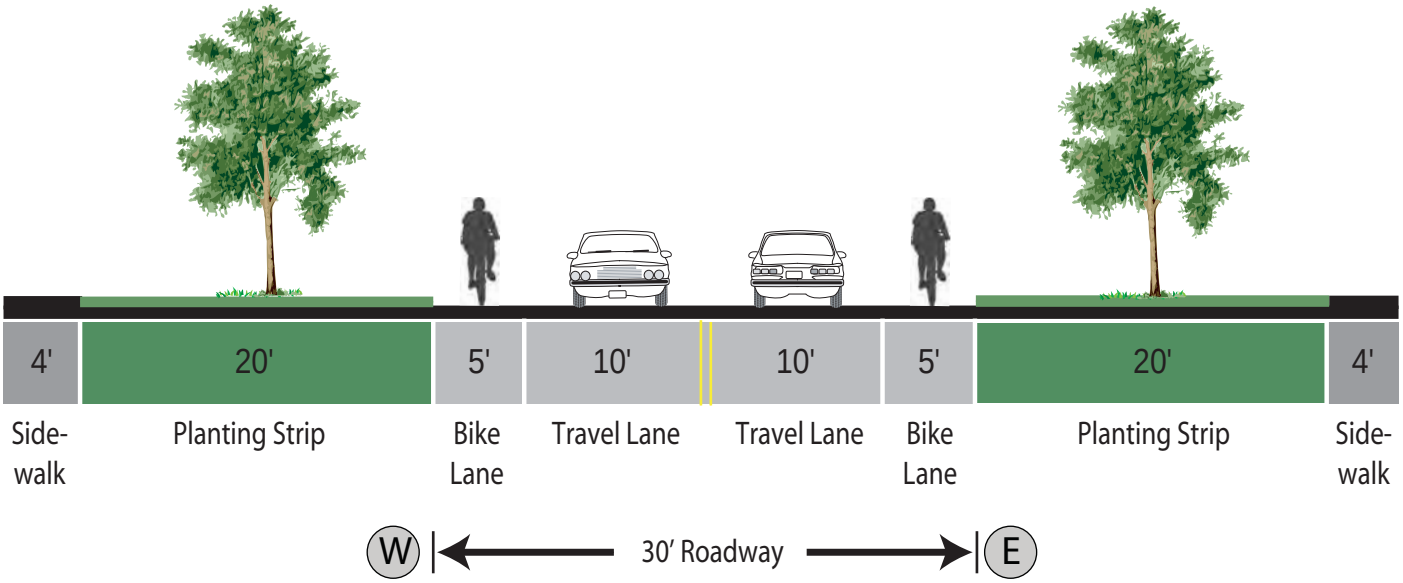

Beech Street - Shelbourne to Raab

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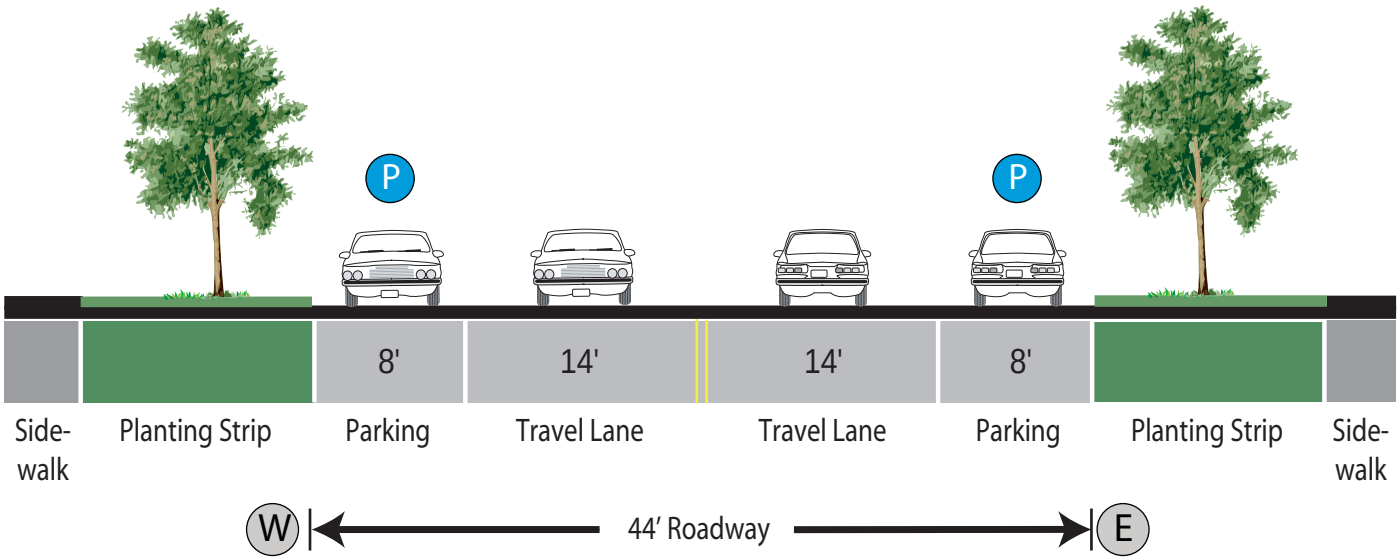

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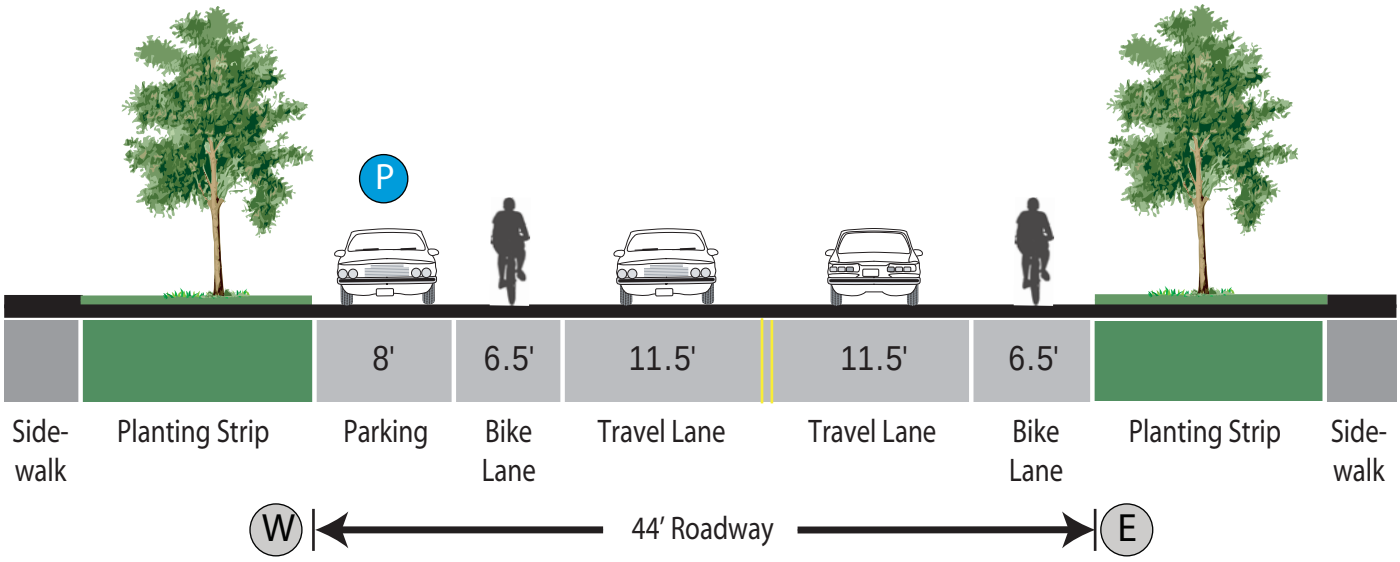
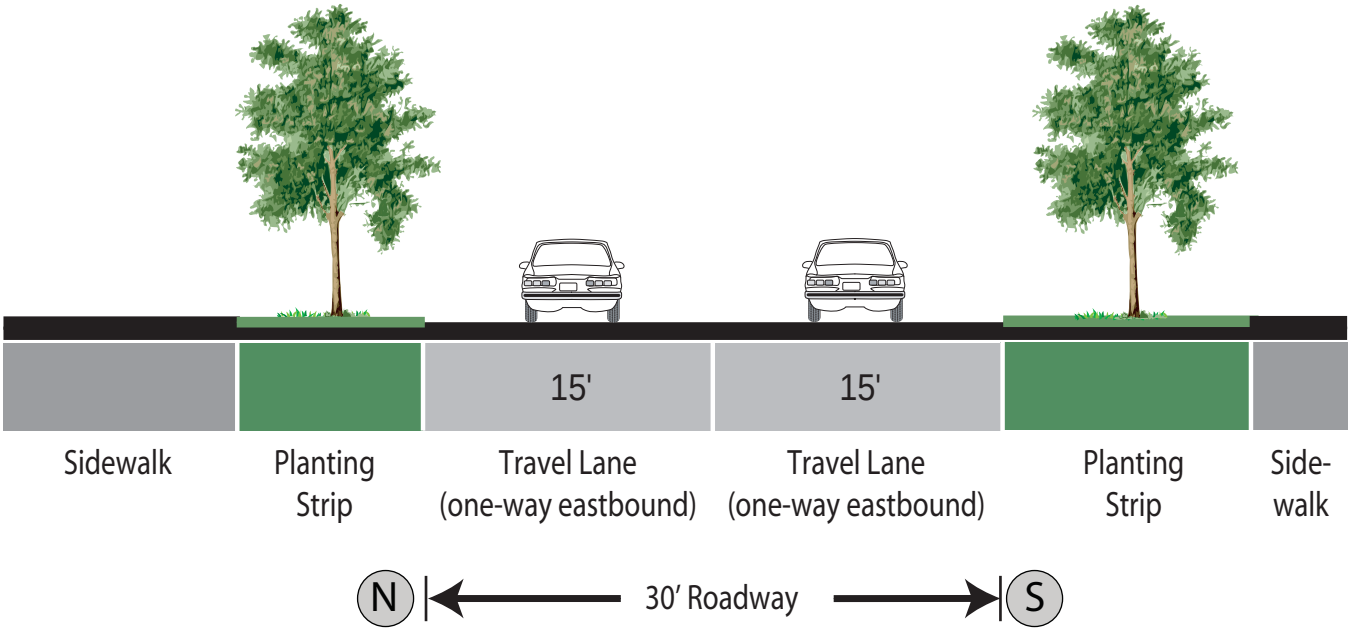


Blair Drive - College to Fort Jesse

Existing Conditions



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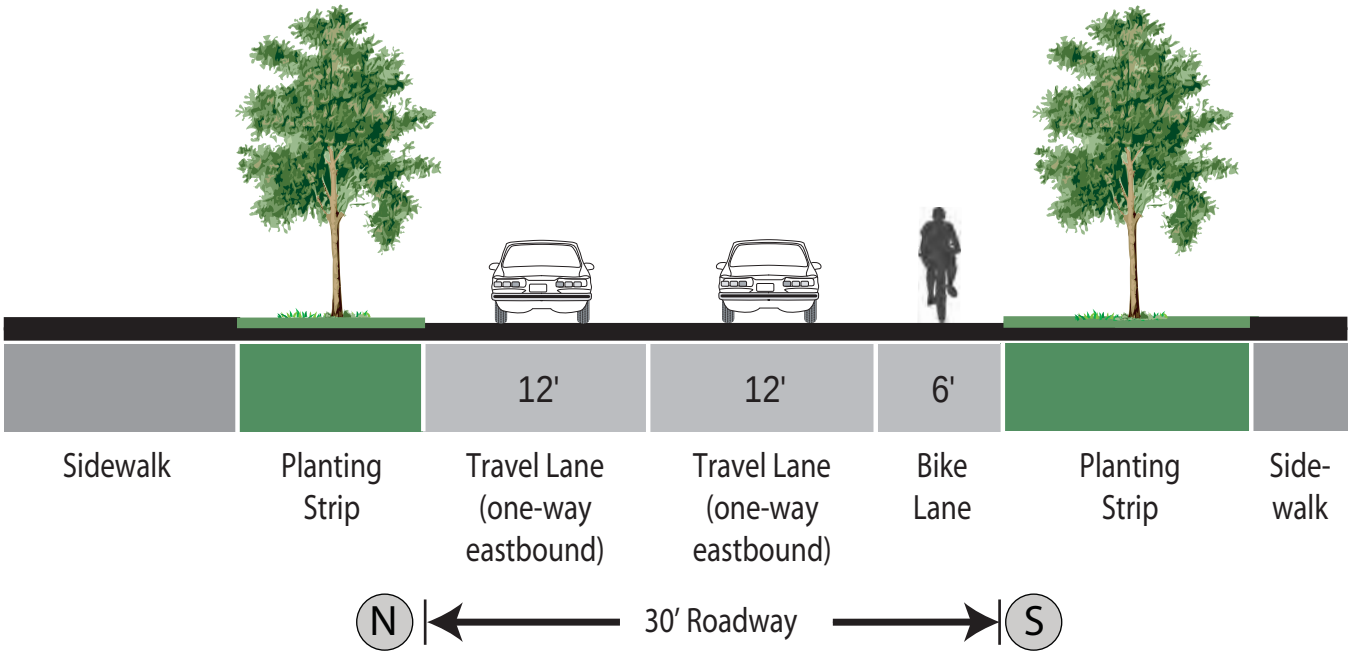
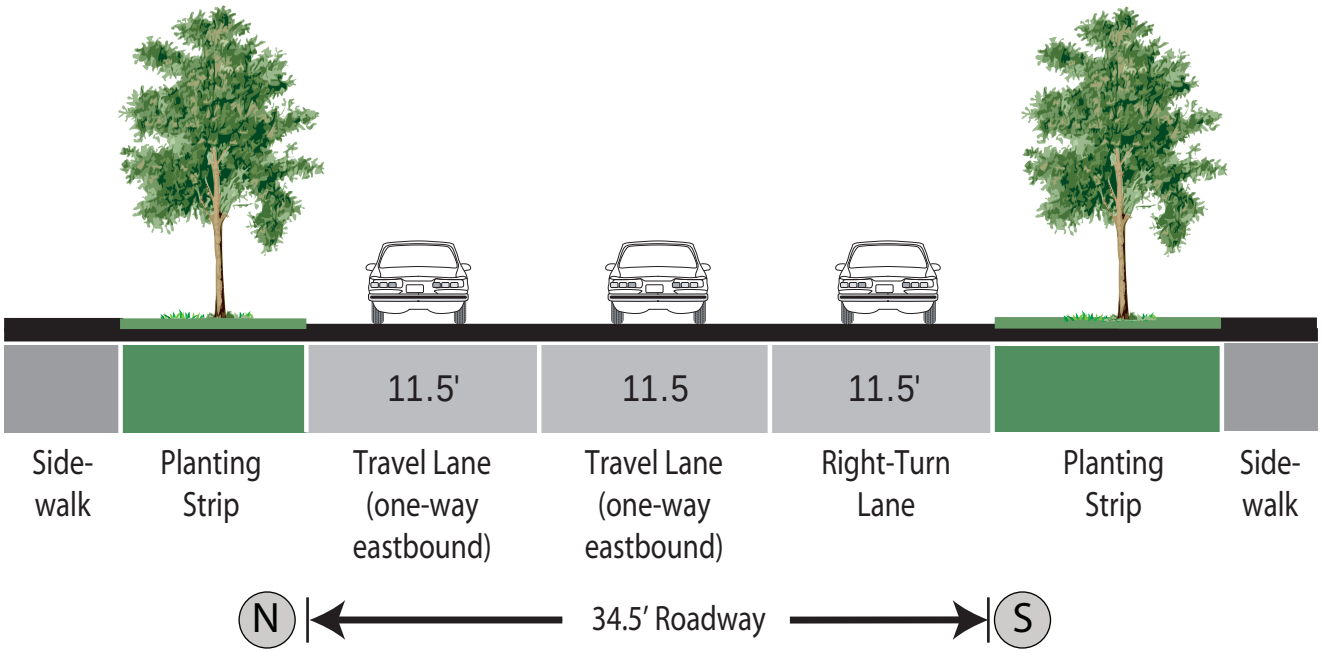


