

Bike Walk Central Corridor Action Plan

AN IMPLEMENTATION PLAN OF THE CENTRAL CORRIDOR DEVELOPMENT STRATEGY AND STATION AREA PLANS



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ACKNOWLEDGEMENTS



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We Heard You!

Throughout this process, community members have provided valuable input and insight on how to make the Central Corridor a more safe and inviting place for walking and biking. You'll find a sample of these comments running along the bottom of each page.



Public art and pedestrian walkway near Fairview Avenue



Purpose

The Metropolitan Council, the Twin Cities regional planning agency, in coordination with the cities of Minneapolis and Saint Paul, is preparing for construction of the Central Corridor light rail transit (LRT) line between downtown Saint Paul and downtown Minneapolis, Minnesota. The Central Corridor LRT line will run 11 miles between the two downtowns, primarily along University and Washington Avenues, and will connect to the existing Hiawatha LRT line and the Union Depot. Central Corridor LRT construction is scheduled to begin in 2009 and be operational by 2014.

The success of the Central Corridor project depends on people's ability to access its stations and move through the corridor on foot or bicycle. The City of Saint Paul initiated this Bike Walk Central Corridor Action Plan to ensure that bicycle and pedestrian connections and facilities create a safe and inviting environment around the LRT line and within the greater Central Corridor area. The plan sets priorities and strategies for creating a bicycle and pedestrian friendly environment.

This Plan builds on other Central Corridor and City of Saint Paul planning work, including the Central Corridor Development Strategy, the University Avenue Station Area Plans, ongoing Downtown Station Area Planning, the Transportation and Parks Chapters of the Comprehensive Plan, the Downtown Development Strategy, and the Downtown Bicycle Plan.

Goals and Objectives

The goal of the Bike Walk Central Corridor Action Plan is to enhance biking and walking to and within the Central Corridor and foster bicycling and walking as a major portion of the transportation solution. The Plan will achieve the goal of increasing biking and walking travel mode share in the Central Corridor by focusing on five objectives - Improving Connectivity, Enhancing Safety, Improving the Bike/Walk Experience, Fostering Creative Solutions and assuring Feasibility and Functionality. The criteria listed under each objective define the objective's intent. Objectives help select and prioritize routes, improvements, support facilities, amenities, and programs.

1. Improves Connectivity

- Connects to LRT stations
- Connects to destinations
- Closes existing gaps
- Creates direct, legible, and visible connections
- Connects young people to education opportunities
- Connects underserved areas of the City
- Connects populations with low mobility

2. Enhances Safety

- Minimizes conflicts with other travel modes
- Has safe crossings or improves crossing safety
- Improves lighting, enhances visibility, activity, etc.

3. Improves the Bike/Walk Experience

- Reduces barriers to biking or walking
- Creates a comfortable/pleasant environment
- Has a year-round benefit
- Has minimal stops (for bicyclists)
- Improves travel time

4. Fosters Creative Solutions

- Demonstrates an innovative approach
- Has potential for corridor-wide use
- Has community support
- Has positive environmental impact
- Enhances community livability and sustainability
- Enhances economic development
- Attracts new transit riders
- Raises awareness of bicycle and pedestrian opportunities and benefits

5. Is Functional and Feasible

- Has funding potential
- Has reasonable timing for implementation
- Is cost effective (initial and life-cycle costs)



Pedestrian friendly amenities at Wabasha Avenue and Fifth Street West

1

INTRODUCTION

- Is accessible to all users
- Meets applicable engineering standards
- Maximizes the mode-share shift to biking and walking
- Maximizes efficient use of existing facilities
- Has a reasonable grade/slope for most users
- Accommodates bicyclists and pedestrians with a range of abilities

Process

Funding & Partnerships

The City of Saint Paul secured funding for the Bike Walk Central Corridor Action Plan through the Non-Motorized Transportation Pilot Program (NTP), administered by Bike Walk Twin Cities and Transit for Livable Communities.

The following agencies and organizations partnered in the planning process:

- Saint Paul Department of Planning and Economic Development
- Saint Paul Department of Public Works
- Saint Paul Department of Parks and Recreation
- Office of Mayor Christopher Coleman
- Bike Walk Twin Cities
- Transit for Livable Communities
- St. Paul Smart Trips
- Saint Paul Bicycle Advisory Board
- District Councils and the District Councils Collaborative
- City of Minneapolis

Outreach

One of the goals of this project was to expand the toolbox for public participation techniques in planning processes in the City of Saint Paul, within the constraints of the short timeline placed on the funding. With these two aspects in mind, the project included

the following components for involving the public while meeting deadlines required by the funding program.

A project website was established as a centralized resource for accessing planning updates as well as links to the newsletter, online survey, project blog, bicycle and pedestrian resources, and contact information.

A stakeholders roundtable discussion was held with representatives of community organizations, including University United, District Councils Collaborative, St. Paul Smart Trips, Transit for Livable Communities, District Councils along the corridor, Central Corridor Funders Collaborative, and Saint Paul Bicycle Advisory Board. The City of Minneapolis Department of Public Works also participated in the planning process to ensure coordination.

Three editions of a project newsletter were posted on the website and also sent to over 450 interested parties who have been involved in previous Central Corridor or transportation planning. Circulation was extended through our project partners, especially St. Paul Smart Trips and Transit for Livable Communities, who included a link to the e-newsletter in their regular organizational updates.

Additionally, an online survey received more than 300 responses from the public who shared their general opinions on bicycle and pedestrian conditions in the Central Corridor as well as specific problem areas and suggestions. Results of the survey were used in developing priority areas and recommendations.

A public open house was held at the Central Corridor Resource Center to present the draft plan. Attendees were encouraged to examine enlarged maps from the draft plan, draw and write on the posters, and speak with City staff as well as consultants. Many suggestions from the open house were incorporated into revisions of the draft plan.

Staff receives input on citywide bike routes at the 2008 St. Paul Classic

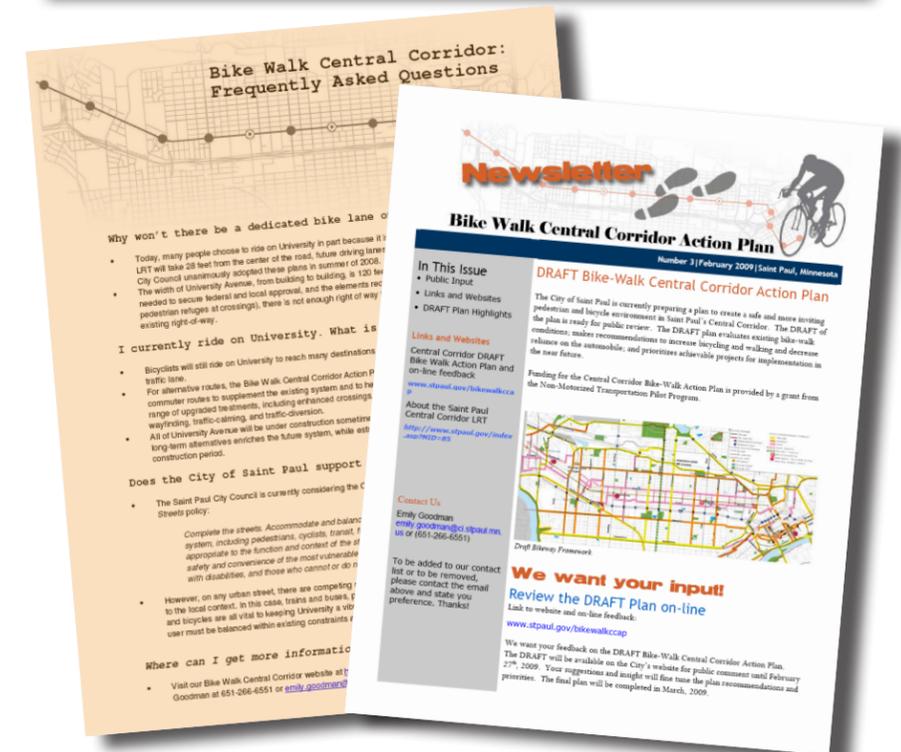
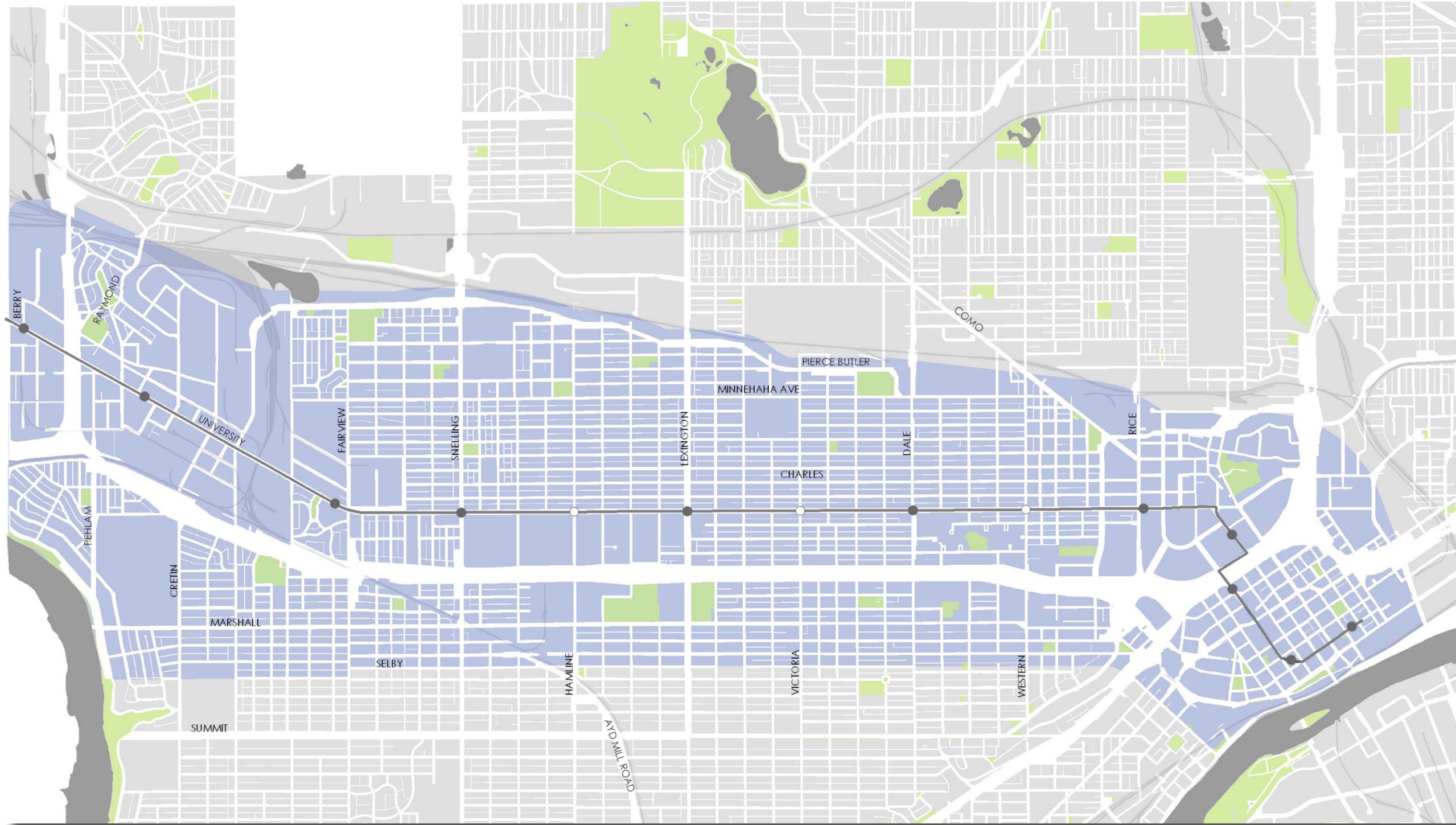


Figure 1. Study Area Map



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INTRODUCTION

PEDESTRIANS. TO ENCOURAGE GREATER USE OF THE CORRIDOR THROUGH ALTERNATIVE MODES, THESE ACCESS POINTS SHOULD BE IMPROVED. REBUILD THE GRIGGS PEDESTRIAN/BIKE BRIDGE. ENFORCE SNOW REMOVAL RULES ALONG

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INTRODUCTION

Context

Most of the Central Corridor LRT line within Saint Paul will run down the center of University Avenue, a 5.5-mile corridor stretching from the Minnesota State Capitol to the Saint Paul/Minneapolis border. A short portion of the LRT line will run from the State Capitol through downtown Saint Paul to Union Depot.

The character of downtown Saint Paul is different from the University Avenue area. While both areas are fully developed urban environments, downtown has much greater density and more employment and regional destinations. University Avenue is predominantly a lower-density commercial corridor bordered primarily by single-family residential housing. Schools, parks, community centers, and smaller retail areas are located throughout the Corridor. Residential neighborhoods extend north and south of University Avenue in a regular grid pattern of streets. Interstate 94 runs parallel to and 1/4 mile south of University Avenue. Major streets such as Rice, Dale, Lexington, Snelling, Cleveland, and Highway 280 cross University Avenue at approximately one-mile intervals. North-south traffic tends to concentrate on the streets that have interchanges with Interstate 94. A series of pedestrian/bike bridges also cross over I-94.

Connecting the Central Corridor to greater Saint Paul, Minneapolis, and the region is challenging due to significant highway and railroad barriers. In spite of these barriers, there are opportunities to provide connections within Saint Paul, as well as to surrounding communities.

Bike Setting

Legible, continuous bicycle routes in the core of the study area are few, and bike facilities are lacking. There are established bike routes at the edges of the corridor that provide connections to regional destinations. Regional trails such as the Bruce Vento Trail, the Willard Munger Trail, and the Sam Morgan Trail lead to but do not travel through downtown or the University Avenue area. Some of these bikeways, such as Pelham/Raymond, alternate between striped bike lanes and a share-the-road route which is confusing for both cyclists and motorists.

In general, the grid street pattern and quiet, low-traffic residential streets are bike friendly. Bike lanes exist on portions of Prior, Pascal, Minnehaha, Marshall, and Dale, but overall these segments lack continuity and connectivity with city-wide routes. On major streets biking conditions are challenging. University Avenue is not pleasant for bicyclists due to its higher traffic volumes, frequent driveway and local street access, and variable width, but it is used by cyclists since it is one of the few complete east-west routes through the city. Pierce Butler is a designated bike route with wide, striped shoulders, but it is a truck route with a posted speed limit of 40 miles per hour, does not have pavement markings specifically identifying a bike lane, and can be intimidating to even seasoned cyclists. Similarly, biking on high-traffic streets such as Snelling, Dale, and Rice is out of the question for many cyclists. The existing bicycle and pedestrian bridges over I-94 provide traffic-separated crossings of the highway, but in some cases have difficult approaches and access.

Downtown, bicyclists encounter further difficulties. Downtown bike lanes are disconnected and illegible, and there are few low-traffic bike routes to enter and leave downtown. Bike lanes are provided on portions of Sibley and Jackson Streets, but these lanes stop and start unpredictably. Jackson is particularly dangerous as the bike lane terminates, leaving cyclists to navigate down a steep hill on their own, through a tunnel to the Sam Morgan Trail along the Mississippi River.

Walk Setting

Streets in the study area vary widely in character and in their accommodations for pedestrians. The residential neighborhoods in the Central Corridor are generally pedestrian friendly. In most places there are sidewalks and grassy, tree-lined boulevards that buffer walkers from the street and provide shade in the summer months.

In the commercial areas on and surrounding University Avenue, sidewalks exist but are utilitarian and lacking in streetscape amenities. The intersections and street crossings accommodate pedestrians, but do not provide ample crossing time or protection from heavy traffic.

Figure 2. Foundation Plans

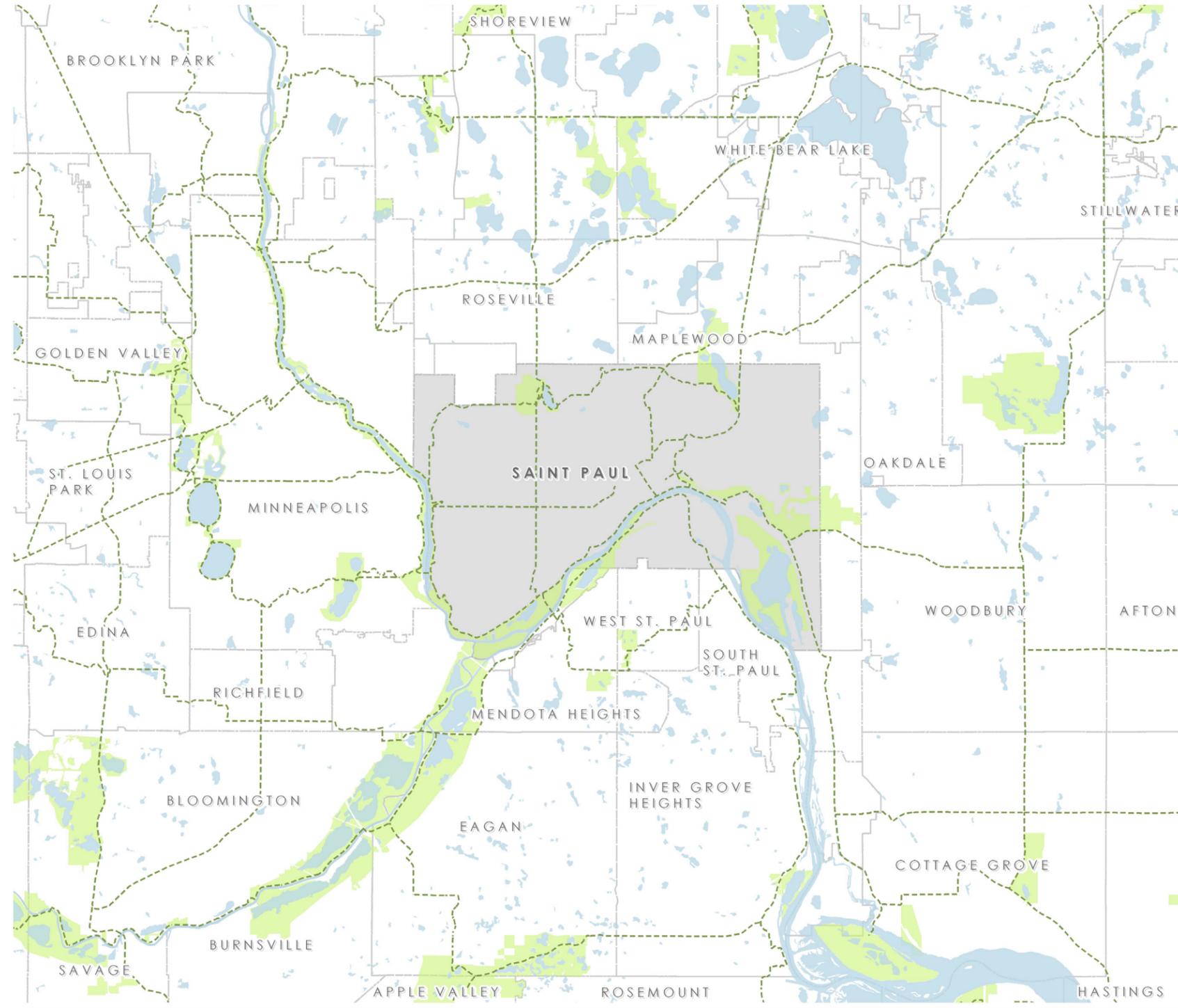
FOUNDATION PLANS

This plan was initiated to further implement and refine previous bicycle and pedestrian planning done in the Central Corridor, and to inform upcoming planning processes for the future infill station area planning.

