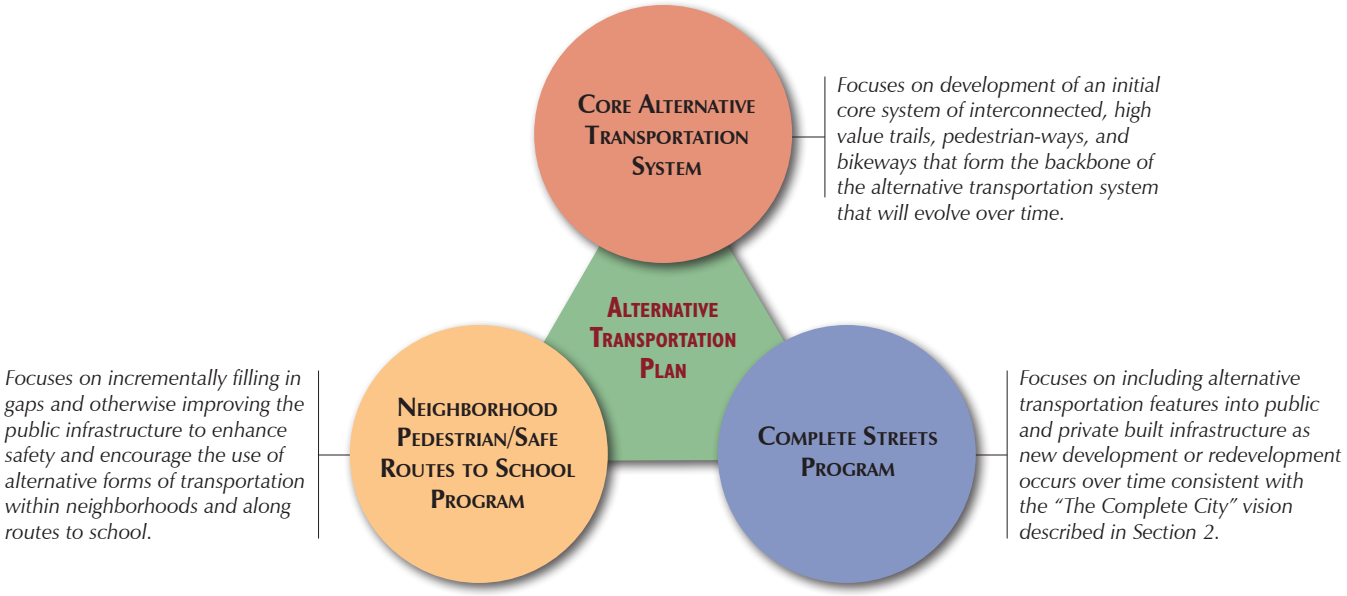
Section 3 Alternative Transportation System Plan

Key System Plan Components

The Alternative Transportation System Plan (***System Plan***) consists of three key components that will be implemented incrementally and concurrently over time to achieve the vision and values as set forth in Section 2. As defined in Figure 3.1, each of the three components focuses on a specific aspect of improving the transportation system in Bloomington to serve a cross-section of constituencies. As defined in Section 4, this three component plan translates into a multifaceted implementation strategy that leverages various resources and approaches to their best advantage.

Figure 3.1 – Key Components of the Alternative Transportation Plan



The following considers each of these components in greater detail, after consideration of the existing system of trails and sidewalks and a description of the principal destinations of interest within the city.

Value of Existing Trails, Sidewalks, and Bikeways Infrastructure

The existing infrastructure of alternative transportation features includes an eclectic collection of trails, sidewalks, and bike routes throughout the city that have evolved over time. While residents clearly value these features, input during the public process suggests that the system is often fragmented, lacks consistency, and basically needs upgrading if the use of alternative forms of transportation is to be fostered.

Figure 3.2 – Existing Asphalt Trails and Concrete Sidewalks within Bloomington

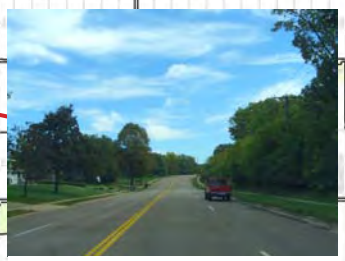
New trails being added to the system are already enhancing alternative transportation options within the city.

Some of the existing trail infrastructure is old and substandard, requiring replacement over time to be of greater value to the community for recreational or transportation uses.

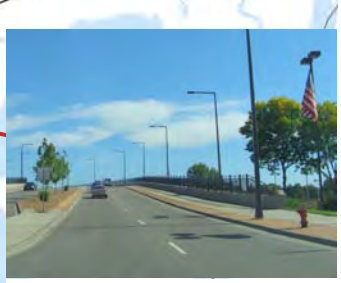
The 2-lane configuration on Nesbitt Ave. leaves a wide shoulder for bicyclists, which improves their sense of safety and the appeal of the corridor.

The width, condition, and flow of the existing sidewalk system is often inconsistent, with numerous gaps.

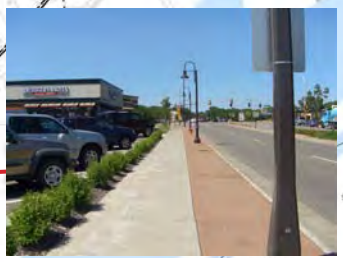
Numerous residents and task force members participating in the process pointed out various missed opportunities, many of which are addressed in this plan. With on-road bikeways, the major concerns are the lack of safe riding spaces along the street, confusing signage, and no defined routes. Figure 3.2 provides an overview of the existing network of trails and sidewalks found across the city. The accompanying photos illustrate some of the issues associated with the current system.



The 4-lane configuration on 86th St. leaves no shoulder for bicyclists, which reduces their sense of safety and the appeal of the corridor.



The enhanced pedestrian features along American Boulevard greatly improve pedestrian-level transportation options. The new bridge over I-35W also redefines the balance between modes of transportation relative to older bridges.



The enhanced pedestrian features along select sections of Old Shakopee Road accommodate pedestrians in a pleasant streetscape setting.

Importance of Existing Trails, Sidewalks, and Bikeway Infrastructure: *As defined starting on page 3.45, enhancement of the existing infrastructure of trails, sidewalks, and bikeways is an important aspect of the overall alternative transportation plan in that these features support the core system, as defined starting on page 3.7. For this reason, the importance of systematically expanding this "secondary" or "feeder" system should not be overlooked.*

Over time, systematic implementation of the proposed alternative transportation plan will improve the aging and sometimes inconsistent infrastructure of trails and sidewalks found across the city.

Whereas the existing trails, sidewalks, and bikeways have their limitations, these infrastructural features still provide an important base for building an alternative transportation system that more completely responds to public needs and contemporary design standards.

Principal Destinations

The public process included input on destinations from the task force, municipal partners from adjoining communities, and citizens through stakeholder meetings and public open houses.

As defined in Section 2, using alternative transportation features as a means for pedestrians, bicyclists, and in-line skaters to safely and conveniently access destinations throughout Bloomington and adjoining communities is one of the core goals of the plan. To that end, the following considers the various types of destinations identified during the public process as principal destinations within the city and links to adjoining communities.

Parks and City-Based Public Facilities

Parks are key destinations at both the community (first tier) and neighborhood level (second tier). First tier parks are those where visitors are likely to come from a broader, community-wide service area. In these cases, providing safe and convenient access to these sites *from throughout the city* via trails, sidewalks, and bikeways is the key objective.

Second tier parks are those where visitors are more likely to come from within the neighborhood. In these cases, providing safe access to these sites from the *surrounding local area* is the key objective, which will generally be in the form of sidewalks, local low-volume residential streets, and in some cases, linking trails. The following aerial images highlight the distinction between first and second tier parks.

Dred Scott Athletic Complex (left) is an example of a first tier park that draws visitors from across the city – thus warranting access via alternative transportation features such as linking trails, sidewalks, and bikeways. On the other hand, Brye Park (right), serves a more localized need in which providing safe routes from the surrounding neighborhoods is the key goal. In most of these second tier park situations, improvements over time will focus on enhancing the existing infrastructure of sidewalks and local trails, with particular attention to completing missing links and replacing narrow sidewalks (those less than 6 feet wide).

As with first tier parks, the plan focuses on city-based public facilities where visitors are likely to come from a broader, community-wide service area, as the following aerial image illustrates. In these cases, providing safe and convenient access to these sites *from throughout the city* via trails, sidewalks, and bikeways is the key objective.

Bloomington's Civic Plaza is an example of a city-based public facility that warrants direct access via alternative transportation features such as linking trails, sidewalks, and bikeways.

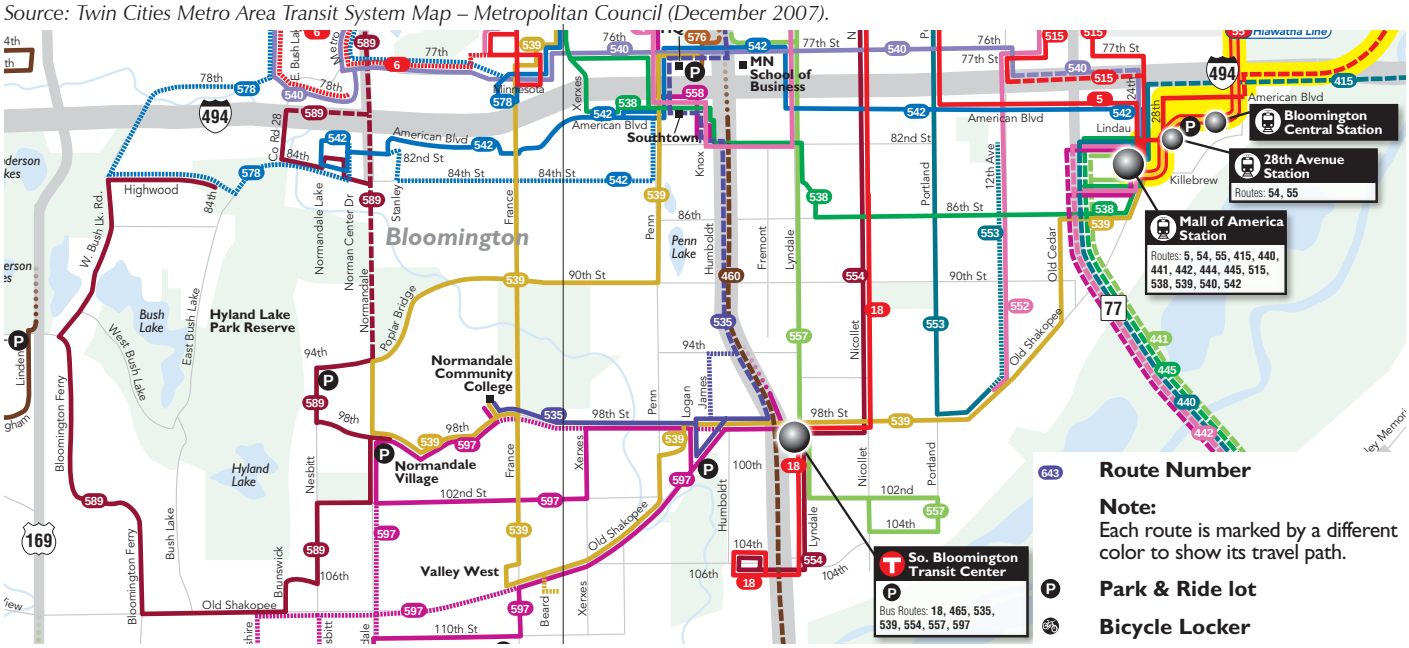
Although the core alternative transportation system focuses on trails, pedestrian-ways, and bikeways that service first tier public parks and facilities, it does not diminish the importance of safe alternative forms of transportation at the neighborhood level – which is addressed in greater detail starting on page 3.7. The ***Core Alternative Transportation System Plan with Principal Destinations*** on pages 3.8 and 3.9 identifies public parks and facilities locations.

Metro Transit Connections

The metropolitan transit system in Bloomington consists of bus routes throughout the city and LRT connections within Airport South. 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 3.3 illustrates the transit routing system in the Bloomington area, along with the locations for park and ride lots and transit centers/stations.

FIGURE 3.3 – METRO TRANSIT SYSTEM IN BLOOMINGTON AREA

Source: Twin Cities Metro Area Transit System Map – Metropolitan Council (December 2007).

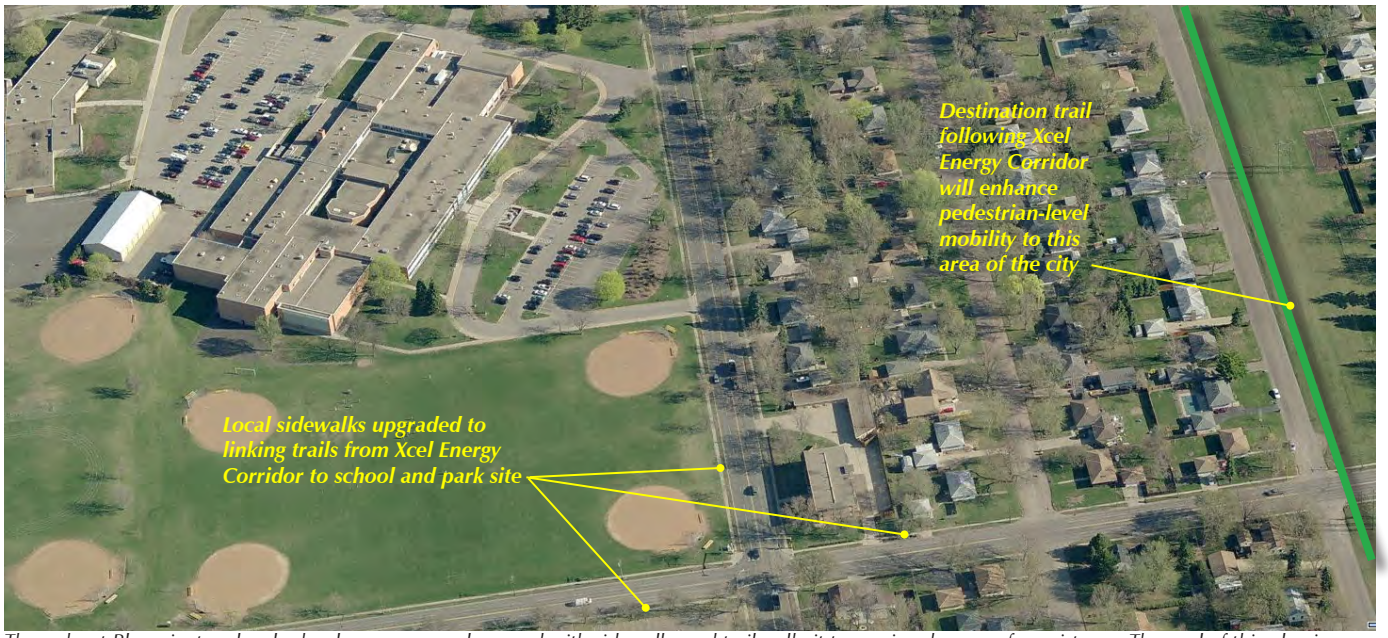


A priority of the alternative transportation plan is to entice higher levels of use of the metropolitan transit system by making access to park-and-ride lot locations, transit centers, and LRT stations via trails, sidewalks, and bikeways more complete, accessible, and safe. Working closely with transit authorities on providing support facilities and amenities (i.e., bike lockers 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. The ***Core Alternative Transportation System Plan with Principal Destinations*** on pages 3.8 and 3.9 includes park-and-ride lots, transit centers, and LRT stations.