College Avenue - Broadway to Linden

Existing Conditions



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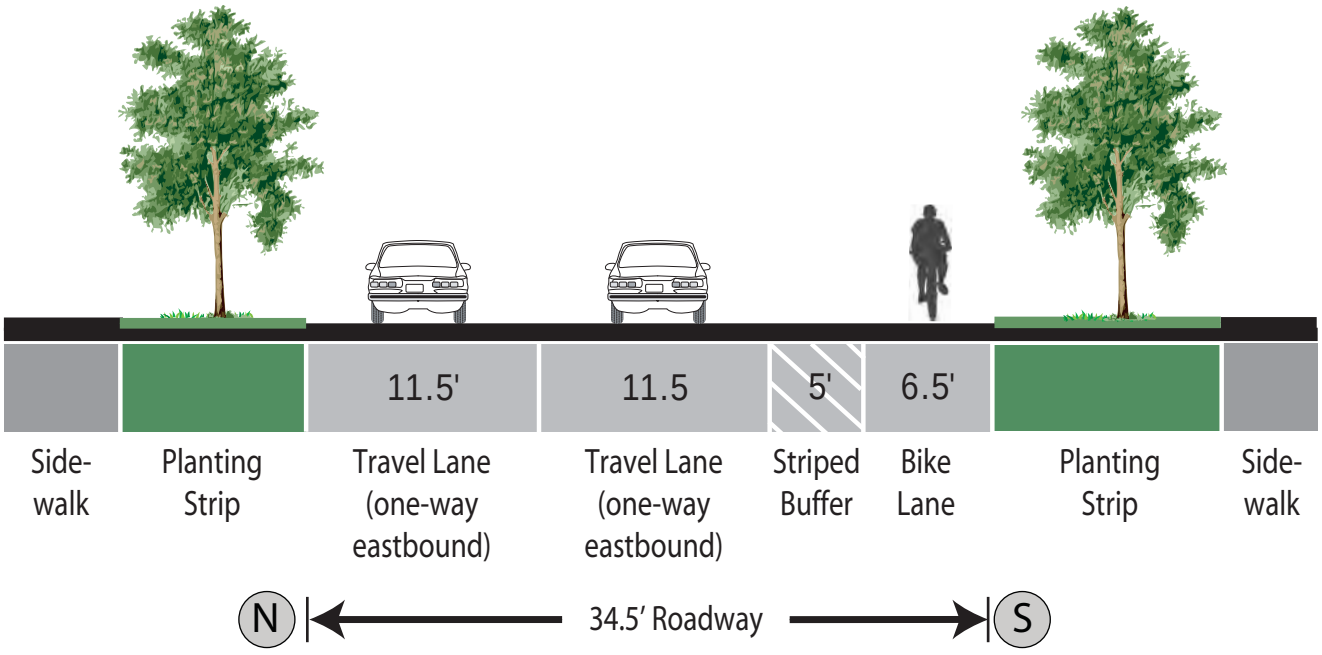

College Avenue (School to Broadway)

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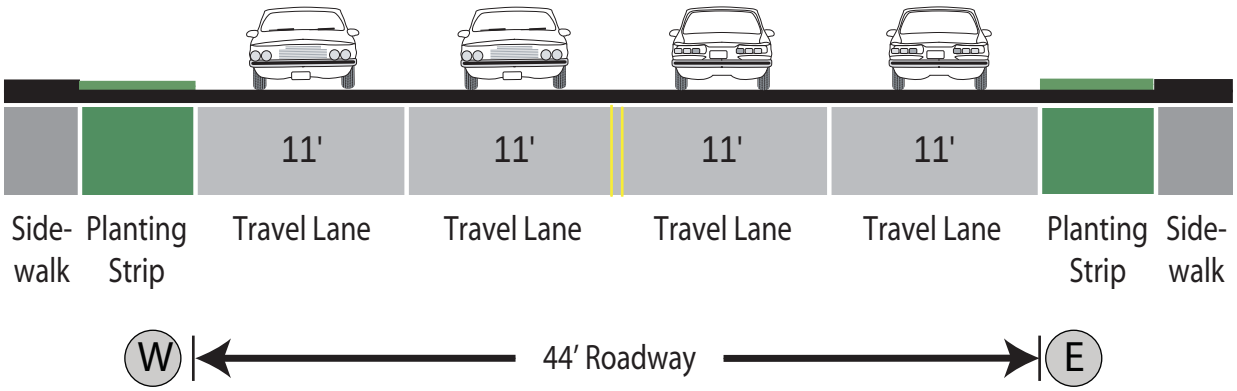

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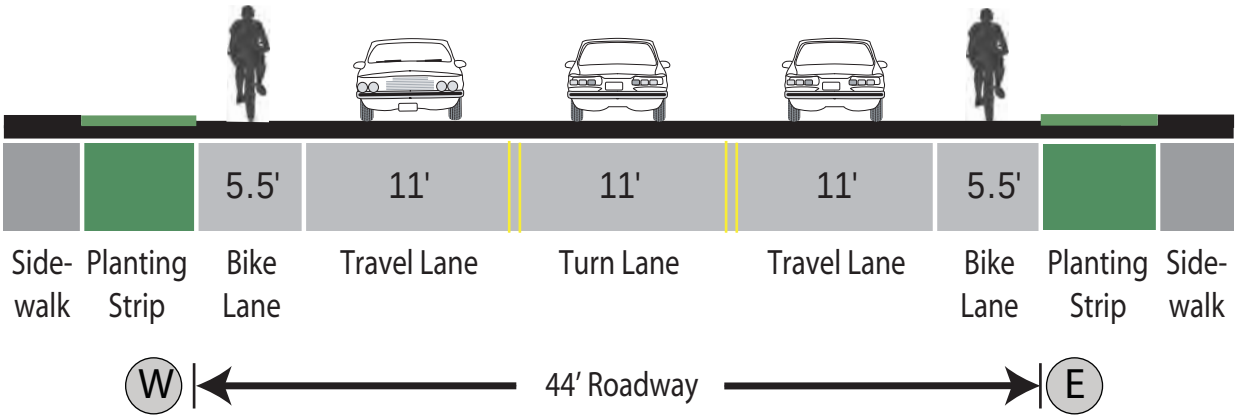

Cottage Avenue - Martin Luther King to College

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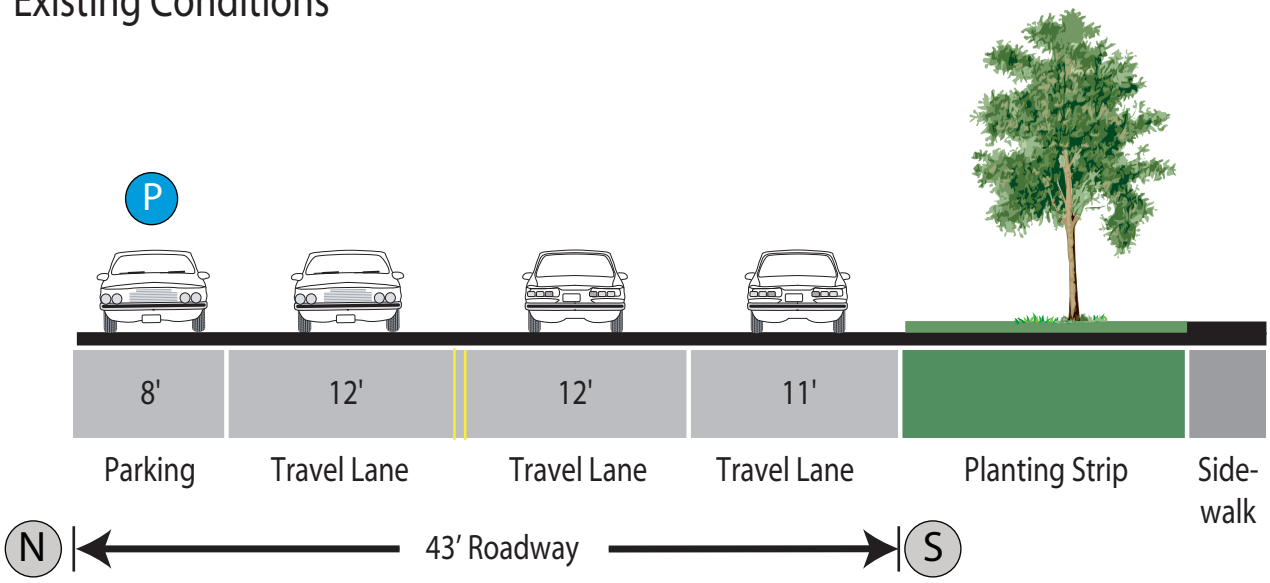

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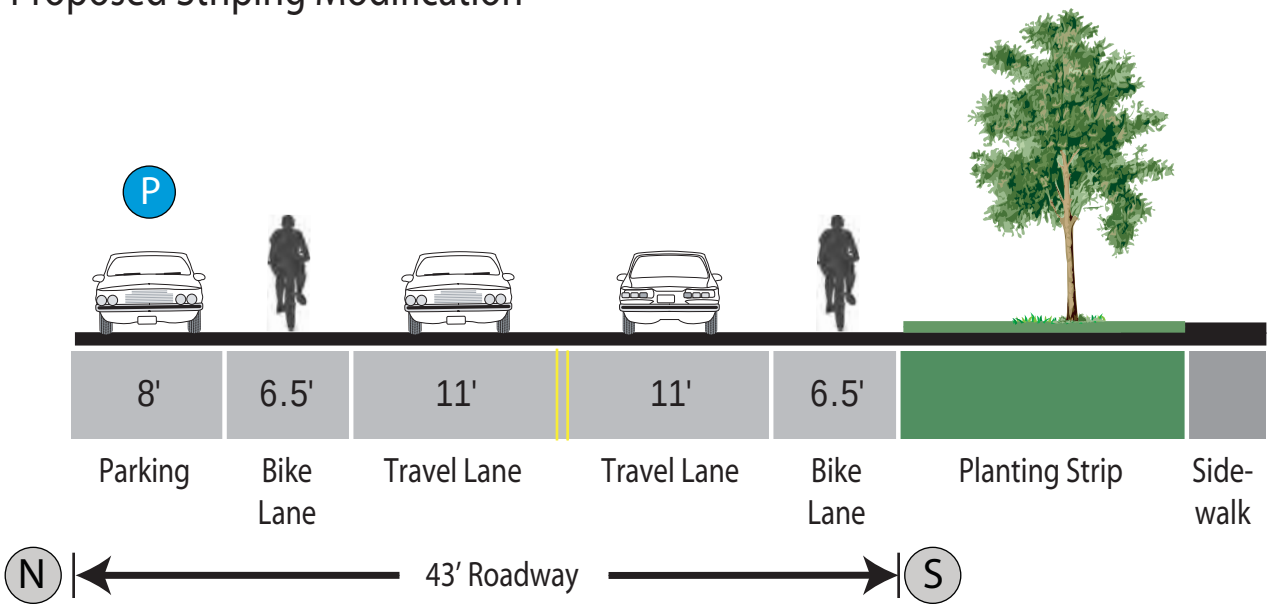

Gregory Street - Cottage to Adelaide

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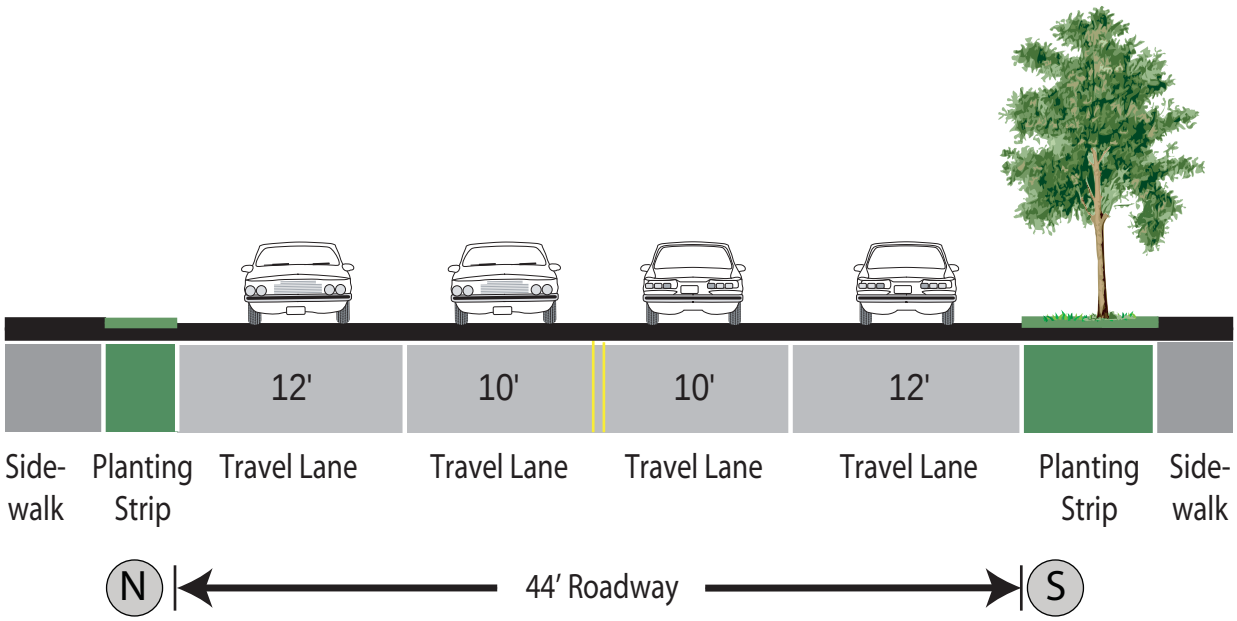

