



# ATP System SECTION

# 3

## System Overview

The Alternative Transportation Plan System (ATP System) defines the core network of regional trails, community corridors, and local connections that will connect residents and visitors to key destinations in the City and adjoining communities. The following describes the major components of the ATP System and provides broad guidance for the design of alternative transportation facilities and related amenities.

The **key alternative transportation routes** identified in the ATP System, shown in Figure 3.2, respond to recommendations, priorities, and concerns voiced by a wide range of stakeholders, representing those who live, work, and recreate in the City of Bloomington. Input on the system was collected through various stakeholder engagement activities, including community open houses, focus groups, an online questionnaire, and ongoing collaboration with City staff, the planning commission, elected officials, and regional planning entities. See p. 1-8 to 1-10 in Section 1 for a summary of community input.

The City is committed to applying the complete streets policy to all projects implemented by the City. This includes projects that may not be included in the core network identified as part of the System Plan.

## Destinations

“Accessibility,” or the ability to reach a variety of destinations, is an important consideration in designing for active, healthy communities. By prioritizing connections to key local and regional destinations, the ATP System supports improved accessibility for pedestrians and bicyclists. The ATP System, shown in Figure 3.2 highlights destinations throughout the city. These key destinations are a important component of the system plan and provide part of the underlying rationale for ATP planning. The following considers the various types of destinations.

## Parks and City-Based Public Facilities

Parks are key destinations at both the community and neighborhood level, and providing safe and convenient access to all parks is the primary objective. For community-scale parks, where visitors are likely to come from a broader, community-wide service area, more robust alternative transportation features are appropriate. For neighborhood parks that draw visitors primarily from within the neighborhood, focusing on existing infrastructure and more localized connections may be sufficient. For example, a community scale park such as Dred Scott Playfield, which draws visitors from across the city, may warrant a range of potential alternative transportation facilities such as bikeways, trails, and sidewalks. A city-based public facility such as the Bloomington Civic Plaza would warrant similar facilities. On the other hand, for Brye Park, which serves

a more localized population, improvements over time should focus on enhancing the existing infrastructure of sidewalks and local trails, with particular attention to completing missing links and replacing narrow sidewalks.

## Metro Transit Connections

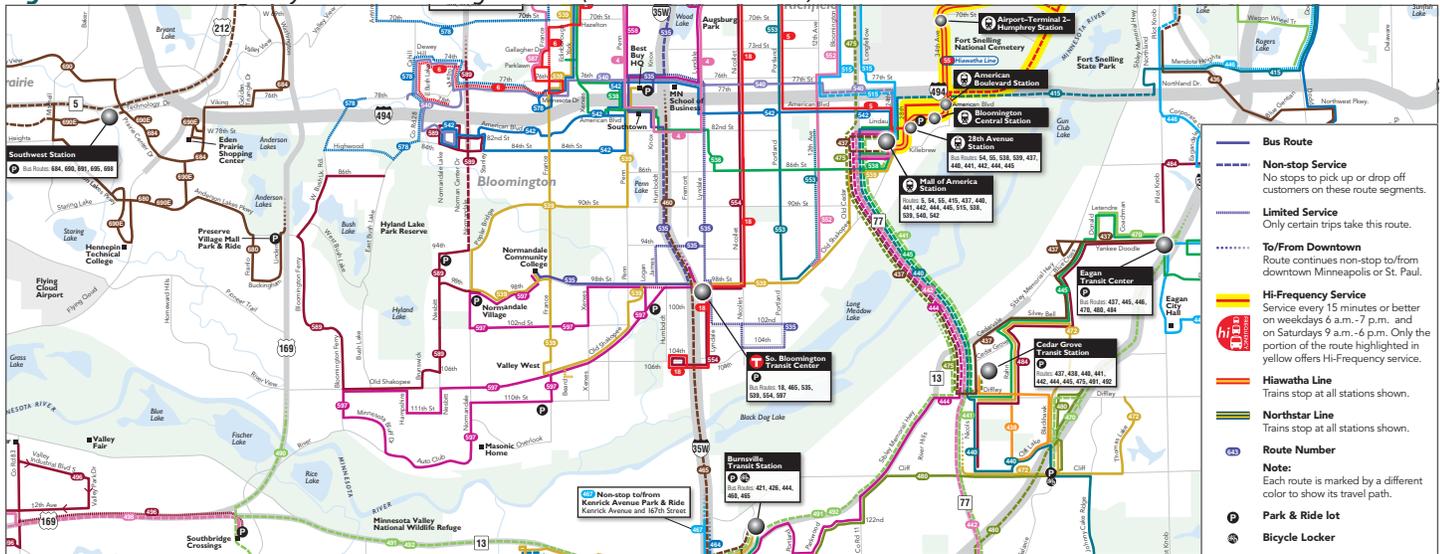
The metropolitan transit system in Bloomington consists of existing and planned bus and Bus Rapid Transit (BRT) routes throughout the city and Light Rail Transit (LRT) connections within South Loop. Support facilities include park and ride lots, transit centers, and LRT stations. Bike lockers are provided in select locations on a fee basis. The route system is determined by Metro Transit (a service of the Metropolitan Council) based on ridership and demand. Figure 3.1 illustrates the transit routing system in the Bloomington area, along with the locations for park and ride lots and transit centers/stations.

A priority of the ATP System is to entice higher levels of use of the metropolitan transit system by making access to park-and-ride lot locations, transit centers, and LRT stations via trails, sidewalks, and bikeways more complete, accessible, and safe. Working closely with transit authorities on providing support facilities and amenities (i.e., bike lockers, bike racks and bike racks on buses and LRTs) in convenient locations where the metro transit system interfaces with the core alternative transportation system is part of this priority. This includes both established transit locations as well as other select locations in the city where standalone bicycle facilities could be provided along various bikeways, trails, and pedestrian-ways.



*Parks and City-Based Public Facilities*

**Figure 3.1: Metro Transit system in Bloomington area (source: Metro Transit)**



## Schools

Both public and private schools are considered key destinations for improved alternative transportation facilities. Under this plan, the goal is to enhance the core infrastructure of trails, sidewalks, and bikeways near schools as part of a comprehensive Safe Routes to School (SRTS) Program, which will be implemented over time on a priority basis in partnership with the School District. Although the Alternative Transportation System Plan shares common goals with the SRTS program, site-specific plans will be prepared as the SRTS program is implemented to ensure safe access issues pertinent to a given school are addressed.

Accessibility enhancements associated with school sites will occur in phases as resources allow. The SRTS program builds on the existing alternative transportation system and infrastructure improvements that resulted from the original 2008 ATP (See page 2-5 for more on SRTS).