Schools (Public and Private)

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 Program, which will be implemented over time on a priority basis in partnership with the School District. Although the core alternative transportation plan infrastructure plays a role in this program, site-specific plans would be prepared as the 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, with this particular plan being the first phase of that process by establishing the core alternative transportation system that the Safe Routes to School Program would built upon. (See page 3.42 for additional discussion this program.) The following aerial images illustrate some of the goals associated with improving access to school sites.



Throughout Bloomington, local schools are commonly served with sidewalks and trails, albeit to varying degrees of consistency. The goal of this plan is to enhance the existing system to further the Safe Routes to School approach. With Valley View School for example, the alternative transportation plan includes development of a destination trail along the Xcel Energy Corridor to augment the existing sidewalks near the school and adjacent park site. In doing so, children will have more enticing pedestrian-level options to get to school than is currently the case.

In the Jefferson High School and Olson Middle School area, the plan calls for adding a bikeway to W. 102nd Street to augment the existing sidewalks – thus providing a complementary alternative means for bicyclists to get to these campuses. Note that safely accommodating bus turning movements at school locations is another important consideration in bikeway planning.

The ***Core Alternative Transportation System Plan with Principal Destinations*** on pages 3.8 and 3.9 identifies public and private school locations.

Retail, Business, and Commercial Nodes

Whereas there are many retail outlets, businesses, and commercial enterprises across the city and in adjoining communities, the goal of this plan is to focus initially on the more concentrated nodes where there is an adequate critical mass of visitor/employee traffic to justify connection to a city-wide alternative transportation system. Once the initial system as proposed under this plan is implemented and the value of alternative transportation improvements assessed, future phases can focus on expanding the system to additional, second tier destinations. The ***Core Alternative Transportation System Plan with Principal Destinations*** on pages 3.8 and 3.9 identifies retail, business and commercial nodes within the city.

Core Alternative Transportation System Plan

Quick Core Alternative Transportation Feature Comparison Guide:

Destination trail *– 10 to 12 feet wide asphalt surfaced, located in greenway-type setting, and serves pedestrians and bicyclists equally well.*

Linking trail *– 10 feet wide (8-foot min.) asphalt surfaced, located in street right-of-way setting, and serves pedestrians and bicyclists equally well.*

Pedestrian-way *– 6 to 8 feet wide concrete surfaced, located in road right-of-way setting. Serves pedestrians more than bicyclists due to narrower width and surfacing (i.e., concrete crack control joints are rougher to bicycle on than seamless asphalt pavement).*

On-Road Bikeways *– 6-foot preferred width and located on the road. These serve bicyclists, but not pedestrians.*

Each of these are considered in greater detail in this section.)

The core alternative transportation system plan consists of existing and proposed trails, pedestrian-ways (sidewalks), and bikeways under various classifications that collectively form the backbone of the larger system. The plan is based on four key principles:

- Using **destination trails** to form a core system of high value recreation, fitness, and transportation trails across the city
- Using **linking trails and pedestrian-ways** ("enhanced" sidewalks) as a means to connect the destination trails together, along with providing pedestrian-level transportation routes to principal destinations that cannot otherwise be reached by destination trails
- Using **on-road bikeways** to serve recreational, fitness, and transportation bicyclists comfortable riding on the road
- Developing a **core system plan that is ambitious in its vision, yet realistic and achievable** in the context of resources available to the City

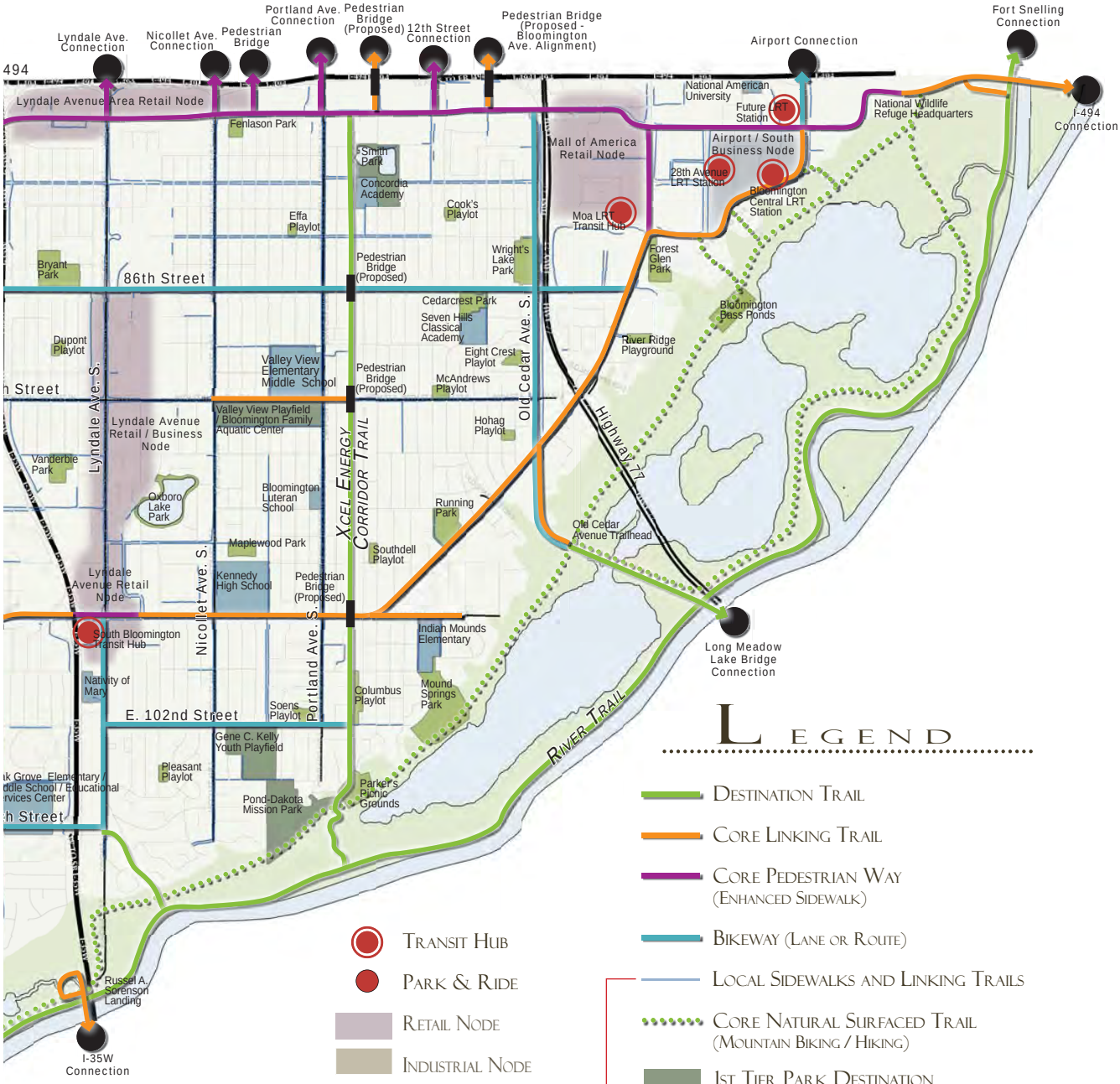
The ***Core Alternative Transportation System Plan with Principal Destinations (System Plan)*** as shown in Figure 3.4 illustrates the routes for each of the trails, pedestrian-ways, and on-road bikeways included as part of the core alternative transportation routing plan. This is complemented by the Neighborhood Pedestrian/Safe Routes to School Program and Complete Streets Program as defined later in this section. Together, these three components result in an integrated transportation system that, over time, will more effectively balance vehicular and pedestrian modes of transportation throughout Bloomington.

Figure 3.4 – Core Alternative Transportation System Plan with Principal Destinations

Potential Core Alternative Transportation System Mileage With Full Development

Classification	Total Combined Miles
Destination Trails	38.0
Linking Trails	28.0
Pedestrian-ways	10.0
Bikeways	28.0

Connections to Adjoining Communities Note: *The connection points shown on the map are conceptual and subject to refinement after further consultation with adjoining communities as detailed plans evolve over time. Also note that the crossing points for bikeways may be different than those for trails and sidewalks depending on street and bridge configurations and specific points of connection with adjoining systems. Refer to page 3.42 for additional information on this issue.*



Legend

- Destination Trail
- Core Linking Trail
- Core Pedestrian Way (Enhanced Sidewalk)
- Bikeway (Lane or Route)
- Local Sidewalks and Linking Trails
- Core Natural Surfaced Trail (Mountain Biking / Hiking)
- 1st Tier Park Destination
- 2nd Tier Park Destination
- School Destination
- Civic Destination
- Transit Hub
- Park & Ride
- Retail Node
- Industrial Node
- Business Node
- Key Connection to Adjoining System
- Pedestrian Bridge / Underpass

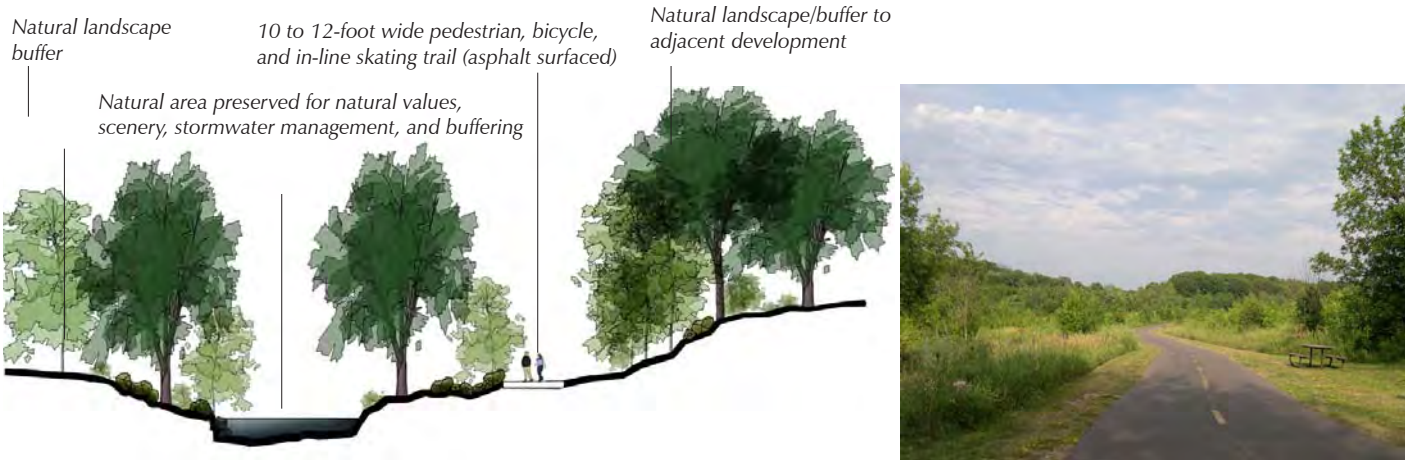
Secondary Sidewalks, Linking Trails, and Bikeways Note: *Addressing gaps in the local sidewalk, trail, and bikeway system throughout the city is considered under the Complete Streets Program discussion starting on page 3.45. Once implemented, this program will complement the core alternative transportation features shown on this plan.*

The following provides an overview of each classification and each of the routes/corridors shown on the ***System Plan*** that fall under a given classification.