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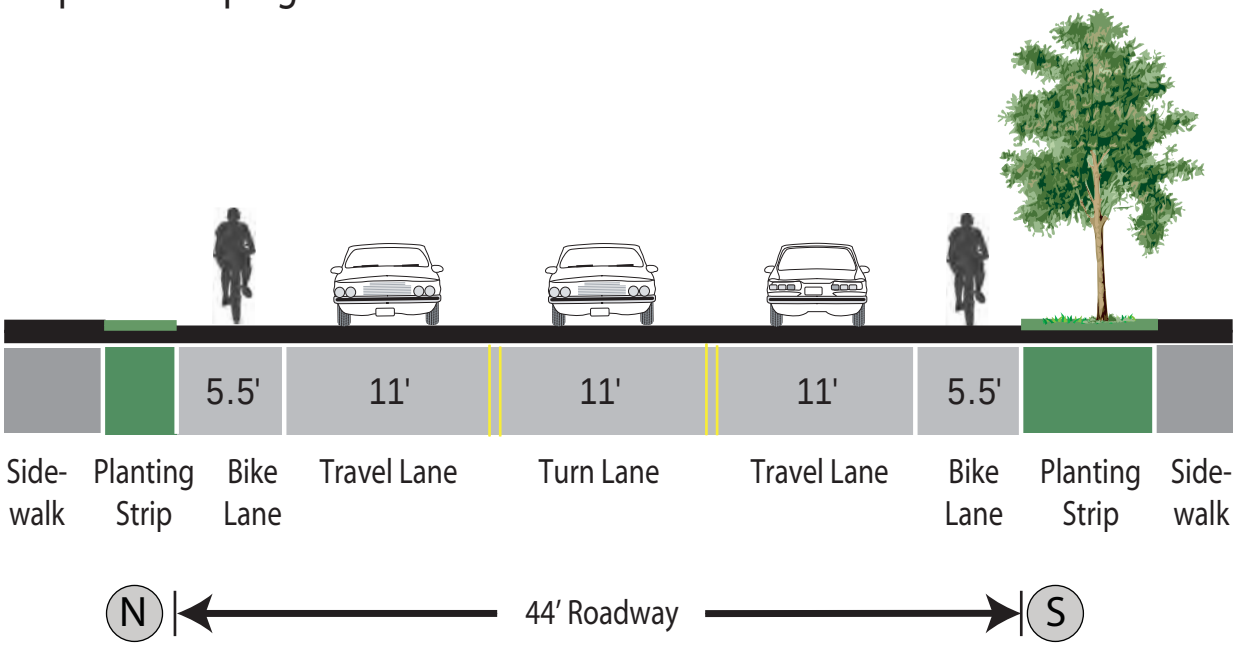

Hovey Avenue - Cottage to Main

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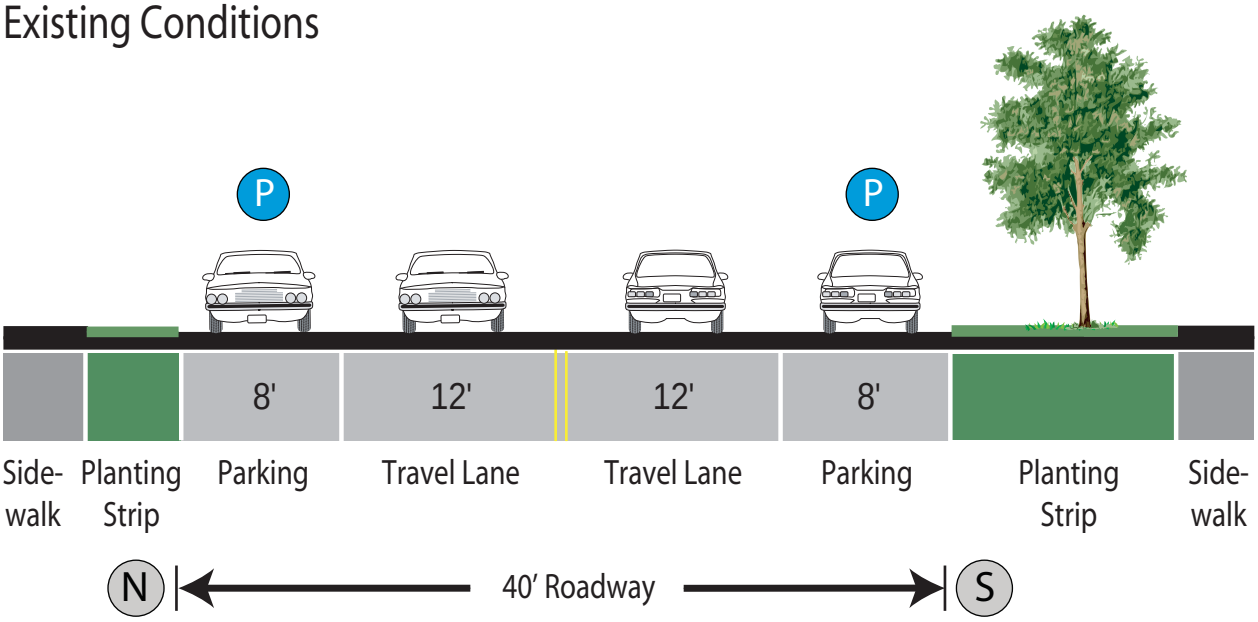

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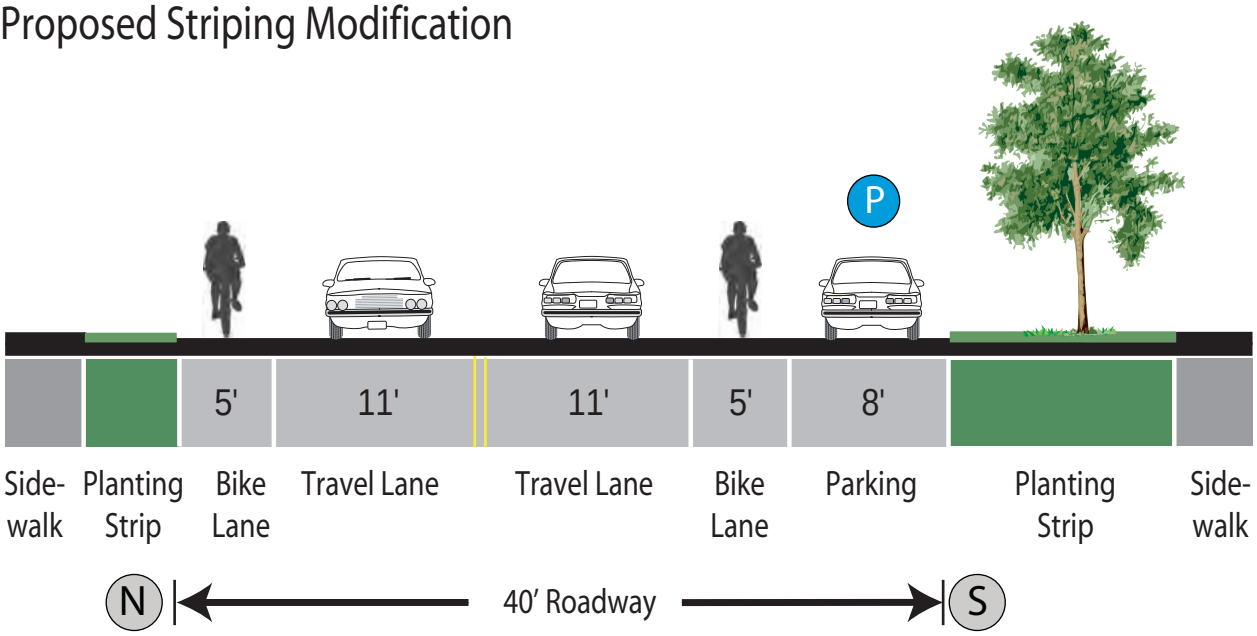

Jersey Avenue - Linden to Towanda

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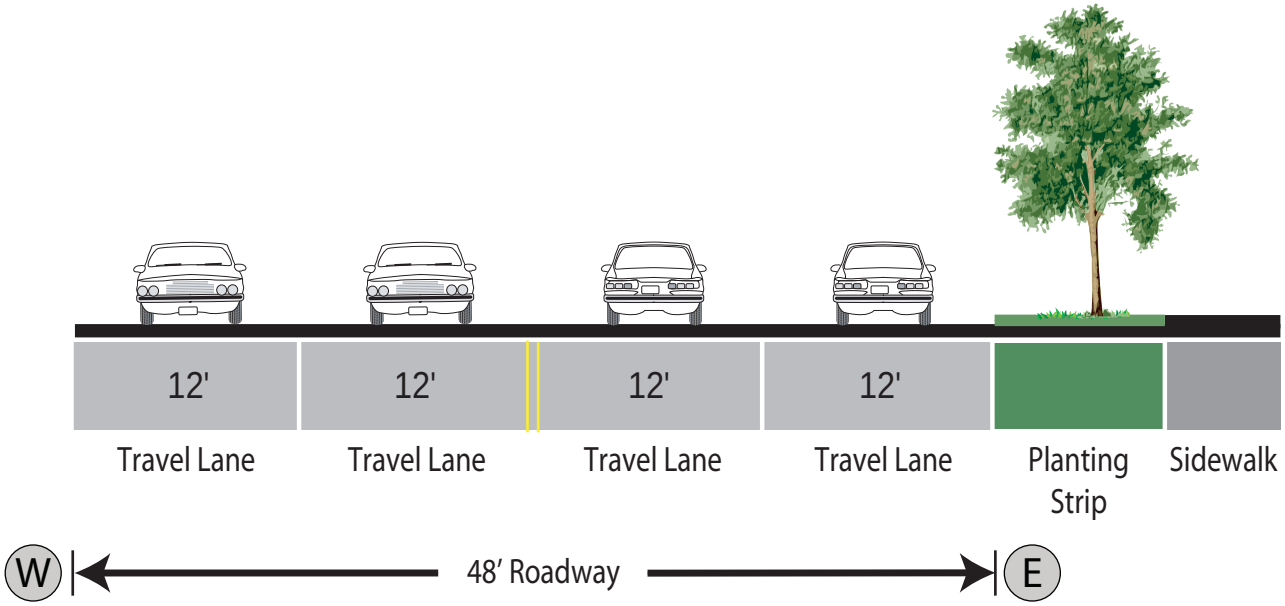

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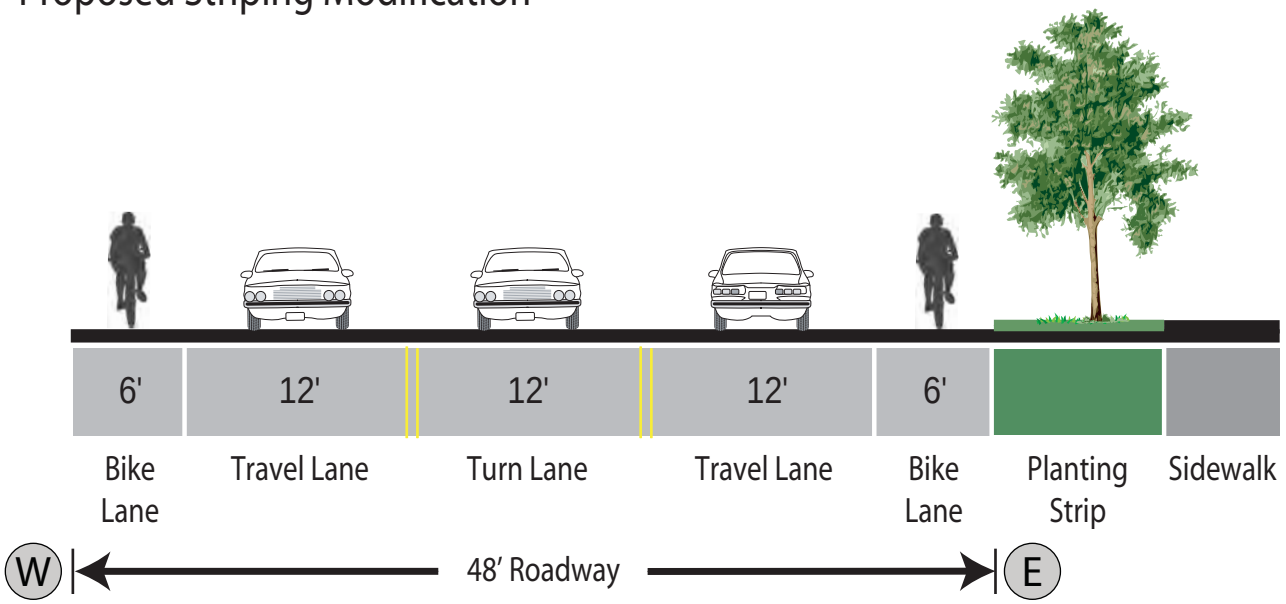