- *Central Corridor Development Strategy* (adopted October 2007). Vision and strategies for how the Central Corridor should grow and change over the next 25-30 years as a result of LRT investment.
- *University Avenue Station Area Plans* (adopted October 2008) and the *Downtown Station Area Plan* (adoption anticipated in February 2010). More detailed framework for integrating decisions about future land use and development; the public realm; and the movement of LRT, buses, cars, pedestrians, and bicycles at each station area.
- *Saint Paul Downtown Bicycle Transportation Master Plan* (drafted April 2008). Vision for downtown bicycle usage with detailed facilities recommendations.
- *Saint Paul Downtown Development Strategy* (adopted September 2005) - ADD TEXT
- *2030 Saint Paul Comprehensive Plan* (adopted March 2009). New citywide policies to guide the development complete, safe, and well-maintained bicycle and pedestrian systems.
- *Vision for 5th and 6th Streets* (concurrent) - ADD TEXT



Figure 3. Regional Bikeways Map - connections to the Central Corridor



There are other parts of the study area that lack basic pedestrian accommodations. The industrial area west of Prior Avenue has few sidewalks and an irregular street pattern, making walking challenging and unpleasant. The Midway shopping district is dominated by automobile-oriented businesses on the south side of University Avenue that have vast expanses of parking and few direct walkways from University Avenue. In addition, because businesses are inwardly oriented, sidewalks on surrounding streets are neglected and the absence of active land uses makes them feel unsafe.

The vehicle bridges and underpasses across I-94 and Highway 280 can be a hostile environment for pedestrians. While the bridges have walkways, there is no separation from multiple lanes of traffic and crossing freeway on and off ramps is problematic.

Pedestrian bridge crossings over I-94 also need accessibility improvements. While these crossings could provide direct, off-road links between University Avenue and the neighborhoods to the south, the pedestrian bridges have overgrown and obscured approaches, inadequate lighting, unattractive chain-link fencing and inadequate width to serve as a shared-use trail. These elements make them seem unsafe to pedestrians and cyclists, particularly at night. The new Griggs Street bridge should serve as a baseline model for the rebuilding or retrofitting of these crossings.

Downtown, pedestrian conditions range from excellent to poor. Downtown has short, square blocks and a complete sidewalk network that make it very walkable, and there are many wonderful places for pedestrians. Other downtown streets are more utilitarian, and lack sidewalk space or pedestrian amenities like street trees, pedestrian-scale lighting, and street-level retail. The skyway system adds another layer of pedestrian movement in downtown. This system makes indoor pedestrian movement in the cold winter months pleasant, but draws people and destinations up to the second level and away from the street.

UNIVERSITY, THE PED MEDIAN HELPS IMMENSELY. THE BRIDGES OVER I-94, INCLUDING PELHAM BLVD, CRETIN AVE AND OTHERS, ONLY HAVE A SIDEWALK ON ONE SIDE AND UNLESS SOMEONE CROSSES THE STREET TO WALK ON THAT

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INTRODUCTION



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BIKE FRAMEWORK

BIKE FRAMEWORK

The Bike Framework recommends a series of new bikeways to create a comprehensive, connected network within the Central Corridor. The bikeway recommendations rely primarily on capturing space within existing lower-volume streets to add bike lanes and to create shared bike-vehicle routes. Planned off-street multi-use trails along the Midtown Greenway Extension would supplement the recommended on-street bikeways. Recommendations are provided for bikeway connections to LRT stations, crossings of major streets, and for the downtown area.

The Bike Framework is based on a hierarchy of bike routes: regional, commuter, and local routes, each with preferred treatments (i.e. bike lanes, trails, bike boulevards, shared lanes, etc.) that respond to route purpose, traffic conditions, and available space. Treatments are considered 'ideal'; flexibility, time, and community input will be needed to implement the plan. What is essential is that all installed bikeways are continuous and that this continuity is clear to both cyclists and motorists. Particular street designs or treatments for each bikeway will be developed through a thorough community process.

The Bike Framework:

- Connects the Central Corridor to the greater city and the region;
- Facilitates east-west and north-south movement within the Corridor by creating a grid of bike routes not more than one-half mile apart;
- Provides fine-grained connections from the route network to LRT on local, low-volume streets;
- Makes biking more accessible and safer for all levels of cyclists by creating a legible system that incorporates a combination of trails and dedicated bike lanes on higher-traffic streets and bike boulevards on lower-volume, local streets;
- Provides east-west bikeways as alternatives to University Avenue, which lacks space for designated bike lanes.

University Avenue Area

Regional Bikeways

Regional routes link the city and region to commuter and local bikeways in the Central Corridor.

Some of the suggested routes, such as Pelham/Raymond, are known to cyclists and will benefit from future investments to transform them into the city's premier bikeways. Other routes, such as the Pierce Butler Route Extension, the Ayd Mill Road Trail, the Midtown Greenway Extension, and Trout Brook Boulevard have long been envisioned in city plans.

A particular challenge in the University Avenue area is making regional connections to the north, due to the presence of railroad tracks near Pierce Butler Route. Raymond Avenue connects on the west side of the corridor and Jackson Street makes a north-south connection on the east side. Lexington Parkway has been identified by the Metropolitan Council in the Regional Parks Policy Plan as a mid-corridor regional connection but, due to right-of-way constraints, extending the trail south of Como Park to Summit Avenue poses significant challenges. This plan recommends that, to make much-needed connections to the north, Griggs and Chatsworth be designed as bikeway alternatives to the Lexington route linking the Summit Avenue Bikeway, the planned Midtown Greenway Extension, and Como Park. For the near term, the existing Lexington Parkway trail would connect to Griggs via Energy Park Drive, the existing Hamline pedestrian/cyclist bridge, and Pierce Butler (see Figure 5 on page 11). Long term, the opportunity for an at-grade railroad crossing at Chatsworth should be explored. If this crossing can be achieved, Chatsworth could provide a direct connection from the Summit Avenue Bikeway to Como Park east of Lexington Parkway.

Commuter Bikeways

Commuter bikeways focus on movement through the Central Corridor and connections to local routes. Proposed routes will form a rough ½-mile grid, making all destinations a short trip from a commuter bikeway. North-south routes occur on low traffic

Minneapolis Grand Rounds trails and wayfinding



Existing bike lane on Minnehaha Avenue

SIDE AND THEN CROSSES BACK AGAIN, MOST PEDESTRIANS WALK IN TRAFFIC. THE [TRAFFIC] LIGHT CYCLES ARE NOT LONG ENOUGH FOR ABLE-BODIED PEOPLE TO CROSS WITHOUT HAVING TO RUN. OLD PEOPLE, PEOPLE CARRYING STUFF,





Existing pedestrian bridge over Interstate 94



local streets that, for the most part, travel along the side yards of businesses and residences. This generally reduces need for on-street parking and may offer the opportunity to restrict parking to one side of the street to make room for bike lanes in each direction. Where there are space constraints, a share-the-road treatment with sharrow pavement markings should be used to signal both cyclists and motorists of a continuous bikeway.

North-south connectivity across I-94 is accommodated on all commuter bikeways with a combination of pedestrian/cyclist bridges, vehicular bridges, and underpasses. Improved lighting is recommended for all bridges. The pedestrian/cyclist bridges at Aldine, Grotto, and Mackubin would benefit from more visible approaches, crosswalks at St. Anthony and Concordia, lighting, ornamental railings and, if rebuilt, increased width (to a minimum of 12 feet) to better accommodate both cyclists and pedestrians.

East-west commuter movement is recommended on Minnehaha Avenue and Marshall Avenue. Segments of both of these roads already have striped bike lanes. Recent improvements on Marshall are an excellent example of how an automobile-oriented roadway can be configured to allow for bike lanes and, at the same time, improve conditions for motorists and pedestrians. Improvements should continue to be made to create a continuous bikeway from the Mississippi River to John Ireland Boulevard.

Local Bikeways

Local routes are intended to accommodate relatively short bike trips between home, business, and transit stops and provide connections from regional and commuter routes to local destinations.

To supplement biking in the traffic lanes on University Avenue, local bikeways accommodate east-west movement parallel to University Avenue on low-traffic streets and provide access to LRT station platforms, bicycle parking, and other destinations. West of Cleveland Avenue, Territorial Road provides for movement north of

University Avenue and Myrtle to the south. Because of an irregular street pattern, routes are indirect and wayfinding will be essential.

East of Prior Avenue, Charles Avenue will be the principal local bikeway parallel to University Avenue. This bikeway is envisioned as a bike boulevard with sharrow pavement markings, wayfinding signage, traffic calming, and enhanced landscaping. Where Charles intersects with commuter bikeways, a neighborhood traffic circle in the center of the street will provide a colorful focal point, slow traffic, and signal motorists and cyclists of the intersection of two bikeway streets (see Figure 14). Planted sidewalk bump-outs at these intersections will also slow traffic, "green" the street, and reduce the crossing distance for pedestrians (see Figure 14).

Parallel to University Avenue to the south, the principal local bikeway route would follow Aurora and Fuller Avenues. The segment on Fuller travels through the heart of the Midway commercial district. Significant redevelopment is required to realize this route, and new roads constructed within the redevelopment area should accommodate bicycle-boulevard or bike-lane treatments.

To facilitate east-west crossing at Fairview, Snelling, Lexington, Dale Marion, and Rice, striped crosswalks and a refuge median are to be placed in the center of the roadway and only right turn movements will be allowed. The minimum six-foot-wide medians provide a safe haven for bicyclists and pedestrians and allow them to cross half of the busy street at a time. On bike boulevards, vehicular left turns at local street-major street intersections would be eliminated, further calming traffic and increasing crossing safety.

Local north-south bikeways on streets that intersect with the ends of the station platforms would connect the Charles and Aurora/Fuller bikeways to University Avenue and the LRT Stations. Bicycle parking will be located on these side streets as well. For future infill stations at Hamline, Victoria, and Western, bicycle access is suggested directly on these streets leading to the stations. Because these roads carry higher traffic volumes, the possibility of bike lanes should be explored when the infill stations are built.



Existing bike lane on Raymond

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BIKE FRAMEWORK

Areas of Special Consideration

University Avenue

University Avenue will experience significant change with the addition of the Central Corridor LRT line. The physical design of University Avenue to accommodate LRT has been established and approved, and due to limited space, does not include dedicated space for bicyclists (figure 4b). This does not preclude bicycles from using University, as they continue to be permitted. Because of the importance of University Avenue for east-west movement, the Bike Framework recommends bike lanes on Minnehaha, Marshall, and Pierce Butler, and bike boulevards on Charles Avenue and Fuller/Aurora Avenues, which provide alternative east-west travel routes.

When travel lanes on University Avenue are programmed, explore a range of enhanced bicycle accommodations (i.e. signage, shared use, peak hour use, etc.), as well as the reintroduction of on-street parking to help buffer automobile traffic from pedestrian activity. In the street grid gap between Prior Avenue and Raymond Avenue (see page 12), special signage and pavement markings should be explored on University Avenue, including signage that indicates that cyclists may use the full traffic lane. This area has the potential to be dangerous for bicyclists because of a narrowing of the street, but due to the lack of direct parallel connections, more bicyclists are expected to choose University Avenue as they travel through this portion of the corridor.

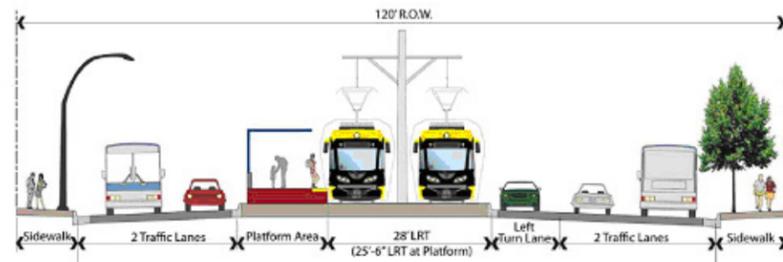


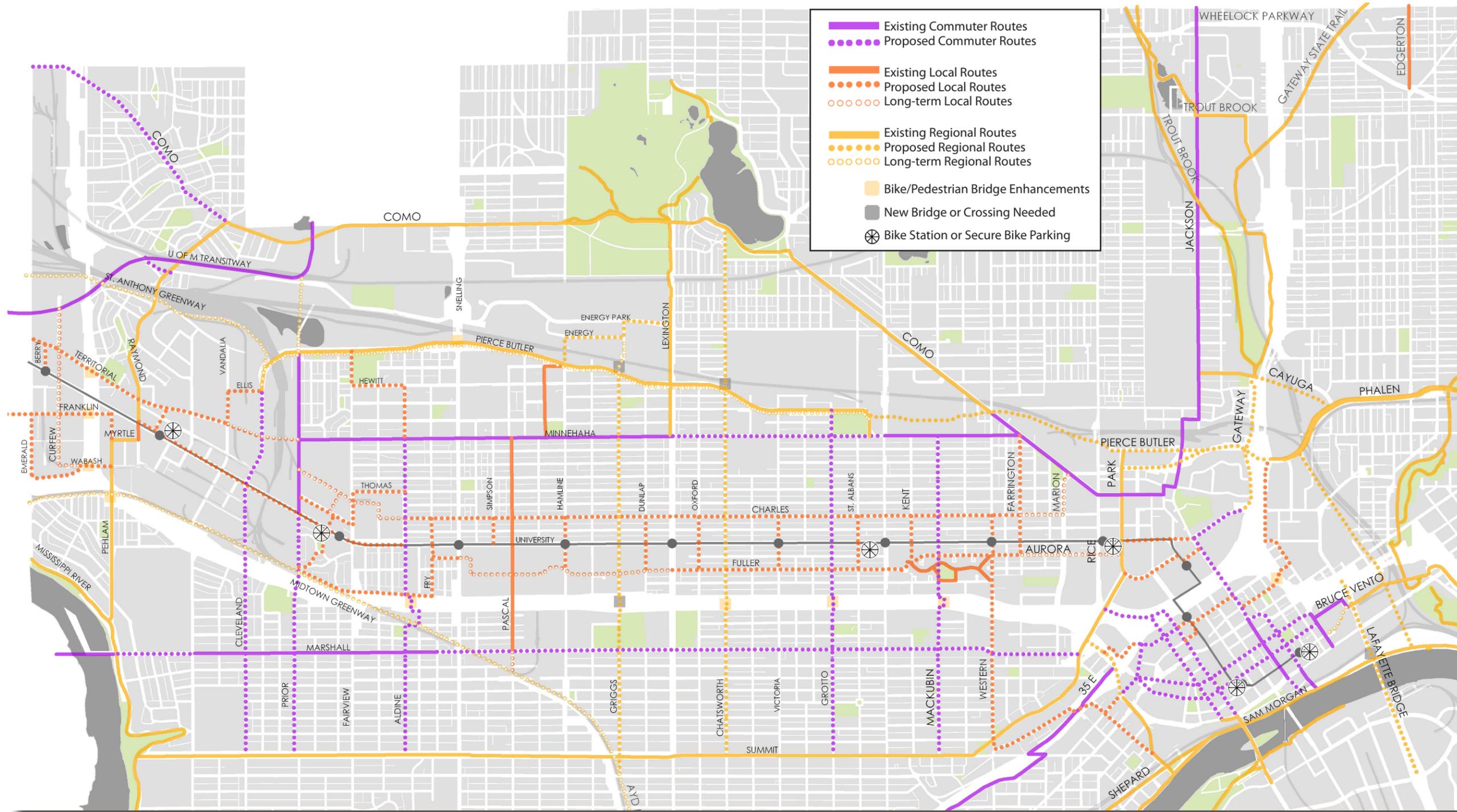
Figure 4b. Typical cross-section through University Avenue station

Figure 4. Bike Framework Definitions

REGIONAL	PURPOSE:	Provide connections to the citywide or regional trail system
	PRIMARY USERS:	All users, novice to experienced
	FOCUS:	Shared transportation and recreation function; safety, user experience, improved travel time, and route continuity
	PREFERRED TREATMENTS:	Bike lanes and/or off-road trails
	SIGNAGE TYPE:	Informational kiosks, route sign, directional, button
	CROSSINGS:	Bicycle priority at minor crossings, signalized major crossings and all crossings downtown
EXAMPLES:	Raymond Avenue, Summit Avenue, Pierce Butler Route, Sam Morgan Trail, Bruce Vento Trail	
COMMUTER	PURPOSE:	Provide transportation routes for daily trips
	PRIMARY USERS:	Average to experienced users
	FOCUS:	Transportation; improved travel time, and route continuity; continuous movement across barriers
	PREFERRED TREATMENTS:	Bike lanes, sharrows
	SIGNAGE TYPE:	Route sign, directional, button
	CROSSINGS:	Bicycle priority at minor crossings, signalized major crossings and all crossings downtown
EXAMPLES:	Como Avenue, Minnehaha Avenue, Jackson Street, Sibley Street, 5th Street, 6th Street	
LOCAL	PURPOSE:	Provide quiet routes for short trips, make connections to/from the bikeway system to local destinations and transit
	PRIMARY USERS:	All users, novice to experienced
	FOCUS:	Short neighborhood connections linking commuter and regional routes to destinations
	PREFERRED TREATMENTS:	Bike boulevard
	SIGNAGE TYPE:	Neighborhood traffic circles for wayfinding, route sign, directional, button
	CROSSINGS:	Bicycle priority at minor crossings (stop signs), median refuges at major crossings
EXAMPLES:	Charles Avenue, Fuller Avenue, Aurora Avenue, 9th Street, 10th Street, Smith Avenue	
PARKING	PURPOSE:	Secure storage and facilities at local and major destinations, and at transit stations/stops
	PRIMARY USERS:	All users, novice to experienced
	FOCUS:	A mix of short- and long-term storage to meet a variety of parking demands
	TYPES OF FACILITIES:	Racks, lockers, covered parking; full bike "station" with secure storage, showers, bike repair, bike rentals
	EXAMPLES:	Union Depot, Fairview Station Area, Raymond Station Area



Figure 5. Bike Framework Map



BIKE FRAMEWORK



NOT RELY ON THEM TOO HEAVILY. PLACE A WALKING BRIDGE FOR PEDESTRIANS AND BICYCLISTS AT UNIVERSITY AND GRIGGS. I HAVE SEEN MANY STUDENTS CROSS HERE TO GET TO SCHOOL AT GORDON PARKS SCHOOL. CHANGE ZONING



Prior Avenue to Vandalia Street Gap (north of University Avenue)

Railroad tracks, elevation change, existing buildings, and the Amtrak passenger rail station significantly limit east-west bikeway and walkway options north of University Avenue. Steep grades and the historic designation of the rail bridge over University Avenue limit options along University Avenue itself.