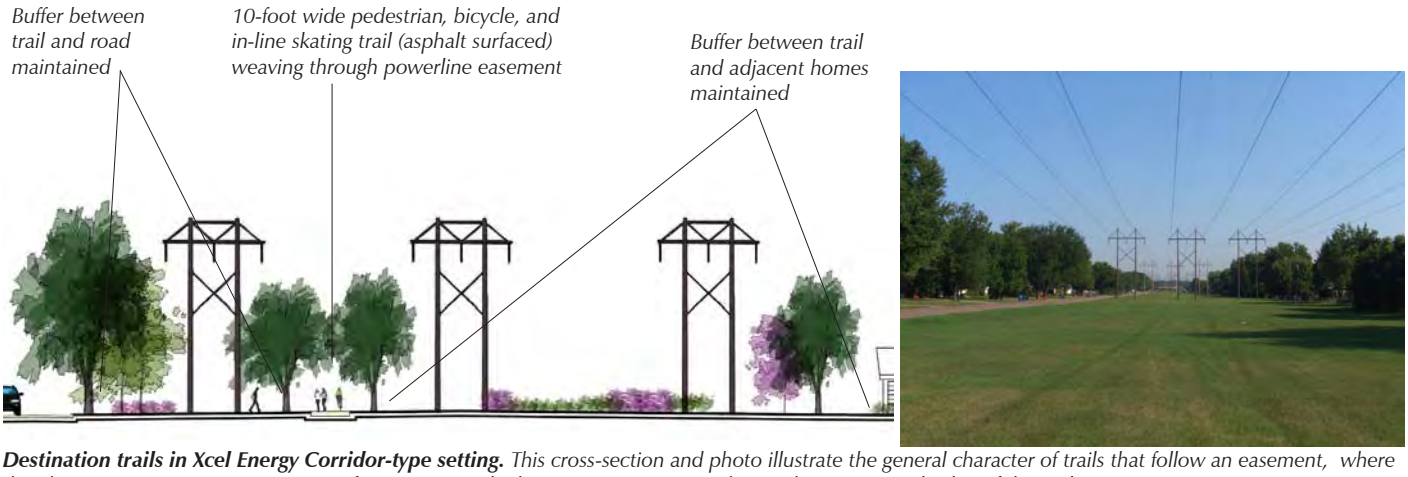
Core Destination Trails

Destination trails are paved trails located within a greenway, open space, park, parkway, or designated trail corridor. As the name implies, the high recreational value of this type of trail often make it a destination unto itself. Destination trails have a particular emphasis on continuity and are often the major conduits for travel within and between trail systems. Figure 3.5 illustrates a typical destination trail in a natural greenway and parkway-type settings offering high recreational value, along with accompanied photos highlighting specific situations applicable to Bloomington.

Figure 3.5 – Destination Trails in Natural Greenway and Parkway-Type Settings



Destination trail in natural greenway-type setting. *This cross-section and photo illustrate the general character of trails located within a greenway away from streets and traffic. Maximizing the use of destination trails located within scenic natural settings is an objective of the alternative transportation plan.*



Destination trails in Xcel Energy Corridor-type setting. *This cross-section and photo illustrate the general character of trails that follow an easement, where the objective is to maximize separation from streets and adjoining properties to enhance the recreational value of the trail.*

As the photos illustrate, destination trails emphasize a natural or park-like setting and creating a sequence of events that make the trail appealing to the user. Any deviation from these design principles incrementally diminish its value to the targeted user groups.

The ***destination trails*** traversing through the city as shown on the ***System Plan*** represent trail corridors that:

- Are integrated with existing linear park, open space, or easement corridors already established within the city
- Take advantage of a pleasant aesthetic setting for a trail
- Provide contiguous routes of travel from one area of the city to another, with particular emphasis on connections between established neighborhoods to local parks, regional parks, and the Minnesota River open space corridor

The generally uninterrupted character of destination trails is essential to their recreational and transportation value. If continuity is lost, the value of the trail diminishes and, in some cases, can effectively change its designation from destination to linking trail.

The alignment of the destination trails as shown on the ***System Plan*** are considered optimal at a citywide planning scale. The actual detail alignment of these trails will be determined as part of the design process at the point of implementation.

Development Standards and Guidelines

The destination trails should be consistent with regional trail standards, which are typically a 10 to 12-foot wide asphalt trail suitable for walking, bicycling, and in-line skating. All of these trails should meet accessibility standards whenever possible, which as a general rule means grades of 5 percent or less. The *Minnesota Trail Planning, Design, and Development Guidelines* (MN DNR 2007) provide the baseline standards and guidelines for developing destination trails.

Overview of Individual Destination Trails

To add context, the following provides a general overview of the major destination trail corridors illustrated on the ***System Plan***.

Minnesota River Trail Corridor

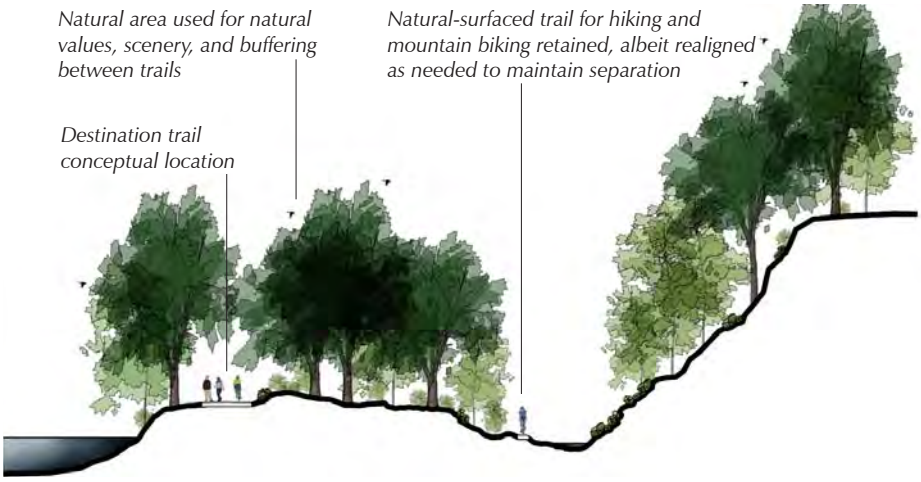
The Minnesota River Trail is classified as a destination trail due to its scenic, greenway-type setting along the Minnesota River. For much of its length, the trail traverses through the Minnesota Valley National Wildlife Refuge, a federally-designated refuge and recreation area, much of which is managed by the U.S. Fish & Wildlife Service (USFWS) in concert with the MN DNR. Development of the trail will require a cooperative partnership between the City of Bloomington, MN DNR, and USFWS.

The proposed destination trail will parallel the existing natural surfaced trail along the river corridor.

Once developed, the trail will likely become one of the city's most popular trails due to its setting, length, continuity, and interconnections with adjoining systems on both sides of the Minnesota River – all of which adding up to a very high value recreational trail experience.

In general, the proposed destination trail will parallel an existing natural surfaced trail along the river bottom, the latter of which being extensively used for mountain biking and hiking. With respect to trail surfacing, an asphalt surface offers certain advantages in accommodating the broadest range of user groups – which is a major goal of the active living philosophy. That said, final decisions on trail surfacing will be determined by the MN DNR as part of the public process associated with detail master planning of this corridor. Figure 3.6 on the next page illustrates the anticipated general relationship between trail types and uses.

Figure 3.6 – Relationship Between Destination and Natural Surface Trails Along River Corridor



As the cross-section illustrates, maintaining visual separation between the proposed destination trail and existing natural surfaced trail to the extent possible is an important design objective in order to retain the desired experience for users using either trail.

As illustrated, the corridor will be shared, with the intent being to minimize disruption to existing trail uses while striving for high quality experiences along the river for all user groups.

With respect to alignment from west to east, the Minnesota River Trail begins at the old Bloomington Ferry Bridge trailhead, which is adjacent to an existing dedicated trail crossing of the Minnesota River via a pedestrian/bicycle bridge. The trail continues east from the bridge until its ultimate interconnection with existing paved trails in Fort Snelling State Park, beginning west of the I-494 bridge over the Minnesota River. As shown on the ***System Plan***, numerous trail access points will be provided along the trail across the city.

Notably, the trail will be subject to periodic flooding in certain locations along the river, especially during spring thaw periods. Although this may cause some inconvenience to the user during these periods, designing the trail to withstand such conditions is technically achievable.

Hyland Trail Corridor

The newly constructed destination trail on the northern end of the Hyland Trail Corridor significantly enhances access to the regional park from this area of the city.

The majority of the Hyland Trail is classified as a destination trail due to its park-like setting in Hyland-Bush-Anderson Lakes Park Reserve (Hyland Park). As illustrated on the ***System Plan***, sections on either end of the trail will be linking trails by definition due to their location in a road right-of-way. Nonetheless, once fully developed, this north-south trail corridor will be of high recreational value and will provide one of the primary links to the Minnesota River Trail. It will also provide access to the park and trail amenities within the regional park.

From a development standpoint, the vast majority of the destination trail traversing through Hyland Park and the greenway on the northern end are completed to a desirable 10-foot wide standard. Completion of the missing interconnecting trail segment on the southeast side of Bush Lake and completing the linking trails on either end of this corridor are the main development priorities.

With respect to alignment from south to north, the Hyland Trail begins at the old Bloomington Ferry Bridge trailhead, where it proceeds north along Bloomington Ferry Road to West 106th Street, and then heads east to Bush Lake Road. From there, the trail heads north through Hyland Park and along some existing greenway corridors until it reaches its current end near I-494, where it will be extended into Edina.

At the access to Bush Lake Beach, a bridge overpass is proposed across East Bush Lake Road to provide a grade-separated connection from the Hyland Trail in the regional park to trails that connect with the existing beach and West Bush Lake Park. Completion of the missing link on the southeast side of Bush Lake to complete the connection to West Bush Lake Park is also part of this trail corridor plan.

Completion of the missing trail link that would connect West Bush Lake Park and Bush Lake Beach together is part of the Hyland Trail Corridor. Doing so, however, likely involves relocation of the road to make room for the trail along the lakeshore. (Photo is looking north.)

Providing a grade-separated crossing of East Bush Lake Road will improve safety for trail users crossing over from the regional park to Bush Lake Beach area. (Photo is looking north.)

Xcel Energy Corridor Trail

A portion of the this trail corridor is already developed in the area of Smith Park on the northern end.

Providing safe crossings of the bisecting streets poses the greatest design challenge along the Xcel Energy Corridor Trail.

The Xcel Energy Corridor Trail, which follows an existing private right-of-way, is classified as a destination trail due to its parkway-type setting, continuity, and north-south directness. Although the powerline detracts from its aesthetics, the corridor's linear green space character is a much more appealing trail experience than would be otherwise possible along a north-south street in this area of the community.

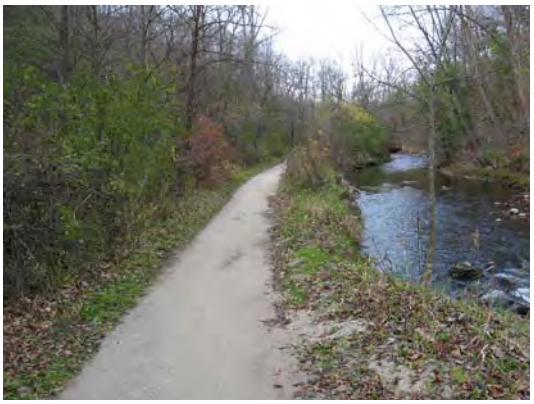
In terms of alignment, developing an appealing curvilinear trail along the corridor would be more appealing than a straight trail from end to end. On the south end, Xcel Energy Corridor Trail connects with the Minnesota River Trail in the area of Parker's Picnic Grounds. On the north end, the trail ties into the American Boulevard Corridor, where it ultimately crosses the freeway and links into the Richfield trail system. Just south of American Boulevard, the trail interconnects with Smith Park.

The main design challenge with this trail is the crossings associated with the 4-lane roads, including Old Shakopee Road, 90th Street, and 86th Street. At a minimum, a formal, perhaps signalized crosswalk will be required, with grade separated crossings being preferred. The limiting factors with the latter is cost and physical space.

In spite of any design challenges, this trail corridor is an important north-south connection through the eastern side of the city, with other options along streets being of far less overall value.

Looking north from the Minnesota River, the Mid-City Trail will follow an existing aggregate trail alignment through a backwater area.

Along the southern end, the well-established aggregate trail and bridges make upgrading to a paved trail relatively straightforward.



In Central Park, the narrow existing paved trail will need to be upgraded, but the bridges appear in good condition.

Mid-City (Nine Mile Creek) Trail

Of the three destination trail corridors defined by the plan, the Mid-City Trail is the most eclectic in terms of retrofitting it into the built environment. Nonetheless, this corridor provides some very high value trail experiences as it traverses through the natural open spaces along the Nine Mile Creek corridor and a couple of established parks. For example, the existing trails within Moir and Central Parks and along the creek down to the river south of 106th Street already provide trails that are popular with walkers and hikers. Of equal importance, the trail provides an important corridor for residents to migrate to the Minnesota River Trail and Hyland Trail corridors, as previously defined.

With respect to alignment from south to north, the trail begins at its intersection with the Minnesota River Trail and heads north following the alignment of an existing aggregate surface trail up to the 106th Street bridge, at which point it connects to an existing, albeit narrow, paved trail in Central Park. The existing bridges crossing the creek along this southern segment are already built to an acceptable standard. The neighborhood connection between this trail and Queen Avenue will also be upgraded to provide improved access for residents coming from the south-central end of the city. The existing parking lot and trailhead along 106th Street will also be retained, with improvements to trailhead information and accessibility envisioned.

Within Central Park, the trail will likely follow an existing paved trail alignment from 106th Street up to the northern part of the park and through Moir Park as illustrated on the ***System Plan***. In both parks, the existing trails are narrow and will need to be upgraded to the 10-foot standard typical for a destination trail in order to accommodate a broader range of users and improve safety. Note that upgrading the trails in these two parks would require a policy review with respect to trail usage. Currently, biking is not allowed under a policy established over a decade ago. Upgrading these trails to allow bicyclists and in-line skaters to use this corridor is consistent with the values and vision defined in Section 2. In addition, the desire to get to the Minnesota River Trail through these parks will be hard to dissuade, making it impractical to prohibit bicyclists from using this route irrespective of its formal designation. From a design standpoint, accommodating bicyclists and in-line skaters is technically feasible following standard design principles for destination trails in natural settings.

From the Moir Park area, the trail briefly follows Old Shakopee Road before it heads west along the north side of 102nd Street until it reaches Xerxes Avenue. This section of trail would technically be a linking trail given its right-of-way alignment. The existing sidewalk along 102nd Street will require upgrading to a 10-foot paved trail to accommodate the various user groups. At Xerxes Avenue, the trail heads briefly north within the right-of-way to Brookside Park, where it will then be integrated into the larger park master plan on its way to intersecting with 98th Street. From there, the trail heads west to France Avenue, where it crosses the street and heads north following an existing linking trail alignment on the west side. Just north of the existing Marsh Lake Soccer Fields, the trail will head west through public open space until it reaches Poplar Bridge Road/90th Street, where it continues west and then north through public open space until it reaches 84th Street. A new, already planned pedestrian bridge across Normandale Boulevard on the south side of 84th Street will provide a grade-separated trail connection to the existing trails around Normandale Lake.