Landmark Drive - College to Fort Jesse

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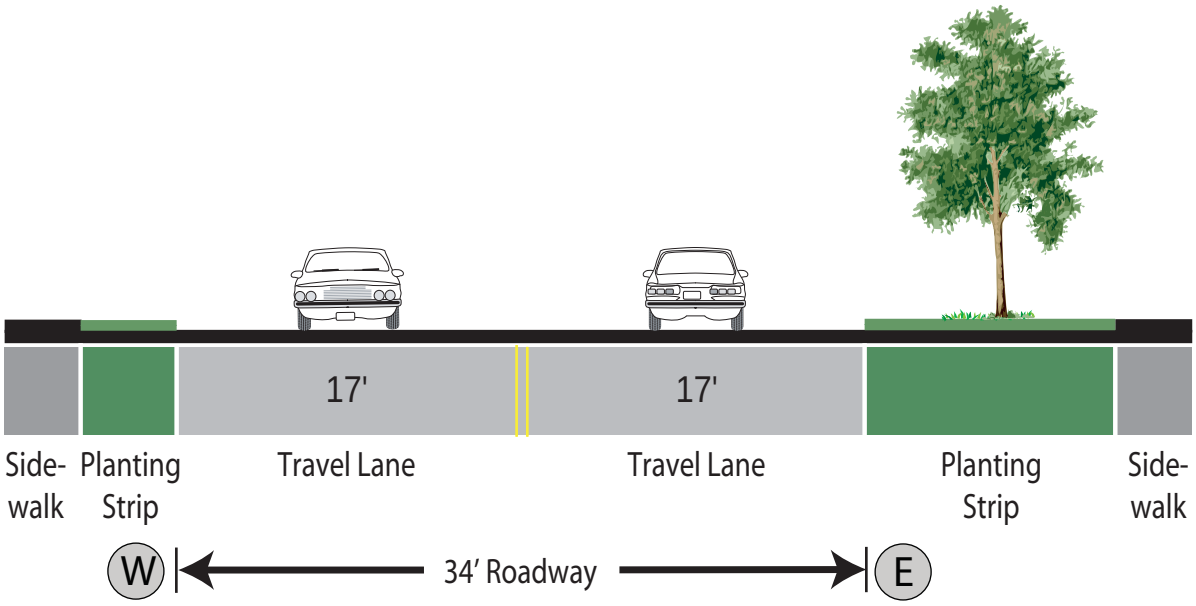

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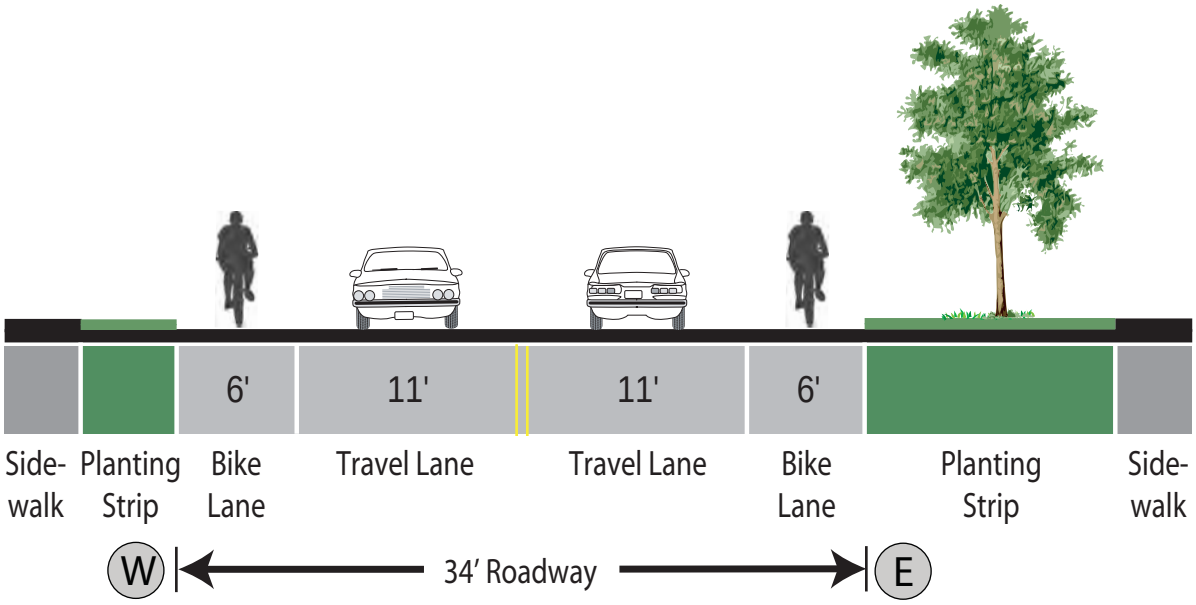

Linden Street - Cypress to Pine

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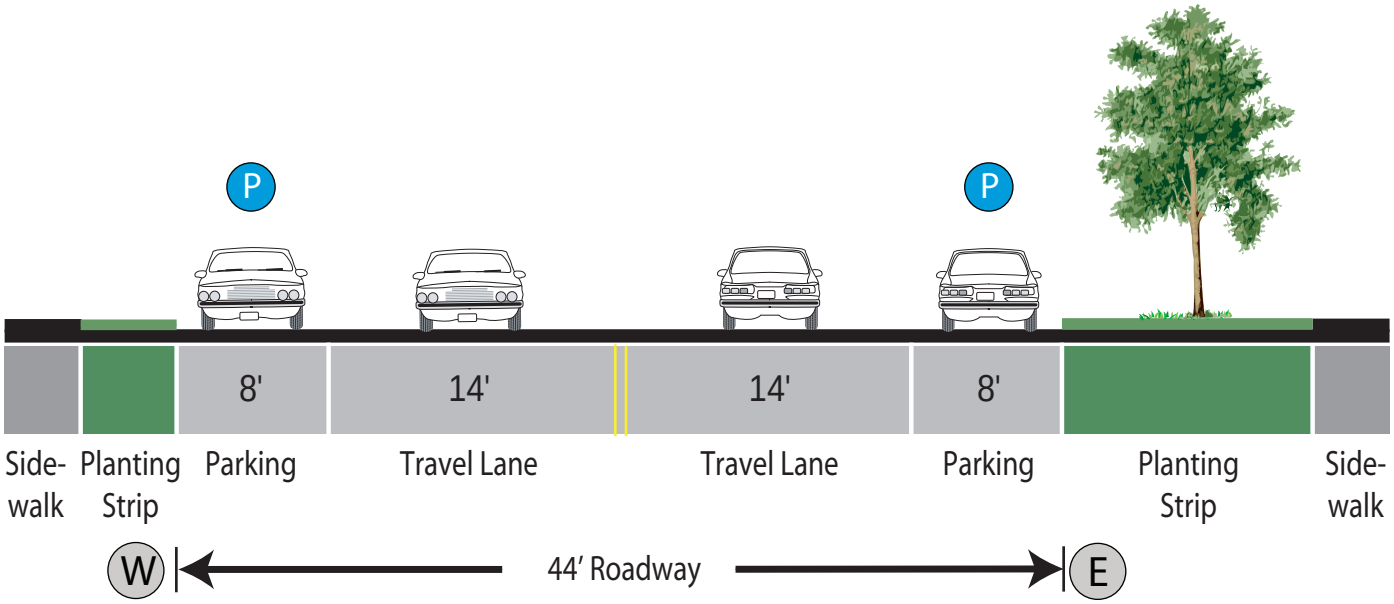

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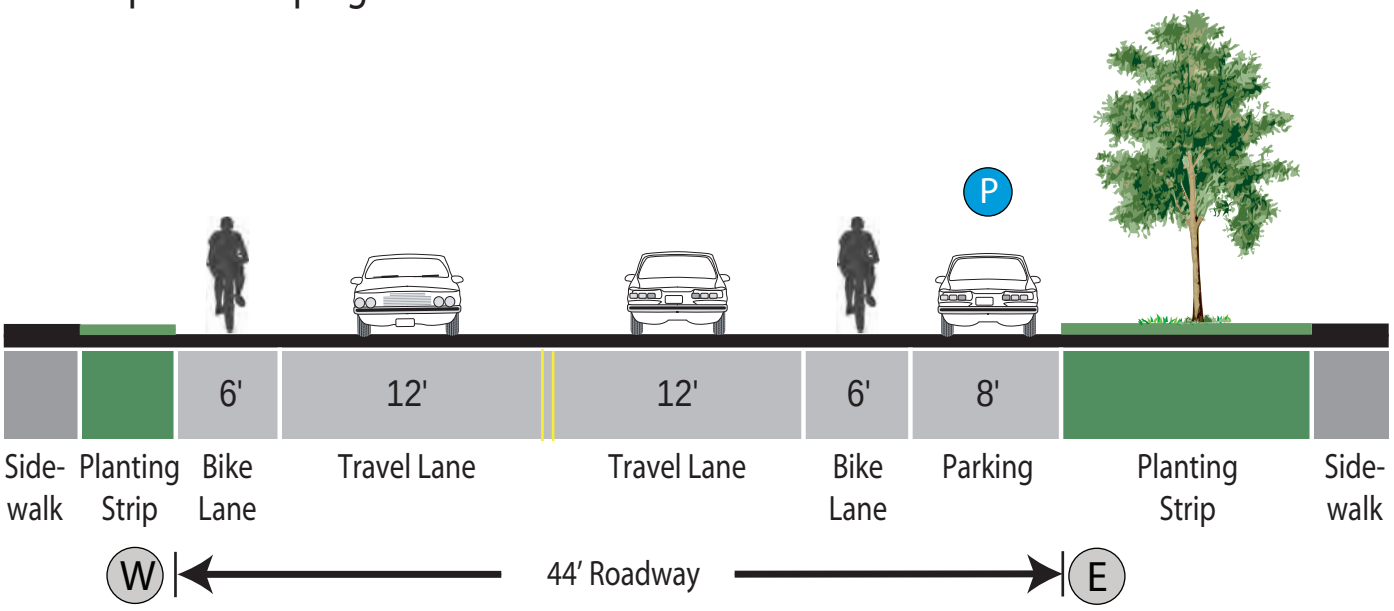

Linden Street - Pine to Shelbourne

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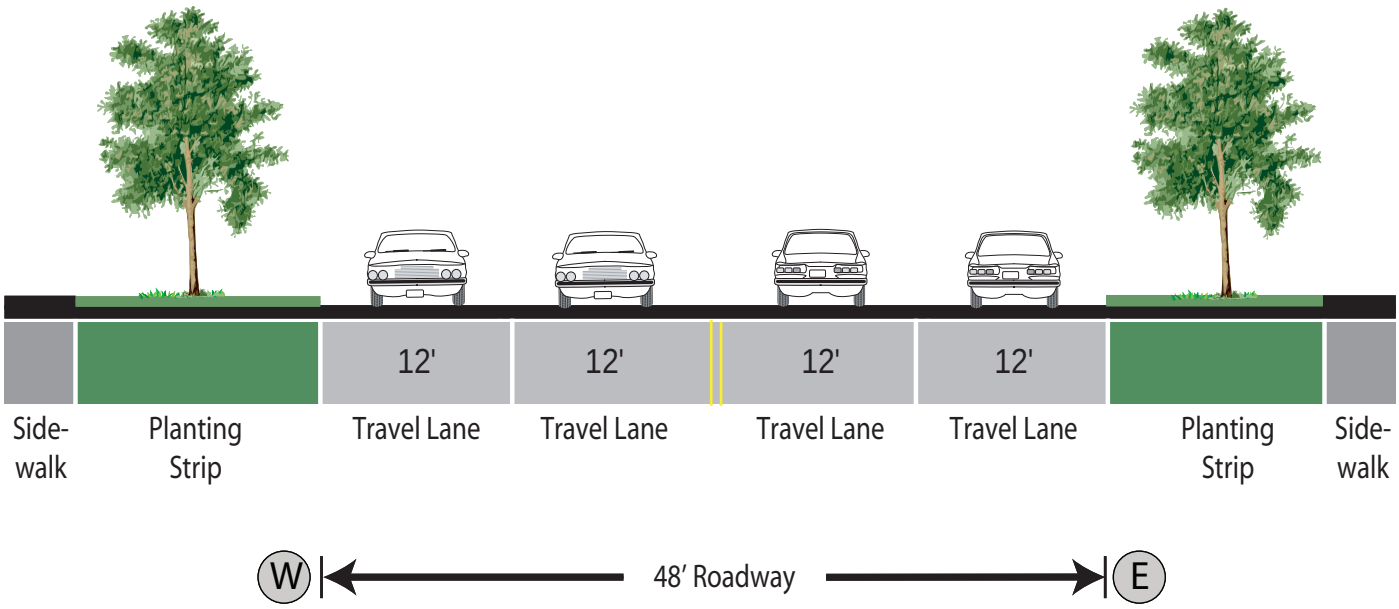

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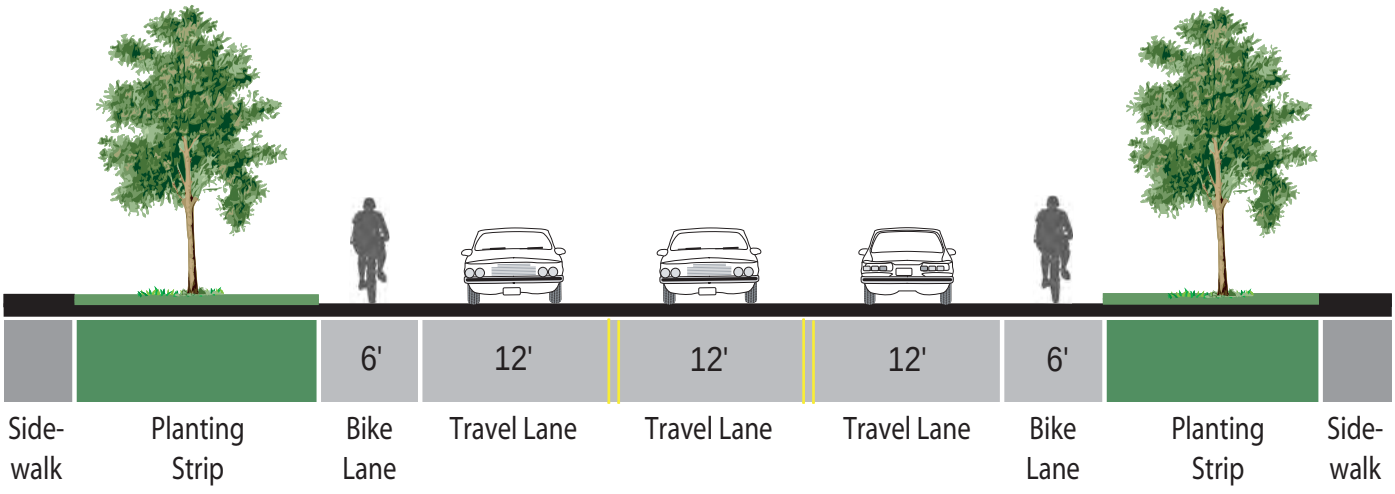