Long-term options for making this connection work should be explored, and could include a future bike/pedestrian bridge, a tunnel, or an at-grade bikeway near the Amtrak property. The alignment and feasibility of a connection is dependent upon future redevelopment, changes to building locations, and the cost/benefit of the specific improvement. As redevelopment occurs within the four blocks north of University Avenue, accommodations should be made for an east-west bikeway to provide a quiet alternative to University Avenue.

Snelling Avenue

Snelling Avenue is not a pleasant place for cyclists because of its high traffic volumes, higher speeds, truck traffic, and numerous elevated bridge sections. Snelling Avenue is designated as Minnesota Trunk Highway 51 and is under the jurisdiction of the Minnesota Department of Transportation. As portions of Snelling Avenue are contemplated for reconstruction, the City should work closely with MnDOT to ensure better accommodations for bicyclists and pedestrians are included in the design.

Hamline Avenue

Hamline Avenue is a lower-volume north-south street with a vehicular bridge over I-94. It was not recommended as a bikeway route in this plan primarily because there are other nearby recommended routes on Pascal and Griggs that provide better connectivity. Cyclists who want to cross I-94 are better served by Griggs because the new bicycle and pedestrian bridge over I-94 is safer and more pleasant for bicyclists than riding in traffic over the vehicular bridge

over I-94 on Hamline. Griggs also provides a better connection to Como Regional Park, and is a closer parallel route to Lexington Parkway. There is currently a bridge at Hamline over Pierce Butler Route, but when the bridge is replaced, it should be relocated to Griggs to further facilitate connections to Como. Finally, when LRT is running, it is likely that there will be bus traffic on Hamline south of University. However, when a future LRT station is constructed at Hamline, it may be beneficial to revisit designation of Hamline as a bikeway route.

Charles Avenue east of Rice Street

East of Rice Street, Charles Avenue makes a jog to the north, making through bike movements at this unsignalized crossing difficult. Long term, along with redevelopment, the Charles Avenue bike boulevard should be extended east of Rice Street to Park Street, but in the short term, an alternate route between Charles Avenue and Como Avenue on Farrington, Thomas, and Marion Parkway is recommended. (See Marion Parkway section below for more details.)

Aurora Avenue and Rice Street

Because crossing Rice is difficult in this area, for the near term, it is recommended that cyclists cross Rice at the signal at University. Opportunities for secure bike storage on the southeast corner of University and Rice should be explored.

Marion Street

Marion Street is very busy and is a significant barrier to east-west movement. A short local bikeway is suggested on Marion Street south of Como Avenue. In this area, the ideal treatment is on-road bike lanes, due to heavy traffic volumes. While bike lanes on Marion Street would be ideal, a combination of bike lanes and sharrow markings will have to be implemented in the short term. Extending the median at Marion Street south to provide a crossing refuge at Thomas Avenue is recommended. Advance bike boxes should be evaluated to help with left-turn movements.

Pedestrian oriented streetscape at Raymond and University Avenues



Intersection of Charles Avenue and Chatsworth Street



Typical downtown streetscape



Downtown Area

The purpose of the bike framework in downtown is to:

- create safe access to downtown
- provide for east-west and north-south movement
- create connections to existing regional bikeways that stop just short of downtown
- increase bike parking opportunities downtown
- calm traffic on bikeway streets
- create routes that are safe for cyclists and increase motorist awareness

Regional Bikeways

Today, regional bikeways lead to, but stop just short of downtown. A new regional bikeway segment is suggested on Kellogg Boulevard from Summit/John Ireland to Smith Street. This is envisioned as the gateway to downtown and as such deserves special treatment for all modes. Kellogg will be a critical cyclist access to downtown because it legibly links the existing regional bikeways on Summit Avenue and John Ireland Boulevard to downtown and the Sam Morgan Trail and avoids the steep topography of Ramsey Hill.

This section of Kellogg Boulevard also has high traffic volumes, multiple lanes, and freeway entrance and exit ramps which make for challenging cycling conditions.

Because Kellogg Boulevard is an important gateway to downtown and makes regional recreation and commuter connections, it is essential that it accommodate all levels of cyclists, from novice to expert. To this end, the long-term vision for this bikeway is for it to be redesigned with off-road trails on either side of the road and on-road bike lanes in each direction. In the near term, conditions for cyclists can be improved by signing the existing ten foot wide sidewalk as a shared bicycle/pedestrian trail, adding wayfinding signage, exploring the use of signage that indicates that cyclists may use the full lane, and implementing traffic-calming measures.

Commuter Bikeways

Three pairs of commuter bikeways are suggested for downtown: Fifth and Sixth Streets to provide continuous east-west movement; Saint Peter and Wabasha to offer north-south movements in the heart of downtown; and Sibley and Jackson to provide for north-south movement on the east side of downtown, and connections to the Sam Morgan Trail to the south and to the future Pierce Butler Extension/Phalen Boulevard to the north.

The long-term vision for downtown is for dedicated bike lanes on all commuter bikeways. Bike lanes provide a safe zone for cyclists, send a strong signal to both cyclists and motorists that 'bikes belong' downtown, and may be the most effective way to increase biking downtown.

Realizing this long-term vision may be challenging because downtown road space is limited and must effectively accommodate many legitimate uses: pedestrians, traffic movement, bus lanes, parking, and loading. There simply isn't room for all of these uses on all streets. Today, downtown commuter bikeway streets could accommodate dedicated bike lanes on most recommended commuter bikeways using a combination of strategies:

- reduction of travel-lane widths;
- removal of on-street parking;
- removal of travel lanes; and
- conversion of some one-way streets to two-way travel.

Each of these options has ramifications. If travel lanes are eliminated, traffic will move slower downtown. Eliminating on-street parking will make access and deliveries to some businesses less convenient. The reality is, dedicated bike lanes can only be effectively considered within the context of a downtown transportation vision that takes into account expectations for vehicular movement downtown and reevaluates one-way versus two-way streets, creates a unified parking strategy, and considers preferred transit routes as well the needs of cyclists.



Rich pedestrian environment of Mears Park





In the near term, all commuter bikeways, with the exception of Jackson and Sibley, should accommodate share-the-road treatments. On Fifth and Sixth Streets, which have dedicated bus lanes, bikes will share a lane with the buses. On Wabasha and St. Peter, bikes will share the right lane with traffic. On all these streets, sharrow markings and bikeway signage will be essential for wayfinding and bicyclist safety. These share-the-road solutions highlight the need for a comprehensive approach to traffic calming and reduced speed on all downtown bikeway routes. Reducing the speed limit to 25 miles per hour (allowed by Minnesota Statutes for bike routes) or adjusting signal timing to create a 20 mile per hour optimal travel speed, adding high-quality streetscapes (landscaping, decorative paving, and pedestrian-scale lighting) pedestrian bump outs, and enhanced crosswalks will slow traffic and make downtown safer and more pleasant for pedestrians and bicyclists.

On Jackson and Sibley Streets, striped, on-street bike lanes are recommended for two reasons: these routes make important regional connections between the Sam Morgan and Trillium/Trout Brook Trails, and lanes already exist on parts of these streets. On Jackson Street, between 12th Street and 7th Street the number of traffic lanes can be reduced from six to four by eliminating one travel lane in each direction to accommodate bike lanes. From 7th Street to Kellogg, the existing southbound bike lanes should be retained, and in the segment from Kellogg to the Sam Morgan Trail, bike lanes should be added (see areas of special consideration). On Sibley, a bike lane can be accommodated by a combination of reducing travel-lane widths and eliminating parking on one side of the street.

Local Bikeways

Local bikeways are recommended as supplements to Kellogg Boulevard for accessing downtown from the west. These routes will be preferable to some because they are on lower-traffic streets, but they are indirect and wayfinding will be challenging. To help with this issue, wayfinding signage and pavement markings are essential. These alternative local access routes are:

- Through the Minnesota History Center, linking 10th Street to Kellogg;
- Irvine Hill switchback, providing an alternative entrance to downtown with more gradual grade change;
- Chestnut Street, linking Irvine Avenue to the Sam Morgan Trail;
- Ninth and 10th Streets, facilitating east-west movement at the northern edge of town.

In keeping with their local classification, bike-boulevard or share-the-road treatments are recommended for local bikeways.

Areas of Special Consideration

Jackson from Kellogg to Shepard /Warner Road

Currently, this section of Jackson is difficult for cyclists, with a bike lane that ends just before a steep hill and underpass where cyclists need to transition from the right lane to the left lane to make a left turn to access the Sam Morgan Trail at Sibley. While this intersection may always be challenging, it can be improved to better meet the needs of cyclists as suggested in Figure 17. Considerations include adding a dedicated bike lane, using pedestrian- and bike-activated signals for crossing Shepard Road, and reconfiguring the Shepard/Jackson intersection to allow direct bike access to the Sam Morgan Trail.

Broadway and 6th Street

Currently, cyclists must make a left turn from Broadway onto 6th, near the location of a freeway entrance ramp. A striped bike lane making the turn is recommended in addition to signage alerting cyclists to car traffic, and cars to cyclists. A contraflow lane on

Figure 6. Bike Parking Demand Forecasts

BIKE PARKING DEMAND FORECASTS

Stations	Initial Bike Parking Needs	Mid-Term Bike Parking Needs	Long Term Bike Parking Needs
Westgate Station	6	11	23
Raymond Avenue Station	19	38	63
Fairview Avenue Station	10	19	57
Snelling Avenue Station	44	59	147
Lexington Parkway Station	9	19	28
Dale Street Station	7	14	21
Rice Street Station	18	36	48
Capitol East Station	4	8	8
10th Street Station	9	19	37
4th and Cedar Streets Station	18	36	48
Union Depot Station	32	64	106
Total:	175	321	585

Sources: LRT ridership: Administrative Draft EIS, dated January 2009. Bicycle ridership and parking demand: HKGi forecasts.

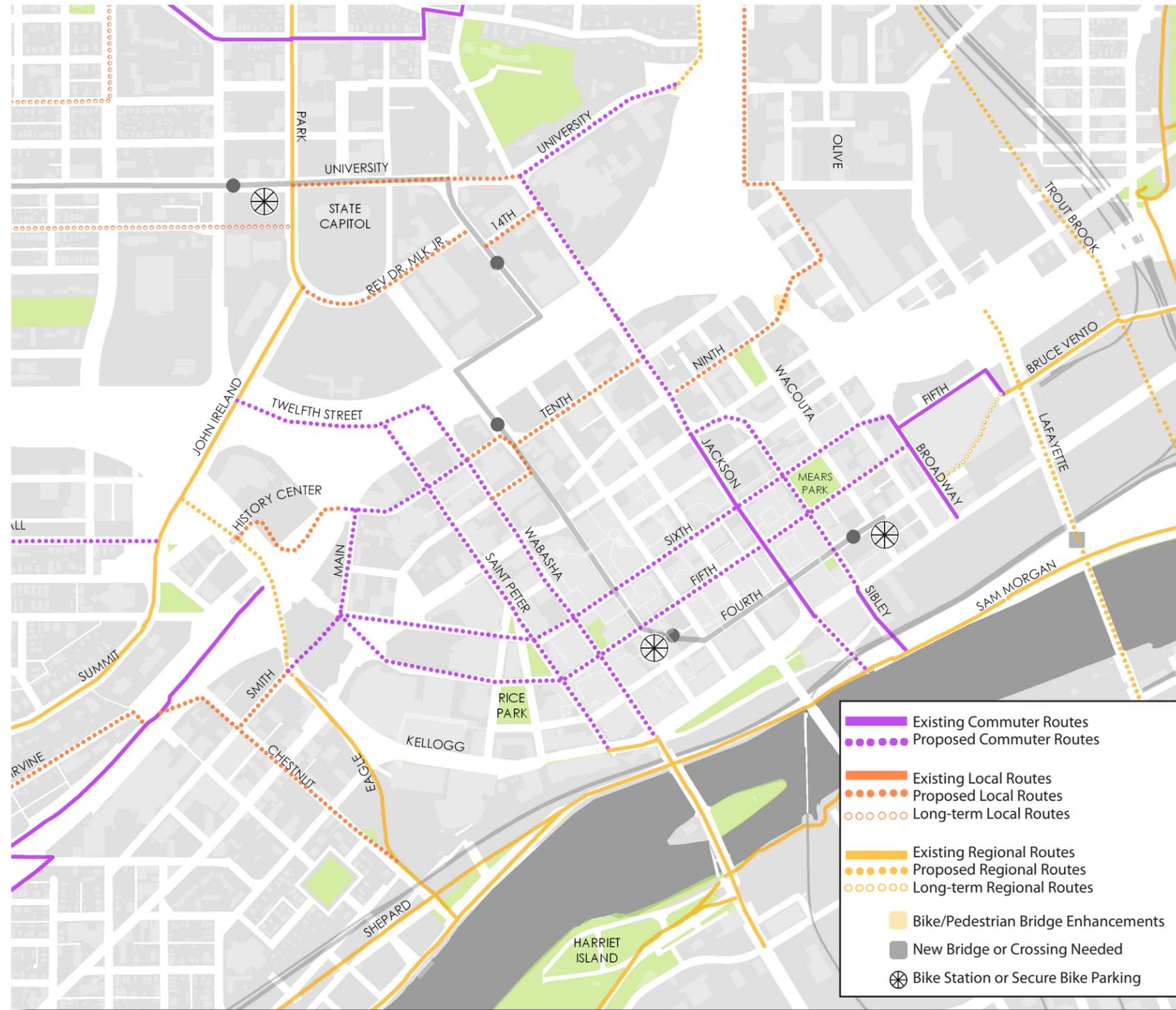
Did You Know?

- Number of bikes that can be parked in one car parking space in a paved lot: 6 – 20.
- Estimated cost of constructing one parking space in a paved lot: \$2,200.
- Estimated cost of constructing one parking space in a garage: \$12,500.





Figure 7. Bike Framework - Downtown Inset



Broadway should also be explored. “Yield to Cyclists” signs are recommended on the freeway exit ramp to slow motorists as well to serve as a warning sign for cyclists to watch for cars approaching from the right. Ultimately, redevelopment of the Diamond Products site (which will house the LRT Operations and Maintenance Facility) can improve bicycle and pedestrian access between downtown and the Bruce Vento Trail.

10th Street and Cedar

The 10th Street LRT station platform location will make continuous bike travel across Cedar impossible. Therefore, westbound bike traffic will need to make a one-block detour to Exchange Street and travel on Cedar for a short jog. East-bound traffic can remain on 10th, but will also have to briefly travel on Cedar. Wayfinding will be essential to make this detour legible.

10th Street at the Minnesota History Center

Cyclists must make a left turn from 10th to either the History Center shortcut (through the parking lot) or Main Street at the location of an I-94 off ramp. In this location, signage alerting cyclists to car traffic and requiring cars to yield to cyclists is recommended. It would also be beneficial to formally mark/enhance the shortcut through the public History Center parking lot.

Capitol Area

The Minnesota State Capitol area is governed by the Capitol Area Architectural and Planning Board (CAAPB). While the Bike Walk Central Corridor Action Plan shows bike routes through the Capitol area on street rights-of-way, the plan does not include paths through the Capitol grounds themselves, even though such routes may be available and chosen by individual cyclists. The CAAPB is currently working on an update of its Comprehensive Plan for the Minnesota State Capitol Area, and should explore formalizing additional bike routes throughout its jurisdiction.

ONLY 1 BLOCK! LONGER WALK LIGHTS, RELIABLE WALK REQUEST BUTTONS. ANYTHING THAT CAN ENCOURAGE CONNECTING THE AREA BY RICE PARK TO MEARS PARK. I'LL WALK BETWEEN THEM (BUT I NEVER HAD A CAR UNTIL I MOVED





Bike Parking and Bike Storage

Safe, secure bike parking is needed to support increased bike use. It is a goal of this Plan to provide secure bike storage as needed to meet demand and to support increased use of bicycles as a mode of travel. Short-term bike parking (1-4 hours) should be provided in bike racks along the Corridor's commercial streets to serve restaurants, shops, and other key Corridor destinations. Longer-term bike parking for commuters, employees, and residents should occur in secure bike storage facilities that are locked and have staffed or electronic observation. Secure bike storage can be provided within parking ramps, in buildings, within freestanding bike-storage facilities, or in bike lockers. Residential bike parking should be encouraged within secured areas accessible only to tenants. Bike parking and bike storage should be located along cyclists' natural routes of travel and as close as possible to destinations. Other facilities like bike stations, which frequently combine bike storage with bike sales/repair, showers, personal lockers, and complimentary uses like cafes, coffee shops, and pubs are typically located at high bike-use areas.

