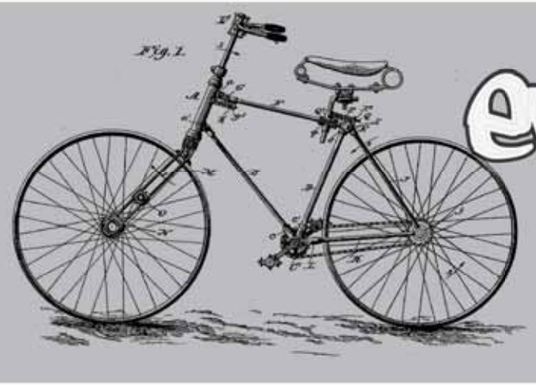
ST. LOUIS PARK, MINNESOTA - APRIL 8, 2009



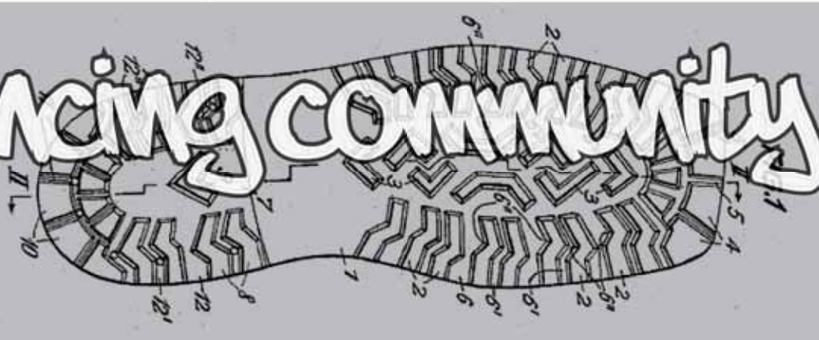




XENIA AVENUE / PARK PLACE BOULEVARD CORRIDOR BICYCLE AND PEDESTRIAN STUDY



enhancing community connections



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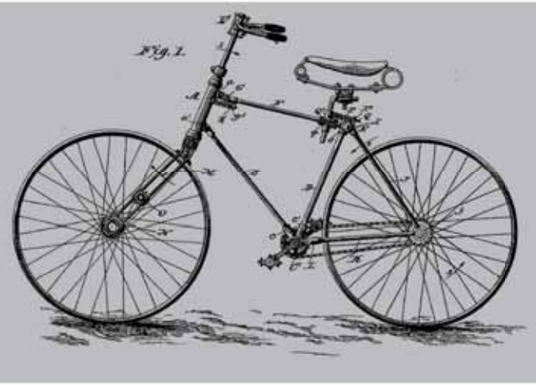
XENIA AVENUE / PARK PLACE BOULEVARD CORRIDOR BICYCLE AND PEDESTRIAN STUDY

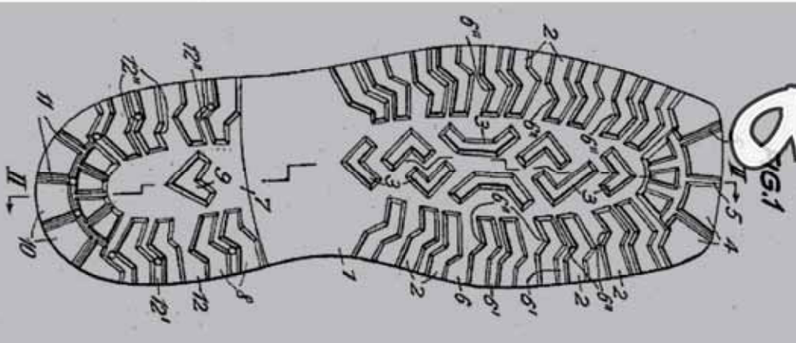






EXECUTIVE SUMMARY





a quick jog

hwy 100 barrier

There are a limited number of crossings over/under Hwy 100. The Cedar Lake Regional Trail is one of the few.

i-394 barrier

There are few acceptable and connected crossings over I-394. The Xenia/Park Place Bridge is inhospitable to bicycles and pedestrians.

lowsf rail barrier

People regularly cross active railroad tracks and through/over fences to get to the Cedar Lake Trail. Better, safer and more frequent access to the Cedar Lake Trail is needed.