*Schools - Crossing at Jefferson High School on W 102nd Street*

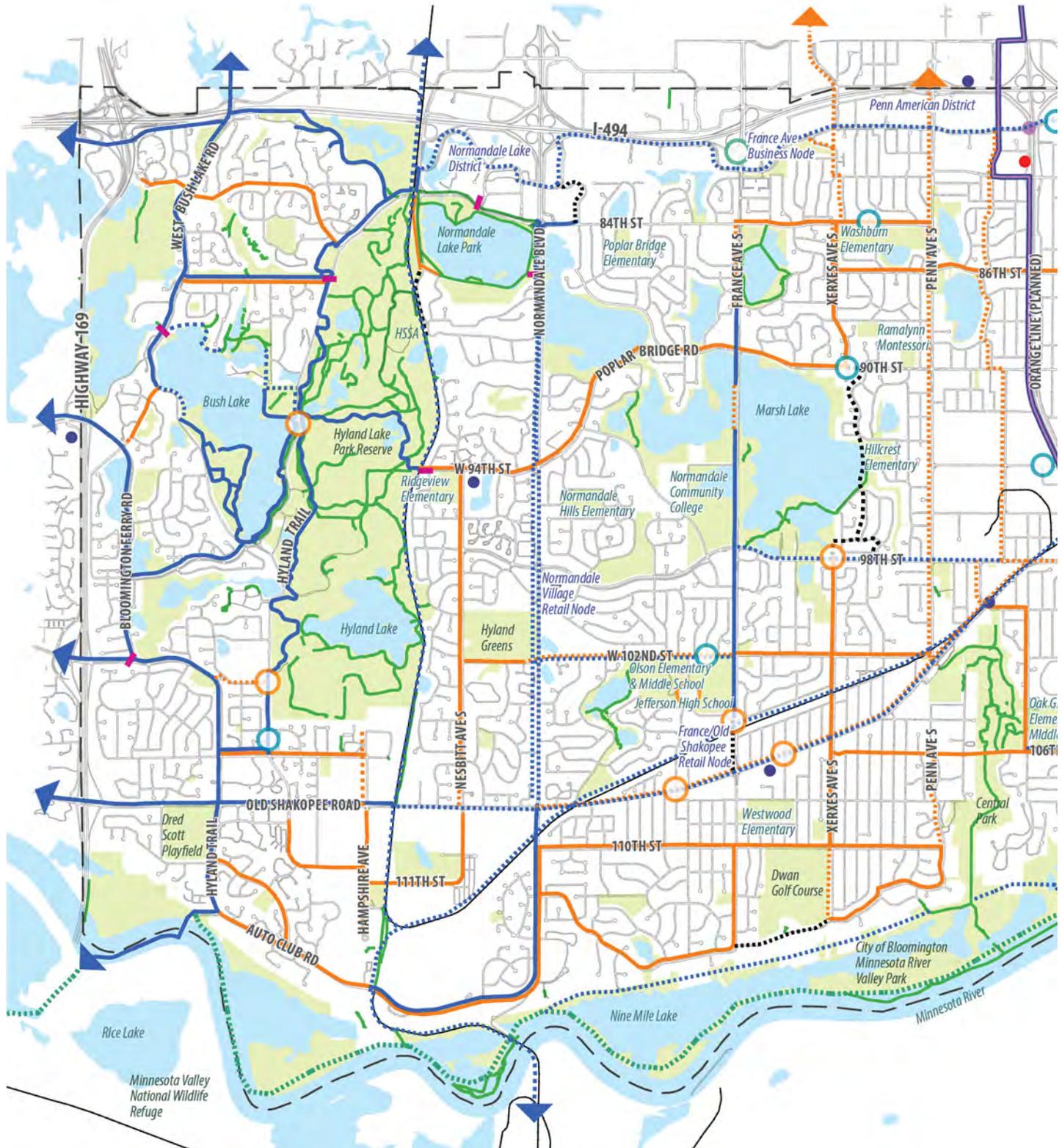
## Retail, Business, and Commercial Nodes

The 2008 ATP prioritized high-activity commercial nodes where there was a critical mass of visitor/employee traffic to justify connection to a city-wide alternative transportation system. The updated system plan builds on improvements completed since 2008 and expands the existing system to enhance access to additional, second-tier commercial destinations.



*Retail, Business, and Commercial Nodes*

**Figure 3.2: ATP System**



This plan does not prescribe specific facility types (trail, sidewalk, bike lanes, etc.) for the planned routes, but does make general recommendations for routes that may be suitable for an on-street versus off-street facilities. Decisions about what facility type is appropriate for a given route should be made in light of the specific context and constraints of that route, cost factors, public input, and other considerations.

See p. 3-12 for a general discussion of alternative transportation facility types that may be implemented in the city.



## Key Alternative Transportation Routes

The system establishes a network of key alternative transportation routes throughout the city that support alternative modes of transportation and enhance access to key regional and local destinations. The system plan does not specify the type of facility (trail, sidewalk, bikeway, etc.) recommended for a particular route, but designates general “route types” that work in concert to ensure a high level of access to alternative transportation facilities to serve a range of users and activities:

- » Regional trails provide high value recreation, fitness, and transportation trails connecting to regional destinations in and around the city.
- » Community corridors support the regional trail system by providing connections to local destinations within the city and connect to adjacent cities.
- » Local connections link residential areas not served by regional trails and community corridors to the broader system.

The system plan is designed to be ambitious in its vision, yet realistic and achievable in the context of resources available to the City. Section 4 of this plan addresses implementation of the system plan, including identification of priority projects, phasing, funding, and operations.

The following considers the three alternative transportation route types in greater detail.

## Regional Trails

Regional trails are routes that pass through or provide connections to regional destinations in and around the City. The regional trails form the backbone of the alternative transportation network, providing commuting routes and recreational corridors, and enhancing access to transit facilities. Regional trails are typically off-road facilities. The routes are generally of a greater length to allow for inter-city or inter-county connections. Regional trails are typically operated at a county or state level and are typically multi-use trails, but may include other facility types based on the context and constraints.

## Community Corridors

Community corridors provide intra-city connections to local destinations in the city as well as access to the regional trails. Local destinations may include recreational, institutional, and commercial uses, as well as transit facilities. These routes are typically operated at the City level. Community corridors may include a combination of on-street and off-street facilities, and should aim to provide the highest level of bike facility possible (with regard to level of protection and separation from motor vehicle traffic) within physical and financial constraints. For example, where space or other constraints do not allow for a multi-use trail, a combination of sidewalk and on-street bike facility should be considered as the minimum treatment.

## Local Connections

Local connections provide the finest level of connectivity in the system, serving primarily as access routes to higher levels of the system. These facilities provide access from residential areas and make the final connections to destinations that are not immediately adjacent to regional trails or community corridors. Local connections are typically operated at the City level. Facilities may include a combination of on-street and off-street facilities, furnishing, at a minimum, sidewalk connections and signed bike routes.

**Figure 3.3:** Representative Bicycle/Pedestrian Facilities in Bloomington



Regional trail on the northern end of the Hyland Trail Corridor enhances access to the regional park



Hyland Regional Trail



Minnesota Bluffs On-road facility



Normandale Lake District

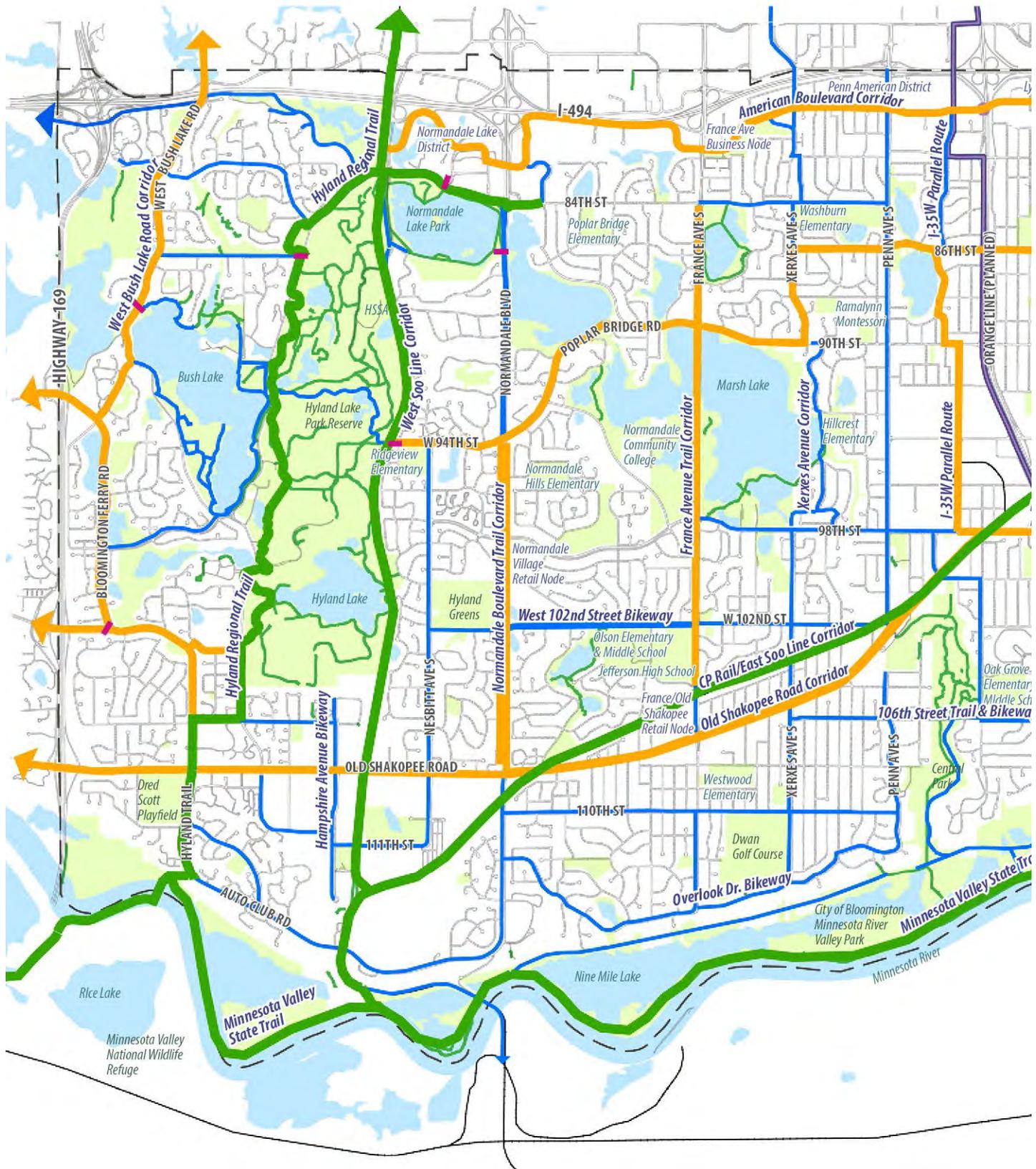


Local Connections - trails



Local Connections - sidewalks

**Figure 3.4: ATP System - By Facility Type**



The ATP System defines the core network of regional trails, community corridors, and local connections that will connect residents and visitors to key destinations in the City and adjoining communities. The key destinations and key alternative transportation routes identified in

the ATP System respond to recommendations, priorities, and concerns voiced by a wide range of stakeholders, representing those who live, work, and recreate in the City of Bloomington.