Bike Parking/Storage at LRT Stations

Bike parking and/or secure bike storage will be needed at each transit station. The amount of bike parking/storage needed will vary based on the volume of LRT riders, the proportion of riders biking to a given station, and the proportion of bike riders who take their bike on the train versus park/store their bike before boarding the train. Experience from other LRT lines indicates that the amount of bike parking increases as LRT ridership grows and that the amount of bike use increases as bikeway facilities are provided.

A forecast was prepared to determine how much and when bike parking/storage will be needed at the LRT stations. Figure 6 estimates bike parking/storage needs for each station. It is important to plan for the space needs at/near each station and have the flexibility to add bike racks, bike lockers, or secure bike storage.

Station Area Facility Recommendations

Each station should have bike parking available. Concentrations of bike racks should occur where local bikeways connect to LRT station platforms. The groups of bike racks should be located within the local street right-of-way or on public land outside of the University Avenue right of way. Lighting should be adequate to ensure the safety of users at all hours.

It is recommended that secure bike storage be provided at the Raymond Avenue, Fairview Avenue, Dale Street, Rice Street, Central Station, and Union Depot LRT stations. These stations were selected based on high ridership forecasts, existing and future regional bikeway connections, and high concentrations of nearby employment. The preferred locations are indoors as part of a multi-use bike station or in a freestanding bike station that is staffed or is secured through Smart Card access. If secure bike parking cannot be provided indoors or in a station, space within parking structures near the ramp attendant is often a suitable cost-effective alternative. Bike lockers are an interim solution at high-demand locations and may be a longer-term solution at less used stations. Care must be taken to locate bike parking and storage along cyclists' natural routes of travel and in places with minimal pedestrian conflicts.

Bike Parking in Commercial Areas

Locate bike parking along commercial streets as part of the streetscape (outside of the pedestrian clear zone, see Figure 11), in off-street areas such as boulevards, on private property, or in converted on-street parking spaces.

Bike racks should be in front of key destinations, such as restaurants, coffee shops, public spaces, and retail stores. Since sidewalk space is at a premium along many streets, simple bike-hitch racks and dual-purpose parking meters/bike racks allow bikes to be parked parallel to the sidewalk without interfering with pedestrian movement.

Demand for downtown bike parking



Secure and covered bike parking



Missing sidewalks on Territorial Road

WALK FRAMEWORK

Pedestrian movement is a key part of a successful City and a vibrant corridor. The roadway network is the primary network for pedestrians. This works well on low-traffic local streets, but high-speed roads create unpleasant pedestrian conditions and at worst, pose significant barriers to pedestrian travel.

A pedestrian is any person afoot or any person in a wheelchair, either manually or mechanically propelled, or other low-powered, mechanically propelled vehicle designed specifically for use by a physically disabled person. Good pedestrian design must account for the needs of all potential users, including those with physical or mental limitations. Improvements to this transit corridor should serve people with differing abilities, including children, the elderly, and those with mobility devices.

Universal design is used to make facilities accessible for all pedestrians, and should be implemented on projects and enhancements throughout the corridor to better connect people to transit. By using universal design principles, the built environment is usable and can be shared by all people, eliminating the need for specialized design. This means designing facilities not only to be compliant with the Americans with Disabilities Act (ADA) standards, but rather to achieve equal access, instead of “separate but equal” access.

Enhancements to the pedestrian realm are needed to make walking safer and more pleasant in the Central Corridor and downtown. Improving conditions for pedestrians will pay dividends in terms of increased LRT ridership, improved property values, greater revitalization and development, and increased neighborhood quality of life.

Improvements to the existing pedestrian network will be a result of redevelopment initiatives, public/private revitalization projects, and public enhancements. The recommendations in this Walk Framework are intended to build upon the existing walkway network and make it pedestrian friendly.

University Avenue Area

With the introduction of LRT, pedestrian activity on University Avenue itself will increase greatly. Though the sidewalk area has already been established as 10' along most of the corridor, additional space in the building frontage zone (see Figure 11) should be captured whenever possible to create small plazas and pocket parks for outdoor restaurant seating, public gathering places, and retail display areas, all of which enliven the street and can improve the pedestrian experience. This can be done by obtaining sidewalk easements and requiring building setbacks as part of redevelopment projects.

Streetscape and bridge improvements, with a focus on lighting and personal safety, are needed for many streets between I-94 and University Avenue. Pedestrian/cyclist bridges should be improved with safe approaches, new lighting, and increased width to better accommodate pedestrians and bikes. Vehicle bridges and underpasses should be improved with better lighting and ornamental railings. When rebuilt, bridges and underpasses should be widened to better accommodate vehicles, bikes, and pedestrians.

Park streets, with grass boulevards, street trees, and landscaping are suggested on streets leading from the neighborhoods on either side of University Avenue to the ends of the station platforms. These streets will also provide the bike links to the LRT stations.

Pedestrian improvements to the Midway shopping district should be made as redevelopment occurs. New streets should have ample sidewalks and have a well defined street edge, amenity zone, clear travel zone, and building frontage area (see Figure 11). Redevelopment form should encourage reestablishing a grid street pattern with walkable blocks and safe, legible pedestrian walkways from University Avenue to building entrances with building entrances connected to safe, legible pedestrian ways along University Avenue.

*Narrow sidewalks on Kellogg Boulevard*

3

WALK FRAMEWORK

Pedestrian Safety

Public input indicated concerns about the safety and comfort of walking across University Avenue and on the vehicle bridges over I-94. Pedestrian crosswalks at traffic signals should be well marked with signage, signals, tactile features, and pavement markings. The walk phase of the signal should allow adequate time for pedestrians to cross the street, and should include non-visual information for all users to better judge crossing times, including vibrations and/or sound. Effective crossing distances can be reduced and traffic calmed by adding pedestrian bump outs (curb/sidewalk extensions) at intersections.

Public comments also included concerns about drivers running red lights, not stopping before turning right on red, turning right on red where that movement is prohibited, and excessive speed. Eliminating free right turn lanes and tightening up curb radii slows turning vehicles and enhances pedestrian safety and comfort. There is also a desire for greater enforcement of traffic laws.

Additional traffic signals and crosswalks to be added along University Avenue as part of LRT construction will help enhance pedestrian crossing and safety. The signal timing at all signals along University Avenue should be adjusted to allow adequate walk signal phase time.

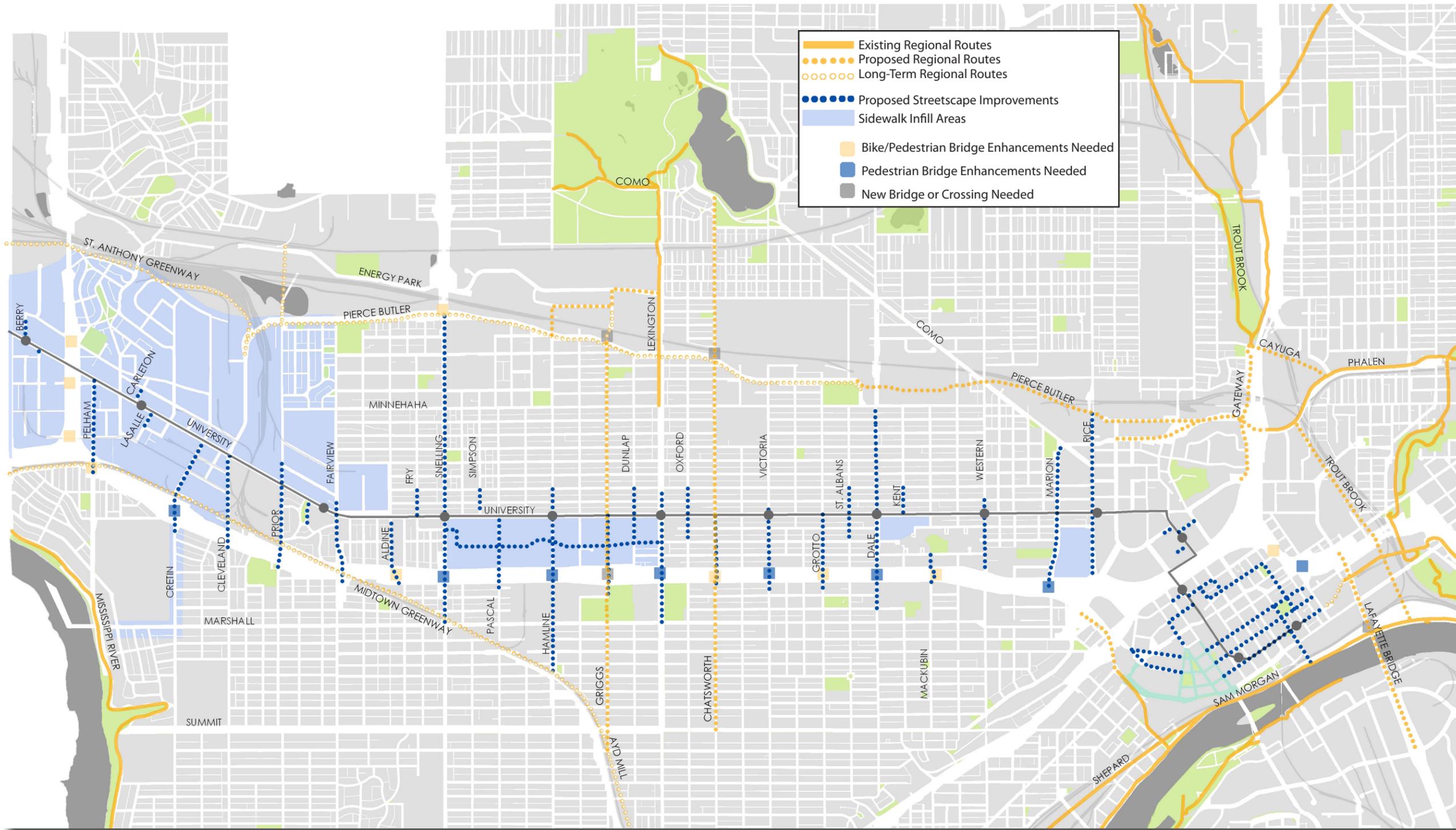
There are many techniques that can reduce traffic speeds, including speed-limit enforcement, street design, and traffic-calming methods. A comprehensive approach combining these methods is warranted along University Avenue.

Figure 8. Walk Framework Definitions

REGIONAL	<p>PURPOSE: Provide connections to the citywide or regional trail system</p> <p>FOCUS: Shared transportation and recreation function; safety, user experience, and route continuity</p> <p>PREFERRED TREATMENTS: Off-road trails</p> <p>SIGNAGE TYPE: Informational kiosks, route sign, directional, button</p> <p>EXAMPLES: Mississippi River Trail, Sam Morgan Trail, Bruce Vento Trail, Phalen Boulevard, Trout Brook Trail</p>
SIDEWALK INFILL	<p>PURPOSE: Add missing sidewalks and walkways to fill gaps in pedestrian connectivity</p> <p>FOCUS: Shared transportation and recreation function; year-round safety, user experience, and route continuity</p> <p>PREFERRED TREATMENTS: New sidewalks or walkways</p> <p>EXAMPLES: West Midway Industrial area, Midway Shopping Center, Sears Redevelopment site</p>
STREETSCAPE IMPROVEMENT	<p>PURPOSE: Maintain and enhance streetscapes to create more comfortable and attractive streets</p> <p>FOCUS: Safety, user experience</p> <p>PREFERRED TREATMENTS: Pedestrian-scale lighting, street trees, benches, amenities</p> <p>EXAMPLES: Bridges over Interstate 94, 5th Street, 6th Street, Streets accessing LRT station platforms</p>
BRIDGE IMPROVEMENT	<p>PURPOSE: Maintain and enhance bridges to create more comfortable and attractive pathways</p> <p>FOCUS: Safety, user experience</p> <p>PREFERRED TREATMENTS: Pedestrian-scale lighting, 14'-wide shared path</p> <p>EXAMPLES: Bridges over Interstate 94 and Highway 280, Lafayette Bridge</p>



Figure 9. Walk Framework Map



3

WALK FRAMEWORK



BENEFITS ASSOCIATED WITH PUBLIC TRANSPORTATION. BIKE BOULEVARDS! PLEASE CONSIDER LINKING UP THE END OF BRUCE VENTO BIKE TRAIL TO THE MARSHALL AVE. AND SUMMIT AVE. BIKE LANES -- THROUGH DOWNTOWN, THEN

3

WALK FRAMEWORK

Downtown

Pedestrian improvements downtown should focus on extending high-quality streetscape on key streets to make pleasant street-level walking connections between existing destinations. Recommendations include:

- Extending the high-quality streetscape on 4th, 5th, and 6th Streets east from Wabasha Avenue to Jackson Street, visually connecting LRT to the Rice Park area;
- Creating a high-quality streetscape identity for LRT streets so that these streets become exceptional places for pedestrians; and
- Creating a loop of “park streets” with high-quality streetscape similar to that on Wabasha and St. Peter, linking existing and planned parks, downtown residential areas, and the Mississippi River (as shown in the *Central Corridor Development Strategy* and *Downtown Station Area Plan*).

Areas of Special Consideration

5th and 6th Streets

5th and 6th Streets are important transit corridors that currently suffer from a lack of pedestrian amenities. Improving these central downtown streets is a high priority for the City of Saint Paul. These streets, particularly from Wabasha to Jackson, will become better places for pedestrians with enhanced amenities such as street trees and planters; pedestrian scale lighting; widened sidewalks, either in conjunction with redevelopment or by reducing the street width; and pedestrian-supportive land uses like restaurants, newsstands, and retail at street level.

Figure 10. Walk Framework - Downtown Inset

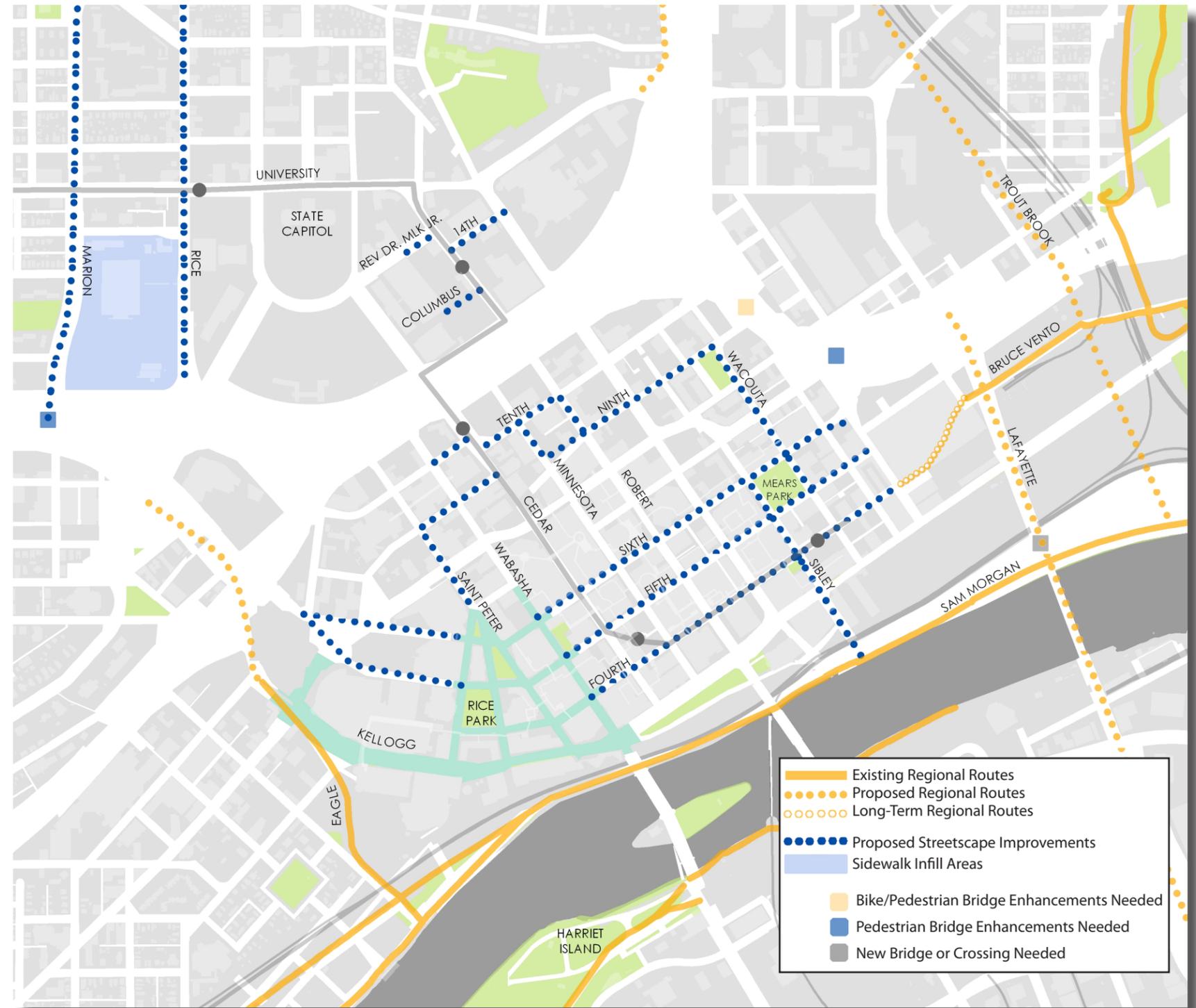
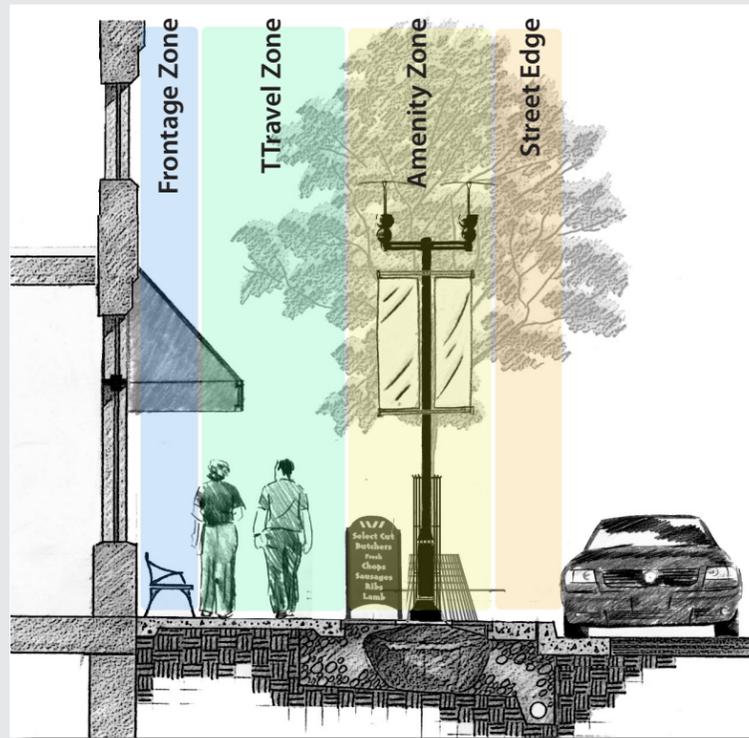


Figure 11. Creating Pedestrian Friendly Streets



The recommended width of these zones and the overall width of the walkway varies with the type of street and is influenced by availability of space and land use context. The example below shows the constrained and recommended widths of each zone on commercial streets.