-PEOPLE ARE CROSSING THE TRACKS ILLEGALLY

STUDY SUMMARY

This study is designed to enhance the bicycle and walking environments within the Xenia Ave/ Park Place Boulevard Corridor, located in St. Louis Park and Golden Valley, MN, and to connect the area to existing regional trails. The Plan recommends bike and walk improvements to enhance connections across Trunk Highway 100, Interstate 394 and the BNSF and CP railroad corridors, and to adjacent neighborhoods, existing regional trails, transit stops, key destinations, and employment concentrations.

St. Louis Park was granted funds for the preparation of bike and walk plans for the Xenia Ave/Park Place Boulevard Corridor from Transit for Livable Communities (TLC) through the Federal Non-Motorized Transportation Pilot Program. TLC saw this as an opportunity to enhance non-motorized connections in this automobile dominated mixed-use area within St. Louis Park and Golden Valley. Each city followed separate paths for communicating the study analysis and obtaining input from citizens and employees in the study area. Golden Valley and St. Louis Park will be able to use this study to coordinate planning efforts in the future.

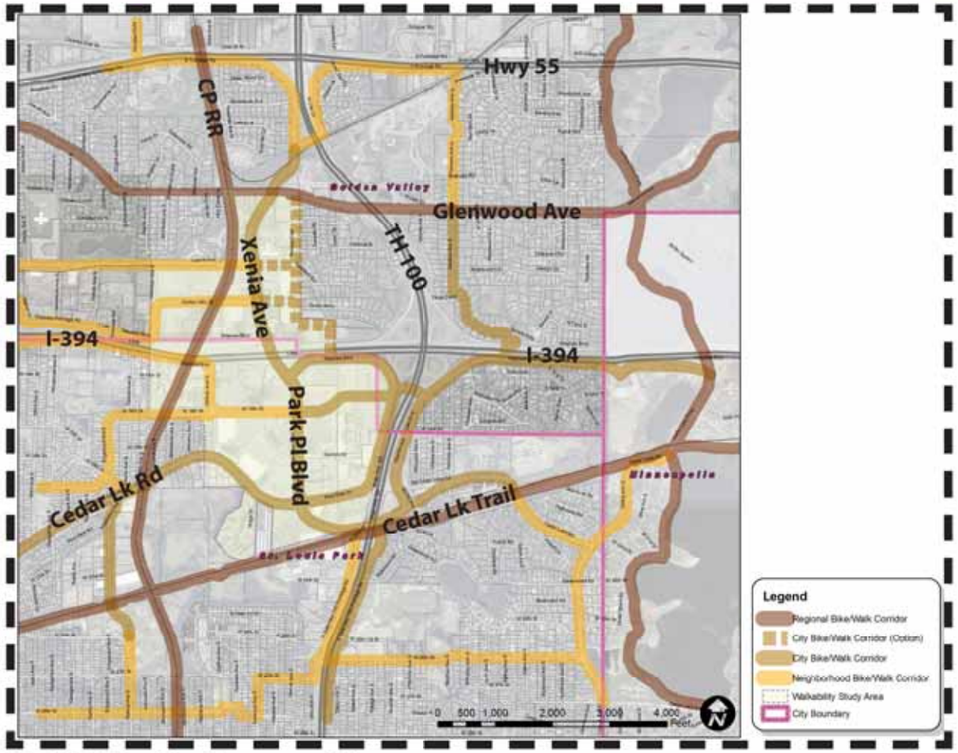
The study's five chapters are organized following the analogy of a journey. The study is designed to act as guide to creating a pleasant and functional pedestrian environment and a place that is easily navigable by bicycle. Chapter 1 introduces the study area. Chapter 2 describes the existing conditions. Chapter 3 is a needs analysis and describes opportunities and bike/walk options. Chapter 4 contains recommended actions and physical improvements. Chapter 5 includes details on top bike/ walk priorities along with strategies, a tool box to help implement the study, and recommendations for operations and maintenance and for creating a supportive environment for non-motorized movement. Study outline:

Executive Summary

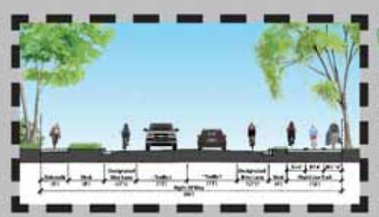
1. Introduction – *Lacing your Shoes*
2. Existing Conditions – *Knowing Your Pace*
3. Needs Analysis – *Hitting the Streets*
4. Recommended Improvements – *Choosing your Route*
5. Implementation – *Tools for the Journey*

ABOUT FORTY PERCENT OF ALL TRIPS ARE SHORTER THAN TWO MILES = A 30-MINUTE WALK OR A 10-MINUTE BIKE RIDE.

- One in 12 U.S. households does not own an automobile (2001 NHTS).
- Motor vehicle emissions represent 31 percent of total carbon dioxide, 81 percent of carbon monoxide, and 49 percent of nitrogen oxides released in the U.S. (The Green Commuter, A Publication of the Clean Air Council).
- The cost of operating a car for one year is approximately $8,000. (AAA, Your Driving Costs).
- According to 2004 data from AAA estimates and US Census surveys, ownership of one motor vehicle accounts for more than 18 percent of a typical household's income.



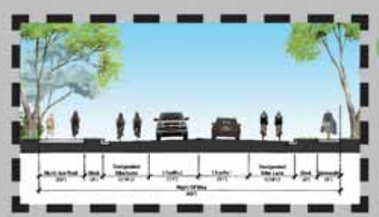
Bike/Walk Corridor Recommendations.



regional corridor

A Regional Corridor efficiently moves pedestrians or bicyclists to their regional destinations, such as the West End Shopping District or their place of employment. It is similar to an arterial automobile route.

This example is a suggested cross section of Glenwood Avenue conveying many people through the study area to locations such as Downtown Minneapolis, Theodore Wirth Park and to the Xenia Avenue/Park Place Boulevard Corridor.



city corridor

A City Corridor is similar to a collector automobile route. It conveys pedestrians and bicyclists from a regional route to their final destinations.

This example is a suggested cross section of Cedar Lake Road conveying travelers to the Xenia Avenue/Park Place Boulevard Corridor and to the popular Cedar Lake Trail Regional Corridor.

EXISTING CONDITIONS

The study area is located north of Minnetonka Blvd., east of Louisiana Blvd., south of Highway 55 and west of Theodore Wirth Parkway. Bicycle and pedestrian traffic movement is constrained by the lack of facilities and uncomfortable conditions for biking and walking. Bicycle and pedestrian movement is limited by heavy traffic, railways, I-394 and TH 100, and by areas without safe travelways. The study area contains large businesses and regional commercial/retail uses which draw employees and customers from all over the metro area.