## User Groups and Preferences

Each of the facility types described in this section serves a particular purpose in meeting local needs. Recognizing that different user groups have different preferences and needs, the following discussion rates various facility types based on their value to individual user groups. The higher the value rating, the more likely that facility type will be used by a particular user group.

The table below considers the most common alternative transportation user groups in Bloomington and the values and preferences that are likely to be of greatest importance to those groups.

**Figure 3.5:** Preferences of Common User Groups

User Group	Preferences	Symbols
<b>Family Group – Various Modes</b>	Safety and convenience are top priorities, followed by a pleasant recreational experience. Controlled, traffic-free access to sidewalks and trails is preferred. Length of trail is less important than quality of experience. Will typically only use low-volume residential streets when biking or skating, and rarely busy streets even with bike lanes or routes.	 FAMILY
<b>Recreational Walker, Bicyclists, Skateboarders, In-Line Skater and Roller Skiers</b>	Same as family user group, with trail continuity and length also being important for repeated use. 20 miles of connected trails are needed for bicyclists, at a minimum. This user group is also more comfortable with street crossings. Bicyclists, skateboarders, and in-line skaters will use roads that are not too busy. Loops are preferred over out-and-back routes for variety.	 RECREATIONAL
<b>Fitness Walker/Jogger, Bicyclists, In-Line Skater and Roller Skiers</b>	Length of trail and continuity are most important, although an appealing setting is also desired. Bikers are reasonably comfortable on busier roads, but prefer bike lanes/routes with adequate separation from vehicles. Bikers will often use a combination of roads and trails to create a desirable loop, which is much preferred over out-and-back routes.	 FITNESS
<b>Transportation Walker, Bicyclists, In-Line Skater and Roller Skiers</b>	Directness of route is important. Will use a combination of sidewalks, trails, residential streets, and roads that are relatively safe, convenient, and direct. Bike lanes/routes are preferred on busy roads to improve safety. Bicyclists are not overly dependent on trails, but will use them if convenient and not too heavily used by families and recreational users, who tend to slow them down. Walkers need a trail or sidewalk.	 TRANSPORTATION

## RESOURCES FOR FACILITY DESIGN AND MANAGEMENT

The development of Bloomington's alternative transportation system should be consistent with the standards, best practices, and design guidelines established by leading experts in alternative transportation planning.

**MnMUTCD (Minnesota Manual of Uniform Traffic Control Devices)** The MnMUTCD is the recognized manual for bikeway signing and striping in Minnesota.

**MNDNR (Minnesota Department of Natural Resources)** The MNDNR Minnesota Trail Planning, Design, and Development Guidelines provides the baseline standards and guidelines for developing multi-use trails and natural-surfaced trails.

**International Mountain Bicycling Association (IMBA)** has several guidebooks for building sustainable mountain biking and hiking trails.

**AASHTO (American Association of State Highway and Transportation Officials)** AASHTO's Guide for the Development of Bicycle Facilities provides information on how to accommodate bicycle travel and operations in a variety of roadway conditions. The AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities provides guidance on the planning, design, and operation of pedestrian facilities along streets and highways.

**The Federal Highway Administration (FHWA)** regards the AASHTO guides as the primary national resources for the design, planning, and operations of bicycle and pedestrian facilities. The FHWA also supports the use of the NACTO Urban Bikeway Design Guide and the Institute of Transportation Engineers Designing Walkable Urban Thoroughfares, particularly for urban areas.

**NACTO (National Association of City Transportation Officials)** The NACTO Urban Bikeway Design Guide provides best practices and design guidelines for the development of urban bikeways and complete streets. NACTO also publishes the Urban Street Design Guide which presents additional principles and practices for street design, including intersection design features and other safety elements. NACTO is used as a guide but does not have official recognition in Minnesota.

**MnDOT (Minnesota Department of Transportation)** the MnDOT Bikeway Facility Design Manual provides design and planning guidance for on-street and off-street bicycle facilities. MnDOT's Minnesota's Best Practices for Pedestrian/Bicycle Safety describes and evaluates a range of strategies to improve bicycle and pedestrian safety. The information in the document is consistent with FHWA and AASHTO guidance.

**Americans with Disabilities Act (ADA)** Whenever possible, alternative transportation facilities should meet accessibility standards as established by the ADA Standards for Accessible Design.

**City of Bloomington Park Trails, Regional Trails & Sidewalk Usage Policy** This policy establishes principles for the appropriate management of City park trails, regional trails, and sidewalks, including facility management, ADA compliance, and strategies for minimizing usage problems. These policies can be found on-line:

<https://www.bloomingtonmn.gov/policy/transportation-policies>



NACTO Bikeway Design Guide

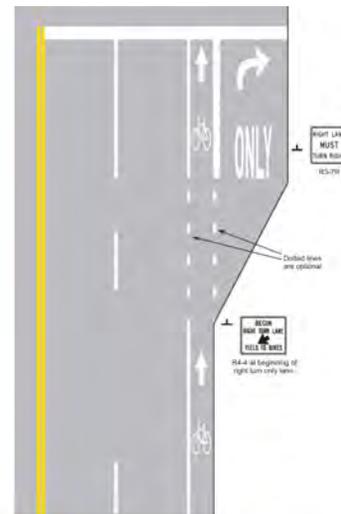


Figure 9C-3 Example of Bicycle Lane Treatment at a Right Turn Only Lane

MnDOT Bikeway Facility Design Manual

## Alternative Transportation Facility Types

Decisions about what facility type (trail, sidewalk, bike lanes, etc.) is appropriate for a given route should be made in light of the specific context and constraints of that route (traffic volumes, right-of-way, land uses, etc.), cost factors, public input, and other considerations. The following describes the possible facility types that may be implemented in the city and provides resources and general guidance on facility design, location, and best practices.

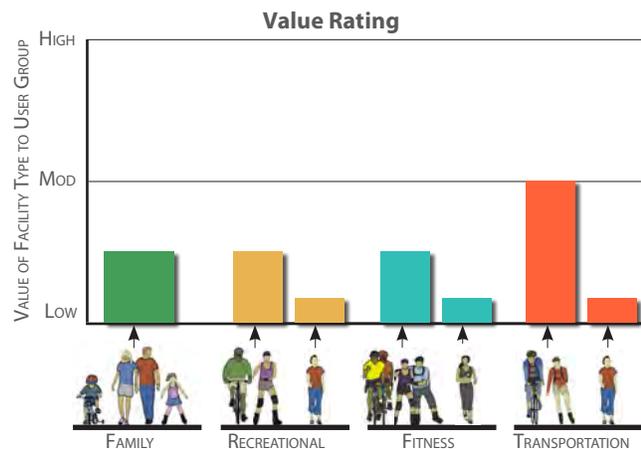
This planning process does not prescribe facility types for the planned routes but does make general recommendations for routes that may be suitable for an on-street versus off-street facilities (see Figure 3.2).

## On-Street Facility Types



### Signed Bike Route

- » On-street facility in which bicycles and vehicles share a lane of travel
- » Routes are marked with signage
- » Routes may include pavement -markings such as a “sharrow” to increase motorist awareness
- » Suitable for a local street that is low-speed and has low traffic volumes
- » Less investment in signage, traffic calming, and landscaping than a bike boulevard.