<i>Street Edge Zone:</i>	1.5 feet - 2.5 feet
<i>Amenity Zone:</i>	4 feet - 8 feet
<i>Travel Zone:</i>	6 feet to 10 feet
<i>Frontage Zone:</i>	2.5 feet to 3 feet+ for outdoor seating

CREATING PEDESTRIAN FRIENDLY STREETS

Making streetscape improvements on key streets can help make the entire Central Corridor more pedestrian friendly. There are four types of zones in a balanced streetscape, as depicted in the figure to the right.

Street Edge. A clear space next to the curb to separate pedestrian and automobile traffic and to allow room for vehicle door openings.

Amenity Zone. The amenity zone serves three functions: buffering pedestrians from the street, providing aesthetic value by including landscaping to “green” the street. This area also accommodates utilities, hydrants, trash/recycling receptacles, signage, light fixtures, benches and bike parking.

Travel Zone. The travel zone is the area used for pedestrian movement. It should be free of all obstacles. A walkway’s clear zone should be wide enough to allow pedestrians to pass one another with ease.

Frontage Zone. This area directly next to the building is for ingress and egress between the walkway and the building. In certain locations the frontage zone should be designed to create pedestrian gathering places. This might be in the form of outdoor seating adjacent to restaurants or coffee shops.

Incorporating all four zones in the Central Corridor will contribute to a safe, active walkway that is inviting to pedestrian activity. These routes will become vibrant destinations, building a stronger sense of place.

Skyways

Better integrating the street-level pedestrian network with the skyway network will facilitate movement between the systems and contribute to activity on the street. This can be done by creating frequent and legible connections between the two systems. Strategies include improved signage at street-level building entrances where skyway connections can be made and increasing the number of direct access points at street level (places where the pedestrian does not have to navigate to the core of a building to access the skyway system). Orient skyway connections to existing and planned transit stations so they can be used as places to wait for buses or trains.

Connecting Lowertown to the Mississippi River

Sibley Street connects Lowertown to the Mississippi River. Existing conditions include an engaging pavement pattern and an improved crosswalk at Warner Road, but additional improvements such as better lighting and overall greening should be undertaken to make this connection more pedestrian friendly.

4

PRIORITIES

PRIORITIES

In this chapter, the recommendations included in the Bike and Walk Frameworks are prioritized based on the goals and objectives of the Bike Walk Central Corridor Action Plan (pages 3-4) to determine the key actions. The priority actions below contribute to improving connectivity, enhancing safety, improving the bicycling and pedestrian experience, fostering creative solutions, and are generally functional and feasible.

These priorities are near-term action items for the City of Saint Paul. They are intended to be the first steps in making this plan's vision a reality, but the Plan's long-term priorities are equally important. In many cases, the short-term priorities below are interim measures that improve conditions for bicyclists and pedestrians and move toward the vision of the plan, but do not yet result in the ideal treatments suggested in the Bike and Walk Plan chapters. The City of Saint Paul will work closely with the community to help develop these conceptual projects into detailed and context-sensitive designs.

Develop a Strong Bikeway System

Pierce Butler Route Extension: Create on- and off-road trails with the construction of the Pierce Butler Route Extension, connecting the eastern end of the existing Pierce Butler Route (near Dale Street) and Phalen Boulevard. Assess the feasibility of reducing the speed limit and adding an off-road trail to the existing Pierce Butler Route. (See Figure 12 at right.)

Griggs Street: Provide a combination of bike lanes and bike boulevard treatments from Summit Avenue to Minnehaha Avenue. Assess the feasibility of moving the Hamline Avenue pedestrian bridge to Griggs when it is reconstructed, and extend the Griggs bikeway north over Pierce Butler Route and south to Jefferson Avenue. Griggs Street links the future Lexington LRT station, as well as major destinations like Como Park, Dunning Field, Central High School, Skyline Tower, Concordia University, Gordon Parks High School, and Jimmy Lee Recreation Center. The Griggs Street and University Avenue intersection will have a new traffic light with the addition of LRT.

Figure 12. Conceptual Cross Section for Pierce Butler Route. Regional routes should include off-road trails as well as on-street bikeways.

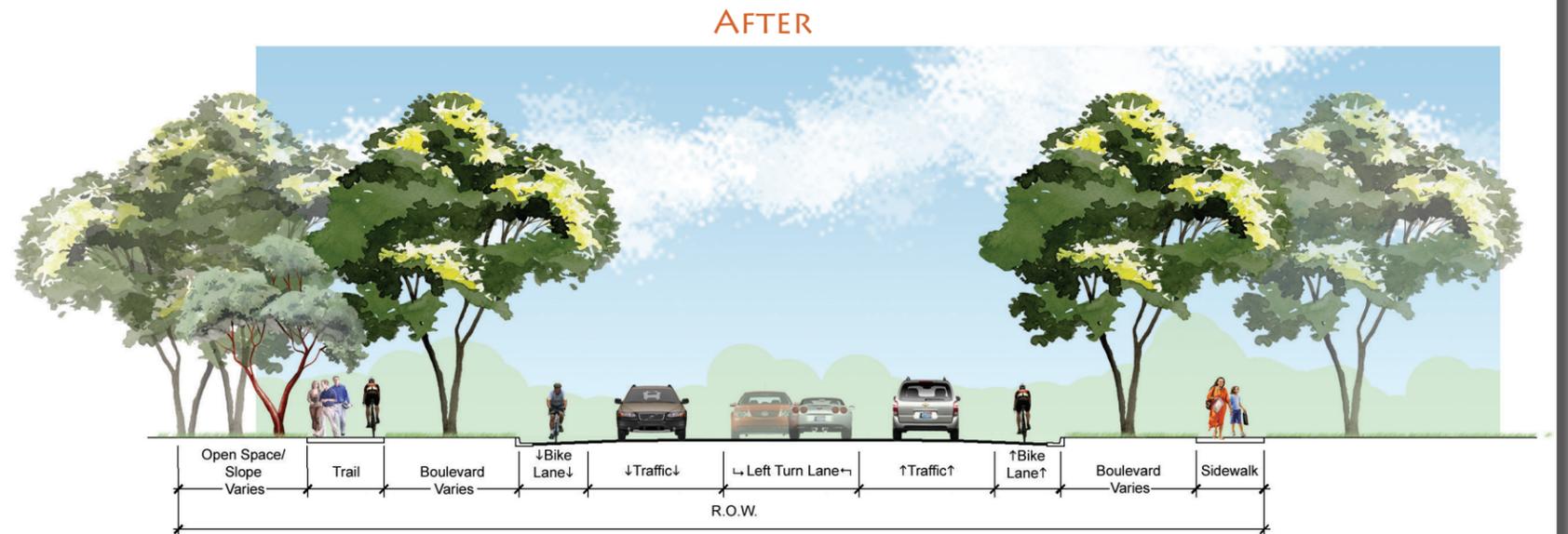
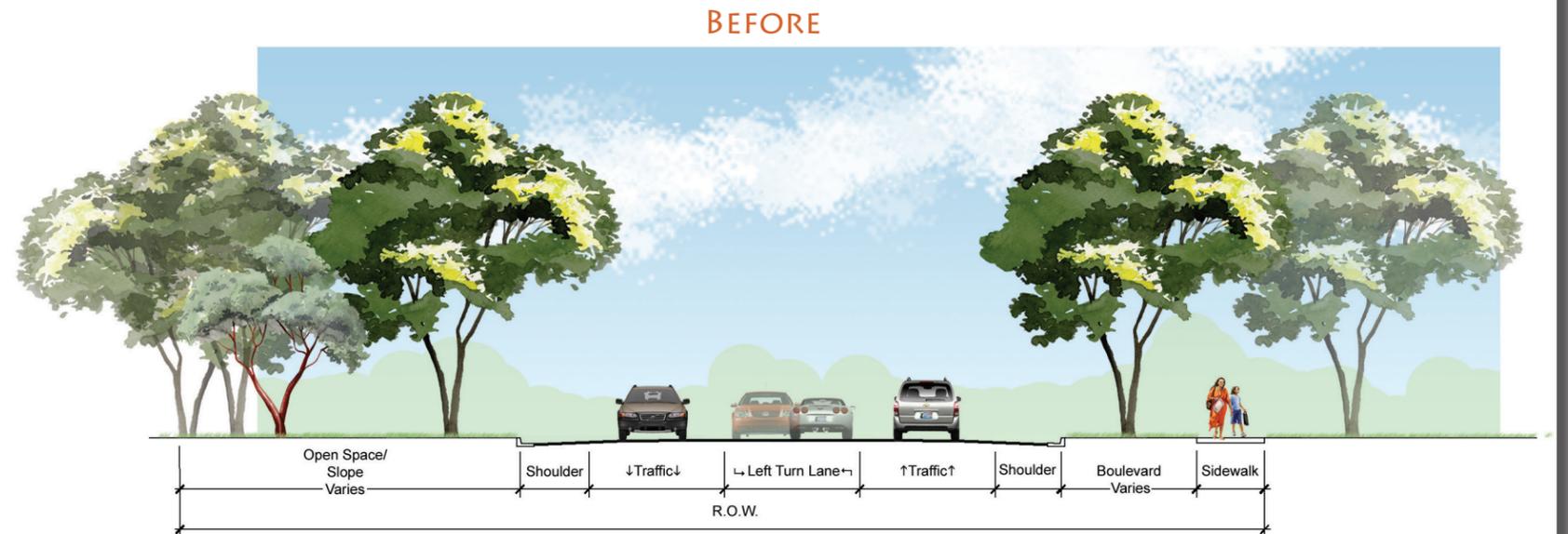


Figure 13. Visualization of Prior Avenue Bikeway South of University Avenue



Prior Avenue: Explore the use of bike lanes from Summit Avenue to Charles Avenue and the addition of sidewalks where needed. Improve the existing on-street conditions north to Minnehaha Avenue. Prior has long been identified as a gap for bicyclists, and provides a direct north/south link between major routes on Summit Avenue and Minnehaha Avenue in the West Midway area. (See Figure 13 at left.)

Mackubin Street: Add a combination of bike lanes and bike boulevard treatments from Summit Avenue to Minnehaha Avenue. Mackubin Street provides north/south access to the future Dale and Western LRT stations, as well as multiple schools, existing trails and open space at Central Village, the Hallie Q. Brown Center, Martin Luther King Recreation Center, and Selby Avenue businesses. As compared to Dale Street, Mackubin also provides a safe off-street crossing at Interstate 94 and will have a new traffic light at University with the addition of LRT.

Marshall Avenue: Implement the funded combination of bike lanes, share-the-road treatments, and sidewalks from Mississippi River to Cretin Avenue. Add bike lanes from Snelling Avenue to Victoria Avenue to connect to the existing bike lanes to the west. Use bike boulevard treatments from Victoria Avenue to Mackubin Street and a bike boulevard treatment with a contraflow bike lane from Mackubin to Summit Avenue. Marshall would be a safe and direct commuter route between Minneapolis and Downtown Saint Paul, and a strong transportation and recreation connection by linking Mississippi River Boulevard to the destinations and neighborhoods along this route.

Minnehaha Avenue: Fill the gap between Lexington Parkway and Dale Street to complete this continuous east/west connection. Explore the use of bike lanes. Minnehaha provides an important link to the Como Avenue bikeway, and to major destinations like Hamline University and Como Park (via the trail along Lexington).

Pelham Boulevard/Raymond Avenue: Add sharrows to the existing bikeway to emphasize the presence of bicyclists on this major north/south route. Pelham and Raymond are a critical part of the Saint Paul Grand Rounds, and will connect neighborhoods to the future Raymond LRT station.

BUT IN THE WINTER, THE STREET BECOMES VERY NARROW, WITH PARKED CARS AND/OR SNOW MAKING THE BIKE PATH UNUSABLE). MORE BIKE FRIENDLY NORTH SOUTH ROUTES (TRY RIDING DOWN SNELLING DURING RUSH HOUR,

4

PRIORITIES

Ellis Avenue/Territorial Road: Construct a bike boulevard from Transfer Road (near Pierce Butler Route) to the University of Minnesota Transitway, with a focus on legibility and wayfinding signage. With any redevelopment, every effort should be made to reinstate the street grid through this heavily industrial area, and to create a more direct connection between Territorial and Charles and/or Minnehaha east of Prior Avenue. Connecting those bikeways would complete an east/west route that stretches from the City border to Rice Street, and provide a quiet alternative for local bicyclists with origins or destinations on University Avenue.

Midtown Greenway Extension/Ayd Mill Road Trail: Work with regional partners to continue to pursue the extension of the Midtown Greenway across the Mississippi River and into Saint Paul. The greenway and Ayd Mill Trail would be the single greatest off-road asset to the corridor, facilitating quick and direct connection between Minneapolis and downtown Saint Paul. The trail is planned to have numerous points of access to and from adjoining neighborhoods.

Charles Avenue: Create a bike boulevard from Prior Avenue to Mackubin Street. Use a combination of planted neighborhood traffic circles, sharrows, curb bump-outs, and wayfinding signage to provide a quiet route alternative to local traffic visiting University Avenue destinations and connecting to LRT stations. (See Figures 14 and 15 at right.)

Kellogg Boulevard West/History Center Route: While Kellogg faces many barriers to change due to grade, existing bridge and ramp structures, and heavy automobile traffic, it remains an important route into downtown for bicyclists. Maximize space in the right lane by restriping vehicle lanes, installing share-the-road signage, and assessing the feasibility of sharrows from John Ireland Boulevard to Smith Avenue for visibility. Expand the eastern sidewalks to 15 feet and sign as shared bicycle and pedestrian trail from Summit Avenue to Smith Avenue. Use bike route treatments through the History Center parking lot to create a formal and legible bikeway as a quiet route alternative into downtown.

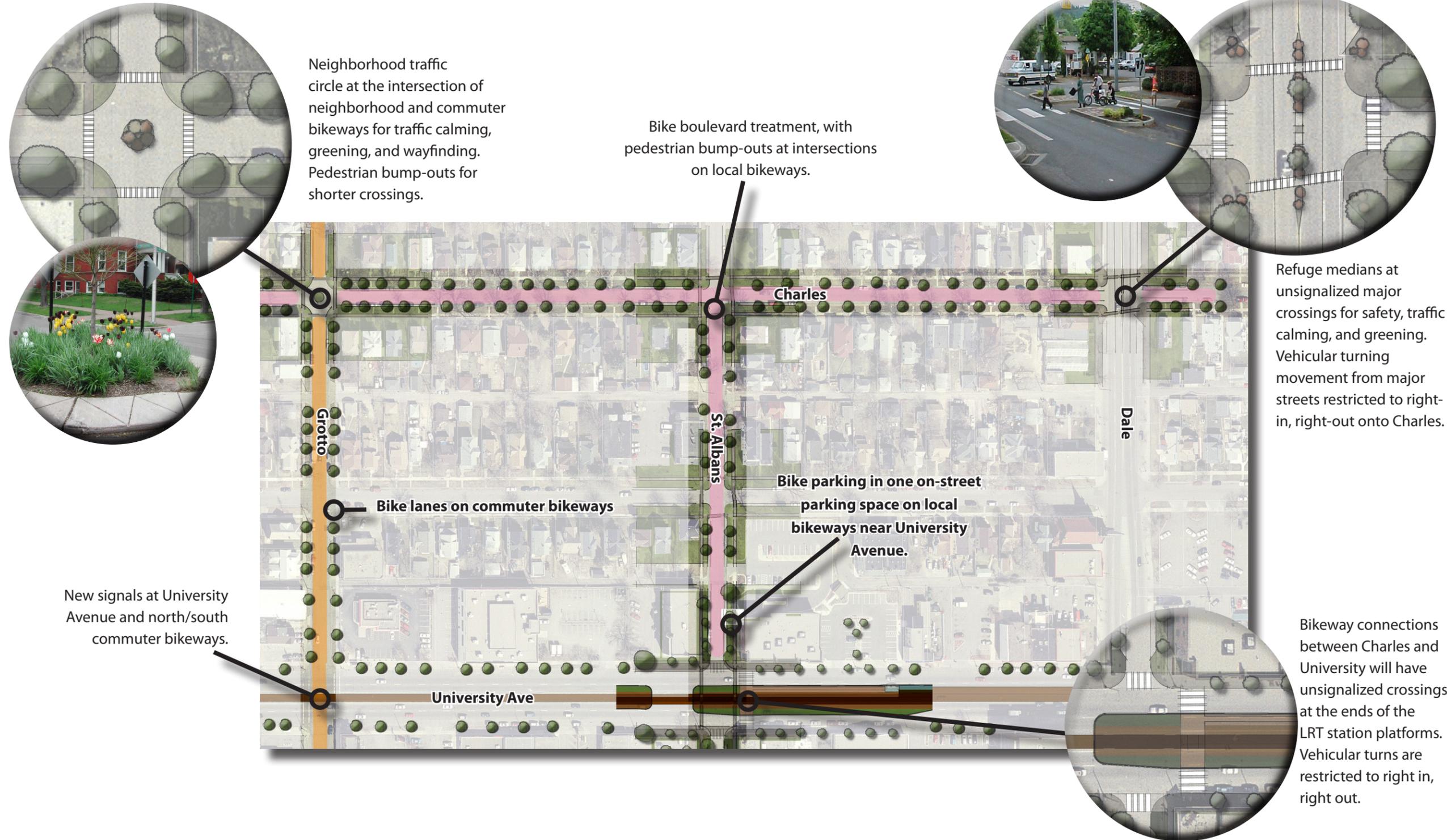
Figure 14. Visualization of Charles Avenue and Chatsworth Street - a typical intersection of a commuter and local bikeway



4

PRIORITIES

Figure 15: Sample Intersection Treatments for a Bike Boulevard



4

PRIORITIES

5th and 6th Streets. Convert the existing bus lane to a shared bus and bike lane. (See Figure 16 at right.)