THE BIKE/WALK PLAN

The study identifies three types of corridors; regional, city, and neighborhood scale travelways for pedestrians and bicyclists (see cross-section examples below). Regional corridors convey larger volumes of people at a faster rate for longer distances, city corridors convey people within the two cities, and neighborhood corridors make local connections to area destinations. Each corridor is designed to fit into an existing environment: utilizing excess pavement width, boulevards (for this study boulevards will be defined as the area from the back of curb to the adjacent right of way boundary), and planned redevelopment areas. The bike/walk corridors are designed to integrate seamlessly with existing bus routes and park and ride facilities. These recommended corridors not only convey people from their homes, transit stops, or parking lots to their place of work or retail destination, they allow for a healthy lifestyle and recreation opportunities. The walkability zone within the study area provides suggestions for the creation of a pedestrian friendly, well-connected, and safe system of trails and sidewalks. The goal of this Plan is to **improve pedestrian and bicycle connections; within the study area, to and from nearby commuting destinations and to the regional trail and walk network.**

PRIORITY IMPROVEMENTS INCLUDE:

- Bikeway striping, signing, and lane marking projects along corridors with wide shoulders.
- Incorporation of this study's suggestions into future planning documents, and future redevelopment projects.
- Adding a pedestrian and bike bridge over the Burlington Northern Sante Fe Railroad (BNSF) railroad near TH 100, a crossing which is currently under study by Three Rivers Park District.
- Adding bicycle parking at retail areas and employment centers.
- Sidewalk additions within the Xenia/Park Place Walkability Zone.

NEAR-TERM IMPROVEMENTS INCLUDE:

- Adding at-grade crossings across the BNSF railroad tracks near Dakota Park.
- Improving the pedestrian/bicycle crossing of I-394 along the Xenia Ave./Park Place Blvd. bridge.
- Adding new off-street trail facilities to encourage connectivity.
- Working with retailers and developers to incorporate pedestrian/bicycle friendly design.
- Encouraging area employers to provide secure bicycle parking, changing rooms and showers for employees.

LONG-TERM IMPROVEMENTS INCLUDE:

- Incorporate a regional trail along the Canadian Pacific Railroad, in conjunction with Three Rivers Parks District including adequate connections to the City's bike and walk system.
- Construct a new pedestrian/bicycle bridge over I-394 just east of the Xenia Ave./Park Place Blvd. bridge.
- Create a safe connection route over I-394 on the Xenia Ave./Park Place Blvd. Bridge.
- Construct connections to the Cedar Lake Regional Trail from the north, crossing the BNSF railroad.

WHAT'S IN THE BIKE/WALK TOOLBOX:

The Bike/Walk Toolbox is a set of informative guidelines to create and support a functional non-motorized transportation system.

- Bicycle and Pedestrian Facility Design Guidelines.
- School Safety Zones.
- Partnerships and Awareness for an Effective System.
- Funding Strategies (types and web links).
- Operations and Maintenance.

This study is a step in the realization of a more walkable, more bikeable, more mobile community for St. Louis Park and Golden Valley. Many cities recognize that a healthy community is a vibrant and prosperous community. Providing trail and sidewalk connections allows the option of choosing to bike or walk rather than driving.

MODERATE CYCLING FOR ONE HOUR BURNS ABOUT 450 CALORIES,

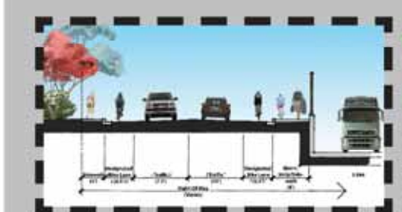
RUNNING FOR ONE HOUR AT SIX MPH BURNS ABOUT 700 CALORIES,

WALKING FOR ONE HOUR BURNS ABOUT 250 CALORIES.

DRIVING AN AUTO FOR ONE HOUR BURNS ABOUT 110 CALORIES.