**Figure 3.6:** Value of Facility Type to User Groups - Signed Bike Route

## On-Street Facility Types (Continued)



### Bike Boulevard

- » On-street facility in which bicycles and vehicles share a lane of travel
- » Suitable for a local street that is low-speed and has low traffic volumes
- » Routes are marked with enhanced signage and pavement-markings such as a "sharrow" to increase motorist awareness
- » Emphasis on traffic calming techniques such as bump outs, median islands, vehicle diverters, roundabouts, and landscaping
- » May give bicycles greater priority by turning stop signs to give bicycles the right of way
- » Can provide an alternative route to higher speed roadways that may be more intimidating for bicyclists with less experience or confidence
- » Encourages less-experienced bicyclists but serves more experienced riders as well



### Shoulder

- » On-street facility in which bicycles ride in the paved shoulder alongside motor vehicle traffic
- » Suitable for moderate-to-high traffic volume roadways
- » Provides an alternative bicycle connections where multi-use trails or bike lanes are not possible but provides less visual and physical separation from motor vehicle traffic
- » More suited to confident riders (recreational and commuters) comfortable biking alongside moderate-to-high speed traffic
- » Typically signed with bike route signage

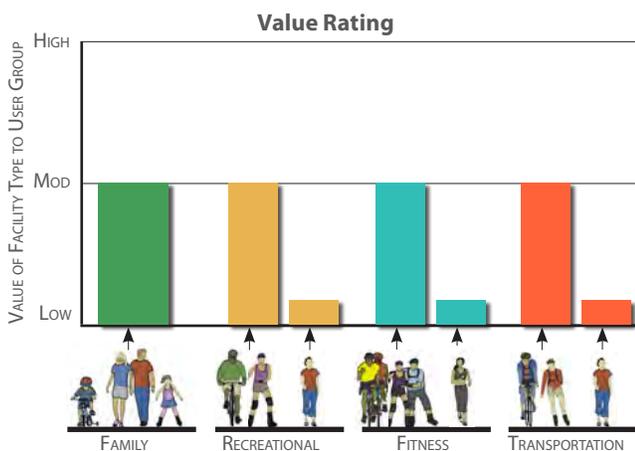


Figure 3.7: Value of Facility Type to User Groups - Bike Boulevard

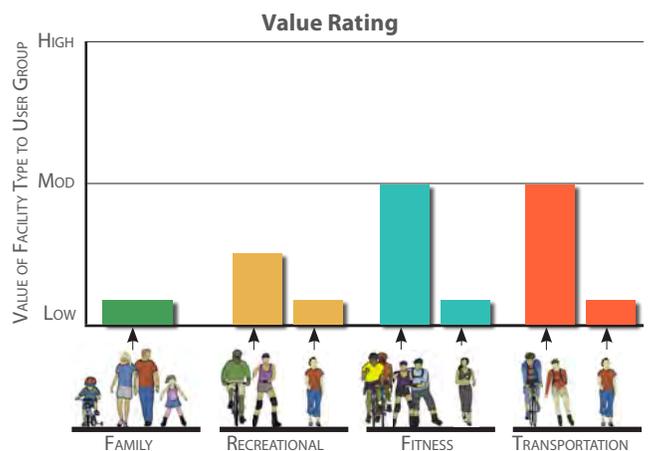


Figure 3.8: Value of Facility Type to User Groups - Shoulder

## On-Street Facility Types (Continued)



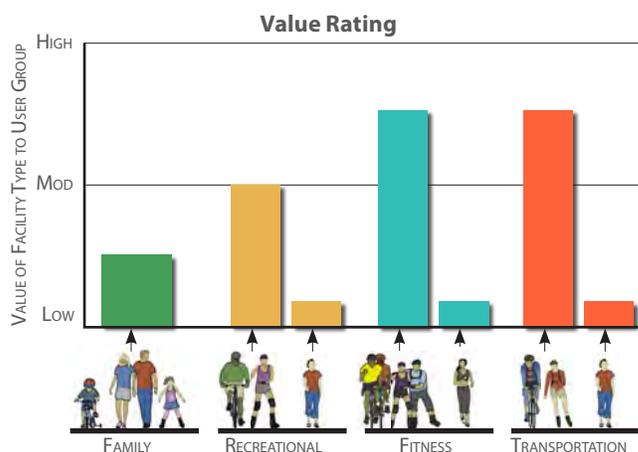
### Bike Lane

- » On-street facility in which bicycles ride in a dedicated lane alongside motor vehicle traffic
- » Bike lane is striped and includes pavement markings and signage to increase motorist awareness
- » Can be enhanced to include a striped or "buffered" space (if space allows) between the bike lane and motor vehicle lane and/or between the bike lane and an on-street parking lane, to protect from motor vehicles and from the door-opening zone of parked cars
- » Suitable for moderate traffic volume roadways
- » Offers more separation from motor vehicles than bike boulevards, bike routes, and shoulders
- » Suited to bicyclists comfortable moving alongside moderate-speed traffic; may not be preferable for less confident/experienced riders depending on context
- » Can be a low-cost option when adequate right-of-way is available and can be incorporated into roadway repaving or restriping projects

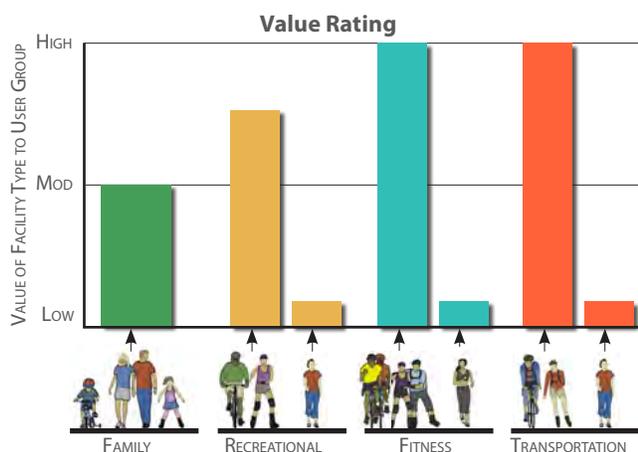


### Protected Bike Lane

- » On-street facility in which bicyclists are separated from motor vehicle traffic by a physical barrier such as bollards, parked vehicles, jersey barriers, or a concrete median
- » Can be designed to accommodate two-way bicycling on one side of the roadway
- » Can be separated from adjacent motor vehicle travel lanes by a curb; this type of high-priority protected bikeway is known as a cycle track
- » Offers a high-degree of separation from motor vehicle traffic
- » Suitable for high traffic volume roadways
- » A more comfortable on-street option for encouraging less-experienced bicyclists but serves more experienced riders as well



**Figure 3.10:** Value of Facility Type to User Groups - Bike Lane



**Figure 3.9:** Value of Facility Type to User Groups - Protected Bike Lane

## Off-Street Facility Types



### Multi-Use Trail

- » Off-street facility that provides a shared space for bicyclists, pedestrians and other (non-vehicular) users
- » Can be designed with designated lanes for bicycles and pedestrians, especially in high usage areas and along commuter bike routes, to improve safety and avoid conflicts between users
- » Provides an off-street biking option in areas where motor vehicle speeds and volumes make on-street bikeways less appropriate; high degree of separation from motor vehicle traffic
- » Can be located inside or outside of the street right-of-way and are often sited along abandoned or active rail corridors, waterways or through parks
- » Fewer street crossings and longer contiguous stretches of trail enhance the value of these facilities for recreation, fitness, and transportation users
- » Generally suited for a wide range of users and bicyclist of all ability levels; may not be desirable for bicycle commuters and more confident riders if trail is poorly-maintained, does not take a direct route, or does not have designated facilities for bicycles and pedestrians



### Sidewalk

- » Off-street facility that includes a concrete path for walking and running
- » Can be enhanced with streetscape amenities such as landscaping, street trees, and other amenities to improve the public realm and create a more safe, comfortable, and visually appealing environment for users
- » Provides a safe, dedicated space for pedestrians travel; may also support bicyclists and other nonmotorized users in areas where pedestrian volumes are relatively low and/or it is unsafe to ride in the street.
- » Typical City sidewalks are 6' wide for local roads, 6-8' wide along collector streets, and 8' along arterial roadways. Wider sidewalks should be considered for higher use areas.
- » Boulevards 6' for snow storage and buffer from vehicles