Linden Street - Shelbourne to Raab

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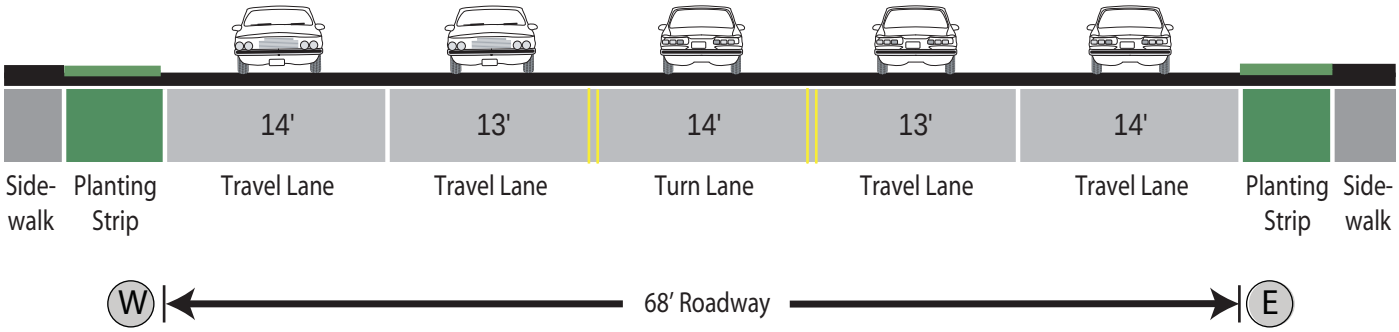
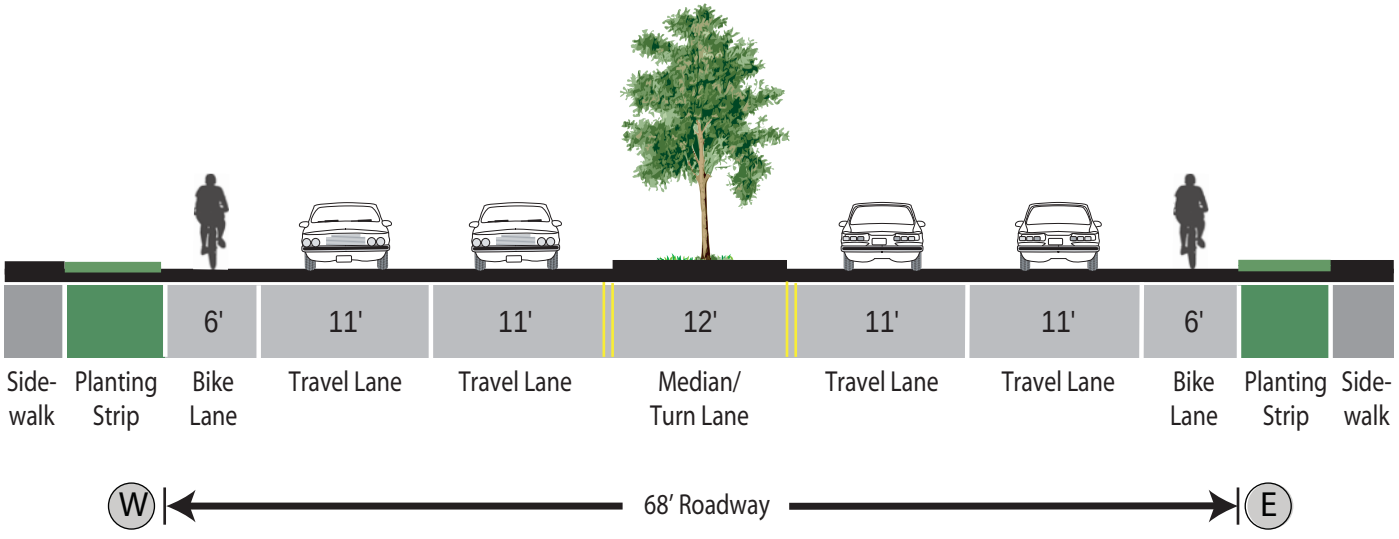
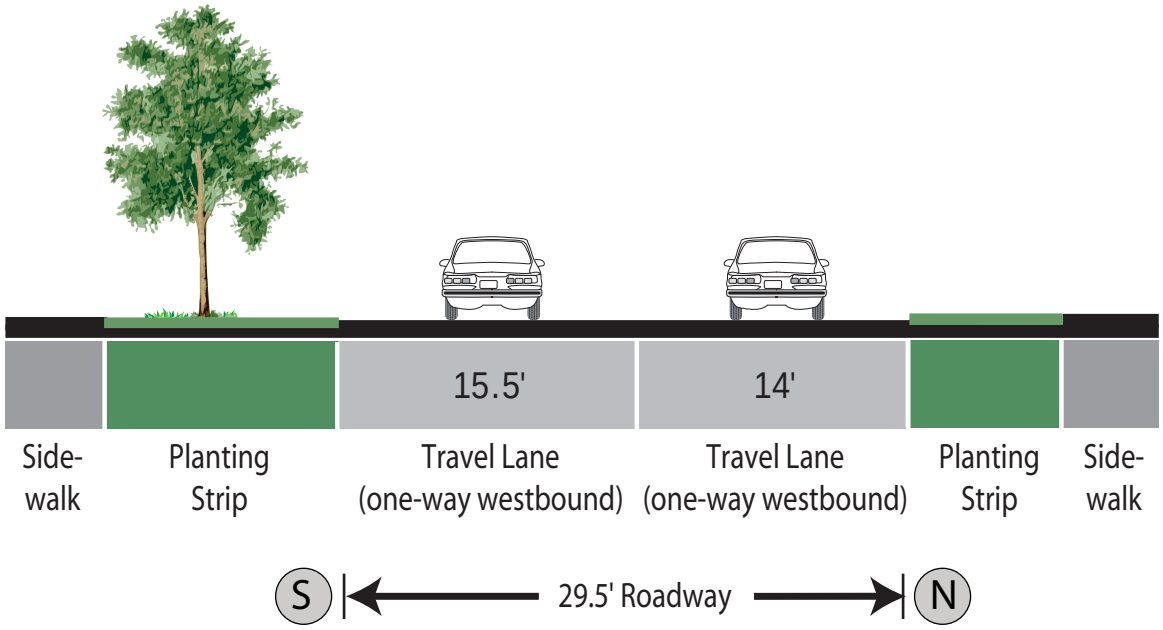