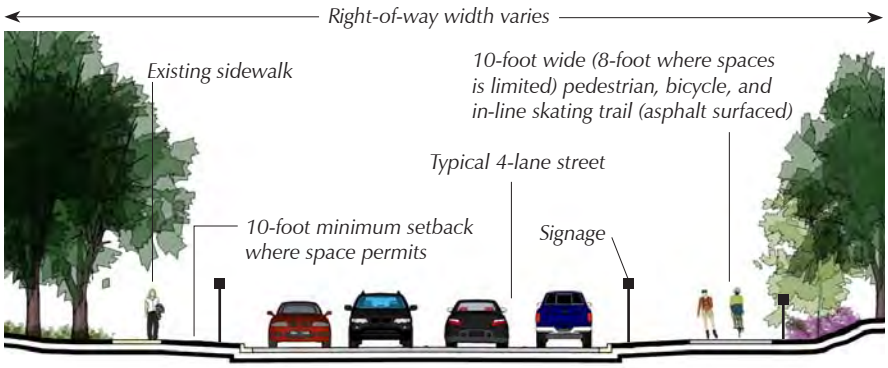
Core Linking Trails and Pedestrian-Ways

Distinction Between Trail Types: *Whereas destination trails emphasize a recreational experience in a greenway or park-like setting, linking trails emphasize safe travel for pedestrians and bicyclists to and from parks and to destinations around the community. Linking trails do provide recreational value, but not to the level of destination trails due to vehicular traffic (safety, noise, odors), more street crossings, and a less scenic setting.*

As illustrated on the ***System Plan***, a core system of linking trails and pedestrian-ways are proposed that, in combination with destination trails and on-road bikeways, form the backbone of the alternative transportation system. The core trails and pedestrian-ways are complemented by a secondary system of sidewalks and trails, which are considered in greater detail on page 3.42 under Neighborhood Pedestrian/Safe Routes to School Program.

Linking trails, which are 10-foot wide (8-foot where space is limited) and asphalt surfaced, are primarily located within road rights-of-way. The advantage of linking trails over a concrete sidewalk is better accommodation of bicyclists and in-line skaters due to extra tread width and smoother surface. In Bloomington, linking trails of varying width and condition are currently provided along a select number of streets (as defined on the map in Figure 3.2 as asphalt sidewalk). In most cases, existing trails are only on one side of the street, typically in combination with a sidewalk on the opposite side. Within the context of this plan, the objective is to upgrade the current infrastructure of linking trails along the core routes shown on the ***System Plan*** to a consistent standard. In most cases, this will entail continuing the current practice of providing a trail on one side of the street and leaving a sidewalk on the opposite side. Although providing linking trails on both sides is a common approach in new construction to accommodate the broadest range of users, continuing the current practice is the most cost-effective approach to bringing the current trail infrastructure up to a consistent standard. Thereafter, replacing sidewalks with linking trails on both sides of designated streets could be considered as resources allow. Figure 3.7 illustrates a typical linking trail situation in Bloomington, along with a photo of a newer trail.

Figure 3.7 – Right-of-Way-Based Linking Trails



In Bloomington, when provided, the current approach is to provide a linking trail on one side of the street and a sidewalk on the opposite side. Continuing this approach is recommended until the core alternative transportation system is completed to attain a consistent standard along the core routes. Thereafter, greater consideration can be given to providing a linking trail on both sides of the street, if warranted by demand.

In contrast to linking trails, **pedestrian-ways** are essentially enhanced sidewalks designed as part of an overall streetscape along key street corridors and within retail and business nodes across the city, as illustrated on the ***System Plan***. Typically, pedestrian-ways include a 6- to 8-foot wide concrete sidewalk with an adjoining band of stamped colored concrete of varying width, which serves as a boulevard behind the curb line. The difference between pedestrian-ways and standard sidewalks is the greater attention given to aesthetic qualities and detail streetscape features that make them more appealing to pedestrians. Detail features include transit stops, benches, and shade trees – all of which entice individuals to walk instead of drive between destinations. The photos on the next page illustrate the difference between pedestrian-ways and sidewalks.



The two left photos illustrate pedestrian-ways in retail nodes within Bloomington. As shown, these provide appealing places between destinations and along the primary corridors, such as American Boulevard. The right photo illustrates a more common sidewalk, which remains important at the neighborhood level, especially along busier streets.

Important consideration! *Bloomington's past focus on pedestrian-ways versus linking trails in retail nodes and along retail/business corridors like American Boulevard consequently put priority on pedestrians over bicyclists. Even with this limitation, the pedestrian-way improvements in these areas greatly enhances the pedestrian environment.*

The one limiting factor with pedestrian-ways and sidewalks is that they best serve walkers, joggers, and children/families on bikes. Adult recreational, fitness, and transportation bicyclists tend not to routinely use sidewalks because they are too narrow and the crack control joints make for a rougher riding surface. In spite of this limitation, a cohesive network of pedestrian-ways and sidewalks add much value to the alternative transportation system.

Development Standards and Guidelines

As with destination trails, linking trails should be consistent with regional trail standards, which is a 10-foot wide asphalt trail suitable for walking, bicycling, and in-line skating. An 8-foot width can also be used in situations where the linking trail provides access from an area with limited development or where space is too limited to cost effectively provide a 10-foot width.

Pedestrian-ways should meet city standards and include an 8- to 10-foot concrete sidewalk where space allows, with 6 feet being the minimum width. The width of the stamped concrete band will vary with the streetscape design, although adequate space for signage should be provided.

All linking trails and pedestrian-ways should meet accessibility standards whenever possible, which as a general rule means grades of 5 percent or less. The *Minnesota Trail Planning, Design, and Development Guidelines* (MN DNR 2007) provides the baseline standards and guidelines for developing linking trails.

Overview of Individual Linking Trail and Pedestrian-way Corridors

The following provides a general overview of the core linking trail and pedestrian-way corridors illustrated on the ***System Plan***.

Old Shakopee Road Corridor

Old Shakopee Road is a major, heavily trafficked east-west corridor through the city. Numerous destinations, including retail and business nodes, parks, and community facilities, are located along this corridor. For these reasons, the corridor is an important part of the alternative transportation plan and a logical choice for providing linking trails and pedestrian-ways to enhance access and through-travel options for all modes of transportation. It is not, however, suitable for an on-road bikeway corridor given limited width and traffic volumes.

Currently, much of the corridor is an eclectic collection of sidewalks, trails, and pedestrian-ways of varying width, character, and condition. The primary goal is to continue making pedestrian-level upgrades over time to complement those that have occurred in recent years, especially in the retail nodes, such as at France Avenue/Old Shakopee Road. Maintaining a consistent approach to the design, layout, and location of linking trails, pedestrian-ways, and sidewalks along the entire corridor is important to establishing use patterns with pedestrians and bicyclists. Figure 3.8 conceptually illustrates how these elements come together at retail nodes such as France Avenue and Old Shakopee Road.

Figure 3.8 – Interface of Linking Trails, Pedestrian-Ways and Sidewalks

This aerial image of the France Avenue/Old Shakopee Road retail node highlights the interface between linking trails, sidewalks, and pedestrian-ways. As shown, the paved linking trail transitions to the pedestrian-way at a convenient location, which provides the visual cue that pedestrians take precedence over bicyclists. Although inconvenient to the bicyclist, this only occurs on a limited basis along the corridor.

Important implementation prioritization factor!
As defined in Section 4, developing a linking trail along this corridor, while still viable, is nonetheless a lower priority than other trails – especially destination trails – due to this issue.

As illustrated, pedestrian-ways take precedence over paved trails in the retail nodes, in affect reinforcing the notion that pedestrians have right-of-way over bicyclists in these spaces. Additional visual cues, including signage and detail streetscape treatments, need to reinforce this relationship to limit conflict. Although this is not an optimal design for through-bicyclists traveling along the corridor, it is a reasonable approach to balancing the needs and expectations of pedestrians, bicyclists, and motorists frequenting these areas. To the advantage of the bicyclist, this only occurs three or four times along the entire corridor, thus minimizing any inconvenience it may cause. Of more concern are the numerous street crossings along this corridor, which is annoying to many bicyclists. As such, a lower level of bicycle traffic can be expected along the corridor due to the inconvenience factor.

In terms of corridor design, the intent is to provide a paved linking trail on one side of the street complemented by an existing sidewalk on the opposite side. Since paved trails already exist in a few locations on the north side of the road, continuing that approach has merit. However, a final judgment should be made on which side best accommodates a paved trail after a detailed review of the corridor. Whichever is selected, staying on one side of the road is recommended to limit street crossings and user confusion.

Note that the paved trail replaces existing sidewalks of varying width for much of the length of the corridor. With respect to enhancing the sidewalks on the opposite side of the road, the focus should be on filling gaps.

In addition to consistency in layout and pavement surfaces, providing safe and efficient pedestrian crossings throughout the corridor is also necessary to entice higher levels of use. The Complete Streets Program design guidelines starting on page 3.45 should be referred to for additional information on safe crossings and other design elements pertinent to the development of this and other corridors.

American Boulevard Corridor

As with Old Shakopee Road, American Boulevard is a major, heavily trafficked east-west corridor through the city. From west to east, the corridor supports a variety of businesses, retail outlets, hotels, and commercial enterprises of all shapes and sizes. Whereas historically the corridor was vehicle-centric, over the last decade or more the City has been upgrading the public infrastructure with significant emphasis on pedestrian accessibility and mobility.

Redevelopment and enhancement of the corridor has included major street and streetscape improvements throughout the corridor, along with a major new bridge over I-35W. Enhanced pedestrian-ways are a significant part of the streetscape design scheme, as the photos below illustrate.

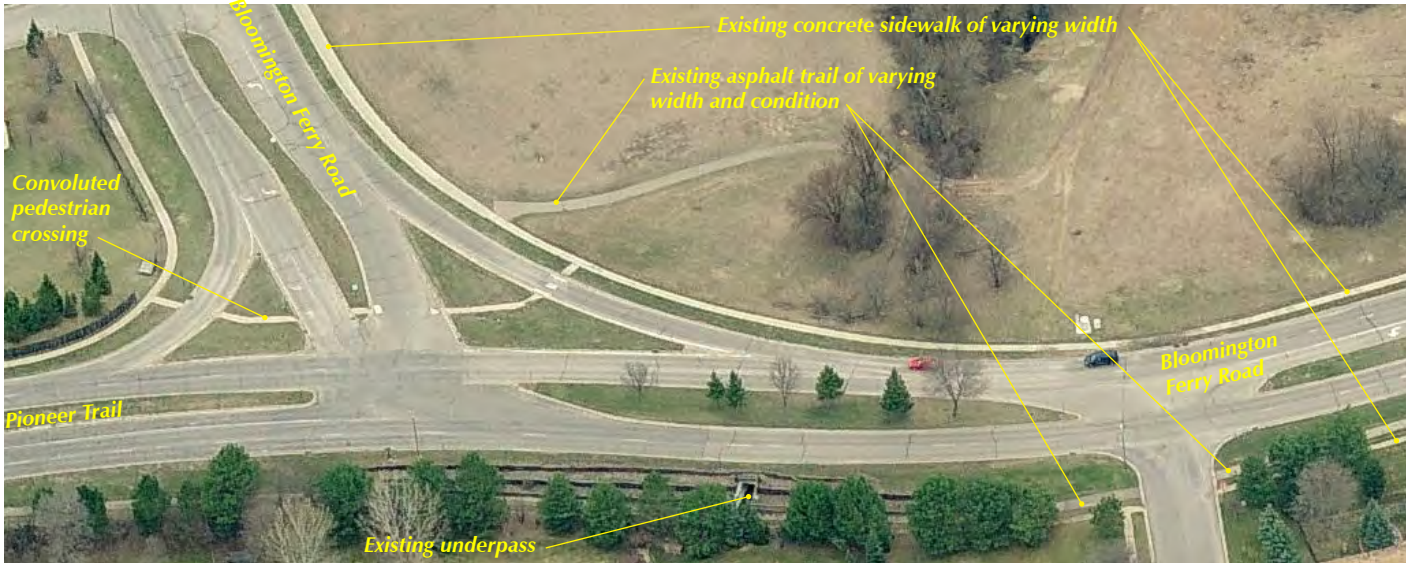
The two left photos illustrate pedestrian-ways incorporated into the streetscape design in areas where American Boulevard has been upgraded in recent times. As shown, these provide a much more appealing pedestrian atmosphere than was the case in the past. The right photo illustrates an area where upgrades have not been made and where occasional pedestrian-way gaps exist.

As the photos suggest, once fully upgraded, the American Boulevard corridor will be primarily a pedestrian-way throughout its length, in contrast to the linking trail/pedestrian-way combination envisioned along the Old Shakopee Road corridor. Although bicyclists can still be accommodated, the design of the corridor focuses on enhancing pedestrian movement between the many destinations in a comfortable streetscape setting.

In terms of corridor design, continuation of the streetscape and pedestrian-way theme already established is the primary goal along this corridor. To maximize the value and safety of any new improvements, pertinent aspects of the Complete Streets Program described on page 3.45 should be applied to the future design of the streetscape and street infrastructure.

Bloomington Ferry Road/West Bush Lake Road Corridor

This corridor is an important north-south linking trail spine that connects the surrounding neighborhoods to the destination trail system as shown on the ***System Plan***. In general, some combination of linking trails and sidewalks are provided along much of this corridor, albeit of varying quality and width. There are also some noticeable gaps that need to be addressed. For context, the following aerial images highlight some of the trail and sidewalk conditions found along this corridor.



As these aerials illustrate, trails and sidewalks in various forms and configurations already exist along Bloomington Ferry Road corridor. However, the design standards and configurations are often inconsistent and can be confusing to users – likely resulting in lower levels of use than might otherwise be expected.