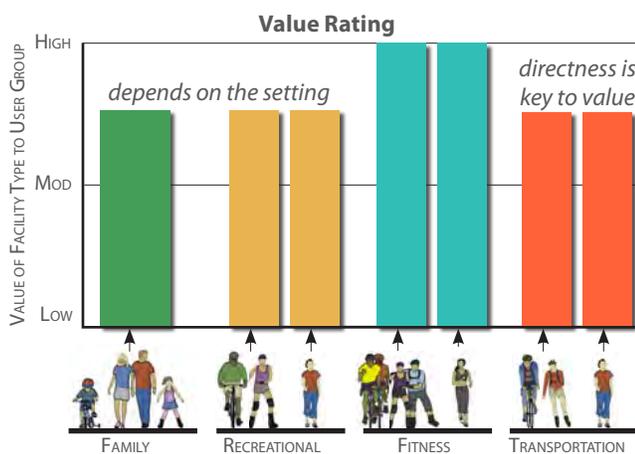


Figure 3.11: Value of Facility Type to User Groups - Multi-Use Trail

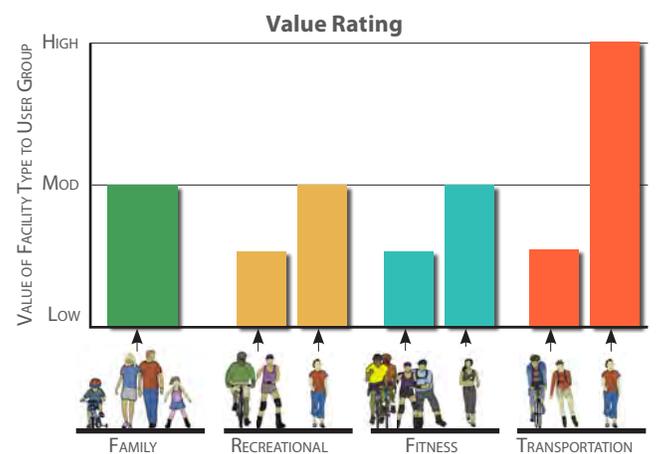


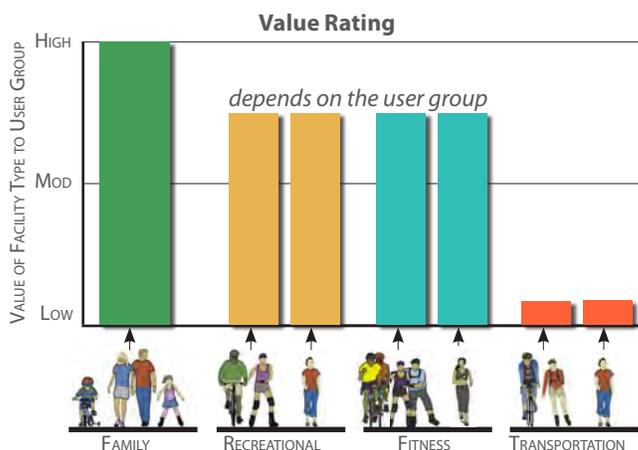
Figure 3.12: Value of Facility Type to User Groups - Sidewalk

## Off-Street Facility Types (Continued)



### Natural-Surfaced Trail

- » Off-street facility that provides unpaved, soft-surfaced tread for recreational activities such as hiking, skiing, and mountain biking
- » Can be located in city and regional parks and other community open spaces to take advantage of an appealing natural setting
- » Along the Minnesota River Valley, natural trails are typically native soil-surfaced and used for mountain biking and hiking
- » Fewer street crossings and longer contiguous stretches of trail enhance the value of these facilities for recreation and fitness users
- » Creating loops, even short ones, adds interest and meet the needs of recreation and fitness-oriented user groups
- » Signage and designated-use trails can enhance the safety and comfort of trail users
- » These trails offer high recreational value for specific user groups whose needs are not accommodated with other types of facilities; plan recognizes high demand for a robust natural-surface trail network within the city, especially along the Minnesota River Valley, a regional amenity and premier area for mountain biking and hiking
- » The Minnesota Trail Planning, Design, and Development Guidelines (MN DNR 2007) provides the baseline design standards and guidelines for developing multi-use trails and natural-surfaced trails
- » The International Mountain Biking Association (IMBA) has several guidebooks for sustainable mountain biking and hiking trails

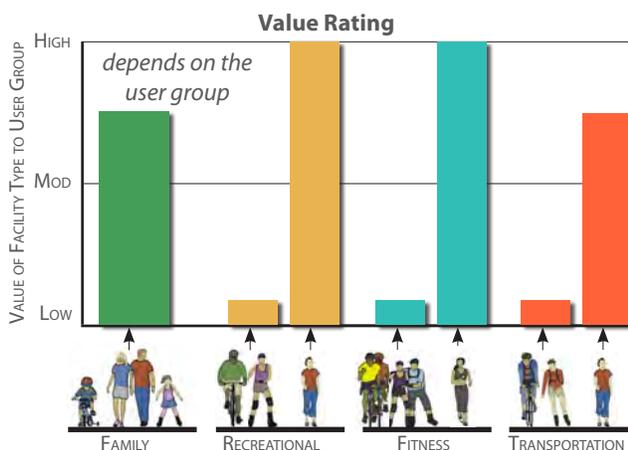


**Figure 3.13:** Value of Facility Type to User Groups - Natural Surfaced Trail



### Pedestrian Only Path

- » Off-street facility that provides a dedicated space for pedestrian use
- » Can be located outside of the street right-of-way and are often sited along abandoned or active rail corridors, waterways or through parks; typically located within parks
- » Can be applied to areas unsuitable for bicyclists due to grades or potential for conflict with other users



**Figure 3.14:** Value of Facility Type to User Groups - Pedestrian Only Path

## Best Practices

The previous section outlines the general characteristics of alternative transportation facility types that may be implemented as part of the system plan. Equally important to encouraging alternative transportation is the design of support facilities, amenities, and streetscape features associated with these transportation facilities. The following outlines best practices to enhance the function, safety, comfort, and appeal of Bloomington's alternative transportation facilities.

These best practices support the aims of the City's Complete Streets policy to promote multi-modal access and accommodate pedestrians, transit riders, bicyclists, motor vehicle driver, and all users, regardless of age or ability. Complete streets design goes beyond simply providing a path, sidewalk, or trail, but designing the overall street environment to ensure the safety and comfort of a wide range of users. In addition to the system plan and best practices outlined here, the City's Safe Routes to School program is an integral part of actualizing the Complete Streets policy. See Section 2 for more on Complete Streets and Safe Routes to School.

## Traffic Speed Management

Reducing traffic speeds is an effective strategy for improving the safety and comfort of alternative transportation users. Lower speeds can be accomplished through a range of proven traffic calming measures. The Federal Highway Administration (FHWA) defines traffic calming as a combination of mainly physical measures that reduce the negative effects of motor vehicle use and improve conditions for nonmotorized users. Such measures include the following:

### Enforcing speed limits

Enforcing traffic speeds has been shown to increase safety for pedestrians and bicyclists. Additionally, lower effective travel speeds improves the perceived sense of safety for all nonmotorized users, particularly in areas where bicycles travel in on-street facilities alongside or sharing a lane with motor vehicle traffic. This perception of safety plays a major role in influencing individual decision-making about walking or biking.

Speed limit enforcement is particularly important around schools, parks, and other areas where you might see a higher level of nonmotorized users and particularly young children. Partnering with local law enforcement to ensure traffic laws are obeyed (this includes enforcement of speeds, yielding to pedestrians in crossings, and proper walking and bicycling behaviors) is key to the effectiveness of such traffic calming measures.

### Physical traffic management

The City of Bloomington has a formal neighborhood traffic calming policy and procedure that clearly articulates the range of traffic management devices available to reduce the speed and volume of traffic on local streets. Some of the devices available include speed tables, central islands, chicanes and diverters. The policy also lays out the process for assessing screening and implementing these measures in the City. The policy is available on the City's website: [https://www.bloomingtonmn.gov/sites/default/files/media/traffic\\_calming\\_policy.pdf](https://www.bloomingtonmn.gov/sites/default/files/media/traffic_calming_policy.pdf)

### STATS ON SPEEDING:

*Speeds over 20 mph significantly increase the likelihood of fatality in the case of a crash. Consider these statistics:*

- » *If someone is hit by a car going at 40 mph, there is a 70 percent chance that person will die*
- » *If someone is hit by a car going at 30 mph, there is a 20 percent chance that person will die*

Source: <http://transalt.org/issues/speeding>



## Road Diets

Reducing motor vehicle lane widths or eliminating motor vehicle travel lanes (also known as a “road diet”) is another way of calming traffic that also reclaims space in the roadway for alternative transportation treatments. Road diets can achieve the following potential benefits:

- » Reducing traffic speeds
- » Reclaiming space for bikeway treatments or additional public realm enhancements (e.g. landscaping, street furnishings, etc.)
- » Improving bicycle and pedestrian safety
- » Increasing visibility and sight distance
- » Encouraging an active streetscape and support the pedestrian realm
- » Improving roadway aesthetics

## Safe Crossing

A successful pedestrian and bicycle network requires safe and convenient street crossing opportunities. Wide roads carrying large traffic volumes are significant obstacles to pedestrians, making facilities on the other side difficult to access. Safe street crossings also benefit motorists, in which an automobile driver parking on one side of the road may desire access to points across the street. A pedestrian system with sidewalks and crossing opportunities also allow a driver to park and then walk to multiple destinations.