Proposed Striping Modification

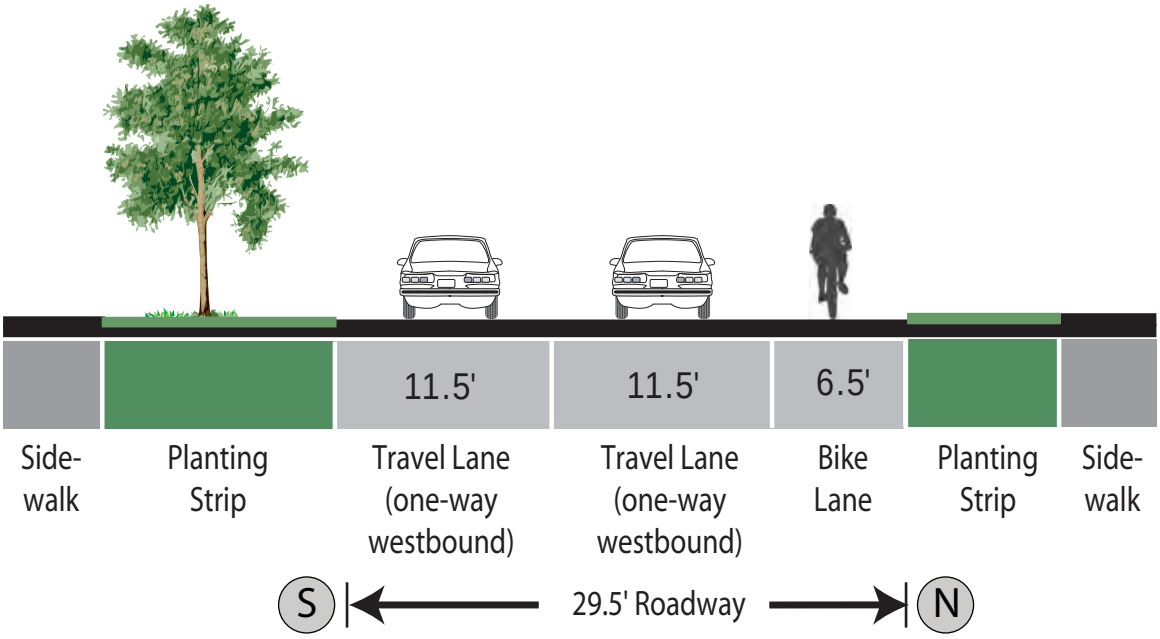


Main Street - College to Raab

Existing Conditions

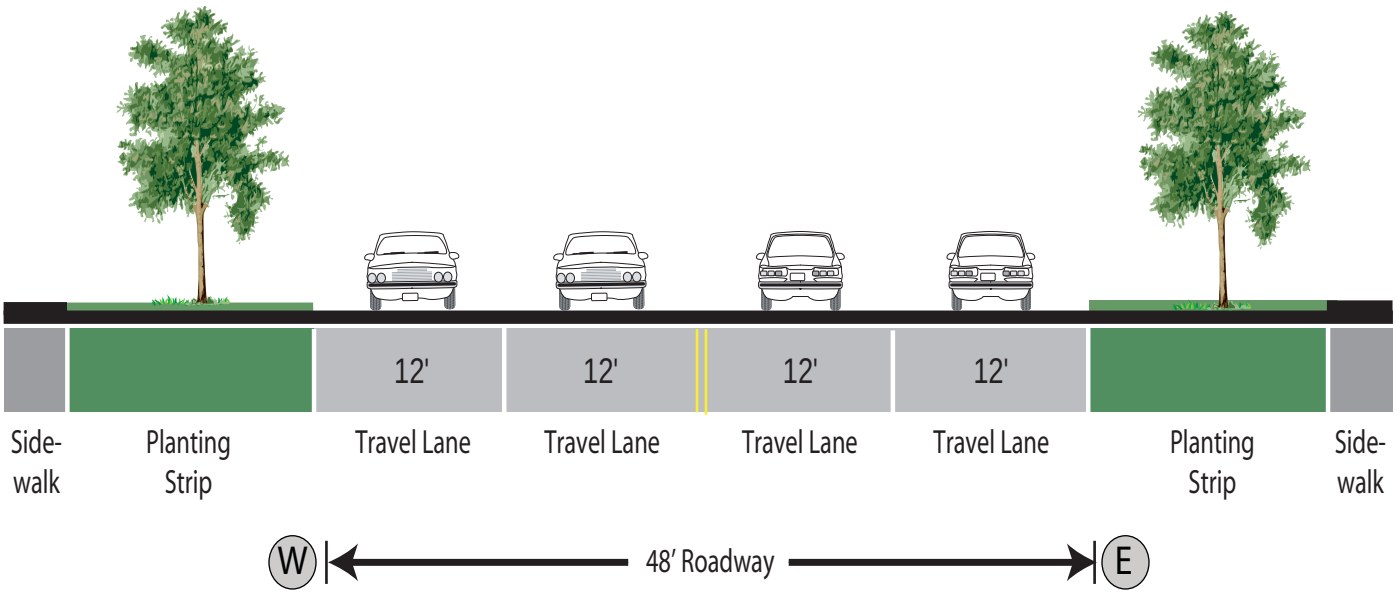


Proposed Striping Modification



Mulberry Street - Linden to School

Existing Conditions



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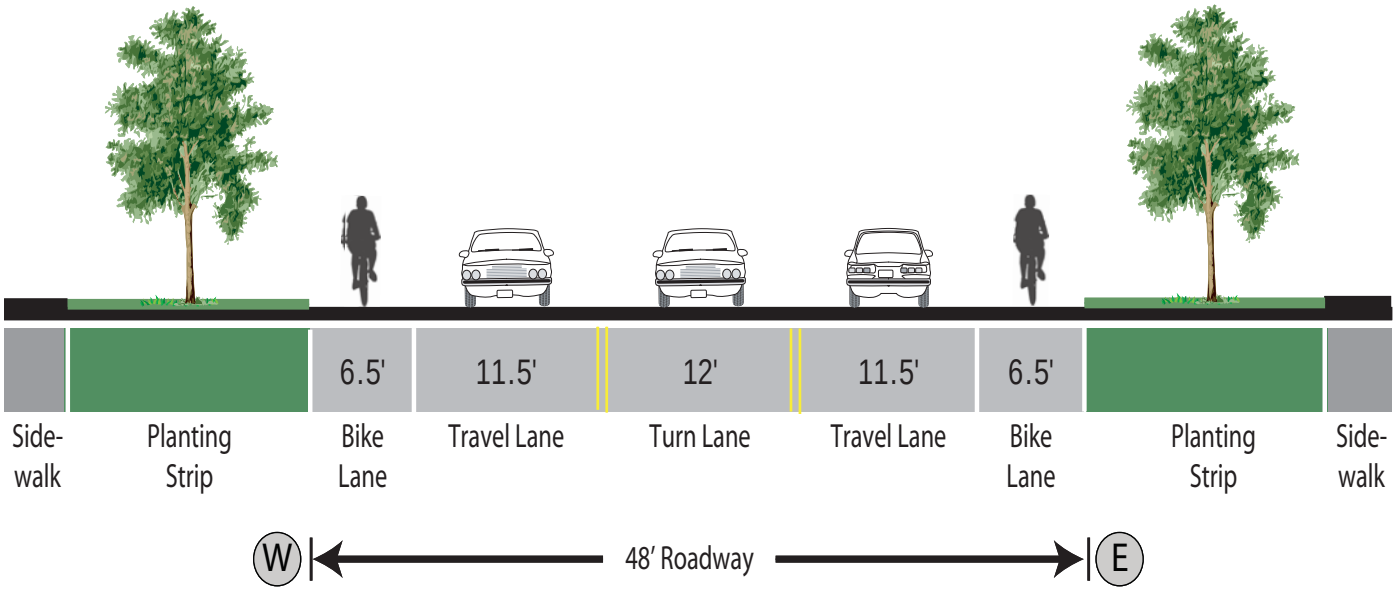
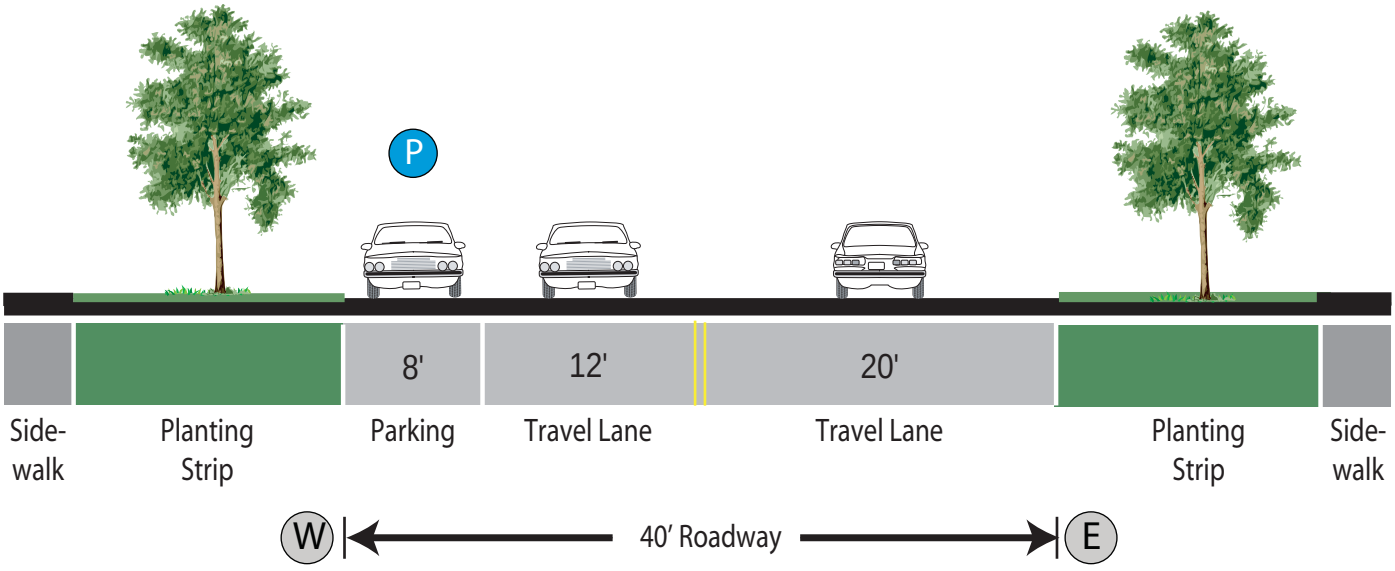
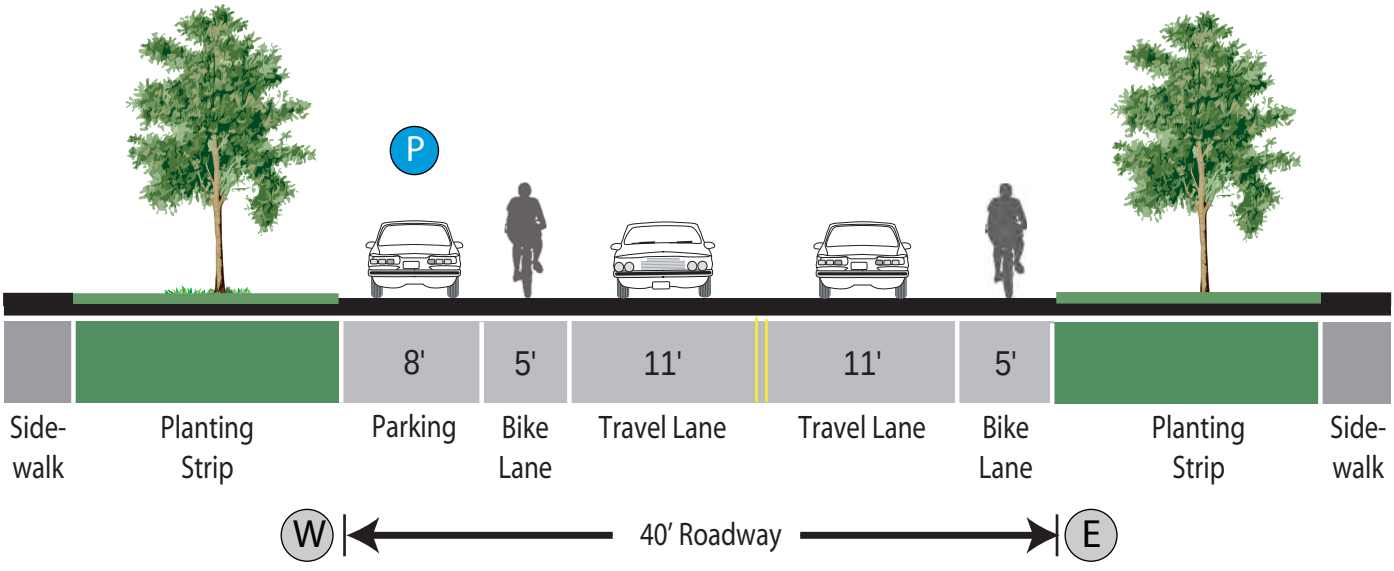