Consistent standards for street crossing configurations and safety features are also important to entice higher levels of use.

As the aerials illustrate, a base infrastructure of trails and sidewalks exist, but establishing a consistent end-to-end linking trail and sidewalk design standard should be uniformly applied as upgrades are made over time is the primary alternative transportation plan objective along this corridor. (Figure 3.7 on page 3.15 illustrates a typical cross-section that would be appropriate for this corridor.)

With respect to alignment from south to north, the corridor begins at the Bloomington Ferry Road Trailhead where the linking trail interconnects with the Minnesota River Trail. From there, the trail heads north on the along Bloomington Ferry Road until it reaches Dred Scott Playfield. This first section is currently a concrete sidewalk that will at some point need to be upgraded to 10-foot linking trail standards to fully accommodate targeted user groups, especially bicyclists. This trail is complemented by a sidewalk on the other side of the road.

At Dred Scott Playfield, a paved trail is already provided along Bloomington Ferry Road, which continues north and crosses Old Shakopee Road at a signalized intersection. Between this intersection and Pioneer Trail to the north, a sidewalk parallels the trail on the west side of the road, which is a bit unusual and perhaps unnecessary. Once at Pioneer Trail, the trail crosses under the road via tunnel, which is a bit long and narrow. It also continues along Pioneer Trail over to Hwy. 169, where it connects to the Eden Prairie trail system.

Continuing north from Pioneer, the linking trail is located on the east side of Bloomington Ferry Road with a concrete sidewalk on the west side. At Veness Road, a newly constructed segment of Bloomington Ferry Road includes paved linking trails on both sides of the road, which is an optimal standard and a layout pattern that continues into Eden Prairie. Within Bloomington, the trail corridor continues north along Veness Road to its intersection with West Bush Lake Road. Veness Road currently has concrete sidewalks along both sides of the road. Upgrading the sidewalk on the east side of the road to a 10-foot linking trail is proposed under this plan to maintain consistency.

Along West Bush Lake Road, an existing linking trail exists from Veness Road north to Marth Road, which is adjacent to I-494. From 86th Street on the north, a sidewalk is provided on the east side of the road. There is also a linking trail provided along 86th Street that connects the trails along West and East Bush Lake Roads. Over time, all of these trails need to be upgraded to a consistent 10-foot trail standard.

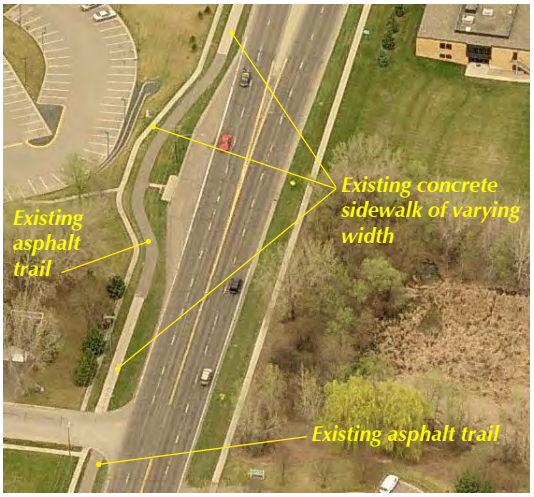
Heading south along West Bush Lake Road from the Veness Road intersection is an important missing trail segment on the east side of the road that needs to be completed to link this corridor with the trails in West Bush Lake Park and points beyond. Making the connection to the Eden Prairie trail system from West Bush Lake Road via Amsden Road and a grade-separated crossing under Hwy. 169 is also part of completing this trail corridor. Given the limited width of Amsden Road, an on-road bike route will likely be necessary in lieu of a separate trail to complete this segment. Since it is a dead end street with low traffic volumes, this approach should be acceptable, assuming the geometrics of the street allow for adequate sightlines and space for safe shared use.

Amsden Road is a dead end street that may be used to create a link to Eden Prairie via a grade-separated crossing at Hwy. 169. The limited right-of-way along Amsden precludes providing a separate trail.

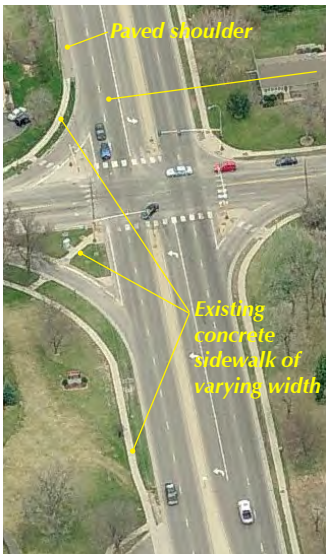
Making a linking trail connection between the end of Amsden Road and the trail along Bloomington Ferry Road is proposed to create a shortcut for bicycle commuters and creating a neighborhood trail loop.

France Avenue Corridor

This avenue was selected as a core north-south corridor over Normandale Boulevard largely due to the greater density of destinations found along it, especially schools and colleges. Although there is an existing linking trail and sidewalk system along this corridor, it is very eclectic. Establishing a consistent pavement width and location for the linking trail and sidewalks throughout the corridor is the major redevelopment issue. This includes creating greater separation between the trail and the street edge where possible to enhance safety and make for a more pleasant user experience. Although this will be challenging and costly along some sections, the overall value of this corridor is greatly diminished when trails turn into paved shoulders, which effectively makes them a bikeway and not a linking trail. This matters in that these facilities appeal to distinctly different user groups.



As the aerial illustrates, a trail in combination with a sidewalk exists on the west side of France Avenue. As shown, however, concrete and asphalt are both used.



North of 98th Street, the France Avenue corridor gets even more inconsistent, with trails, sidewalks, and bikeways all used in random combination.

With respect to alignment, from south to north, the suggested start of the trail is the retail node at Old Shakopee Road. Although continuing south of this intersection would have value in the longer-term, doing so does not rise to core system status (relative to other corridors defined under this plan) since the volume of use would be expected to drop off substantially.

From Old Shakopee Road to 98th Street, an existing trail parallels a sidewalk on the west side of the road. Although this technically serves a purpose, in the longer term a single, 10-foot wide linking trail on this side of the road would be adequate. This approach would also allow for more separation between the trail and the road.

From 98th Street north to American Boulevard, the trail and sidewalk system becomes quite mixed. This causes uncertainty in the users mind, with the lack of continuity and consistency discouraging routine use of the corridor. At American Boulevard, the linking trail will connect with the pedestrian-way along the boulevard.

Core On-Road Bikeways

On-road bikeways (i.e., bike lanes and bike routes) are paved segments of streets that serve as a means to safely separate bicyclists from vehicular traffic. Bikeways generally allow a cyclist to go faster than on many trails and offer more continuity in surfacing and intersections. Complementing destination trails, linking trails, pedestrian-ways, and sidewalks with on-road bikeways enhances the overall alternative transportation system by making it more complete and user friendly. For advanced bicyclists, bikeways are important conduits to longer routes outside of the city limits.

The distinction between a *bike lane* and *bike route* is the level of exclusiveness and the setting. A bike lane is a designated portion of the street defined by striping, signing, and pavement markings for the *preferential or exclusive use of bicyclists*. A bike route is a shared portion of the street that provides some separation between motor vehicles and bicyclists. State statutes define a bike route as a "street signed for encouragement of bicycle use." Most people would recognize a bike route as a paved shoulder with route signage and perhaps drive lane striping. In Bloomington, where all roads are built with an urban cross-section, the distinction between bike lanes and routes is relatively subtle and relates mostly to striping patterns and signage. The photos illustrate the most common difference between the two as applied to Bloomington.

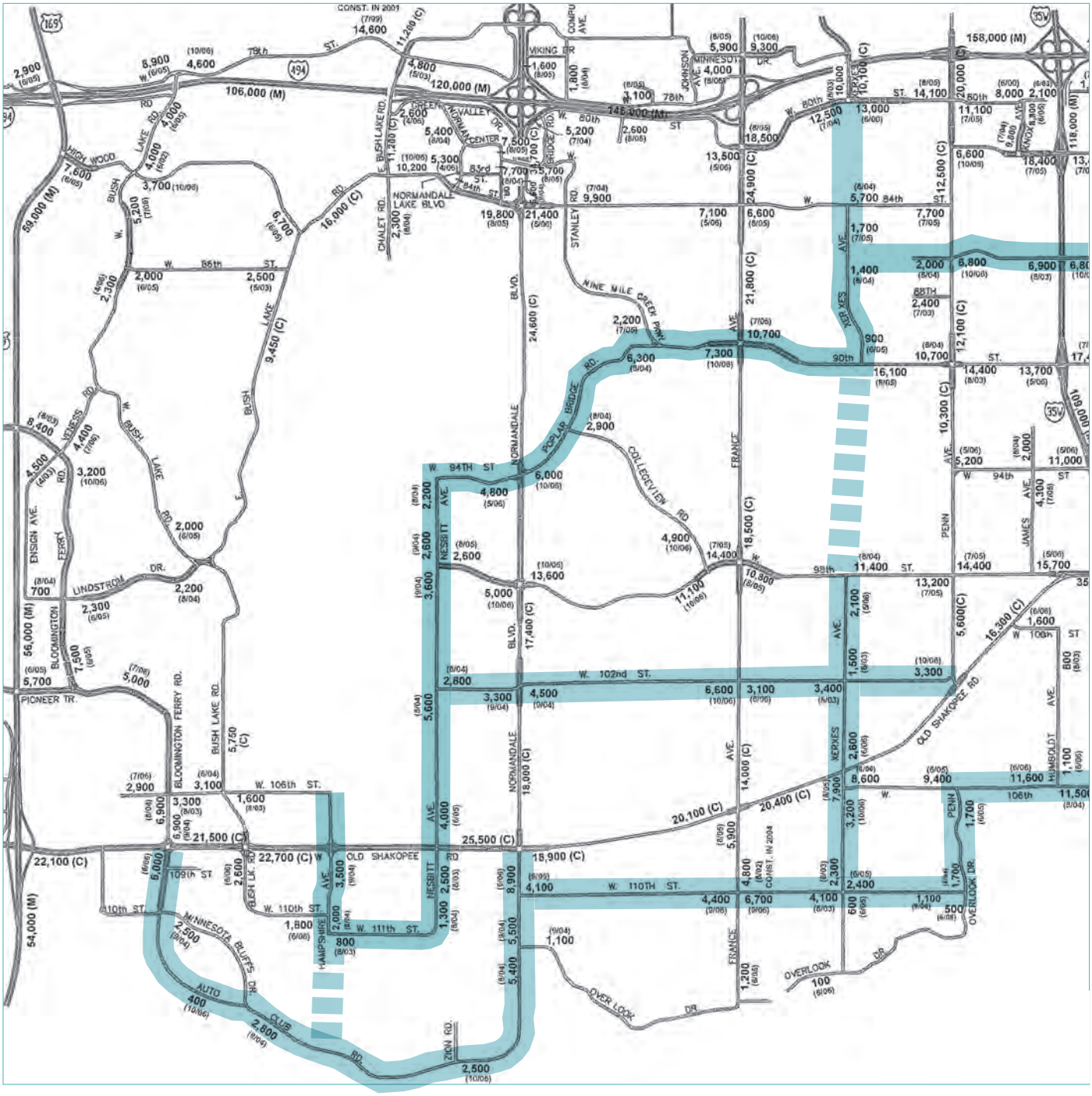
A bike route is essentially a wide shoulder with lane striping. The shoulder is not exclusive, so motor vehicles will use it for bypassing left turning vehicles. In Bloomington, this will tend to occur when 2-lane configurations are used, although not exclusively.

A bike lane is a designated lane for the exclusive use of bicyclists.

Bikeway Corridor Selection Relative to Vehicular Traffic Flow Patterns

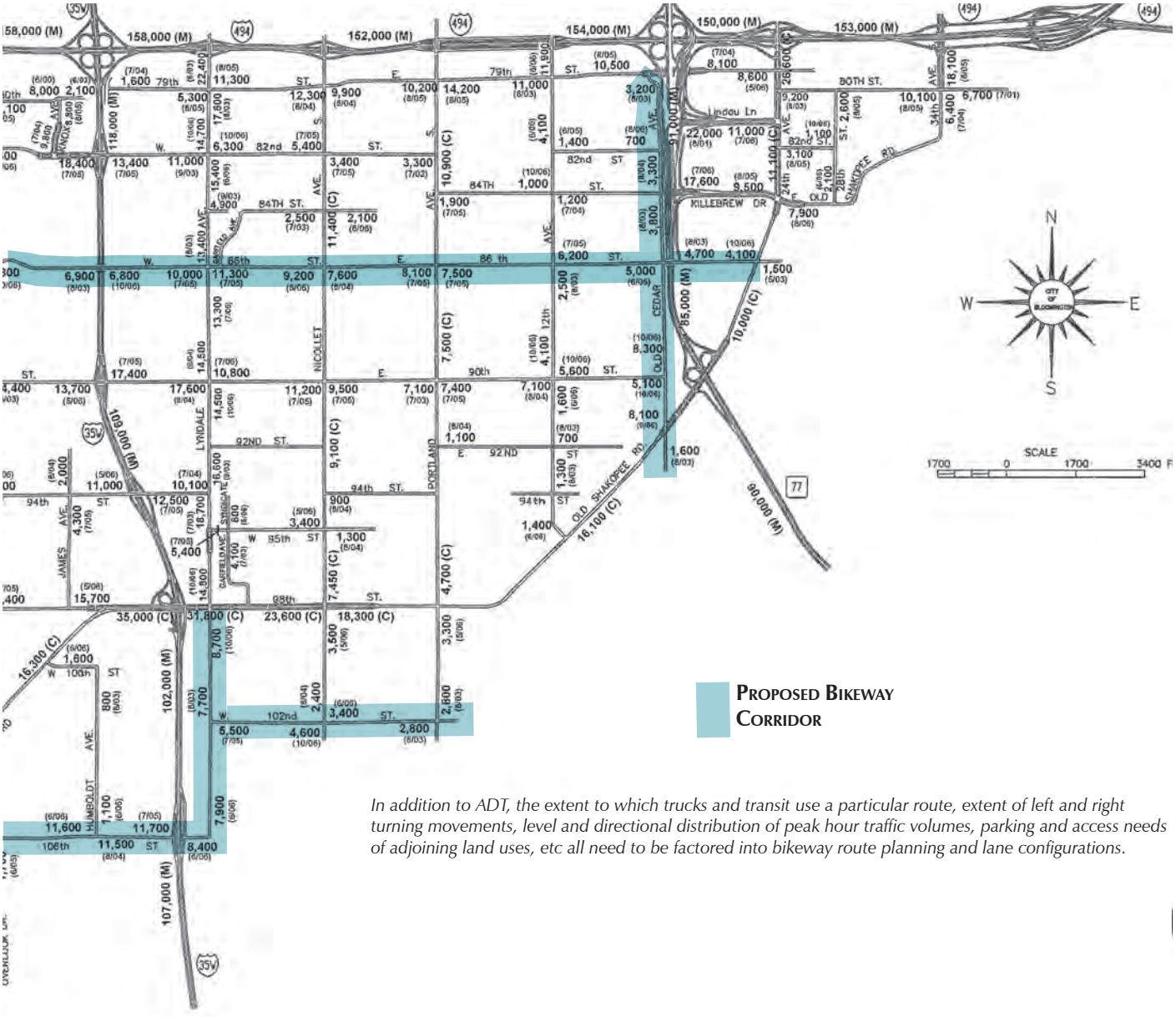
Currently, there is no well-defined bikeway system in Bloomington. Although bicyclists can legally ride on all of these roads, in reality many casual bicyclists would consider them unsafe – especially during peak hours of traffic. The existing signage associated with bikeways along some of these corridors is also confusing to motorist and bicyclists alike and thus needs to be redefined consistent with this plan.