Providing safe street crossings, whether at controlled intersections, uncontrolled crossings or grade separated crossings, is a critical aspect of an effective alternative transportation system. If people do not feel safe crossing the street on foot or bike, they may not choose to travel by these



*Bicycle lane striping through a signalized intersection*

modes. In the community survey conducted as part of this plan update, more than 75% of respondents rated “intersection and street crossing safety improvements” as “very important” or “somewhat important” to improving walking and biking conditions in Bloomington, ranking it as one of the highest priority improvements.

The following strategies should be considered in the design of street crossings for existing and future alternative transportation facilities:

### *Improvements to Signalized Intersections*

Long crossing distances, free right turns on red, permissive left turns, vehicle speeds, signal timing, lighting, and sight lines can contribute to real and perceived safety issues at signalized intersections. While detailed design and site-specific analysis and engineering are needed to appropriately balance the needs of users at any particular intersection, the following measure should be considered to improve crossing conditions at signalized crossing locations:

- » Highly visible pavement markings (i.e. zebra or other)
- » Adequate signal time for pedestrians to cross
- » A leading pedestrian-only signal that allows pedestrians to pass most or all of the way through an intersection before motorized vehicles can advance
- » Pedestrian countdown signals
- » Extension of bicycle lanes (where applicable) through the intersection
- » Bicycle detection and/or bicycle signal
- » Adequate driver visibility through proper sight distance triangles
- » Design for slow vehicle right turn movements (consider tighter turning radii: 5-25 feet)



*Mid-block crossing with pedestrian-activated flashing lights and median island*

- » Pedestrian refuge islands
- » Curb extensions to reduce crossing distance and improve visibility of pedestrians by motorists
- » Overhead lighting

### Improvements to Uncontrolled Intersections

Uncontrolled crosswalks and mid-block crossings can be used where distances to controlled intersections are too far to be convenient for pedestrians or cyclists, particularly in areas where there is a high level of pedestrian activity or a history of safety issues. While site-specific analysis is needed to determine the appropriateness of these measures at any given crossing location (based on number of vehicle lanes, ADT, posted speed limit, roadway geometry, etc.), the following techniques may be considered to improve crossing conditions by increasing visibility and awareness of pedestrians:

- » Crosswalk located in area that optimizes pedestrian crossings (e.g. crossings connect directly to key destinations such as bus stops, parks, or other areas with high levels of pedestrian traffic)
- » Crossings in designated school zones:
  - Well-marked crosswalks
  - Use of adult crossing guards or student patrols
  - School signal and markings and/or traffic signal with pedestrian signals
- » Pedestrian activated flashing lights
- » In-street crossing signs
- » Pedestrian refuge islands
- » Overhead signs
- » Speed limit enforcement

- » Pedestrian signal
- » Pedestrian hybrid beacons (H.A.W.K.)
- » Street narrowing measures such as curb extensions or bump outs
- » Overhead lighting

### Grade Separated Crossings

In areas where signalized intersections may not be sufficient to provide safe crossings for bicyclists and pedestrians (due to high vehicle traffic volumes, high vehicle speeds, or other physical barriers), grade separated crossings may be appropriate. Key design considerations for grade-separated crossings include:

- » Adequate lighting – this is critical to maintaining the perceived or real sense of safety on these facilities
- » Adequate width to accommodate likely users and avoid conflicts between pedestrians and faster moving modes
- » Potential to use the bridge crossing for other uses- for example as an iconic structure, public art, community gathering place, or viewing station to natural or cultural attractions in the city
- » Multiple access choices (i.e. providing stairs and ramps-many bicyclists prefer carrying bicycles up stairs, rather than riding a circuitous ramp; providing access for mobility impaired users)
- » Wider stair ways and access ramps with broader turns (avoid switchbacks) for maneuverability and improved safety
- » Attractive railings, fencing, or other enclosures (where possible, design for a feeling of openness or permeability to avoid the sense of isolation)



Pedestrian Refuge Island



Artful design for a grade-separated bike and pedestrian bridge

## Signals

Commonly, traffic signals along signalized corridors are timed to accommodate smooth motor vehicle flows at a desired operational speed. In urban areas, these speeds exceed typical bicycling and walking speeds of 10 to 20 MPH and 2 to 3 MPH, respectively. Signal timing, or the lack thereof, can create difficulties for bicyclists trying to maintain a constant speed to take advantage of their momentum, which in turn tempts bicyclists to get a jump on a light or to simply run red lights out of frustration. The situation is even more frustrating to pedestrians, who often can only walk one or two blocks at a time, stopping at nearly every light

Where bicycle and pedestrian use is high, signal timing should take into account the convenience of bicyclists and pedestrians where possible. On actuated signals there are several improvements that can be made to benefit cyclists including:

- » Bicycle detection at signals (i.e. video or other)
- » Extending green time in signal timing to accommodate bicycle speeds
- » Placing supplemental push-buttons close to the street where a bicyclist can reach them without dismounting

Improvements for pedestrians may include:

- » Incorporating a pedestrian phase in the signal sequence, rather than on-demand, in locations with high pedestrian use
- » Placing pedestrian push-buttons in locations that are easy to reach, facing the sidewalk and clearly in-line with the direction of travel (must meet ADA guidelines for placement)
- » Adjusting the signal timing to accommodate slower walking speeds in areas with high concentrations of elderly pedestrians
- » “Countdown” timers to indicate time remaining to cross the roadway
- » Incorporating “pedestrian jump” phases that allow pedestrians into the intersection before motor vehicles
- » Incorporating “pedestrian-only” or “ped scramble” phases



*Conveniently located pedestrian push-buttons*



*Adjusted signal timing ensures adequate time for safe pedestrian crossing*

## Support Facilities

Support facilities are an integral part of the alternative transportation system, supporting the end of trip needs of users and creating a more welcoming and supportive environment for walking and biking. Support facilities include the following:

### Bicycle Parking

For the bikeway network to be used to its full potential, secure bicycle parking should be provided at likely destination points. The perceived threat (and reality) of bicycle theft being common due to the lack of secure parking is often cited as a reason people hesitate to ride a bicycle to certain destinations. The same consideration should be given to bicyclists as to motorists, who expect convenient and secure parking at all destinations.

Bicycle parking facilities are generally grouped into 2 classes:

- » Long term – provides complete security and protection from weather; is intended for situations where the bicycle is left unattended for long periods of time, such as apartments and condominium complexes, schools, places of employment and transit stops; these facilities are usually lockers, cages, or rooms in buildings that provide real security for the bicycle
- » Short term (less than 2 hours) – provides a means of locking the bicycle frame and both wheels, but does not provide accessory and component security or weather protection unless covered; it is for decentralized parking where the bicycle is left for a short period of time and is visible and convenient to the building entrance

Covered parking should generally be provided at multi-family residential, school, industrial, and commercial destinations. Where motor vehicle parking is covered, bicycle parking should also be covered. Covered spaces can be building or roof overhangs, awnings, lockers, or bicycle storage spaces within buildings.



Typical short-term bicycle parking

Covered parking needs to be visible for security, unless supplied as storage within a building. Bicycle parking should be located in well-lit, secure locations within 50 feet of the main entrance to a building but not further from the entrance than the closest automobile parking space. To reduce theft, a highly visible location with much pedestrian traffic is preferable to obscure and dark corners. Racks near entrances should be located so that there are no conflicts with pedestrians.

Bicycle racks must be designed to:

- » Avoid bending wheels or damaging other bicycle parts
- » Accommodate high security U-shaped bike locks
- » Accommodate locks securing the frame and both wheels
- » Avoid tripping pedestrians
- » Be covered where users leave their bikes for a long period of time
- » Be easily accessed from the street and protected from motor vehicles

In addition to common bicycle racks, end of trip facilities include secure, longer-term bike storage lockers and showers/changing space for commuters.

Currently, there are no established standards for a specific number of bicycle parking spaces at a given type of destination in Bloomington. See also Hennepin County's 2040 Bicycle Transportation Plan for sample bicycle parking requirements and best practices.