Parkside Road - Gregory to Raab

Existing Conditions

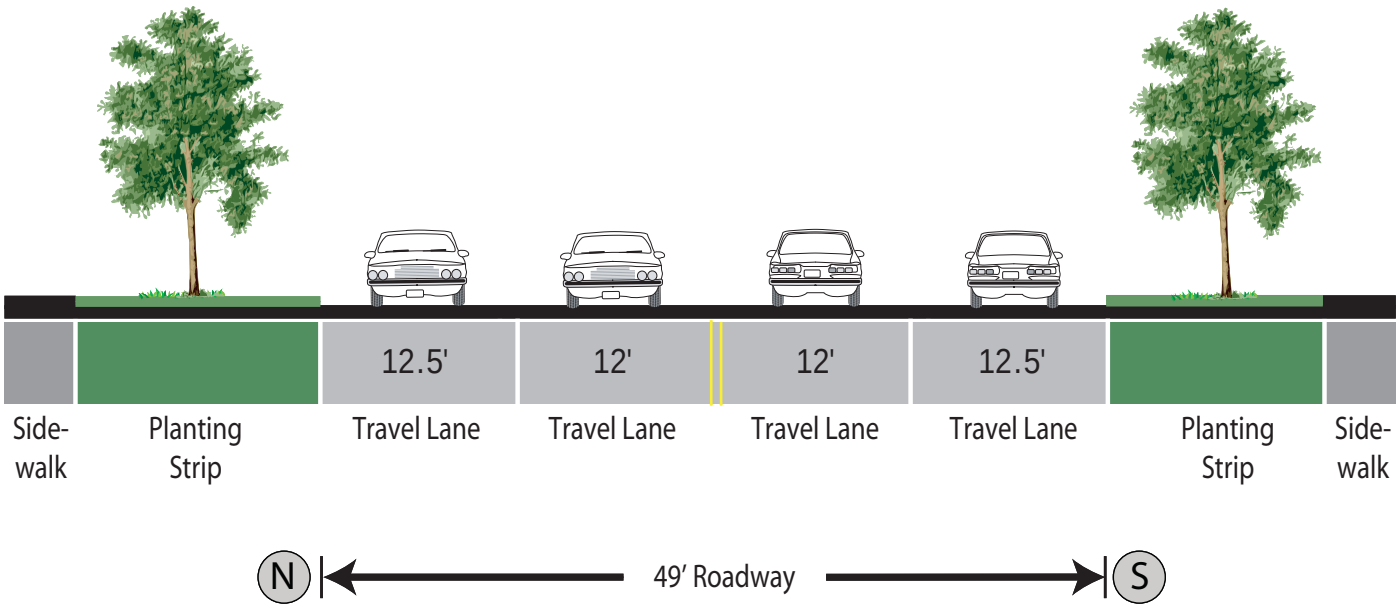


Proposed Striping Modification

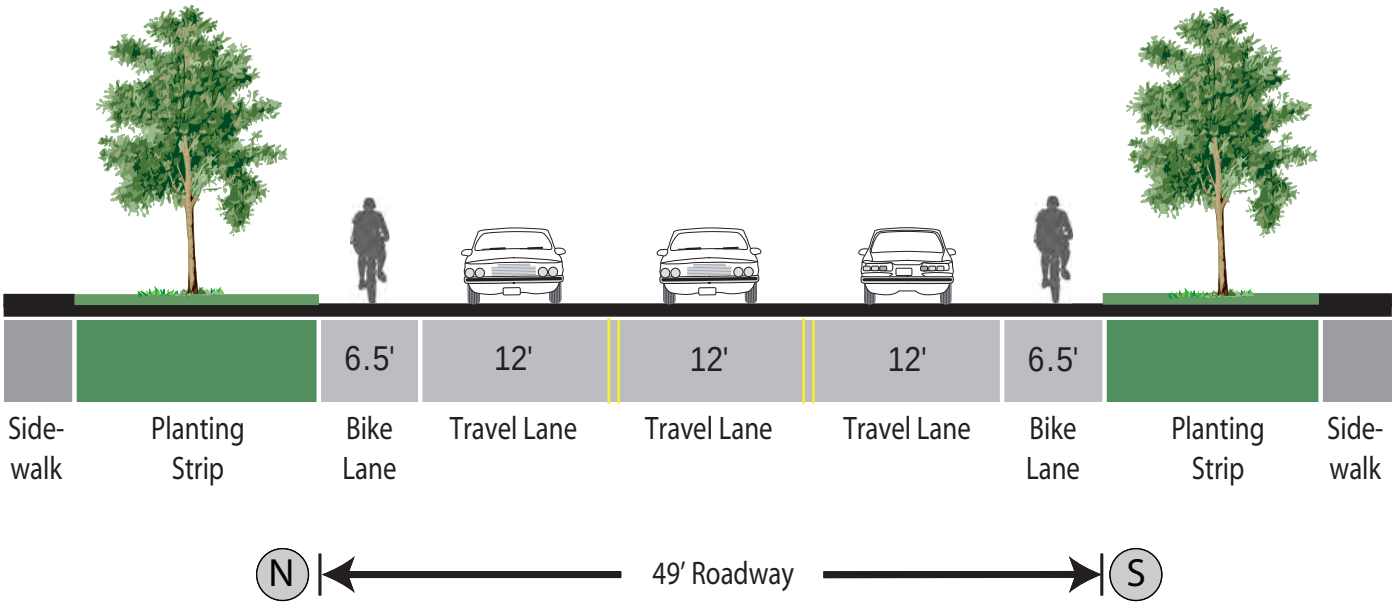


Parkside Road - Hovey to Gregory

Existing Conditions

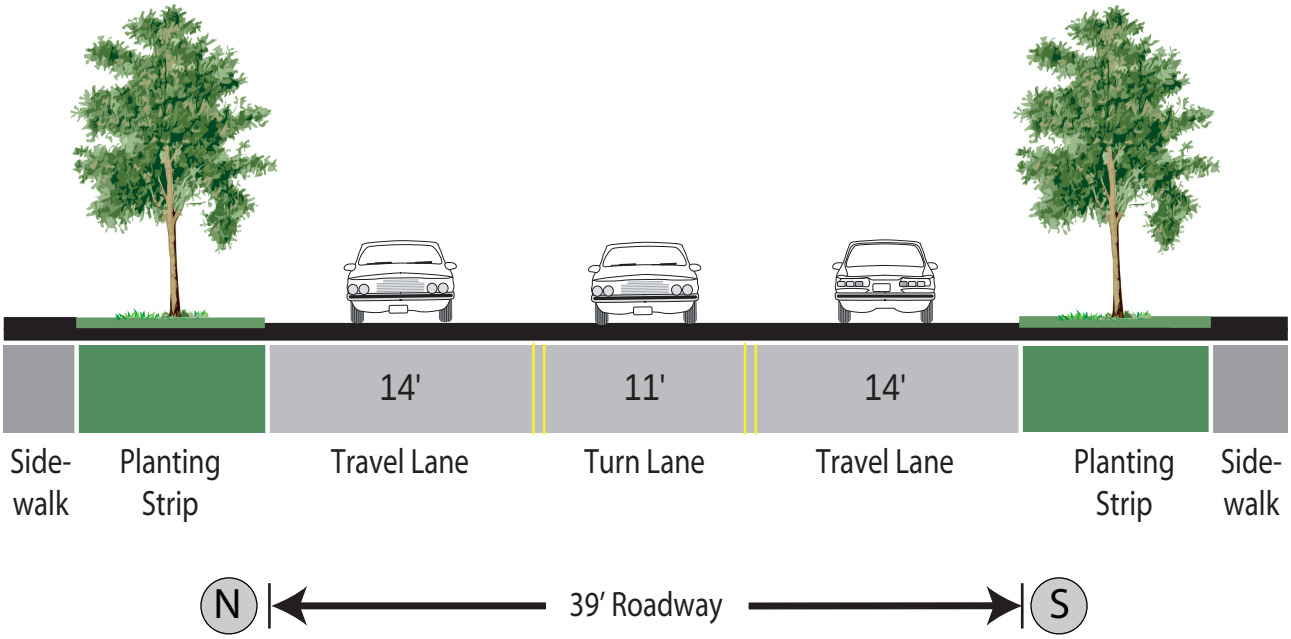


Proposed Striping Modification

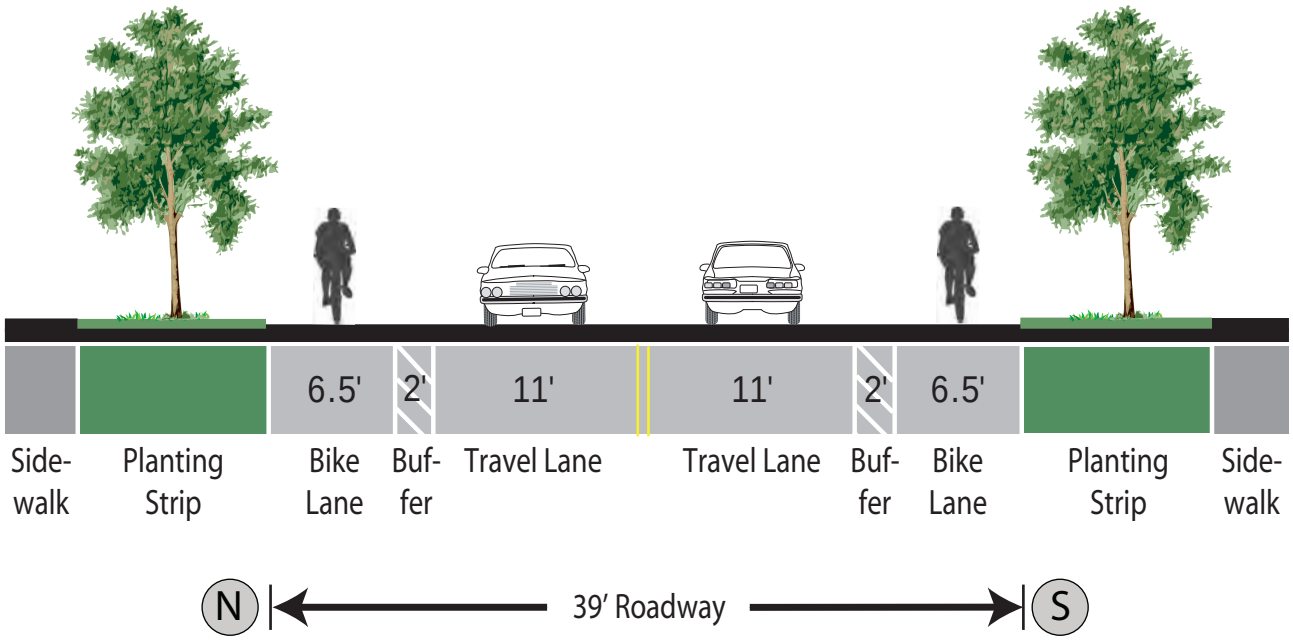


Shelbourne Drive - Beech to Towanda

Existing Conditions

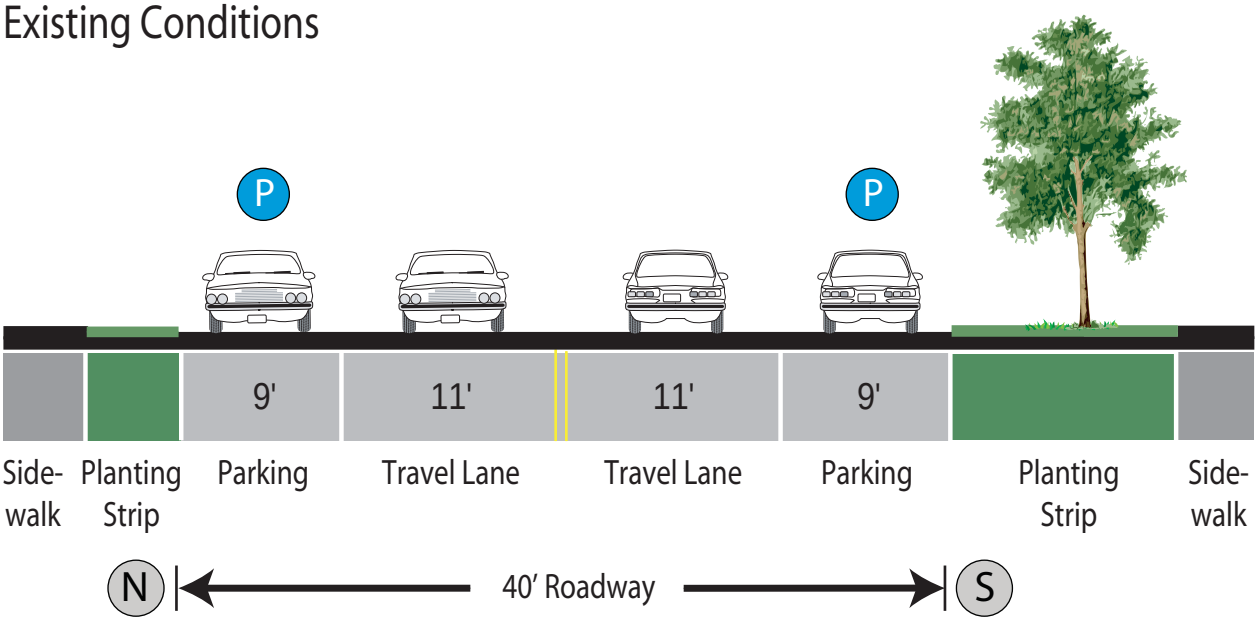


Proposed Striping Modification

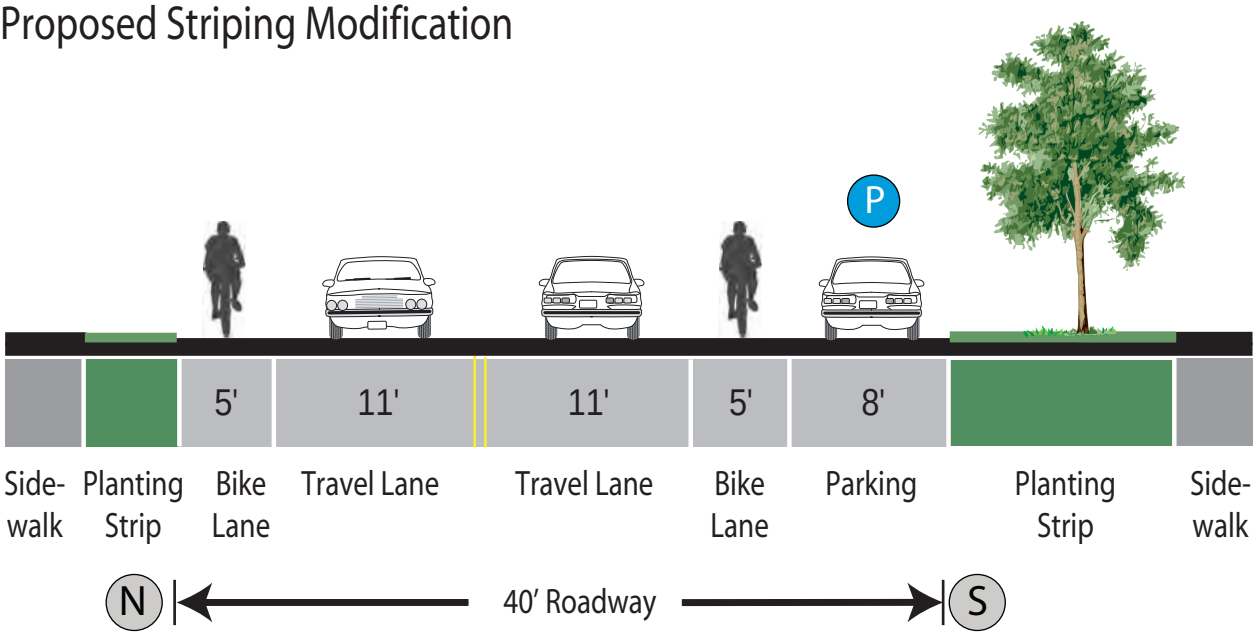


Shelbourne Drive - Walnut to Beech

Existing Conditions



Proposed Striping Modification



Summit Street/Shelbourne Drive - Main to Walnut

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Appendix D. Project Evaluation Matrix

A system of "●", "◑", and "○" was used to rate each project. A "●" indicates the project fully meets the criterion under focus, a "◑" indicates mixed or neutral conditions, while a "○" indicates that the project minimally fulfills or does not fulfill the criterion. These ratings were considered together to prioritize projects. Projects fulfilling the greatest number of evaluation criteria received higher scores, correspondingly leading to higher rankings within the overall list.

Intersection Improvements

Project	Overcomes Barriers	System Connectivity	Community Support	User Generator	Land Uses	Safety/ Comfort	Cost	Regional Benefit	Ease of Implementation
Constitution Trail (north/south segment) roadway crossings	●	●	●	◑	◑	●	○	●	●
Veterans Parkway at Fort Jesse Road	◑	◑	◑	◑	○	◑	◑	○	○
Veterans Parkway at Juniper Drive	◑	○	◑	◑	○	◑	◑	◑	○
Cottage Avenue at Hovey Avenue	○	◑	○	◑	○	◑	●	○	●
Veterans Parkway at Vernon Avenue	◑	○	●	○	○	◑	◑	◑	○
Veterans Parkway at Parkway Plaza Dr	●	○	◑	◑	○	◑	○	○	○
Veterans Parkway at Shepard Road	◑	○	◑	○	○	◑	○	◑	◑
Kingsley Street at Hovey Avenue	◑	◑	○	○	○	◑	○	○	○
Parkside Road at Hovey Avenue	○	◑	○	○	○	◑	●	○	●

Pedestrian Priority Corridors

Project	Overcomes Barriers	System Connectivity	Community Support	User Generator	Land Uses	Safety/ Comfort	Cost	Regional Benefit	Ease of Implementation
College Avenue/ Mulberry Street - School Street to Hershey Road	●	●	●	◑	●	●	◑	●	○
Main Street/ Kingsley Street - south town limits to Raab Road	●	●	●	●	●	●	○	●	○
Towanda Avenue - Jersey Avenue to Raab Road	●	●	○	○	○	◑	●	●	○
Willow Street/ Fort Jesse Road - Beech Street to Northpointe Drive	●	●	◑	◑	●	◑	◑	◑	○
Linden Street - south town limits to Northtown Road	◑	◑	○	◑	◑	●	○	◑	◑
Hershey Road - Fort Jesse Road to Raab Road	○	◑	◑	◑	●	○	●	○	○
Airport Road – Fort Jesse Road to Raab Road	○	◑	◑	◑	◑	○	●	◑	◑
Raab Road - Parkside Road to Towanda Avenue	○	●	○	○	○	◑	◑	●	◑
Shepard Road - Hershey Road to Airport Road	○	◑	○	◑	●	○	●	◑	○
Veterans Parkway – Vernon Avenue to Shepard Road	◑	◑	◑	◑	○	◑	○	◑	◑

Community-Wide Pedestrian Improvements

Project	Overcomes Barriers	System Connectivity	Community Support	User Generator	Land Uses	Safety/ Comfort	Cost	Regional Benefit	Ease of Implementation
Sidewalk infill	●	●	●	●	○	◑	○	◑	◑
ADA improvements in parks	◑	◑	◑	◑	●	●	◑	○	●
Crosswalk marking upgrades	●	◑	●	○	○	●	●	○	●
Damaged sidewalk repair/replacement	●	●	◑	◑	○	◑	◑	◑	◑
Drainage grate retrofits	◑	◑	◑	◑	○	●	●	○	●
ADA-compliant curb ramp upgrades	●	○	○	●	○	●	◑	○	◑
At-grade railroad crossing upgrades	●	●	◑	○	○	●	◑	◑	○
Transit stop upgrades	○	○	○	○	○	◑	○	○	○

Bikeway Improvements

Project	Overcomes Barriers	System Connectivity	Community Support	User Generator	Land Uses	Safety/ Comfort	Cost	Regional Benefit	Ease of Implementation
Main Street/ Kingsley Street	●	●	●	◑	●	●	○	●	○
Hovey Avenue/ Beaufort Street	◑	●	◑	◑	◑	●	●	●	◑
Raab Road: Constitution Trail to Linden Street	◑	◑	●	◑	●	●	◑	◑	◑
College Avenue/ Mulberry Street	○	◑	●	●	◑	●	●	○	◑
Karin Drive/ Centennial Avenue/ Spear Drive/ Hammitt Drive/ Keller Road	◑	●	○	●	●	◑	◑	◑	●
Towanda Avenue: Vernon to Raab	●	●	◑	◑	●	○	○	○	○
White Oak Road	●	●	◑	○	○	○	○	●	○
Adelaide Street	◑	◑	○	●	●	◑	●	○	◑
Towanda Avenue at I-55 (Phase 1)	●	●	◑	◑	○	○	●	◑	◑
South Branch Sugar Creek Trail	●	○	●	●	●	●	○	●	○
Fell Avenue/ North Street/ School Street	○	◑	◑	●	●	●	◑	○	○
Constitution Trail at Vernon Avenue	●	◑	●	○	○	◑	○	●	○
Towanda Avenue at I-55 (Phase 2)	●	●	●	◑	○	◑	○	◑	○
Bryan Street/ Dale Street/ University Street/ Virginia Avenue/ Belt Drive/ Jersey Avenue	○	●	○	◑	◑	◑	◑	○	●
Cottage Avenue	◑	●	◑	◑	◑	○	○	◑	◑
Linden Street: Shelbourne to Raab	◑	●	○	◑	○	○	●	◑	◑
Hoose Elementary School campus/ Blair Drive	◑	◑	○	◑	●	◑	◑	○	◑
Towanda Avenue: I-55 to Northtown	○	◑	◑	◑	○	○	●	○	◑

Bikeway Improvements

Project	Overcomes Barriers	System Connectivity	Community Support	User Generator	Land Uses	Safety/ Comfort	Cost	Regional Benefit	Ease of Implementation
Sugar Creek Elementary Connector	○	○	◑	◑	●	◑	●	○	◑
Grandview Drive/ Karin Drive/ Beech Street	●	○	○	◑	◑	○	◑	○	○
Airport Road	◑	●	◑	○	○	○	◑	○	○
Route 66 Trail	○	◑	◑	○	○	◑	◑	●	○
Locust Street/ Old Fort Jesse Road/ Harter Lane/ George Drive/ Courtland Avenue/ Arborwalk Drive/ Parkway Plaza Drive	●	○	○	◑	○	●	◑	○	○
Parkside Road	○	○	◑	○	●	●	●	○	○
Linden Street: Raab to Northtown	●	◑	○	○	○	○	○	◑	○
Constitution Trail/ Spear Drive Connector	○	●	○	○	○	◑	◑	○	○
College Avenue: Mitsubishi Motorway to Parkside Road	○	◑	○	○	●	○	◑	◑	○
Oakdale Elem Accessway	●	◑	○	◑	●	◑	●	○	●
Summit Street/ Shelbourne Drive	○	◑	○	◑	◑	○	●	○	○
Raab Road: Hershey Road to Normal Community High	◑	○	○	◑	◑	○	◑	●	◑
Normal Avenue/ Bakewell Avenue	○	○	○	◑	◑	●	●	○	●
Orlando Avenue/ Aurora Way/ Warren Avenue/ Heritage Road/ Regal Drive/ Basswood Lane	○	○	○	◑	●	○	◑	○	●
Kerrick Road	◑	◑	○	○	○	○	●	◑	●
Sycamore Street/ Linden Street/ Pine Street	○	◑	○	◑	○	◑	◑	○	○
Greenbriar Park Trail	○	○	◑	○	●	○	◑	◑	◑

Bikeway Improvements

Project	Overcomes Barriers	System Connectivity	Community Support	User Generator	Land Uses	Safety/ Comfort	Cost	Regional Benefit	Ease of Implementation
Hershey Road	●	●	○	○	○	◑	○	◑	○
Raab Road: Mabel Road to Heartland College	●	○	○	○	○	○	○	●	○
Gregory Street: Parkside to Normal	○	◑	◑	○	○	○	○	◑	◑
Northtown Road	●	○	○	○	○	○	◑	◑	○
Towanda Avenue: Raab to I-55	○	●	◑	○	○	○	◑	○	◑
Susan Drive/ Taft Drive	○	○	○	●	●	◑	●	○	◑
McKinley Street/ Clay Street/ Lincoln Street/ Lincoln Avenue/ Chippewa Street	○	◑	○	◑	●	○	◑	○	○
Pheasant Run Creek Trail: Hovey Avenue to Constitution Trail (ISU campus)	○	○	○	●	●	●	○	○	○
Brookwood Drive	○	◑	○	◑	○	○	●	○	●
Watkins Drive/ College Hills Mall Loop/ Landmark Drive	○	○	○	○	●	○	●	○	○
Raab Road: Henry Street to Towanda Avenue	○	◑	○	○	●	○	◑	◑	◑
East-West Connector Trail	●	○	●	○	○	◑	○	○	○
Parkinson Street/ Dewey Street	○	○	◑	○	○	○	●	○	●
Hanson Drive	○	○	○	◑	○	◑	●	○	●
Henry Street	○	◑	○	◑	◑	○	●	○	◑
Maxwell Park Trail	○	○	○	◑	●	◑	◑	○	●
Shepard Road: Greenbriar to Airport	○	◑	○	◑	○	○	○	◑	○
Mitsubishi Motorway/Mabel Road	◑	○	○	○	○	○	●	●	◑