Figure 3.9 – City of Bloomington 2006 Traffic Flow Map



Important Planning Context!

The goal of the alternative transportation plan is to establish a base network of safe and "reasonable" north-south/east-west bikeway routes across the city while recognizing established vehicular traffic patterns. Reasonable in this context relates to the practical reality that vehicular traffic levels are heavy on many of the collector or higher-level roads in the city and elimination of drive lanes to accommodate a bikeway is simply not always feasible. To that end, the core bikeway plan was developed in recognition of the traffic flow patterns associated with the major thoroughfares across the city. In general, proposed routes, as shown on the ***System Plan***, targeted streets with less than 10,000 ADT. Figure 3.9 highlights proposed routes relative to average daily traffic volumes.



In addition to ADT, the extent to which trucks and transit use a particular route, extent of left and right turning movements, level and directional distribution of peak hour traffic volumes, parking and access needs of adjoining land uses, etc all need to be factored into bikeway route planning and lane configurations.

Core Bikeway System Sets the Stage for Future Expansion

Recognizing the challenges of retrofitting bikeways into the existing street system, the routes shown on the proposed plan are best viewed as first-tier core facilities that can be expanded over time, depending on use patterns, public demand, and acceptance of trade-offs relative to vehicular traffic flow. In addition, the plan also calls for bikeways to be a design consideration as part of the Complete Streets Program as roads are upgraded within the city, especially those that reasonably interconnect with the bikeways and trails shown on the system plan.

Complete Streets Program: *Refer to page 3.45 for additional information on adding bikeways to the system as streets are upgraded or striping is reconfigured.*

Development Standards and Guidelines

For ***bike routes***, 6 feet is the recommended optimal shoulder width for streets given that most are built with curb and gutter. Where width allows, 7 or 8-foot wide shoulders are preferred – although going any wider starts to encourage drivers to use it as a drive lane.

B6-18 Curb: *Refers to the style of the concrete curb along the edge of the street. The "6" refers to the top part of the curb, which is 6 inches wide. The "18" refers to the 18-inch wide gutter from the face, or front, of the curb. Streets widths are commonly measured from the face of the curb, which includes the gutter width on each side.*

The width of a ***bike lane*** on roads with a B6-18 curb should also be 6 feet from the face of the curb, which effectively leaves 4-foot 6-inches to the left of the joint between the gutter and the road pavement. At the very minimum, bike lanes should not be any narrower than 4-foot 6 inches, which leaves 3 feet to the left of the joint between the gutter and road pavement. Although this narrower width is technically acceptable, adhering to the 6-foot width is recommended whenever feasible since providing a less optimal width incrementally reduces the likelihood that less experienced bicyclists will feel comfortable using the bikeway. Also, the drainage grates and gutter edges along older roads often become uneven over time, further pushing the bicyclists away from the curb face toward traffic. By staying with a preferred 6-foot width standard, use levels can be maximized since the less experienced bicyclists will be more enticed to use the corridor than would be the case with a narrower lane.

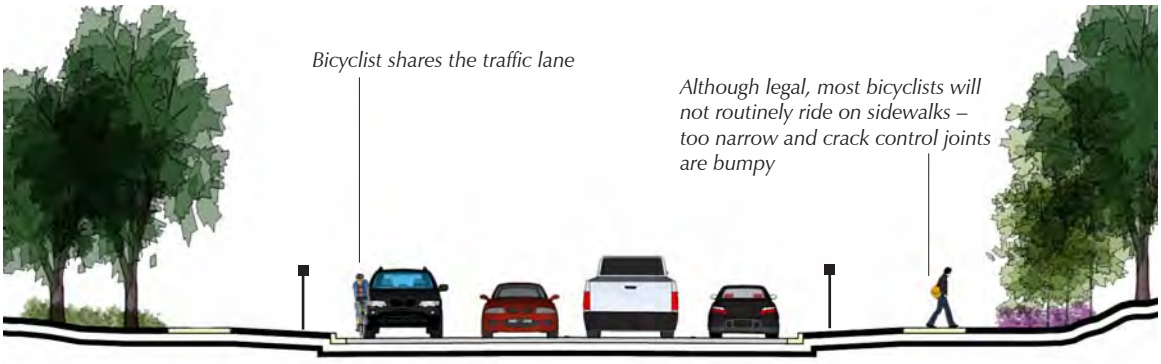
Adhering to a uniform 6-foot lane width will also ensure adequate width in instances where average daily traffic exceeds 10,000 ADT or when average speeds exceed 30 mph. When parking is provided, the parking lane should be 8 to 10 feet wide, with the adjacent bike lane being an optimal width of 6 feet. A 4-foot 6-inche bike lane is the minimum where space is limited. Anything less does not provide enough space for a bicyclist to feel comfortable and safe.

Realities of Providing Bikeways on Bloomington Streets

Safety and convenience of the bicyclists relative to the adjacent vehicular traffic are the major factors considered in proposing either a bike lane or bike route along any of the core bikeway corridors. The overriding objective of the plan is to maintain the greatest separation between bicyclists and motor vehicles most of the time during a given day of traffic flow – which ranges from higher volumes at peak times to lower volumes at off-peak times. Along with traffic volumes, the curb-to-curb street width along each of the proposed corridors factors heavily into selecting the type of bikeway and street striping configuration best suited for a given situation.

In application in Bloomington, selecting a width for a bike route or bike lane along a given corridor is driven by street width and drive lane configuration standards. Along many of the proposed routes, it is common to have street widths in the 41- to 44-foot range curb face-to-curb face. Figure 3.10 illustrates the current riding condition on virtually all of the through-streets in the city.

Figure 3.10 – Relationship of Bicyclists and Motor Vehicles with 4-Lane Street Configuration



As illustrated, vehicles and bicyclists share the traffic lane, which is perfectly legal. But the lack of separation generally frustrates motorists and bicyclists alike, often resulting in conflict. With the exception of higher skilled riders, relatively few bicyclists will ride on roads under these conditions – reducing the level of bicycling for transportation, fitness, or recreation.

Although it is perfectly legal for bicyclists to ride on these streets – and some do – the lack of any separation with motor vehicles intimidates all but the most hardy of riders from using many of the these roads. From a practical standpoint, there is little value in defining any of these streets (i.e., with signage or mapping) as bikeways since there is no physical difference between them and any other 4-lane street.

With **41-foot widths**, the street is not wide enough to accommodate even the absolute minimum bikeway width of 4-foot 6-inches using a three 11-foot lane configuration, much less the optimal 6-foot width. Therefore, a 2-lane configuration with wide shoulders is the primary and most desirable option available for any road less than 41 feet wide, as figure 3.11 illustrates.

Figure 3.11 – 41-Foot Street Configuration Option for Accommodating a Bikeway

41-Foot Street with Shoulders and Two Drive Lanes – *Under this scenario, the shoulder area on each side is held at 8 feet, allowing for two 12-foot 6-inch drive lanes. The shoulder is held at 8 feet to avoid drivers using it as a de facto drive lane. Since the shoulder area would be used for bypassing at left-turning situations, this would fall under a bike route versus bike lane designation. Compared to a 4-lane configuration, this would be a much improved situation for bicyclists.*

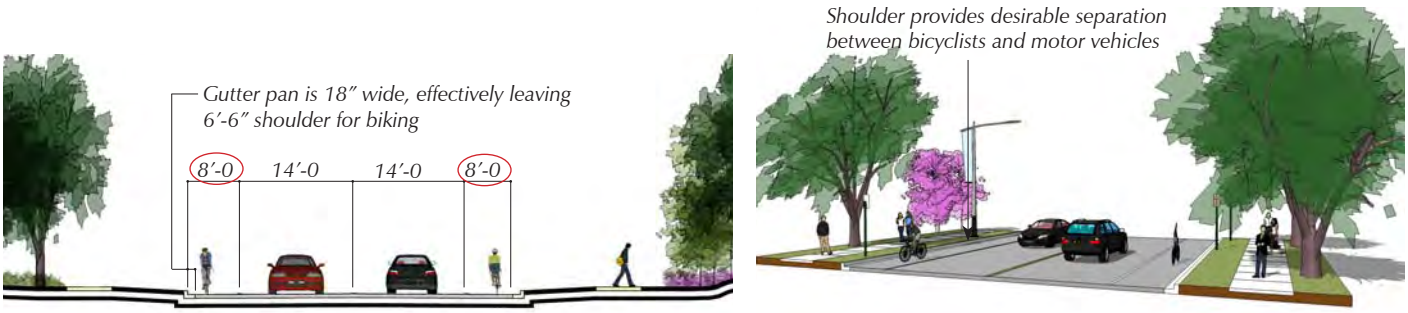
The lack of a center turn lane under this scenario will inherently result in ongoing vehicles bypassing left turning ones at intersections and driveways. This reduces the "exclusiveness" of the shoulder space for bicyclists at these locations, effectively making the corridor a bike route versus a bike lane as described earlier.

10-foot drive lane: *See 44-foot street configuration options for more discussion on the use of a narrower drive lane.*

Whereas the use of the shoulder for bypassing may not be ideal, the trade-off is well worth it to the bicyclist relative to the option of having to ride in traffic along a 4-lane street with no designated separation between bicycle and motor vehicle travel lanes. Note that the only way to achieve close to the optimal bike lane width using a three lane configuration on a 41-foot street is to reduce the drive lanes to 10 feet each, which leaves 5-foot 6-inch bike lane on each side.

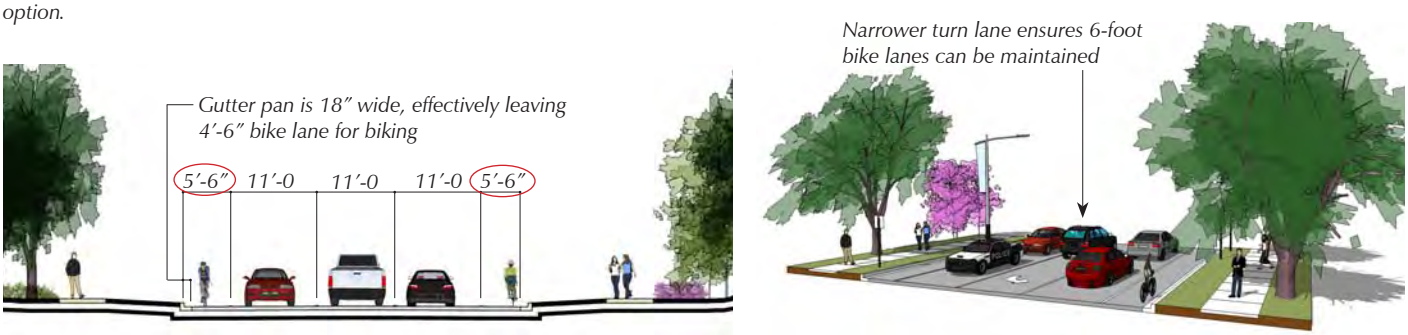
With **44'-foot widths**, there are more options to consider in accommodating a bikeway along the street, with some offering advantages over others in terms of enticing higher levels of bicycle use. Figure 3.12 considers the three primary options available for 44-foot street widths.