QUICK DEFINITIONS:

- Sidewalk/Walkway - An off-street paved walk dedicated exclusively for pedestrian use.
- Bicycle Facility/Bikeway - An on-street striped bike lane dedicated exclusively for biking or a designated shared use bike route with signage and pavement markings. Use could be shared with autos or buses and taxies.
- Multi-Use Trail - An off-street paved trail shared by bicyclists and pedestrians.



neighborhood corridor

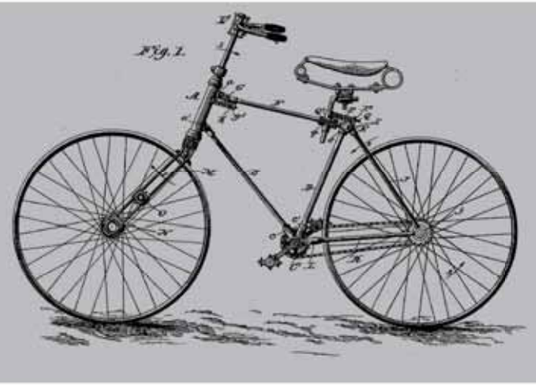
The Neighborhood Corridors allow pedestrians and bicyclists to move from their homes to city corridors, regional corridors, and local destinations.

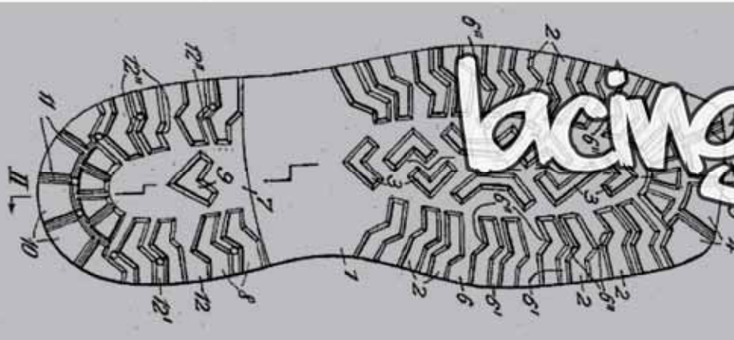
The example to the left is a suggested cross section of Wayzata Boulevard conveying travelers along the I-394 Corridor to the Xenia Avenue/Park Place Boulevard Corridor.

"...REALIZING THAT A HEALTHY COMMUNITY IS A VIBRANT AND PROSPEROUS COMMUNITY"

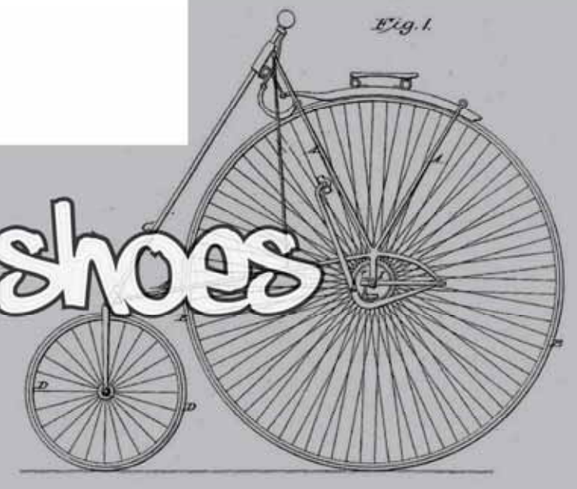
XENIA AVENUE / PARK PLACE BOULEVARD CORRIDOR BICYCLE AND PEDESTRIAN STUDY

CHAPTER ONE - INTRODUCTION





lacing your shoes



Existing pedestrian bridge over BNSF Railroads.

Good use of native plantings along a trail near the corner of Xenia Ave. and Glenwood Ave.

This particular office building offers covered bicycle parking within its structured parking facility.

PURPOSE AND FUNDING OF THIS STUDY

This Study provides recommendations for enhancing bicycle and pedestrian connections within and to the Xenia-Park Place Area within the cities of St. Louis Park and Golden Valley, MN. The planning work was funded by the Federal Non-Motorized Transportation Pilot Program through Transit for Livable Communities.

The Study recommends short-term and long-term improvements to bikeways, walkways, road crossings, and public and private sector support facilities. The recommendations are designed to create safer, more convenient and pleasant bike/walk environments within the study area and to create connections from the study area to existing regional multi-use trails in the City of Minneapolis, MN.