Note that the City is currently developing local standards for bicycle parking spaces based on local research. The standards will take into consideration site-specific needs and actual and projected use numbers. A common approach in applying a standard is to establish a baseline "proof-of-parking" capacity at a given destination consistent with the standard, then provide



Bicycle lockers (long-term parking)

actual bicycle parking spaces as demand warrants. In general, employment and retail centers should voluntarily provide parking to satisfy the demands of customers and employees.

Directional signs are needed when bicycle parking locations are not visible and obvious from building entrances or transit stops. Instructional signs may be needed if the design of bicycle racks isn't readily recognized as such. For security reasons, it may be desirable not to sign long-term employee parking within a building, to avoid bringing bicycles to the attention of potential thieves.

### Bicycle Hub/Repair Stations

Bicycle repair stations are typically free facilities that provide amenities such as a tire pump, tire air gauge, tire levers, tools, etc. along major bicycle routes, at transit station, and outside bicycle shops and bike-friendly businesses. More expansive than a repair station, a bicycle hub may include additional amenities to support bicycle commuters or distance riders, including changing rooms, restrooms, showers, and long-term bicycle parking. Such bicycle hubs are often located in combination with other related uses such as a transit stations, bicycle repair shop, cafe/coffee shop, and other bicycle-friendly businesses.

The City has plans to install bicycle repair stations at Dred Scott Playfield/Hyland Trail and Bloomington Civic Plaza in 2015.

### Trailheads and Rest Stops

Trailheads within parks in Bloomington are an important support facility within the alternative transportation system. Amenities at trailheads may include:

- » Vehicle parking
- » Bicycle parking
- » Water
- » Restrooms
- » Kiosk with trail information and wayfinding
- » Repair stations
- » Benches
- » Trash receptacles

Rest stops at key locations along regional trails and community corridors can provide smaller-scale amenity areas, similar to trailheads, and may include wayfinding, landscaping, benches, and water.

**Figure 3.15:** Minimum Bicycle Parking Requirements- low density suburban, exurban or rural areas (Draft Hennepin County 2040 Bicycle Transportation Plan)

Type of Use	Short-term bicycle parking requirements	Long-term bicycle parking requirements
Commercial	Office: 1 space for each 20,000 s.f. of floor area, minimum of 2 spaces	1 space for each 12,000 s.f. of floor area; minimum of 2 spaces
	Retail: 1 space for each 5,000 s.f. of floor area, minimum of 2 spaces	
Multi-family residential	0.05 for each bedroom; minimum of 2 spaces	0.5 spaces for each bedroom
Institutional /public uses (museums, libraries, hospitals, religious uses, etc.).	1 per 5,000 s.f. of floor area; minimum of 4 spaces	1 per 30 employees; minimum of 2 spaces
Manufacturing/industrial	None required; consider minimum of 2 at public building entrance	1 space per 15,000 s.f. of floor area; minimum of 2 spaces
Transit stations	LRT or BRT stations: Spaces for 1.5 percent of daily boardings	LRT or BRT stations: Spaces for 4 percent of daily boardings
	Park and rides: minimum of 6 spaces	Park and rides: minimum of 6 spaces

*Note: Bicycle lockers may be a good fit for long-term parking in low density areas where less than six long-term spaces are needed. Electronic lockers (first-come first-served with keycard access) are strongly recommended over lockers leased to individuals*

## Transit Integration

Integrating the alternative transportation system with the Metro Transit system plays an important role in making walking and bicycling a part of daily life in Bloomington. As the System Plan illustrated in Figure 3.2 on pages 3-4 and 3-5, regional trails and community corridors connect with established transit hubs and park & ride lots wherever possible. It is imperative that safe and convenient access to transit stations for bicyclists and pedestrians be provided. With increasingly convenient linkages, the potential to increase the use of bus and light rail transit is enhanced.

To encourage a more robust integration of bicycles with transit, five main components are necessary:

1. Allowing bicycles on transit
2. Safe and convenient access to transit stations for pedestrians
3. Offering secure bicycle parking at transit locations
4. Improving bikeways to transit locations
5. Educational outreach

The first of these is largely controlled by Metro Transit, which already provides bike racks on all Metro Transit buses and Blue Line trains at no additional charge. Items two through four will be addressed through the implementation of this plan. The fifth is best addressed jointly between the City of Bloomington, Metro Transit and Minnesota Valley Transit (MVTA) through a coordinated local effort.

As with the rest of the system, quality of end of trip facilities is critical to increased uses. Providing quality long-term bicycle parking at transit stations in particular is necessary to reassure bike commuters that their bicycles are safe and secure until they return. A mix of short and long-term bike parking is typically provided at transit centers. Programs such as Metro Transit's

"Guaranteed Ride Home" for cyclists who ride their bike to work three times a week or more also help reduce reluctance to travelling without an automobile.

### Bicycle "Park and Ride" Sites

Currently, transit-oriented bicycle facilities are provided at designated vehicular park and ride lots and transit hubs. However, these may not always be the most safe and convenient locations for bicyclists to get to via the street or trail system. As such, the validity of providing stand-alone bicycle park and ride facilities in select locations along the bikeway and trail system should be considered as the core ATP is implemented. The best way to determine where and the extent to which this should occur is to observe bicycle commuting patterns and work with local bicycle groups. Realistically, these patterns will not fully emerge until some of the key bikeway and trail corridors defined under this plan have been established.



*Bicycle Repair Station*



*Bicycle Racks on Metro Transit Buses*

## Education, Marketing, and Promotion

Improvements to the physical environment are most effective if coupled with on-going marketing, promotion, and educational efforts. Programs and events that promote walking, biking, and other nonmotorized modes can help to activate the alternative transportation system and increase the visibility and use of these infrastructure investments. Such programming may include:

- » Bloomington Active Living Biking and Hiking Guide
- » “Bike-Walk Week” events, including bike to work/school incentives, group rides, and other events
- » Community bike rides with the mayor or other City officials
- » Rides organized by local walking, biking, or outdoor recreation clubs
- » Parades, carnivals, block parties, and other street events that promote walking, biking, and other forms of outdoor recreation
- » School and community education classes about bicycle and pedestrian safety, bicycle commuting, and bicycle repair
- » Bicycle Friendly Business and Bicycle Friendly Community certification (a program of the League of American Bicyclists) Bloomington currently has “Honorable Mention” status
- » Bloomington Bicycle Alliance- local group advocating for bicycling issues and facilities in Bloomington

Web-based tools for promoting alternative transportation are another means to education and inform the public about planning, programs, and resources related to walking, biking, and other nonmotorized modes of transportation. Some potential components of an alternative transportation informational webpage include:

- » Links to maps (existing and proposed routes and facility types)
- » Interactive maps or other web-based forms that allow users to report crash incidents, comment on infrastructure conditions, safety concerns, and/or favorite rides/routes
- » Information on current and past planning and construction projects, programs to promote walking and biking, and other community health-related initiatives
- » Educational materials explaining the features and functions of alternative transportation infrastructure (e.g. explanation of pavement markings, facility types, tips for sharing the road, etc.)



*Group bicycle rides*



*Community events to promote walking and biking*

## Signage and Wayfinding

Included in the ATP System is a mix of amenities that also includes signage. The application of appropriately planned and scheduled signs helps the public understand their environment and guides them to known and new destinations. Planning signage means interpreting the needs and requirements for providing efficient and confident access. The following describes the features of an effectively programmed, designed and scheduled sign system to address multi-modal traffic sign system and describe how signage should be planned and managed. The intent is to have the wayfinding and signage plan be an integral component of the overall ATP plan and its implementation.

It should be noted that while the focus of this section is signage and wayfinding for bicyclists and pedestrians, there is a compelling need for these recommendations to be compatible and complementary to roadway signage for vehicles.

### Creating a “Readable” Environment

Signs designed to address wayfinding must provide clear, unambiguous answers to four questions:

- » Where am I?
- » Where am I going?
- » How will I get there?
- » How will I know when I have arrived?

Good signage helps to explain the facility and, in a sense, answers questions before they are asked. A well-planned system enables people to find their destination readily and quickly, reducing the need to search or to ask questions.