Jackson Street: Between 7th and 12th Streets, use a “road diet” to create space for bike lanes in both directions. Bike lanes should be continued between Kellogg Boulevard and Shepard/Warner Roads, with the addition of wayfinding signage at the entrance of the tunnel. Introduce curb cuts in the median of Shepard Road and at the entrance to the Sam Morgan Trail. Longer term, assess the feasibility of two-way traffic south of 7th Street with bike lanes in both directions. (See Figure 17).

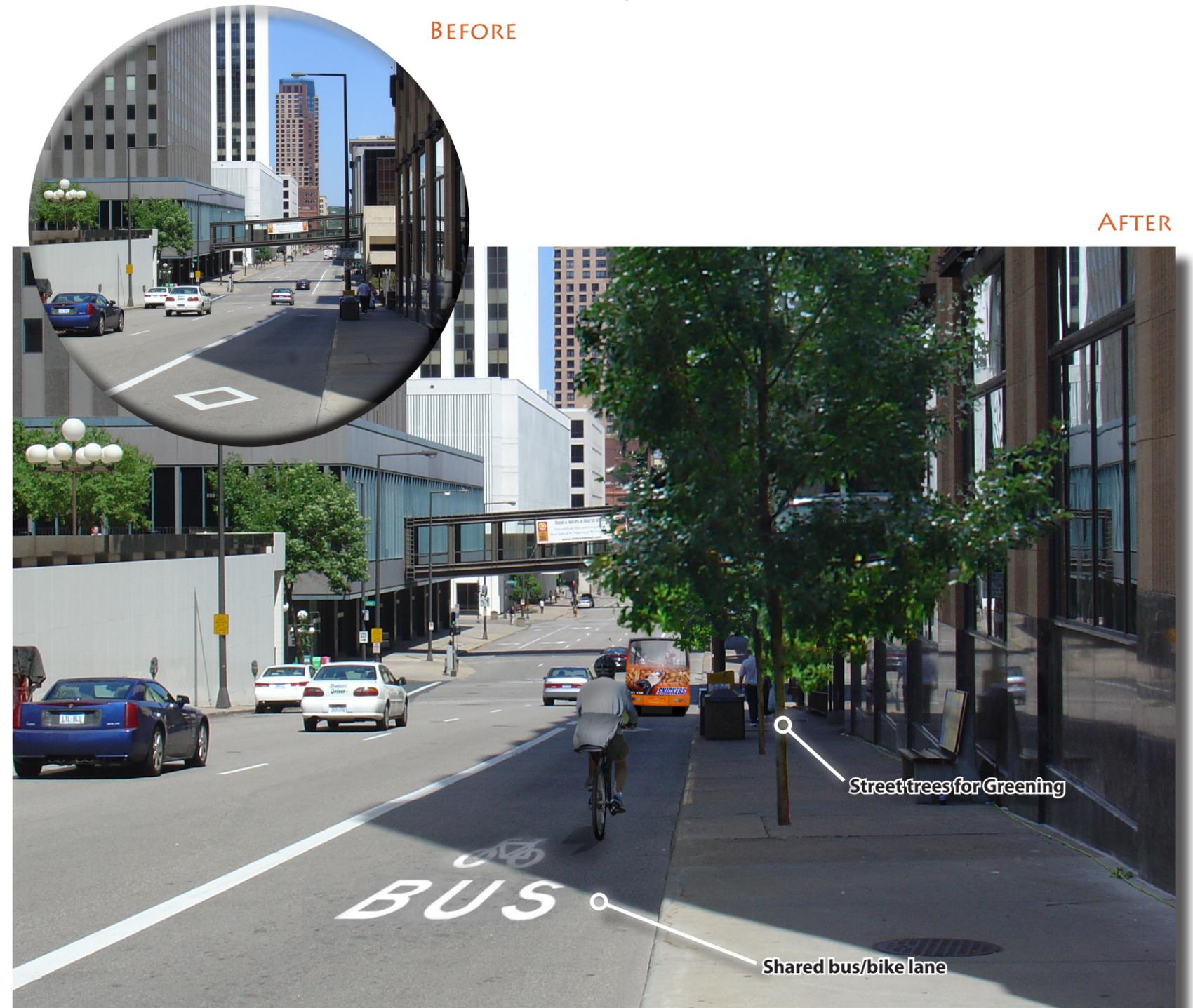
Sibley Street: Install bike lanes where vehicle lane widths can be reduced and parking can be eliminated on one side of the street, or where a road diet to reduce the number of traffic lanes would be effective. Use sharrows to provide continuity of the bikeway where bike lanes are infeasible due to physical constraints.

Incorporate Bicycle and Pedestrian Facilities

Develop Bike Parking: Provide bike lockers and other covered parking near all station platforms along the University Avenue portion of the LRT line, and bike racks along the entirety of University Avenue as part of streetscape improvements. Downtown, focus bike parking at major hubs of activity, like the Union Depot, to serve both commuter and recreational riders. Continue to use a combination of public and private strategies to help build this infrastructure, including:

- implementation of a bicycle parking zoning requirement
- collocation of racks in vehicular parking ramps or at parking meters
- continuation of the current Public Works bicycle rack cost sharing program

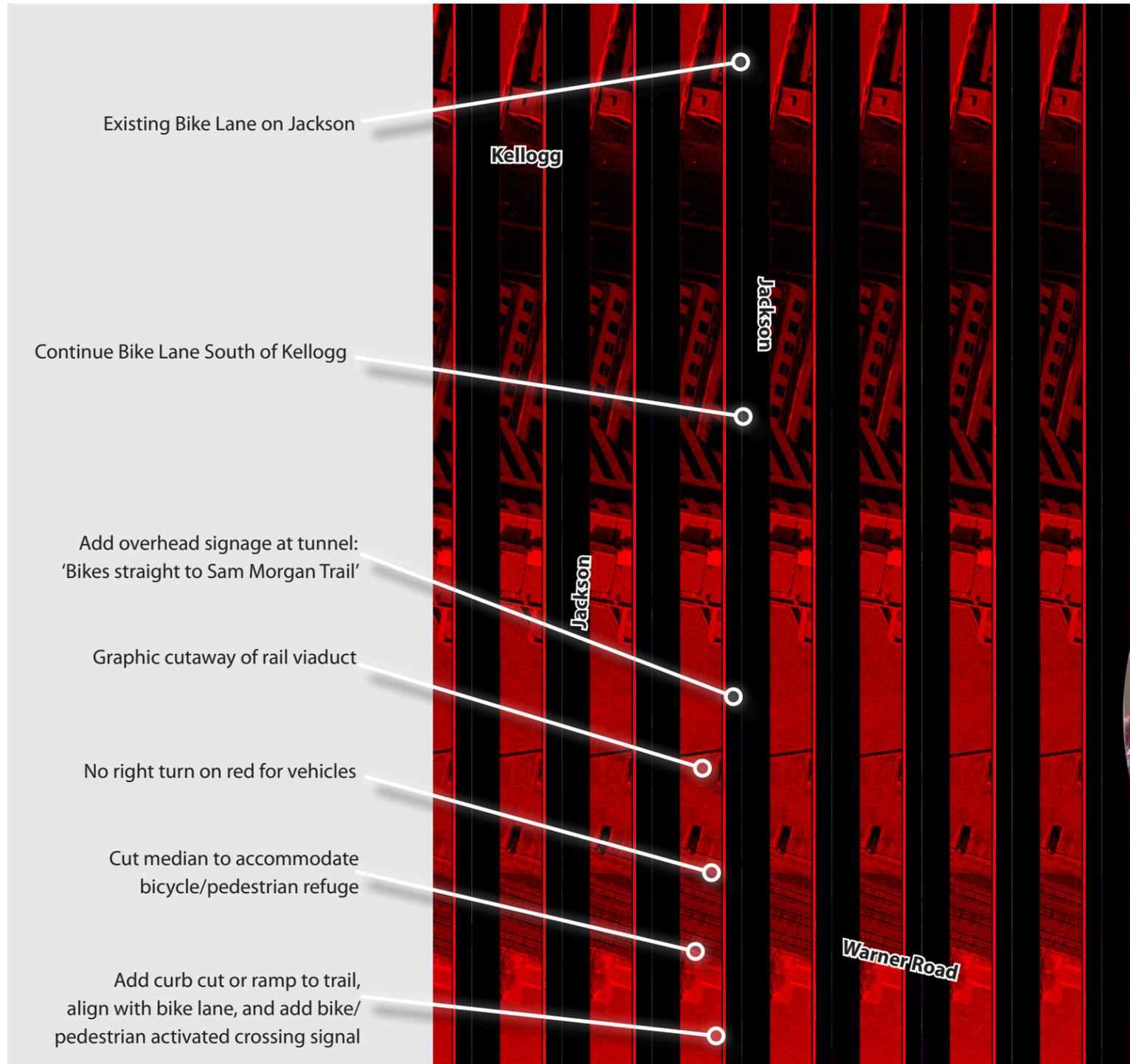
Figure 16: Visualization of a Shared Bus/ Bike Lane at 5th Street & Wabasha Street



SHARE THE ROAD SIGNAGE AND MORE TRAFFIC CALMING STRATEGIES THAT DO NOT LIMIT CYCLING (MARSHALL, FOR EXAMPLE, IS DIFFICULT TO RIDE ON IN THE WINTER BECAUSE OF THE NEW MEDIANS. THIS IS LOVELY IN THE SUMMER,



Figure 17: Recommended Bikeway Improvements to Jackson Street between Kellogg Boulevard and the Sam Morgan Trail



What is a Road Diet?

The purpose of a road diet is to remove or narrow automobile lanes to improve safety, mobility, and access for all modes of transportation, including biking and walking, while achieving economic and community goals. A typical road diet would achieve a series of the following initiatives:

- Reclaim street space for bikeway treatments or sidewalks.
- Reduce the number of lanes of traffic & conflict points.
- Reduce motorized vehicle speeds.
- Improve bicycle and pedestrian safety.
- Increase visibility and sight distance.
- Encourage an active streetscape and support the pedestrian realm.
- Improve the roadways' aesthetics and visual qualities.



Figure 18. Visualization of Improvements to Sibley Street at Shepard Road (Image courtesy Urban Strategies, Inc.)

BUT IN THE WINTER, THE STREET BECOMES VERY NARROW, WITH PARKED CARS AND/OR SNOW MAKING THE BIKE PATH UNUSABLE). MORE BIKE FRIENDLY NORTH SOUTH ROUTES (TRY RIDING DOWN SNELLING DURING RUSH HOUR,

4

PRIORITIES

Secure Bike Storage: Focus ample commuter bike storage facilities or services where significant short-term demand is likely, including near the Raymond, Dale, Central Station, and Union Depot LRT stations. Encourage commuter-oriented services, like repair shops, to collocate with these facilities to create “bike depots”.

Add Sidewalks and Improve Streetscapes

Sidewalk Infill Area: Actively pursue new sidewalks on both sides of streets through city funding, assessments, and redevelopment opportunities. Short term, focus new pedestrian facilities within the large sidewalk infill area located in the West Midway (see Figure 19 at right) with an emphasis on strengthening pathways between jobs, housing, and transit. Enhancing the pedestrian experience with new infrastructure and amenities can not only improve safety, but also fill critical gaps in accessibility compliance. Sidewalks also support a more continuous business district by providing attractive connections between commercial corridors, like University Avenue, and adjacent residential neighborhoods.

“Downtown Park Streets” (Sibley, Wacouta, St. Peter, Exchange, and 9th Streets): Improve pedestrian scale lighting. Introduce pedestrian wayfinding focused on connections to downtown parks, other destinations, and the Mississippi River. Building on the work of the *Central Corridor Development Strategy*, improve streetscape of streets leading to LRT platforms by using a combination of bike boulevard treatments, landscaping, and widened sidewalks.

5th and 6th Streets: Implement 6th and 5th street Capital Improvement Initiative which recommends hardscape, ecology, public art, and programming improvements to beautify 6th and 5th streets between Wabasha and Jackson.

Bridges over I-94, I-280, and the Mississippi River: Add pedestrian-scale lighting and decorative railings to improve pedestrian and cyclist comfort and safety while crossing major barriers. Introduce signed crosswalks, with attention to landscaping and creating more visible approaches to the bridges.

Calm Traffic and Improve Intersections

Pedestrian Crossing Improvements may include:

- Adequate walk signal times to cross the street.
- Use of countdown walk signals, including Accessible Pedestrian Signals (APS) like
- Pedestrian refuge islands
- Enhanced crosswalks – “piano” style pavement marking, colored pavement, raised crosswalks or raised intersection tables, advance warning signage and advance stop bars (10-20 feet from crosswalks)
- Pedestrian bump-outs/curb extensions and neck downs at intersections
- Two pedestrian ramps at each corner parallel to crosswalks, instead of having one ramp at the corner

Pierce Butler Route: Work with Ramsey County and neighborhood stakeholders to lower the speed limit on the existing Pierce Butler Route for increased bicycle and pedestrian safety. Focus bicycle crossing improvements at intersections with north-south bikeways, including Prior, Griggs, Hamline, Chatsworth, and Grotto.

Charles Avenue: Create refuge islands at intersections with Snelling, Lexington, and Dale. Construct neighborhood traffic circles at intersections with commuter bikeways at Prior, Aldine, Grotto, and Mackubin, working with community councils to provide plantings where possible. Install pedestrian bump-outs at streets connecting to station platforms to serve as both a wayfinding tool and a pleasant connection to the LRT station itself.

Jackson/Sibley Street and Warner Road: Reconfigure this intersection for overall bicycle and pedestrian safety improvements based on the concepts on page 27. Add a bicycle and pedestrian-activated signal to facilitate controlled crossings to the Sam Morgan Trail.

Kellogg at Mulberry (at the History Center) and John Ireland Boulevard: Explore crossing improvements for the visibility of both bicycles and pedestrians, including the use of an advance bike box.

Figure 19: West Midway Sidewalk Infill Area Map. The gray dashed lines show missing sidewalks.



Franklin Avenue near Berry Street



Snow Shoveling Public Information Campaign (photo courtesy of St. Paul Smart Trips)



Maintain Year-Round Walkways and Bikeways

Snow Removal: Pilot a snow-removal program on the Marshall bikeway, focused on providing a safe and dependable commuter route throughout the year. Marshall Avenue is a critical regional link for commuters travelling between Saint Paul and Minneapolis. (On streets with on-street bike facilities, plow snow to all the way to curb).

Strictly enforce snow shoveling requirements on city walkways, working with community and business organizations to communicate existing ordinances and educate the public about the year-round value of pedestrian safety and accessibility.

Install a Comprehensive Wayfinding System

Working closely with the Departments of Parks and Recreation and Public Works, prepare a citywide bikeway wayfinding plan. Install an on-street wayfinding test section on Griggs Avenue, between Summit and Minnehaha Avenues.

Support Bicycle and Pedestrian Programming

- Hire full-time bicycle, pedestrian, and complete-streets coordinators.
- Establish a contact for reporting bicycle and pedestrian problem areas and develop a consistent response and repair strategy.
- Prepare a citywide bikeway route map in paper and digital formats .
- Support regional efforts to produce an on-line, on-demand bike route planning tool.
- Adopt a coordinated partnership approach to bicycle and pedestrian marketing and promotion. Potential partners:
 - St. Paul Smart Trips, schools, neighborhoods, Met Council, adjoining cities, Ramsey County, bike shops, bike clubs, business organizations, Saint Paul and Minnesota Tourism
- Use special events to promote biking and walking.
- Expand educational and promotional programming to encourage biking and walking.
 - School and community education programs– Bike riding classes, bike safety, bike commuting, bike maintenance, bike purchasing, walking school buses.
 - Employee bike purchase/subsidy programs in lieu of car parking subsidies.
 - Road closure to vehicle days.
 - Weekly/monthly ride of Central Corridor bike routes organized through the Bicycle Advisory Board, Twin City Bicycle Club or others.
 - Downtown bike taxi service.
 - Affordable refurbished bikes for targeted groups/ neighborhoods.
 - Ride/walk with the Mayor/City Council days.
 - Bike/walk rodeos/carnivals.
 - Door-hanger notices for bike facility construction/stripping.
 - Free “bike on the train” weekend (during lower ridership).
 - Enforce existing bicycle regulations, such as requiring cyclists to obey traffic regulations

Pursue Funding for Implementation

Substantial funds are required to design, build, and maintain the bicycle and pedestrian system. The quality of the pedestrian and bicycle realm is largely a reflection of City priorities and allocation of resources, as well as its ability to attract funding from outside sources to fund priority projects and programming. An increased proportion of the City’s budget should be allocated to bicycle and pedestrian projects in order to achieve substantial mode shift.

A variety of potential funding sources are available including local, regional, private, state, and federal funding programs. Most funding programs are competitive and include a formal application process.

Current funding opportunities for bike/walk projects include:

- Congestion Mitigation and Air Quality (CMAQ) Improvement Program - www.fhwa.dot.gov/environment/cmaqpgs/
- Safe Routes to School (SR2S) - www.saferoutesinfo.org/legislation_funding/
- Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) - www.dot.state.mn.us/safetea-lu/
- Grants.gov - www.grants.gov
- FHWA and FTA Funds that may be used for bicycle and pedestrian activities - www.fhwa.dot.gov/hep/bkpedtbl.htm
- Funding Sources for Bicycle and Pedestrian Projects - www.fhwa.dot.gov/environment/bikeped/bp-broch.htm#funding
- Smart Growth Funding - www.epa.gov/smartgrowth/funding.htm
- FTA Grant Programs - www.fta.dot.gov/funding/grants_financing_263.html
- Bike Walk Twin Cities - www.tlcmnnesota.org
- “Adopt a trail” programs
- Trail/bikeway dedication fee (similar to the park dedication fee)

THE CARS DISREGARD A CYCLISTS "RIGHT TO THE ROAD" WHEN TURNING ONTO THE ONE-WAY FRONTAGE ROADS. I'VE BEEN "BUMPED" SEVERAL TIMES. STRETCH OF UNIVERSITY AVENUE BETWEEN SNELLING AND LEXINGTON IS THE MOST

ILLUSTRATED GLOSSARY

Accessibility

The ability of all people to move around an area and reach destinations directly and safely.