PROJECT LOCATION AND STUDY AREA DESCRIPTION

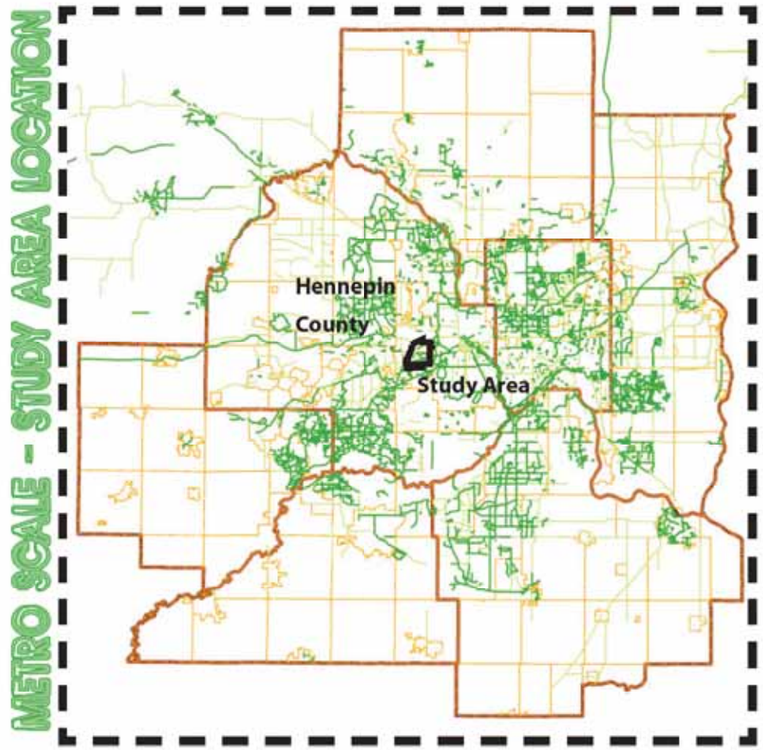
The Xenia-Park Place Study Area, located 4 miles west of downtown Minneapolis, is a vibrant mixed use area surrounding the TH 100/I-394 interchange (see the metro, city and project scale maps to the left). The 1,500 acre study area is a regional destination for employment, shopping and dining. Approximately 20,000 people work in the study area. The study area also includes approximately 2,500 multi-family and single family residences, plus several schools. The area's proximity and access to major regional highways has fostered a strong business and residential area that continues to evolve with on-going redevelopment and reinvestment. Redevelopment is expected to add new office, retail and housing within the study area. Those regional highways along with area railroads are barriers to bike and pedestrian movement. Existing regional multi-use trails such as the Cedar Lake Trail, Theodore Wirth Parkway and Southwest LRT Trail are tantalizingly close or even within the study area, however, access to those trails is limited.

The study area is served by regular and express bus service. A recent study of the I-394 corridor, the MnPASS study, is designed to optimize the level of service in the corridor for transit, HOV's and optional toll-paying users. This level of service increase would allow great opportunities for the study area creating a solid foundation for higher residential and office densities. The MnPass Study also included recommendations about transit and bike/walk improvements for the Xenia - Park Place area. The Southwest LRT line, which is tentatively scheduled to begin operation in 2015, would run about a mile south of the study area.