### Sign System Design

A family of signs is a hierarchy of structures designed as a standard to be applied throughout a defined area. While the content may vary from sign to sign the common design provides a consistency and relationship that connects each individual sign to the system. The reason for applying messages is to inform, instruct or convey information to the reader. The following typical sign types are defined to serve a specific range of posted information:

#### Regulatory signs

Regulatory signs provide trail rules, appropriate uses, access information and can include posting of enforceable instructions, restrictions and traffic rules. These signs typically contain standard forms and graphics and are applied along road lanes and off-road trails. (see Figure 3.15 on-road lanes)

#### Directional signs

Directional signs present directions, locations, scale and distances to destinations. They are typically designed to be attached to existing structures or free-standing, standard forms.



Figure 3.16: Regulatory Signage

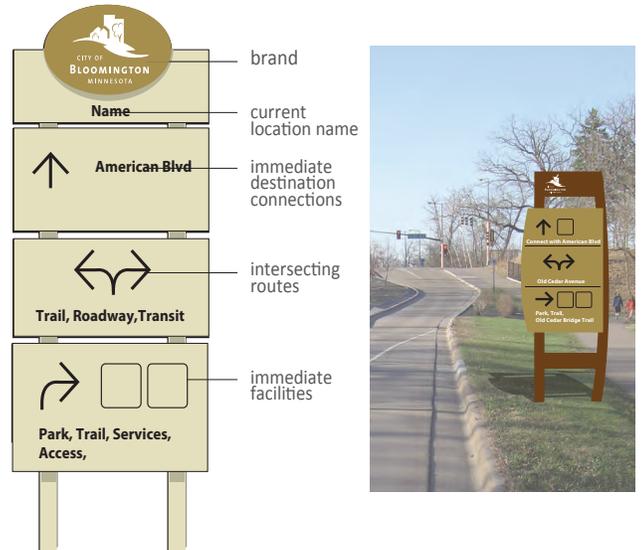


Figure 3.17: Directional Signage

They can also be information graphics applied along sidewalks, roadways and off-road trails and other posted locations. These signs provide information that names and directs people to destinations. (see Figure 3.16)

### Waymarker signs

Waymarker signs provide specific cues that provide orientation and scale. Waymarker signs may be applied along sidewalks, roadways and off-road trails. They indicate connections from the immediate stop to the larger transportation network. (see Figure 3.17)

Waymarker signs can also give direction to amenities in the immediate area, such as public rest rooms, food and water. Care should be taken not to identify specific businesses as a form of advertising.

### Directory signs

Directory signs provide information about the trail within the larger context of the city. Designed to hold orientation maps, event, sponsorship and other items, the form of the directory may vary from larger kiosks to simple panel displays. Located along road lanes and off-road trails, they present overview maps showing the immediate stop and how it relates to the larger transportation network. (see Figure 3.18)

Directory signs are an opportunity for providing information regarding prescribed routes for recreation or interpretation. Examples would be measured loops in the Normandale area for noon time runs or walking routes that highlight historical or natural amenities. Directory signs are also another opportunity to provide direction to nearby amenities.

### Sign dimensions

The number of characters and the type size as well as the length of the message determine the overall size of a sign. The size of a sign can be reduced by rephrasing the message in a manner that requires fewer characters. The following should be considered when planning the design of a sign system:

- » Consistent graphic presentation of information, (type style, size, reading distances, contrasts, conditions)
- » Application of well formed graphic standards
- » Use of maps and other orientation and information resources
- » Application of pictograms, icons and selected graphics
- » The scale, style, and durability of the signs in the context of their environment

The posted message needs to be communicated clearly while also scaled to “fit” appropriately within the facility or surrounding conditions. The ultimate size and location of the sign must balance this need to be large enough to be readable without being a visual obstruction or distraction. The ultimate size of a sign is a critical factor and should be assessed during the planning process. This applies to exterior signs in particular, where environmental or aesthetic concerns should be part of



Figure 3.18: Waymarker Signs



Figure 3.19: Kiosks on sidewalk setback



Figure 3.20: Applied Brand City of Bloomington

the criteria that are considered in determining the size and location of a sign. (see Figure 3.19)

### Placement of signs

Choosing a proper location and orientation is key to a sign's effectiveness; the following points should be observed when determining the placement of a sign.

The viewing distances referred to the mix of the various facility types with the observer standing or approaching the sign. The pace or speed of the observer coming upon the sign while walking, jogging, cycling or driving a vehicle should determine the placement, scale and amount of information that can be posted. The reading of sign messages is usually a kinetic process with the sign typically fixed in place while the reader is moving past the message at various speeds and distances. If it is expected that a cyclist is to be informed by reading a sign without missing a pedal stroke, the content on the sign must be well placed, clearly posted and short enough in length to be read and understood very quickly. If by contrast the amount of information is larger and the choices posted are more detailed or complex, the example of the cyclist is still valid where a message should be placed in advance of the sign, providing the option to slowdown and pause to read the more detailed sign content.

### Appropriate Placement

Exterior signs can be installed by various means. The methods of installation include the following: mounted on or into grade or finished surfaces; erected on posts to be freestanding; suspended from overhead structures, walls or fences or bracket mounted to suspend from existing structures such as light or traffic control stanchions. As applicable, factors such as landscape (terrain, vegetation) or architecture (surface, texture, color, modules) should be fully considered when determining the installation of a sign. The nature of the facility or site, the message and type of sign, and the needs of the user public will suggest the most appropriate form and mode of installation.

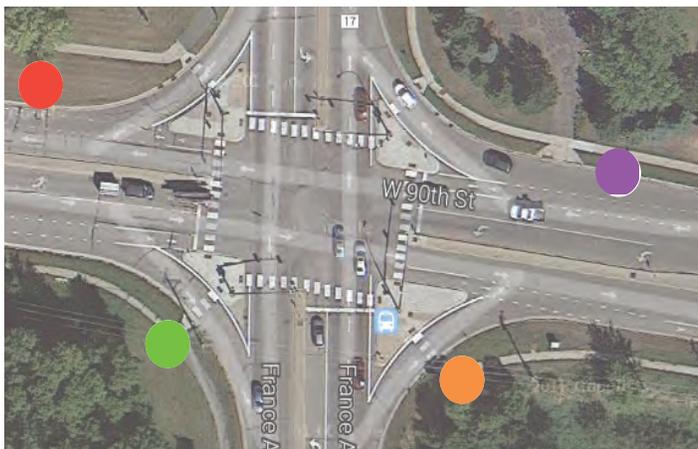


Figure 3.21: Applied Signs- four basic sign types

All signs that serve the same communication function should be installed in a manner that is consistent throughout the city where similar pathways or routing conditions exist. Signs that serve similar purposes should appear at the same height and in a similar context as facility features observed as one approaches a decision-point, for example. Uniformity of sign placement should be part of the planning process.

### Signage Hierarchy

An established hierarchy of signage to reinforce the similar hierarchy in trail types is important and can also be used to inform appropriate locations of signage as listed below.

- Directory Signs should generally be associated with the regional trail system and be located at major “gateways” where regional trails enter the city and at major commercial districts that may have a higher number of visitors unfamiliar with the Bloomington trail system.
- Waymarker signs should be associated with the intersections of the regional trail system and the community trail system to provide general context and reminders to users. The simplified information provided on these signs is reflective of a higher proportion of trail users on the community corridors being familiar with the area.
- Directional signs are lowest in the signage hierarchy but also the most prevalent. These signage will provide basic directional information to keep users on route when utilizing the system.

### Sign quantities and distance

Several factors influence decisions on how many signs will be needed to provide information on a particular route. These include the nature of the environment (differentiate types of facilities and complexity), the distance between the starting point or decision points and the destination, and the number of decision points along any given route. It is good practice to consider locating directional signs just before each decision point. When there are long distances between decision points, a prompting message may need to be repeated, confirming the direction towards the single or multiple destinations. (see Figure 3.20)

The need to provide information and specific directions along a route should not be interpreted as a call to install many additional, reassuring signs. Providing information that lists fixed distance from the sign's location to each destination provides a reassuring sense of orientation and scale in addition to providing potential options to trip planning and scheduling. Placing too many signs along a pathway can create too many reference points while a well thought out sign plan containing more informative content will usually result in fewer, more useful and strategically placed signs.

## Sign Partners

Consider locating signs throughout the network of connecting routes in partnership with current and proposed multi-modal sign and information system partners who have or are currently locating signs within and adjoining with the city. These may include the Three Rivers Park District, MnDOT, and/or US Fish and Wildlife Service (Refer to resources for Facility Design and Management, earlier in section 3). The mix and variety of facilities located throughout the community provide the city with an efficient and most functional solution by agreeing to support the mixed communication goals of these various multi-modal partnering groups. If planned appropriately, this can be accomplished with little more than simple revisions or changes to the content of a map or directional sign.