Accessible Pedestrian Signals

Accessible Pedestrian Signals (APS) are devices that communicate information about the WALK phase in audible and vibrotactile formats. An APS provides non-visual information for crossing analysis and decisions by pedestrians who are blind or who have low vision.

APS should be located so pedestrians using the audible or vibrotactile indications can align and prepare for the crossing while standing close to the device, and that pedestrians who use wheelchairs and scooters are able to reach the pedestrian button from a flat, paved surface.

ADA

An acronym for the Americans with Disabilities Act. Pedestrian facilities on public rights-of-way are required to be accessible to people with disabilities through the following federal statutes:

- Section 504 of the Rehabilitation Act of 1973 (Section 504) (29 U.S.C. 5794) and
- Title II of the Americans with Disabilities Act of 1990 (ADA) (42 U.S.C. 59 12131-12164)

Title II of the ADA governs all state and local governments and their agencies and facilities, regardless of the funding source. All pedestrian facilities within the public right-of-way, designed, constructed, and/or altered on behalf of or for the use of a public entity must be readily accessible to and usable by persons with disabilities.

In 2009, Mn/DOT elected to adopt the U.S. Access Board's Public Rights-of-Way Accessibility Guidelines (PROWAG) as its primary guidance for

public facility design. Mn/DOT is currently beginning the integration of PROWAG into its technical guidance process.

Advance Bike Box

The bike box is an intersection safety design to help prevent bicycle/car collisions, especially those between drivers turning right and bicyclists going straight. It also facilitates left turns for cyclists. It is dedicated space for bicyclists to stop in within intersection. The bike box is typically a colored box with white bicycle symbols painted on the road pavement in advance (front) of the painted vehicle stop bar/stripe. The vehicle stop bar/stripe is moved further back from the intersection to allow room for the bike box. It includes bicycle lanes approaching and leading from the box. At a red light, cyclists are more visible to motorists by being in front of them. At a green light, the treatment through the intersection helps guide the bicyclist clearly through the intersection.

Benches

Seating offers pedestrians and bicyclists a place to rest, socialize, or wait for transit services. Seating is an amenity that can be applied in various locations to create a pedestrian friendly atmosphere. The location



Advance Bike Box diagram

of benches should be strategically placed outside of the pedestrian walkway and visible to the user.

Bike Boulevards

Bike boulevards are a technique used to better accommodate bicyclists, walkers and vehicles in today's urban settings. This innovative approach incorporates complete streets design standards and traffic calming techniques. The intent is to design a bike route in a manner that emphasizes the presence of pedestrians/bicyclists.

The City of Berkeley, California has a successful bicycle boulevard program. Their "Bicycle Boulevard Design Tools and Guidelines Report" serves as a model for successful traffic-calming techniques that can be applied to slow traffic and create safer crossings at intersections. The City has been implementing these treatments in places where bicycles and cars can equally share the road. In most cases, they've been located on residential routes and in a few commercial areas.

Typical bike boulevards have included visually dramatic pavement markings and signage. Traffic-calming techniques have included bump-outs, median islands, diverters, and roundabouts. Depending on the traffic-calming technique, the amount of right-of-way and cost varies. The design of a bicycle boulevard would take into consideration the following:

- Low-volume streets less than 3,000 average daily trips
- Implementing traffic-calming techniques
- Increasing the flow of bicycle movement
- Safe intersection crossings
- Visual markings to increase awareness
- Bike boulevard-specific signage to give identity to neighborhoods and boulevards
- Creating an environment that makes the bicyclist a prominent mode of transportation

Bike Lanes

A dedicated bike lane uses pavement markings and signage to indicate



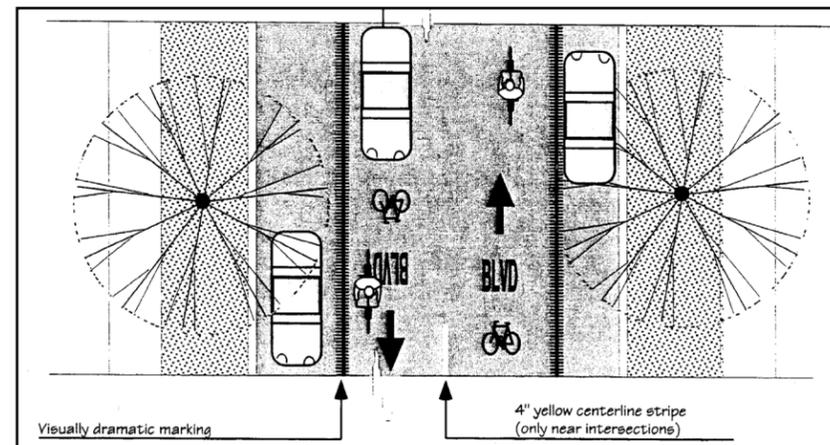
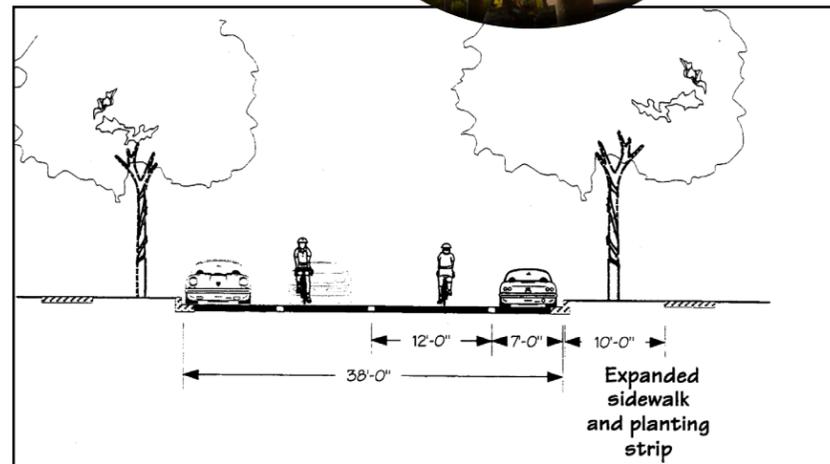


that the bike lane is solely for bicyclists. Bike lanes can be designed to work in a variety of conditions. Dedicated bike lanes are commonly used in urban environments, where there is a higher demand for bicycle treatments. They also work well in environments where there are right-of-way constraints or on-street parking.

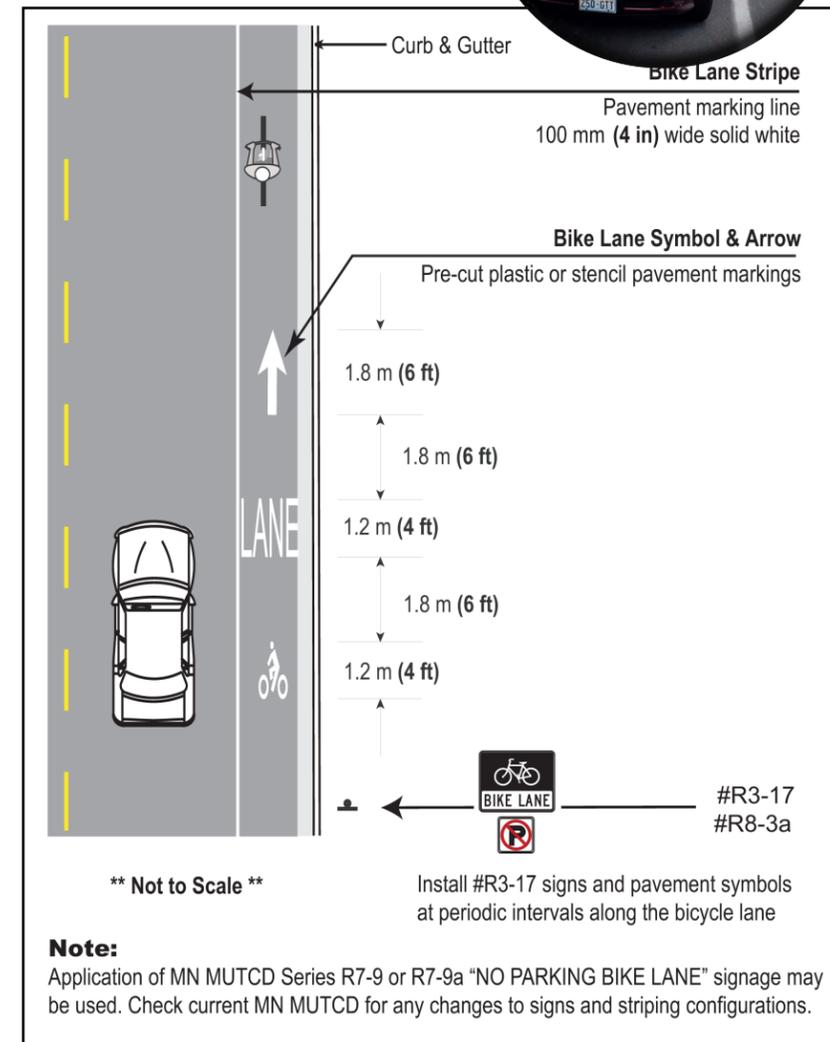
Dedicated bike lanes rely on pavement markings, striping, and signage. Using a combination of these treatments increases the visibility and awareness that a bike lane is present. A dedicated bike lane sign will emphasize that the lane is to be used solely by bicyclists.

The pavement needed to accommodate a dedicated bike lane may range between 4 – 7 feet in width, depending on the traffic volume, available space, and presence of on-street parking. A bike lane width of 5 feet is recommended for lanes next to a curb and 6 feet is recommended for lanes next to parking. Six- to seven-foot bike lanes are preferable, and wider pavement lines may be used to help increase the visibility of the bike lane.

Typical bike lane cross section (Source: MnDOT Bikeway Facility Design Manual)



Typical cross section and plan view of Bike Boulevards (source: City of Berkeley, CA - Transportation Division)



Plan view of a bike lane (source: MnDOT Bikeway Facility Design Manual)

GLOSSARY



Bike Lanes, colored

Colored bike lanes provide a much higher level of visibility for bike lanes. The higher visibility enhances safety and route wayfinding. Colored pavement can be achieved by the use of color aggregate/chip seal or by painting. Because of higher maintenance costs, colored lanes are typically used to enhance safety in bike lanes or sections of bike lanes in shared use/transitional areas or in areas with a high volume of turning movements.



Example of a colored bike lane

Bike Parking

Secure and convenient parking is critical. Bicyclists want to be able to park their bicycles as close as possible to their destinations. Bike parking in the form of bike racks, bike lockers, or secure bike storage areas should occur along the riders' natural routes and as close to destinations as possible. Parking should be well lit and in an area with street activity and active building frontages. Conventional outdoor bike parking in bike racks is primarily for short-term parking (up to four hours), while secure bike parking caters more to day-long or overnight users. Attention should be paid to the shape and design of the racks to maximize efficiency, usability, and security. Ideal locations for bike parking are in front of key destinations, such as restaurants, coffee shops, public spaces, and retail stores. Sidewalk space is

Covered bike racks collocated with a transit shelter in New York City



at a premium along many streets so use of simple bike hitch style racks and dual purpose parking meters/bike racks allows bikes to be parked parallel to the sidewalk without interfering with pedestrian movement.

Bike Stations

Bike stations incorporate a wide range of uses and support facilities. The overall intent is to create a hub that accommodates bicyclists and encourages social gatherings. These complimentary uses may include coffee shops, cafés, bike rentals, or bike repair shops. Bike stations may also include showers and personal lockers. A bike station would typically be located at an LRT station that supports mixed use/transit oriented developments and/or serves as an intermodal transfer between bus, light rail, and heavy rail.

Simple hitch-style bike racks



A bike station

NEW PEOPLE-ORIENTED DEVELOPMENT FRONTING THE NEW STREETS. GET RID OF BIKING ON CITY STREETS ALTOGETHER, THEY ARE A TRAFFIC HAZARD. NEED BIKE LANES ON UNIVERSITY AVE!! BICYCLE BOULEVARD ON CHARLES. I'M



Bike Storage, Secure

Secure bike storage offers bike commuters a safe, secure, and long-term alternative for storing their bicycle. Storage units of this nature are usually in high demand and are the preferred choice for long-term bike parking. Other forms of secured bike parking include bike cages, outdoor/indoor facilities with observation and smart card access to storage units, and indoor staffed bike storage facilities. Secured bike parking should be located in close proximity to transit stations and work destinations for easy access. Bike storage capacity should be flexible to provide enough space for future expansion.

Example of a contraflow bike lane



Contraflow Lanes

Contraflow lanes are designed to accommodate bike lanes in each direction on one-way streets. The contraflow bike lane is designed to allow bicycles to travel against the flow of traffic and allow cyclists to safely and conveniently re-enter the traffic stream at either end of the lane. Contraflow lanes can result in improved safety due to reduced conflicts. It is important to look for the presence of the following conditions when evaluating the appropriateness of a potential contraflow lane location:

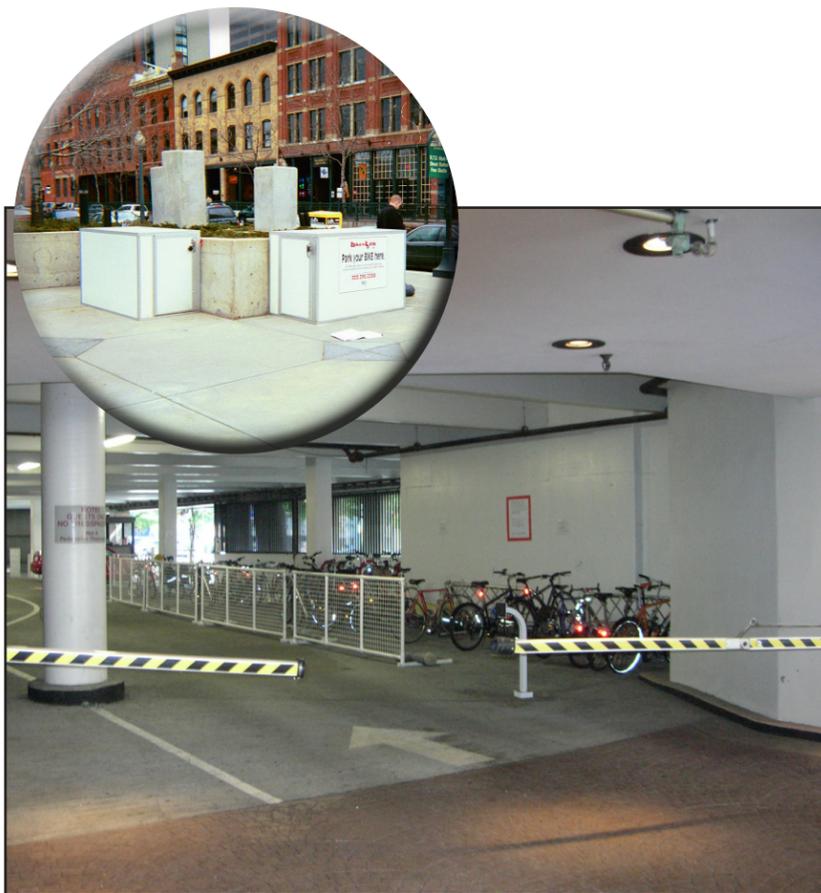
- The contraflow bike lane is short and provides direct access to a high-use destination point;
- There are no or few intersecting driveways, alleys or streets on the side of the proposed contraflow lane;
- A substantial number of cyclists are already using the street;
- There is sufficient street width to accommodate a full-dimension bike lane;
- The contraflow bike lane provides a substantial savings in out-of-direction travel compared to the route motor vehicles must follow;
- The contraflow bike lane provides a significantly improved travel experience for the cyclist (e.g., allows cyclists to avoid a high-volume, high-speed alternative route);
- Traffic volumes on the street are low.

Crosswalks

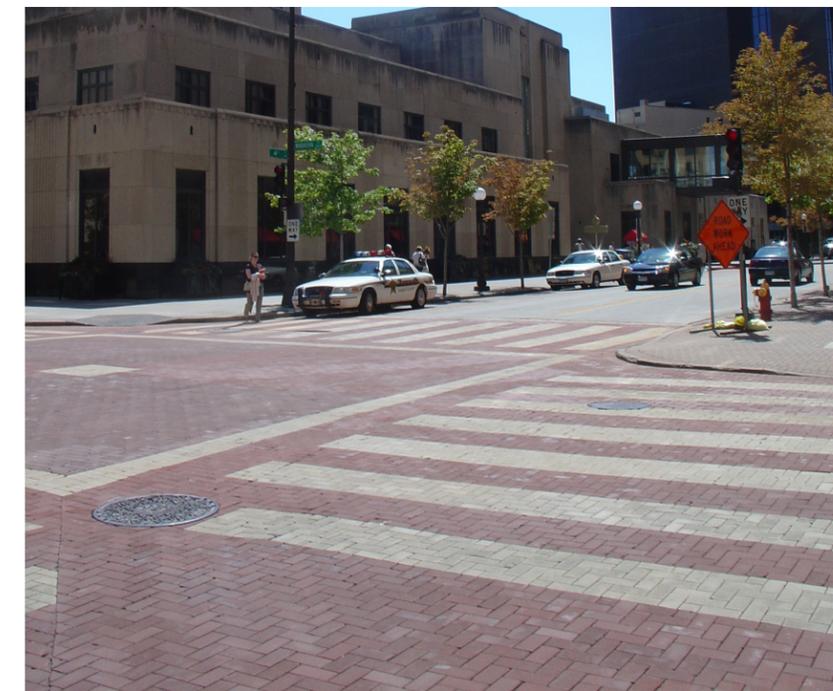
Whether marked or unmarked, crosswalks exist at all intersections. Crosswalks function as an extension of walkways and, unless restricted by signs for safety, must follow the most direct and convenient pedestrian path. Crosswalks may pass through a median or pedestrian refuge island. Marked crosswalks help direct pedestrians, including the sight-impaired, in the direction of crosswalks. Marked crosswalks must be 1.8 m (6 ft) wide minimum.