Figure 3.12 – 44-Foot Street Configuration Options for Accommodating a Bikeway



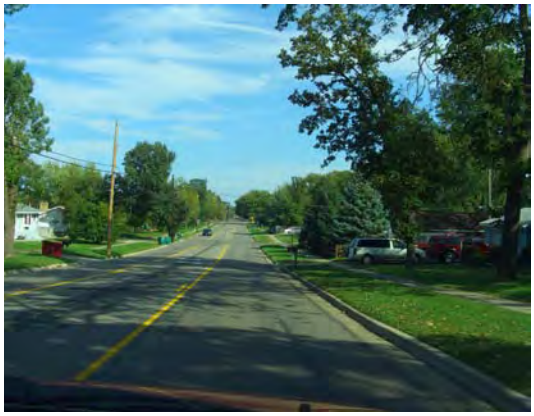
Optimal Option to Retain Preferred 6-Foot or Greater Bikeway Width: 44-Foot Street with Shoulders and Two Drive Lanes – *Under this scenario, the shoulder area on each side is held at 8 feet, allowing for two 14-foot drive lanes. The shoulder is again held at 8 feet to avoid drivers using it as a de facto drive lane. Since the shoulder area would be used for bypassing at left-turning situations, this would fall under a bike route versus bike lane designation. As with the 41-foot scenario, this would be a much improved situation for bicyclists, assuming that two drive lanes can handle vehicular traffic movements.*

Alternative Option to Retain Preferred 6-Foot or Greater Bikeway Width: 44-Foot Street with Bike Lanes, Two Drive Lanes, and *Narrower* Turning Lane – *Under this scenario, the turning lane allows for a bike lane to be provided for the exclusive use of bicyclists. However, the only way to maintain an optimal 6-foot bike lane is to narrow up the two drive lanes to 11 feet each (which is commonly accepted), with the turning lane being reduced to 10 feet (which is below the commonly accepted standard of 11 feet). Although 10-foot lanes are not common in Minnesota, cities in other states have been using them in select situations for several years. Since a 6-foot bike lane is maintained, this would be a much improved situation for bicyclists and an acceptable option.*



Alternative Option on 44-Foot Street with Two Drive Lanes and Turning Lane, Albeit with Accepting Narrower Bike Lane – *Under this scenario, the turning lane allows for a bike lane to be provided for the exclusive use of bicyclists. However, if 11-foot drive lane widths are maintained, the bike lane would be reduced to 5'-6", which is below the optimal standard of 6 feet. Although this technically exceeds the minimum standard, any reduction from the optimal width will incrementally reduce the number of bicyclists that will use the route. As such, this should be used only as a fallback option if the others prove technically unfeasible.*

As this photo illustrates, a 2-lane configuration with a wide shoulder provides a pleasant bikeway experience, even though drivers will use the shoulder for bypassing left turning vehicles.



There is no defined bike lane along this street, and as such does not provide a sense of separation between bicyclists and motor vehicles. In fact, this is even less desirable than a 4-lane configuration to many bicyclists during off-peak times since the drive lane configuration always puts vehicles close to the bicyclist irrespective of traffic levels. This "shoulder bumping" feeling discourages all but the most hardy bicyclists from using a route of this design.

As Figure 3.12 illustrates, the first option offers the bicyclists the most space and is preferred when traffic volumes can be handled with a two-lane configuration. Second to this is the three lane configuration with a narrower turn lane which allows the optimal 6-foot bike lane width to be maintained. The last option is also technically acceptable, with the trade-off being that some drop-off in use should be expected given the narrower bike lane width. Although 6 inches does not seem like much, the extra width is important to the less experienced bicyclists. For this reason, *making every attempt to retain the optimal or greater width of the bikeway along any given route is recommended to entice high levels of use*.

Although retaining the optimal width whenever feasible is recommended, the reality check in Bloomington is that the street widths and traffic conditions along any given corridor will likely require some flexibility if an on-road bikeway system is to be realized. It is recommended that an optimal 6-foot bike lane width be the primary standard, but allow the use of a narrower width when that is simply not achievable. In these cases, however, the minimum acceptable width to get through "tight" sections along a corridor should be no less than 4-foot 6-inches from the face of curb. Anything less is not recommended! Further, *caution is advised to make every reasonable attempt to retain the 6-foot width before considering narrower options to prevent the latter from becoming the de facto norm.* This would ultimately lead to a sub-standard system that would not achieve the desired result of enticing higher levels of use.

With respect to the possibility of using 10-foot drive or turn lanes for streets as illustrated in figure 3.12, this is ***not*** a currently accepted practice for State Aid Roads. Whether this will ever be acceptable to Mn/DOT (and, subsequently, the City of Bloomington) requires further evaluation as part of implementation planning for each route. Factors such as traffic characteristics (e.g., truck traffic), extent of left and right turning movements, and adjoining land uses will also need to be factored into street configuration decisions along any given route.

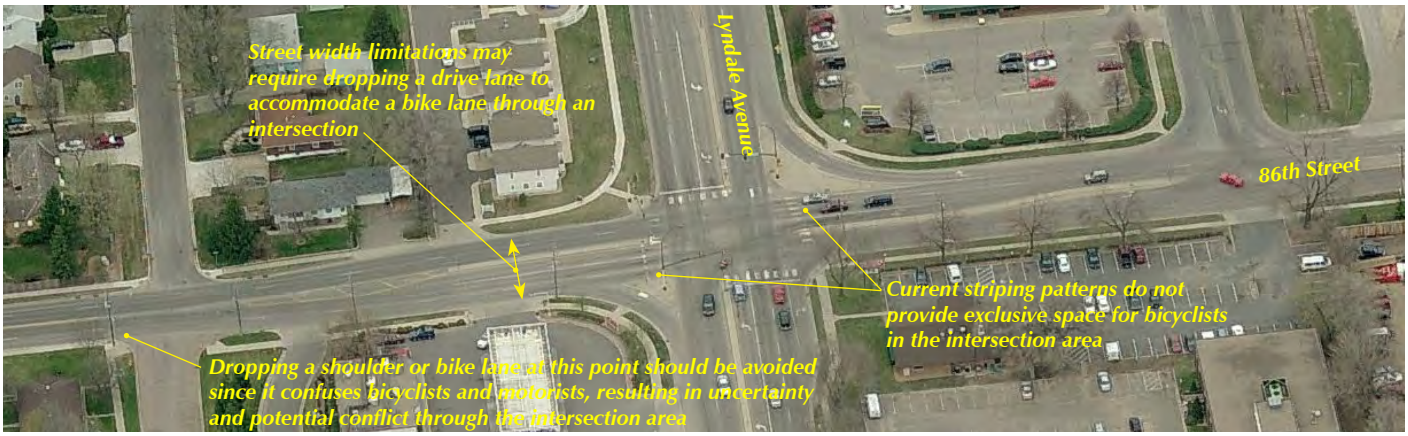
Accommodating Parking Along Selected Routes

In the context of bikeway route planning, it is assumed that parking would not be provided along any of these routes, as is often (but not exclusively) the case. However, if any given street has adequate width to accommodate parking without compromising the bikeway design standard, providing parking is not an issue. Any decision in this regard should be based on evaluation of larger transportation system planning factors outside the scope of this plan.

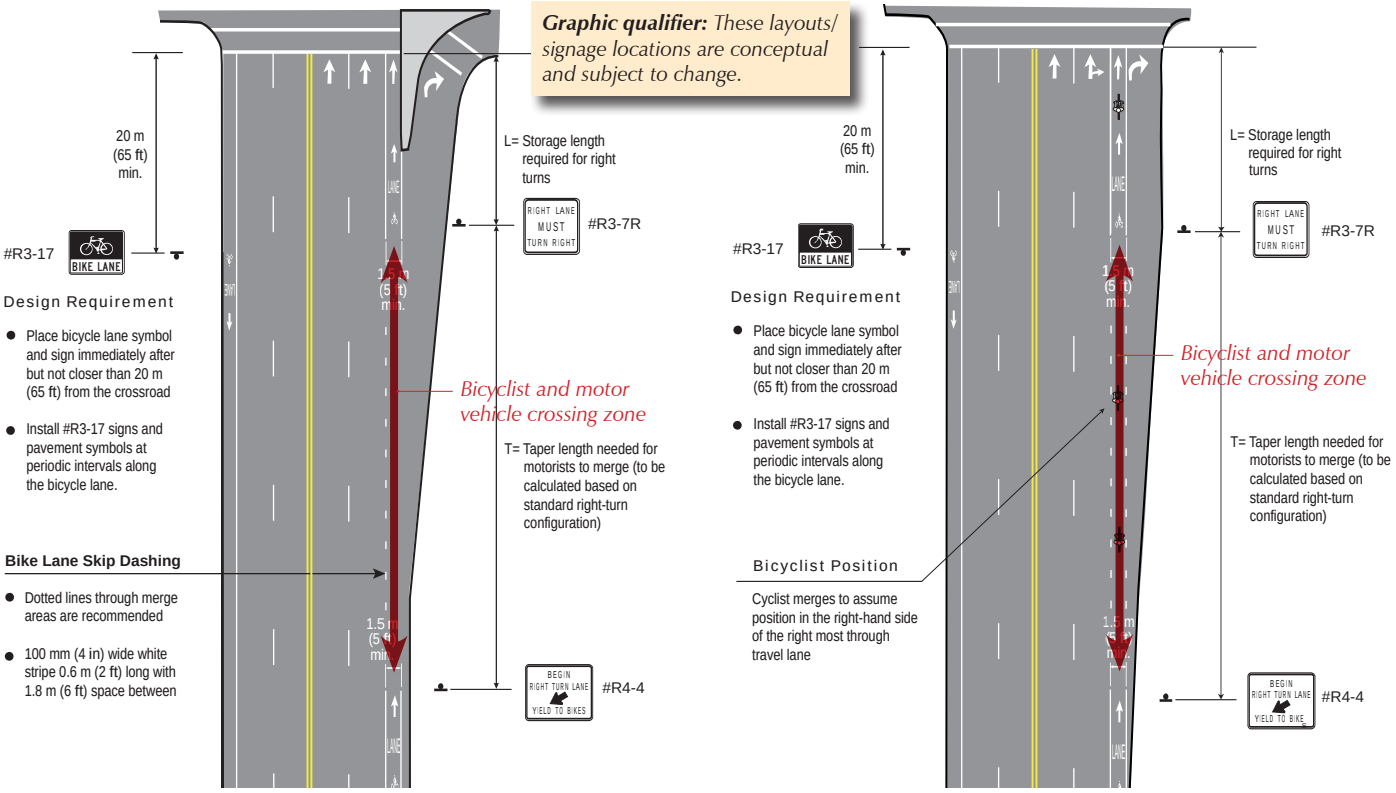
Continuity of Bikeways Through Intersections

In Bloomington, one of the more perplexing challenges is maintaining bikeway continuity through major intersections along proposed routes. From a bicyclist's perspective, the ability to safely get through an intersection is a major factor in deciding whether or not to use a particular route irrespective of the quality of the rest of the bikeway. Recognizing that there are many nuances associated with intersection configurations throughout the city, individual evaluation of the best approach for any given situation will be required. With this in mind, Figure 3.13 provides an aerial view of a busy intersection in Bloomington, along with conceptual examples of potential intersection configurations to maintain bikeway continuity through an intersection.

Figure 3.13 –Maintaining Bikeway Continuity Through Major Intersections



Busy intersections such as this at 86th Street and Lyndale Avenue pose challenges to maintaining bikeway continuity. From a bicyclist's perspective, the ability to safely get through an intersection is a major factor in deciding whether or not to use a particular route. As this intersection highlights, there are many nuances that need to be considered in accommodating a safe bikeway through these areas – all of which having some impact on existing traffic flows, turning movements, and traffic disbursement in the area. Nonetheless, in order to entice higher levels of bicycle use in the city, reasonable choices will have to be made that balance the needs of all forms of transportation.



These two graphics from Mn/DOT Bikeway Facility Manual illustrate recommended approaches to maintaining bikeway continuity through two types of intersections common in Bloomington. Notice that in each case the motor vehicle and bicyclist cross each others path before the intersection turning movement. Doing so helps ensure that drivers pay attention to bicyclists prior to preparing to merge into traffic or make the actual turning movement. These types of detail considerations are vital to creating bikeways that will actually be used.

Important Planning Context!

As Figure 3.13 illustrates, retrofitting existing intersections to accommodate a functional bikeway is complex and will require balanced transportation trade-offs. This reality was one of the major factors in limiting the core bikeway plan to a select number of east-west and north-south routes thought to be least disruptive to established traffic patterns. Until this concept proves to be successful in actual application, there is little value in proposing any more bikeway corridors on streets that are even more complex than those proposed.

Descriptions of Bikeway Corridors

Important Qualifying Statement!

The following provides a general overview of the bikeway corridors illustrated on the ***System Plan***. *Note that the 2-lane configuration is used as the standard optimal recommendation when streets are 44 feet or less since that meets the optimal bikeway width using currently accepted drive lane width standards*. Final determination on configuration will be made as part of the detail evaluation of each corridor relative to the options defined on page 3.26

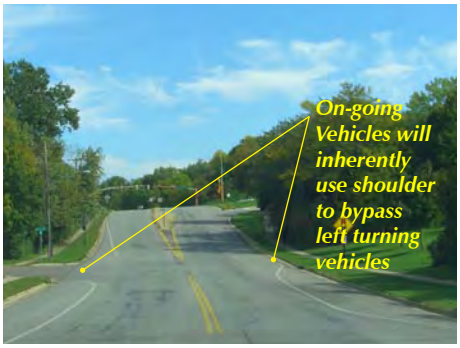
Nesbitt Avenue South (and West 111th Street) Bikeway

This corridor begins on the south end at Hampshire Avenue, where it follows 111th Street east to Nesbitt Avenue and then heads north to 94th Street. With traffic volumes in the 800 to 5,600 ADT range and an overall width averaging 44 feet, accommodating a bikeway along this corridor is best accomplished through the use of a 2-lane striping configuration, which is already established on part of this corridor. The following table provides an overview of the key factors associated with establishing this corridor as a designated bikeway.

Nesbitt Avenue South Bikeway Considerations and Recommendations

Factor	Considerations and Recommendations
Predominant Street Width	For the majority of its length, Nesbitt is 44 feet wide, with a few sections being 40 feet. West 111th Street is 44 feet wide.
Current and Proposed Striping Configuration	Currently, a 2-lane striping configuration is used from Old Shakopee Road north to 98th Street. A four lane configuration is used between 98th Street and 94th Street, and between West 111th Street and Old Shakopee Road. **Maintaining a 2-lane configuration for the entire length of this bikeway is optimal**, which allows for standard drive lanes plus ample shoulder for a bike route 7 or 8 feet wide.
Major Intersections and Other Predominant Reconfiguration Issues	The intersections at Old Shakopee Road and 98th Street are two predominant issues associated with establishing a bikeway along this corridor. Each of these are designed with wider turning radii and turning lanes to accommodate truck turning movements. The striping layout at each of these intersections will need to be individually considered to maximize safety and visibility of bicyclists to motor vehicles. If and where parking is allowed along this corridor is also an issue that needs additional consideration. Otherwise, no major physical constraints to continuing the 2-lane striping configuration used from Old Shakopee Road north to 98th Street are envisioned.