Bikeway Improvements

Project	Overcomes Barriers	System Connectivity	Community Support	User Generator	Land Uses	Safety/ Comfort	Cost	Regional Benefit	Ease of Implementation
Grove Street	○	○	○	◑	○	●	◑	○	●
Main Street: Raab Road to Constitution Trail	◑	●	◑	○	○	●	◑	◑	◑

Community-Wide Bikeway Improvements

Project	Overcomes Barriers	System Connectivity	Community Support	User Generator	Land Uses	Safety/ Comfort	Cost	Regional Benefit	Ease of Implementation
Bicycle Wayfinding Signage Plan	◑	●	◑	●	◑	○	●	●	●
Shared use path pavement upgrades	○	○	●	◑	○		◑	●	●
Uptown Normal “Bike Oasis”	○	○	●	◑	◑	○	○	○	○

Evaluation of Supporting Programs

Recommended Program	Cost	Range of Influence	Organizational Needs	Likely Impact
Crosswalk Enforcement Actions	●	●	●	●
Develop a Complete Streets Policy	●	●	◑	●
Update Bloomington-Normal Trail Map	●	●	◑	◑
Pilot SmartTrips program	◑	○	●	●
Normal Bike/Walk Central Website	●	●	○	◑
Media Safety Campaign	○	●	◑	◑
Apply to become a Bicycle Friendly Community	●	◑	○	◑
ISU Bike Orientation	◑	◑	○	●
Participate in Walk Across Illinois	●	◑	○	◑
Perform Annual Bicycle and Pedestrian Counts	◑	○	●	○
Safe Routes to School - Phase I	○	○	◑	●
Celebrate the Constitution Trail	◑	○	◑	○

Appendix E. Potential Funding Sources

Intersection Improvements

Project	Federal											State		Local							
	Surface Transportation Program	Highway Safety Improvement Program	Transportation Enhancements	Recreational Trails Program*	Safer Routes to School grants †	New Freedom Initiative	CDBG	Rivers, Trails and Conservation Assistance	Land and Water Conservation Fund	Trans., Comm. and System Pres. Program	National Scenic Byways program	Open Space Lands Acq. / Dev. Prog. Funds	Illinois Bicycle Path Grant Program	Local Bond measures	TIF / URA Funds	System Development Charges(3)‡	Street User Fees(3)§	Local Improvement Districts	Business Improvement Districts	American Greenways Program	Bikes Belong Grant Program
Kingsley St at Hovey Avenue	x	x	x			x								x							
Parkside Rd at Hovey Avenue	x	x	x			x								x							
Cottage Avenue at Hovey Avenue	x	x	x			x								x							
Veterans Parkway at Shepard Rd	x	x	x			x								x							
Veterans Parkway at Fort Jesse Rd	x	x	x			x								x							
Veterans Pkwy at Parkway Plaza Dr	x	x	x		x	x								x							
Veterans Parkway at Juniper Dr	x	x	x			x								x							
Veterans Parkway at Vernon Avenue	x	x	x			x								x							
Constitution Trail (north/south segment) Rdway crossings	x	x	x	x	x	x		x				x	x	x						x	

* Funds shared use path component of project only

† For projects within 2 miles of a school

‡ Potential local funding

Pedestrian Priority Corridors

Project	Federal											State		Local							
	Surface Transportation Program	Highway Safety Improvement Program	Transportation Enhancements	Recreational Trails Program*	Safer Routes to School grants †	New Freedom Initiative	CDBG	Rivers, Trails and Conservation Assistance	Land and Water Conservation Fund	Trans., Comm. and System Pres. Program	National Scenic Byways program	Open Space Lands Acq. / Dev. Prog. Funds	Illinois Bicycle Path Grant Program	Local Bond measures	TIF / URA Funds	System Development Charges‡	Street User Fees	Local Improvement Districts	Business Improvement Districts	American Greenways Program	Bikes Belong Grant Program
Main Street/ Kingsley St - south town limits to Raab Rd	x	x	x		x	x	x							x				x	x		
College Avenue/ Mulberry St - School St to Hershey Rd	x		x		x	x	x							x	x			x	x		
Towanda Avenue - Jersey Avenue to Raab Rd	x		x		x	x	x							x							
Raab Rd - Parkside Rd to Towanda Ave	x		x		x	x	x							x							
Linden Street – S. town limits to Northtown Rd	x		x		x	x	x							x							
Willow Street/ Fort Jesse Rd - Beech Street to Northpointe Dr	x		x		x	x	x							x							
Airport Rd - Fort Jesse Rd to Raab Rd	x		x		x	x	x							x							
Hershey Rd - Fort Jesse Rd to Raab Rd	x		x			x	x							x							
Shepard Rd - Hershey Rd to Airport Rd	x		x		x	x	x							x							
Veterans Parkway – Vernon Ave to Shepard Rd	x		x		x	x	x							x							

* Funds shared use path component of project only

† For projects within 2 miles of a school

‡ Potential local funding

Community-Wide Walkway Improvements

	Federal											State		Local							
Project	Surface Transportation Program	Highway Safety Improvement Program	Transportation Enhancements	Recreational Trails Program*	Safer Routes to School grants †	New Freedom Initiative	CDBG	Rivers, Trails and Conservation Assistance	Land and Water Conservation Fund	Trans., Comm. and System Pres. Program	National Scenic Byways program	Open Space Lands Acq. / Dev. Prog. Funds	Illinois Bicycle Path Grant Program	Local Bond measures	TIF / URA Funds	System Development Charges‡	Street User Fees	Local Improvement Districts	Business Improvement Districts	American Greenways Program	Bikes Belong Grant Program
Sidewalk infill	x		x			x	x							x			x				
ADA improvements in parks	x		x			x	x	x				x	x	x						x	
Crosswalk marking upgrades	x		x			x								x			x				
Damaged sidewalk repair/replacement	x		x			x	x							x			x				
Drainage grate retrofits	x		x											x			x				
ADA-compliant curb ramp upgrades	x		x			x								x							
At-grade railroad crossing upgrades	x		x											x							
Transit stop upgrades	x		x											x							

** Funds shared use path component of project only

† For projects within 2 miles of a school

‡ Potential local funding

Bikeway Improvement Projects

	Federal											State		Local							
Project	Surface Transportation Program	Highway Safety Improvement Program	Transportation Enhancements	Recreational Trails Program*	Safer Routes to School grants†	New Freedom Initiative	CDBG	Rivers, Trails and Conservation Assistance	Land and Water Conservation Fund	Trans., Comm. and System Pres. Program	National Scenic Byways program	Open Space Lands Acq. / Dev. Prog. Funds	Illinois Bicycle Path Grant Program	Local Bond measures	TIF / URA Funds	System Development Charges‡	Street User Fe§	Local Improvement Districts	Business Improvement Districts	American Greenways Program	Bikes Belong Grant Program
Adelaide St	X		x		x									x							
College Ave/ Mulberry St	x		x		x					x				x				x	x		
Gregory St: Parkside to Normal	x		x	x										x							
Cottage Ave	x		x											x							
Parkside Rd	x		x		x									x							
Bryan St / Dale St/ University St / Virginia Ave / Belt Dr/ Jersey Ave	x		x		x									x							
Grove St	x		x											x							
Kerrick Rd	x		x											x							
Northtown Rd	x		x	x										x							
Raab Rd: Constitution Trail to Linden	x		x	x										x		x					
Karin Dr/ Centennial Ave / Spear Dr/ Hammitt Dr/ Keller Rd	x		x											x							
Hovey Avenue/ Beaufort St	x	x	x		x									x	x			x	x		
Orlando Ave/ Aurora Wy/ Warren Av/ Heritage Rd/ Regal Dr/ Basswood Ln	x		x	x										x							
White Oak Rd	x		x											x							
Pheasant Run Creek Trail	x			x				x	x			x	x	x						x	

Bikeway Improvement Projects

	Federal											State		Local							
Project	Surface Transportation Program	Highway Safety Improvement Program	Transportation Enhancements	Recreational Trails Program*	Safer Routes to School grants†	New Freedom Initiative	CDBG	Rivers, Trails and Conservation Assistance	Land and Water Conservation Fund	Trans., Comm. and System Pres. Program	National Scenic Byways program	Open Space Lands Acq. / Dev. Prog. Funds	Illinois Bicycle Path Grant Program	Local Bond measures	TIF / URA Funds	System Development Charges‡	Street User Fe§	Local Improvement Districts	Business Improvement Districts	American Greenways Program	Bikes Belong Grant Program
Oakdale Elem Accessway	x				x									**x**							
Main St/ Kingsley St	**x**	**x**	**x**		**x**									**x**				**x**	**x**		
East-West Connector Trail	**x**			**x**				**x**	**x**			**x**	**x**	**x**						**x**	
Shepard Rd: Greenbriar to Airport	**x**	**x**	**x**		**x**									**x**							
Hanson Dr	**x**		**x**											**x**							
Constitution Trail at Vernon Avenue	**x**			**x**				**x**	**x**			**x**	**x**	**x**						**x**	
Sugar Creek Elem Connector	**x**				**x**									**x**							
Parkinson St / Dewey St	**x**		**x**											**x**	**x**						
Brookwood Dr	**x**		**x**											**x**							
Normal Ave/ Bakewell Ave	**x**		**x**											**x**							
Fell Ave / North St / School St	**x**	**x**	**x**											**x**	**x**						
Linden St: Shelbourne to Raab	**x**		**x**											**x**	**x**						
Linden St: Raab to Northtown	**x**		**x**											**x**		**x**					
Grandview Dr/ Karin Dr/ Beech St	**x**		**x**	**x**					**x**					**x**				**x**	**x**		
Hoose Elem campus/ Blair Dr	**x**		**x**		**x**									**x**							

Bikeway Improvement Projects

Project	Federal											State		Local							
	Surface Transportation Program	Highway Safety Improvement Program	Transportation Enhancements	Recreational Trails Program*	Safer Routes to School grants†	New Freedom Initiative	CDBG	Rivers, Trails and Conservation Assistance	Land and Water Conservation Fund	Trans., Comm. and System Pres. Program	National Scenic Byways program	Open Space Lands Acq. / Dev. Prog. Funds	Illinois Bicycle Path Grant Program	Local Bond measures	TIF / URA Funds	System Development Charges‡	Street User Fe§	Local Improvement Districts	Business Improvement Districts	American Greenways Program	Bikes Belong Grant Program
Henry Street	x		x											x							
Towanda Avenue: Vernon to Raab	x		x	x										x							
Towanda Avenue: Raab to I-55	x		x											x							
Towanda Avenue at I-55 (Phase 1)	x	x	x											x							
Towanda Avenue at I-55 (Phase 2)	x	x	x											x							
Towanda Avenue: I-55 to Northtown	x		x											x							
Watkins Dr/ College Hills Mall Loop/ Landmark Dr	x		x											x							
Susan Dr/ Taft Dr	x		x											x							
Hershey Rd	x		x											x							
Airport Rd	x		x	x	x									x							
College Avenue: Mitsubishi Motorway to Parkside Rd	x		x											x							
Raab Rd: Hershey Rd to Normal Community High	x		x	x	x									x		x					
Locust St/ Old Fort Jesse Rd/ Harter Ln/ George Dr/ Courtland Ave/ Arborwalk Dr/ Parkway Plaza Dr	x		x							x				x				x	x		
Sycamore St / Linden St / Pine St	x		x	x										x							

Bikeway Improvement Projects

	Federal											State		Local							
Project	Surface Transportation Program	Highway Safety Improvement Program	Transportation Enhancements	Recreational Trails Program*	Safer Routes to School grants †	New Freedom Initiative	CDBG	Rivers, Trails and Conservation Assistance	Land and Water Conservation Fund	Trans., Comm. and System Pres. Program	National Scenic Byways program	Open Space Lands Acq. / Dev. Prog. Funds	Illinois Bicycle Path Grant Program	Local Bond measures	TIF / URA Funds	System Development Charges‡	Street User Fe§	Local Improvement Districts	Business Improvement Districts	American Greenways Program	Bikes Belong Grant Program
Summit St / Shelbourne Dr	x		x											x							
McKinley Street/ Clay St / Lincoln St / Lincoln Avenue/ Chippewa St	x		x	x						x				x							
Mitsubishi Motorway/Mabel Rd	x		x											x							
Raab Rd: Mabel Rd to Heartland	x		x		x									x		x					
Maxwell Park Trail	x			x				x	x			x	x	x						x	
Raab Rd: Henry St to Towanda Avenue	x		x	x										x							
Greenbriar Park Trail	x			x				x	x			x	x	x						x	
Const. Trail/ Spear Dr Connector	x			x				x	x			x	x	x						x	
Route 66 Trail	x			x				x	x		x	x	x	x						x	
Main Street/Raab Road to Const. Trail																					

** Funds shared use path component of project only

† For projects within 2 miles of a school

‡ Potential local funding

Community-Wide Bikeway Improvements

	Federal											State		Local							
Project	Surface Transportation Program	Highway Safety Improvement Program	Transportation Enhancements	Recreational Trails Program*	Safer Routes to School grants †	New Freedom Initiative	CDBG	Rivers, Trails and Conservation Assistance	Land and Water Conservation Fund	Trans., Comm. and System Pres. Program	National Scenic Byways program	Open Space Lands Acq. / Dev. Prog. Funds	Illinois Bicycle Path Grant Program	Local Bond measures	TIF / URA Funds	System Development Charges‡	Street User Fees§	Local Improvement Districts	Business Improvement Districts	American Greenways Program	Bikes Belong Grant Program
Bicycle Wayfinding Signage Plan	x		x											x							
Shared use path pavement upgrades	x		x											x							
Uptown Normal "Bike Oasis"														x			x				

** Funds shared use path component of project only

† For projects within 2 miles of a school

‡ Potential local funding

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