Curb Ramps

A ramp and landing that cuts through or is built up to the curb and provides access between the sidewalk and roadway for people using wheelchairs, strollers, walkers, crutches, bicycles, and for pedestrians with mobility impairments who have trouble stepping up and down high curbs. Recommended ramp types are perpendicular or parallel.



A bike station



Crosswalks and curb ramps at 4th and Wabasha Streets

ACTUALLY OKAY WITH NO BIKE LANES ON UNIVERSITY. GLAD MISSING SIDEWALKS WILL BE INSTALLED, AND GAPS WILL BE CLOSED. LIKE THE LONG-TERM APPROACH – FORTHUGHT AND PLANNING. EASIER SHORT-TERM PROJECTS TO

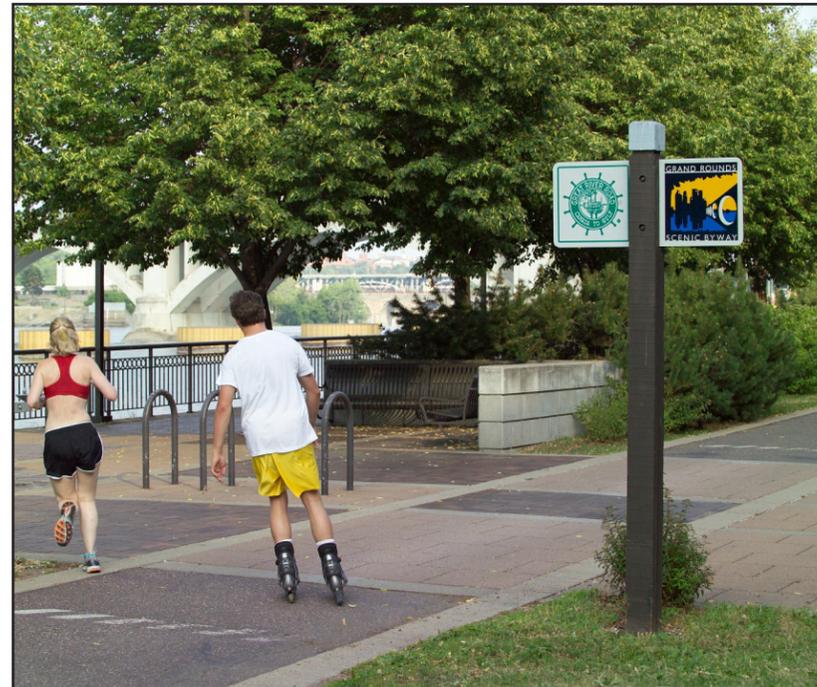
Lighting

Lighting provides more than just an aesthetic value. It provides a stronger sense of security and creates a safer environment at night time. Lighting is also utilized at transit stations to increase visibility between the platform and rail. Well lit walkways are crucial for a safe walking environment.

Off-street Trails

An off-street trail is completely separated from the roadway. The Twin Cities has been nationally recognized for its extensive network of off-street trails. These routes are known for their recreational purposes, but they are also popular for bicycle commuters. Off-street trails offer safe, scenic, and long-distance routes with little or no interaction with motor vehicles. They also enhance the livability and walkability in our neighborhoods. Most off-street trails are shared between pedestrians,

Minneapolis Grand Rounds Off-street trail



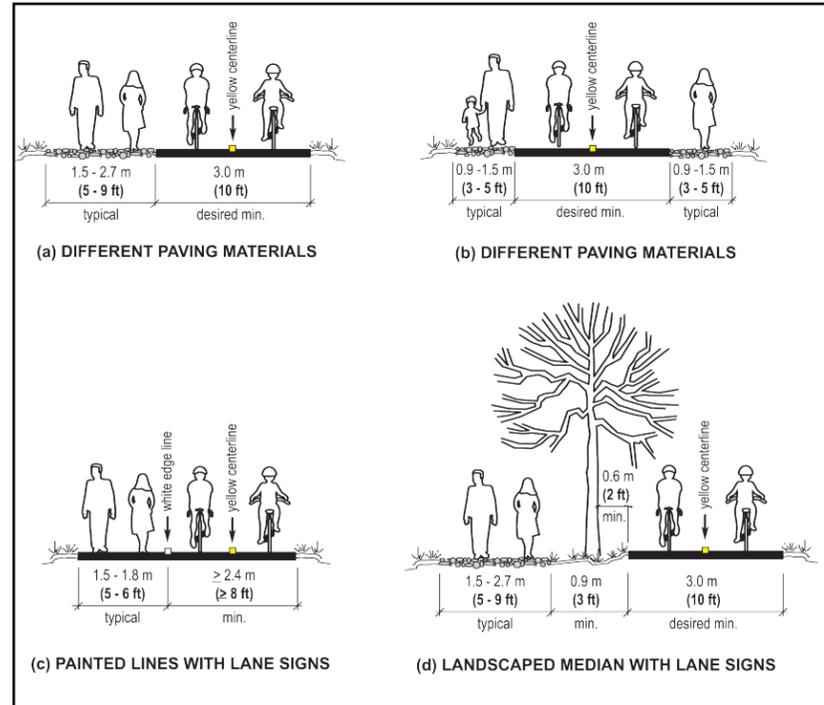
also used. A maintenance program should also be in place to ensure pavement upkeep, snow removal, brush/debris removal, and general repairs to amenities.

Pedestrian

A pedestrian is any person afoot or any person in a wheelchair, either manually or mechanically propelled, or other low-powered, mechanically propelled vehicle designed specifically for use by a physically disabled person.

Road Diet

The purpose of a road diet is to remove or narrow automobile lanes to improve safety, mobility, and access for all modes of transportation, including biking and walking, while achieving economic and community goals. A typical road diet would achieve a series of the following initiatives:



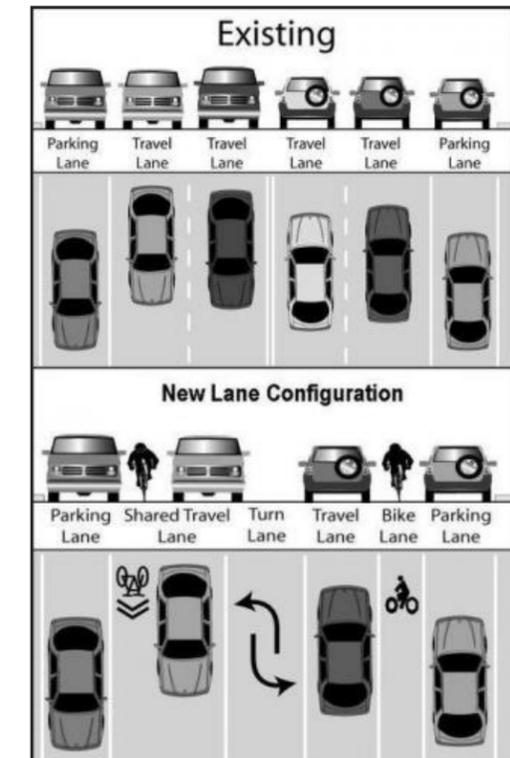
Typical cross section of an off-street trail

bicyclists, in-line skaters, etc. In high-use situations, separate bike and walk trails are warranted. The Parks Chapter of the Comprehensive Plan calls for no mixed-use paths because of these safety concerns.

The challenge in implementing an off-street trail is defining its right-of-way. This process can be challenging and costly. The process for off-street trails typically includes an extensive planning process, which includes environmental documentation, defining a preferred alignment and a public process. Off-road trails work best when driveway and street crossings of the trail are kept to a minimum.

Off-street trails may also include way-finding signs, kiosks, water fountains, benches, lighting, landscaping, and other amenities.

The typical width of an off-street trail ranges from 8 to 14 feet, depending on the anticipated volume of bike and pedestrian use. Off-street trails are typically paved, but crushed stone surfaces are



Plan view (source: MnDOT Bikeway facility design manual)

DO IN THE MEANTIME. TRAFFIC-CALMING! USE "MINOR" ROADS FOR BIKING. I WANT WIDER SIDEWALKS ON UNIVERSITY TO ACCOMMODATE BENCHES, BIKE RACKS, CAFES, AND THE RESTORATION OF ON-STREET PARKING FOR BENEFIT OF



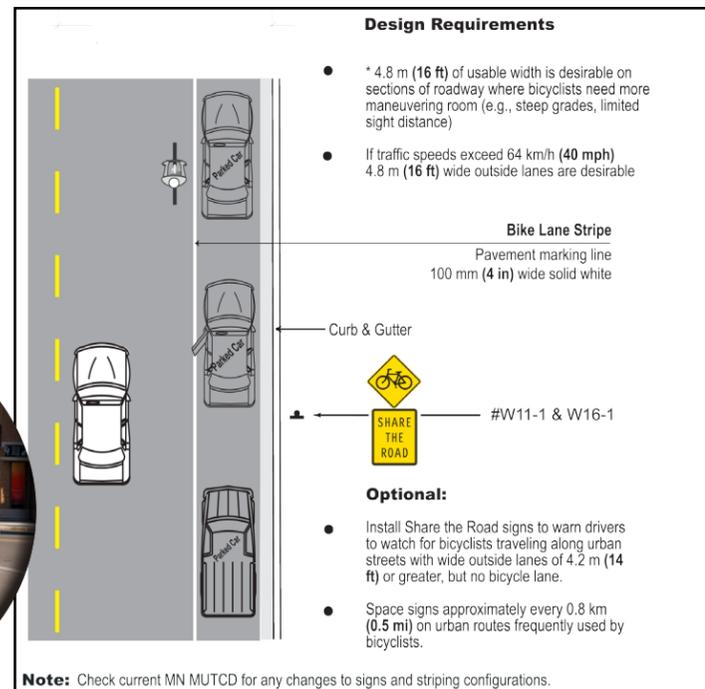
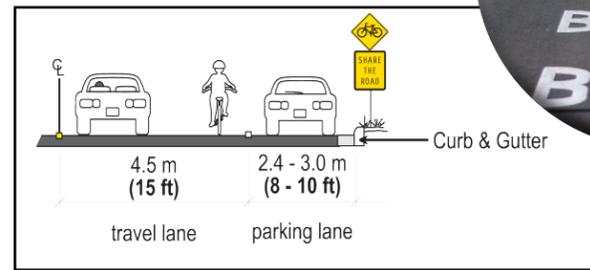
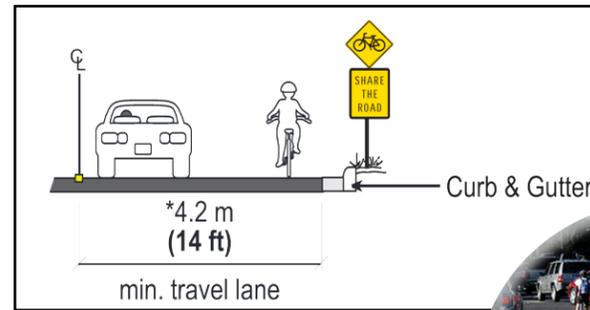
- Reclaim street space for bikeway treatments or sidewalks.
- Reduce the number of lanes of traffic & conflict points.
- Reduce motorized vehicle speeds.
- Improve bicycle and pedestrian safety.
- Increase visibility and sight distance.
- Encourage an active streetscape and support the pedestrian realm.
- Improve the roadway's aesthetics and visual qualities.

Shared Bike Lanes

A shared bike lane is a roadway that is signed to accommodate both bicyclists and motorists. There are three common types of shared lanes: a low-traffic volume shared vehicle-bike lane, a wide outside lane for bikes shared with vehicles, and a shared bus-bike lane. These types of routes are typically found in urbanized environments where roadways are curbed and guttered or have paved shoulders. The shared bus-bike lane typically occurs on busy streets with frequent transit service. Shared bus-bike lanes have the disadvantage of potential conflicts with bus-bike movement, but have the advantage of professional drivers who can be trained to better accommodate shared bike use.

Shared lanes work best on low-traffic streets. Desirable lane widths range between 12 – 14 feet where roadway widths are large enough to safely accommodate cars and bikes simultaneously. Bikeways on roads with wide outside shoulders (lane widths of 14-16 feet) can be a solution on higher-traffic streets. Shared lanes use signage to designate the route. Pavement marking is also utilized in some cases to enhance visibility and safety.

In more urbanized environments the lane width will depend on on-street parking. If the lane is solely being shared with mass transit vehicles additional signage and pavement markings will be needed. A minimum width of 14 feet is recommended for shared bus-bike lanes.

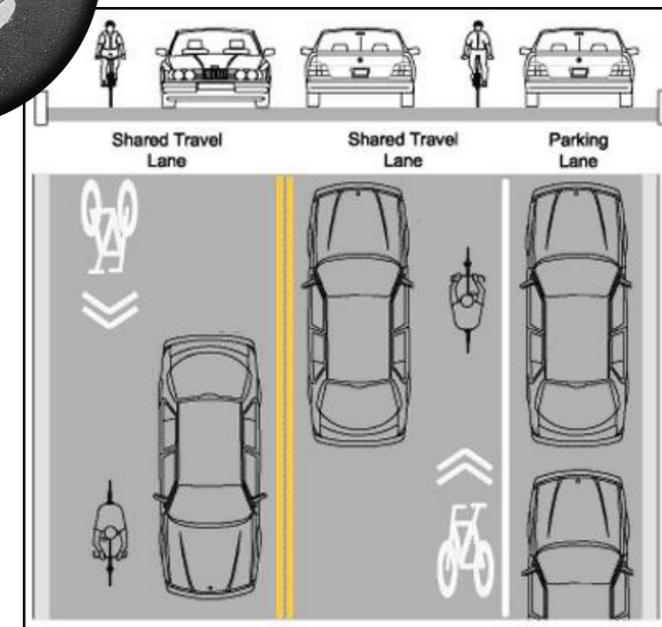


Typical cross sections and plan views (source: MnDOT Bikeway facility design manual)



Sharrows

Sharrows use a bike symbol and arrow graphic to mark pavement and to indicate a shared bike-vehicle route. Sharrows are intended to help cyclists better position themselves on roadways where bicycle lanes are the recommended treatment, but which cannot be striped for varying reasons. Sharrow symbols also raise awareness of the route for bicyclists and pedestrians. Sharrows can also be placed in the center of a travel lane to reinforce "share the road" or "bicycles may take full lane" signs, and should be a minimum of 12 feet from the curb where parking is present.



Shelters

Desireable waiting areas for patrons encourage year-round transit use. Shelters offer a place of refuge for transit users during undesirable weather conditions. Shelters should be focused at transit stops. The size of each shelter depends on the level of service and ridership.

Showers and Lockers

Showers and lockers are a wonderful amenity to offer at key regional bike-transit hubs and at major employment destinations. These facilities allow cyclists to clean up and store their items before reaching their final destination. These facilities should be focused at large regional stations and employment sites that experience high levels of ridership to be cost effective.

Traffic Calming



Bus shelters on Cedar Street at 5th Street

Neighborhood traffic circle in Chicago, and an example of a raised crossing



The Federal Highway Administration (FHWA) defines traffic calming as a combination of mainly physical measures that reduce the negative effects of motor vehicle use and improve conditions for non-motorized street users. However, the term “traffic calming” also applies to a number of transportation techniques developed to educate the public and provide awareness to unsafe driver behavior. For the purpose of bike and walk planning, the objective is to provide physical improvements that will create safe and pleasant conditions for motorists, bicyclists and pedestrians. Some successful traffic-calming techniques are included in the table to the right by the Federal Highway Administration (FHWA).

Vibrotactile

A vibrating surface used in an Advanced Pedestrian Signal to communicate information by touch about pedestrian signal timing. Vibrotactile indications are transmitted by a vibrating plate or arrow on the housing of the pedestrian push button. During the WALK phase, the arrow or plate vibrates.

Wayfinding

Wayfinding is the ways in which people orient themselves in physical space and navigate from place to place.

Wayfinding signs for bicyclists typically show destination, direction, and distance. Signs are typically placed where routes change or there is a change of direction and periodically along the route for route identification. Many places use bikeway system maps at key locations to aid movement and raise awareness of the bikeway options. In addition to signs, some communities use pavement marking as a wayfinding tool as these can be easier for cyclists to see. Most bikeway wayfinding signage follows the Manual on Uniform Traffic Control Devices standards (MUTCD). MUTCD standards are evolving rapidly as new signage innovation occurs and new research is conducted. Seattle and Chicago are two examples of recent bikeway wayfinding systems which helped shape the evolving MUTCD standards. Some communities modify MUTCD standards to add logos or city/neighborhood images to wayfinding signs.

Pedestrian wayfinding has similar needs to bicycle wayfinding: to provide information about destination, direction, and distance. Since pedestrians move at a slower pace and over shorter distances than bicyclists, wayfinding signage is typically focused on destinations within ½ to 1 mile. Since pedestrians can easily stop to read information, maps and kiosks can be used in addition to signs to display more detailed information about routes, destination, and area destinations. Area maps and kiosks and walking routes often combine navigation information with education about natural and man-made features. There is no national standard for pedestrian wayfinding comparable to Manual on Uniform Traffic Control Devices (MUTCD).



Bike Wayfinding Signs

Techniques	Descriptions	Pictures
Bulbouts/ Neckdowns/ Chokers	Curb extensions at intersections that reduce curb-to-curb roadway travel lane widths.	
Center Islands	Raised islands located along the centerline of a roadway that narrow the width at that location.	
Chicanes/ Lateral Shifts	Curb extensions that alternate from one side of the roadway to the other, forming s-shaped curves.	
Diverters	Barriers placed diagonally across an intersection, blocking certain movements.	
Forced Turn Lanes	Raised islands located on approaches to an intersection that block certain movements.	
Median Barriers	Raised islands located along the centerline of a roadway and continuing through an intersection to block cross traffic.	
Speed Tables/ Textured Pavement/ Raised Crossings	Flat-topped speed humps often constructed with a brick or other textured material to slow traffic	
Neighborhood Traffic Circles	Barriers placed in the middle of an intersection, directing all traffic in the same direction.	

Traffic Calming (source: MnDOT Bikeway facility design manual)

Sign	Example
Type: Route Sign Role: Identify route name and major destination Placement: Every 1/2 mile along routes and at major intersections.	
Type 2: Directional Role: Identify turns, route destination choices and distance Placement: Route intersections and decision points	
Type 3: Button Role: Identify Bike-ways Placement: On existing street signs along bikeway routes	



Pedestrian Wayfinding Sign

GLOSSARY