As this photo illustrates, the 2-lane configuration works on 40 to 44-foot wide streets, clearly providing safe operating space for bicyclists.



One of the distinguishing features between a bike route (as proposed here) and a bike lane is exclusivity. In real terms, bicyclists will have to accept ongoing vehicles bypassing left turning vehicles by using part of the shoulder. Striping patterns can help warn of this occurrence.

The remaining 4-lane configuration between 98th Street and 94th Street needs to be reconfigured to 2-lanes with a wide shoulder to be consistent with other segments of this bikeway.

W. 94th Street/Popular Bridge Road/West 90th Street Bikeway

This corridor begins at Colorado Avenue on the western end of West 94th Street. It also connects with a trail access to Hyland-Bush-Anderson Lakes Park Reserve. From here, the bikeway heads east along 94th to Normandale Boulevard. From Normandale Boulevard, the bikeway

follows Poplar Bridge Road and then 90th Street until it reaches Xerxes Avenue, where it heads north as described under Xerxes Avenue Bikeway as described on page 3.32.

With traffic volumes in the 4,000 to 7,500 ADT range on all but 90th Street east of Normandale Boulevard, accommodating a bikeway along this corridor can be accomplished through the use of a 2-lane and three 3-lane striping configuration. The most challenging aspect of this segment is 90th Street east of Normandale Boulevard to Xerxes Avenue, where traffic volumes approach 10,800 ADT. Reconfiguring this segment to accommodate a bikeway will require a detail evaluation at the time of implementation. The following table provides an overview of the key factors associated with establishing this corridor as a designated bikeway.

West 94th Street/Poplar Bridge Road/West 90th Street Bikeway Considerations and Recommendations

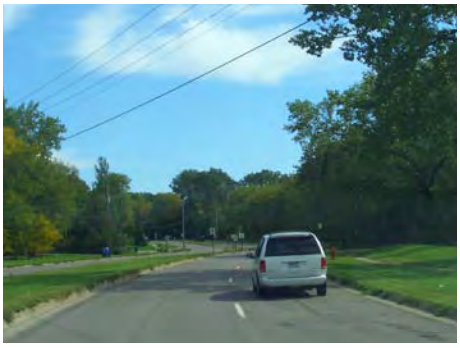
Factor	Considerations and Recommendations
Predominant Street Width	For the majority of its length, West 94th is 44 feet wide. The width of Poplar Bridge Road varies, as is the case with West 90th Street.
Current and Proposed Striping Configuration	Currently, a 2-lane striping configuration is used on West 94th Street, which provides an adequate shoulder for a bikeway. **Maintaining this current configuration along West 94th Street is optimal.** Poplar Bridge Road starts out as a 4-lane from Normandale east to Kingsdale Drive, at which point it converts to a 3-lane configuration with a shoulder on each side until it reaches Harrison Road (just west of Normandale Boulevard), where the bike lane ends as it converts to a 4-lane configuration approaching the intersection. **Maintaining a 3-lane configuration for the entire length of Poplar Bridge Road is optimal,** assuming that the section west of Kingsdale Drive is 46 feet wide, which leaves enough space for 6-foot bike lane (assuming 11-foot drive and turning lanes). Continuing the 3-lane configuration further east as far as possible from Harrison Road toward Normandale Boulevard is also recommended to avoid "dropping" the bike lane earlier than necessary into a drive lane, which is extremely annoying to and less safe for bicyclists. The bikeway segment along West 90th Street from France Avenue east to Xerxes Avenue is a 4-lane configuration and is the most challenging to retrofit for a bikeway given traffic volumes and existing street widths and configurations. The first part of this segment includes a median that accommodates left turn lanes at intersections. The last (and hardest) part, between York Avenue and Xerxes Avenue, is only 44 feet wide and does not have a median. Given the limited width on this last segment, there are basically two options that can be considered. The first one is to use a 2-lane configuration, which leaves a nice shoulder for a bike route. The only downside is that the left turning movement onto York would result in some bypassing. Otherwise, the two lane configuration seemingly works well from a bikeway perspective. The other option is to widen this segment of road a bit from 44 feet to allow for 3-lane configuration with adequate space for a 6-foot bike lane on each side.
Major Intersections and Other Predominant Reconfiguration Issues	The intersections at Normandale Boulevard and France Avenue are two predominant issues associated with establishing a bikeway along this corridor. Each of these are designed with wider turning radii, turning lanes, and half-block or more 4-lane approaches to accommodate vehicular traffic. The striping layout at each of these intersections will need to be individually considered to maximize safety and visibility of bicyclists to motor vehicles.

As this photo illustrates, the existing 2-lane configuration works well on West 94th Street, providing safe operating space for bicyclists.

East of Normandale Boulevard on Poplar Bridge Road, reconfiguring the street from 4-lane to 3-lane with 6-foot bike lanes on either side is proposed to maintain consistency from Normandale over to France Avenue.

East of Kingsdale Drive on Poplar Bridge Road, the existing 3-lane 11-foot drive lane striping configuration does not provide enough space to accommodate a 6-foot bike line.

As this photo illustrates, a 4-lane configuration with turn lanes is used on Poplar Bridge Road/90th Street just west of France Avenue. Reconfiguring this to maintain the shoulder through the intersection area is recommended to enhance continuity and safety for bicyclists.



East of France on 90th Street, a median is provided along with a 4-lane configuration. Reducing this segment to a 2-lane plus turning lanes in the median effectively make this a 3-lane configuration with bike lanes on either side.

Further east on 90th Street, it would be optimal to reconfigure the 4-lane to a 3-lane layout with a bike lane. But at 44 feet wide, the bike lane would be slightly substandard, suggesting that a 2-lane approach would be more desirable if bypassing left turning vehicles onto York is acceptable.

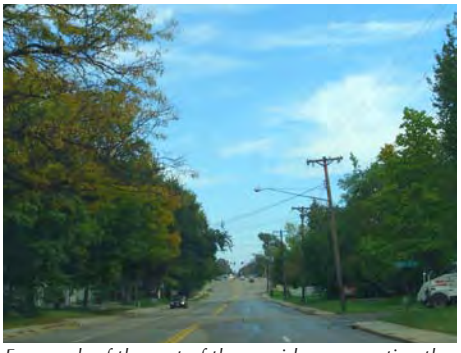
86th Street Bikeway

This corridor begins at Xerxes Avenue on the western end and heads directly east to Old Shakopee Road, making for one of the most direct, and thus important, east-west corridors in the system. With the exception of a few blocks either side of Lyndale Avenue, traffic volumes along this corridor are below 10,000 ADT. Around Lyndale Avenue, traffic volumes creep up to slightly over 11,000 ADT. For the most part, accommodating a bikeway along this corridor can be accomplished through the use of a 2-lane striping configuration, which leaves adequate space for a bikeway. A 3-lane configuration is also a possibility where street width allows. The following table provides an overview of the key factors associated with establishing this corridor as a bikeway.

86th Street Bikeway Considerations and Recommendations

Factor	Considerations and Recommendations
Predominant Street Width	From west to east, the width of 86th Street is 36 to 38 feet from Xerxes Avenue to Penn Avenue and 44 to 45 feet from Penn Avenue all the way east to Old Shakopee Road. The only significant exception to this standard is in the Lyndale Avenue area, where it widens out in both directions for a block or two.
Current and Proposed Striping Configuration	Currently, the narrower segment from Xerxes Avenues to Penn Avenue is unstriped. From Penn Avenue east to Old Shakopee Road, a 4-lane striping configuration is used, with turn lanes added either side of Lyndale Avenue. Reconfiguring this **corridor to a 2-lane configuration is optimal,** which allows for standard drive lanes plus ample shoulder for a bike route 7 to 8 feet wide. **A 3-lane configuration may also be feasible where street width allows.**
Major Intersections and Other Predominant Reconfiguration Issues	The intersection at Lyndale Avenue is the predominant issue associated with establishing a bikeway along this corridor. It is currently designed with wider turning radii and turning lanes to accommodate truck turning movements. The intersection area at the Cedar Avenue bridge crossing also poses some continuity concerns. The striping layout at each of these intersections will need to be individually considered to maximize safety and visibility of bicyclists to motor vehicles. Removal of parking along certain segments of the street will also need to be addressed. Otherwise, no other major physical constraints to establishing this bikeway are envisioned.

As this photo illustrates, 86th Street between Xerxes Avenue and Penn Avenue is a local level street that could accommodate a bikeway with relative ease.



For much of the rest of the corridor, converting the 4-lane configuration to 2 or perhaps 3-lanes with wider shoulders is would meet desirable standards for a bike route.

The intersection at Lyndale Avenue poses the greatest challenge to establishing a bikeway long 86th Street.

Xerxes Avenue Bikeway

This corridor begins at 110th Street, where it interconnects with another bikeway. From there, the bikeway heads directly north along Xerxes Avenue until it reaches 98th Street, at which point the bikeway connects with a proposed trail system past the Armory and on the east side of Marsh Lake. The trail essentially fills the gap between 98th and 90th Streets. Once to 90th Street, the bikeway continues along Xerxes Avenue until 82nd Street, where it jogs over to Washburn Avenue until 84th Street, where it once again follows Xerxes Avenue until it reaches American Boulevard, its ending point. With the exception of a few significant blocks, traffic volumes along this corridor are very moderate, typically less than 2,500 ADT. However, between 106th Street and Old Shakopee Road traffic volumes in the 8,500 ADT range, which poses a street configuration challenge. Otherwise, for the most part, accommodating a bikeway along this corridor can be accomplished through the use of a 2-lane striping configuration, which leaves adequate space for a bikeway.

The best way to address the 106th Street and Old Shakopee Road segment will require detail evaluation, where a variety of options can be considered. The segment along Washburn Avenue is a local, lower volume route that allows parking. On this segment, providing route signage is all that might be needed. The following table provides an overview of the key factors associated with establishing this corridor as a designated bikeway.

Xerxes Avenue Bikeway Considerations and Recommendations

Factor	Considerations and Recommendations
Predominant Street Width	For the majority of its length, Xerxes Avenue is 44 feet wide, with some variation on the northern segments and Washburn Avenue.
Current and Proposed Striping Configuration	Currently, a 4-lane striping configuration is used for much of Xerxes Avenue. **Maintaining a 2-lane configuration for the entire length of this bikeway is optimal,** which allows for standard drive lanes plus ample shoulder for a bike route 7 or 8 feet wide.
Major Intersections and Other Predominant Reconfiguration Issues	The intersections at Old Shakopee Road is the predominant issue associated with establishing a bikeway along this corridor. The striping layout at this intersection will need to be individually considered to maximize safety and visibility of bicyclists to motor vehicles. The other major challenge is the gap on 84th Street between Xerxes and Washburn Avenues. With 84th Street having traffic volumes in the 6,000 ADT range, getting bicyclists safely along a short stretch poses some challenges, especially the left turning movement across 4 lanes of traffic. This will require consideration of both on-road and off-road options to make this connection. The off-road option could include a linking trail on the south side of 84th Street for a half-block, plus a formal crosswalk that includes, at a minimum, pavement markings and crosswalk signage. The downside to this is potential impacts to traffic flow along 84th Street.

As this photo illustrates, a 4-lane configuration is predominant on Xerxes Avenue.

As noted, one of the biggest challenges is the segment between 106th Street and Old Shakopee Road, a situation that will require individual evaluation to find a workable solution.

At 98th Street, Xerxes Avenue ends. From here to 90th Street the bikeway would follow a trail proposed for the east side of Marsh Lake. Although a bit unusual, this segment would actually be quite appealing.

Hampshire Avenue Bikeway

This corridor begins at Auto Club Road, where it interconnects with another bikeway, and proceeds north to where it interconnects with the park reserve's trail system. Although a relatively short bikeway, it is an important connection between the regional park and Auto Club Road, which ultimately connects with the Minnesota River Trail.

From Auto Club Road heading north, the first part of this segment will be a linking trail, assuming that one can be integrated with private development between Auto Club Road and the cul-de-sac at the end of Hampshire Avenue. From the cul-de-sac, the bikeway heads directly north along Hampshire Avenue until it reaches the park. Overall, traffic volumes along this corridor are very moderate, typically less than 3,500 ADT. For the most part, accommodating a bikeway along this corridor can be accomplished through the use of a 2-lane striping configuration, which leaves adequate space for a bikeway. The following table provides an overview of the key factors associated with establishing this corridor as a designated bikeway.

Hampshire Avenue Bikeway Considerations and Recommendations

Factor	Considerations and Recommendations
Predominant Street Width	For the majority of its length, Hampshire Avenue is 44 feet wide, with a few sections being narrower on the northern end.
Current and Proposed Striping Configuration	Currently, a 4-lane striping configuration is used along this street, with the exception of the few blocks north of 106th Street, where it is striped as a 2-lane. **Maintaining a 2-lane configuration for the entire length of this bikeway is optimal,** which allows for standard drive lanes plus ample shoulder for a bike route of 7 or 8 feet in width.
Major Intersections and Other Predominant Reconfiguration Issues	The intersection at Old Shakopee Road is the predominant issue associated with establishing a bikeway along this corridor. It is designed with a wider turning radii and turning lanes to accommodate truck turning movements. The striping layout at this intersection will need to be individually considered to maximize safety and visibility of bicyclists to motor vehicles. Otherwise, no major physical constraints to providing a bikeway along this street are envisioned – with the noted exception of integrating a linking trail with private development on the southern end.

As the photo illustrates, much of Hampshire Avenue is currently a 4-lane configuration with modest traffic volumes.

As the aerial image illustrates, there is a gap between Auto Club Road and the cul-de-sac at the end of Hampshire Avenue. A linking trail integrated with private development is proposed to make this important connection, which is important to the validity of this route as a connection to the Minnesota River Trail.