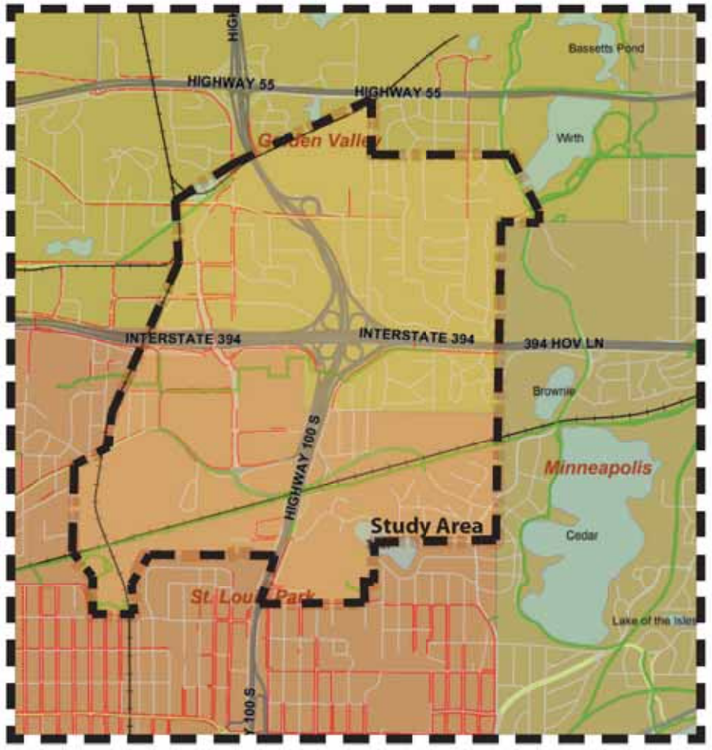
The high employment levels, presence of retail and service business, surrounding residential area and the addition of more multi-family housing, offices and retail creates an even greater need and opportunity to enhance non-motorized connections within the study area.

BENEFITS OF A BICYCLE AND PEDESTRIAN FRIENDLY COMMUNITY

The cities of St. Louis Park and Golden Valley recognize the importance of moving people not just cars. Two key aspects of mobility are walking and bicycling. All commuters, shoppers, and



PROJECT SCALE - STUDY AREA LOCATION



AERIAL PHOTO - STUDY AREA LOCATION

visitors, regardless of their mode of transportation are pedestrians for a portion of their trip to their destination. Therefore, the cities and the study area benefit by enhanced connectivity and a more comprehensive and pleasant biking and walking environment. Specific economic, environmental and social benefits of biking and walking are listed below.

ECONOMIC

- Reduced dependence upon high priced gasoline.
- More options for commuting and transportation.
- Increased ease of transit use.
- More affordable travel options and reduced dependency on auto ownership.
- Improved livability - positive factor in attracting businesses and workers as well as tourism

ENVIRONMENTAL

- Reduced energy consumption.
- Less pollution and green house gas emissions.
- Reduced traffic congestion.

SOCIAL

- A healthier more physically active population.
- Improved physical and mental health.
- Lower health care costs.
- Improved quality of life.
- More vital active neighborhoods.
- Safer streets and business districts.
- More independent and active elderly community.
- Increased opportunities for social contact which strengthens sense of community and place.

GOAL... "IMPROVE PEDESTRIAN AND BICYCLE CONNECTIONS WITHIN THE STUDY AREA, TO AND FROM NEARBY COMMUTING DESTINATIONS AND TO THE REGIONAL TRAIL AND WALK NETWORK."

The currently under construction West End project along the east side of Park Place Blvd. Proposed development layout shown.

Home Depot, Costco, and Pet Smart Parking Lots along the West side of Park Place Blvd.

Office buildings along Xenia Ave. north of I-394.

Highway 100 runs along the other side of the wood sound wall. The wall is a nice amenity to the neighborhood, however the entire stretch of TH 100 creates a physical barrier to all travelers.

There are a few railroads that cross through the study area. These are barriers, but may be opportunities for trail sharing.

Blackstone Park within the study area.

GOAL OF THE STUDY, OBJECTIVES, AND CRITERIA

The goal of this Plan is to **improve pedestrian and bicycle connections within the study area, to and from nearby commuting destinations and to the regional trail and walk network.** To accomplish the goal the following objectives and criteria were developed to evaluate and prioritize potential bike/walk improvements.

1. *IMPROVE CONNECTIONS*

- Closing bike/walk gaps
- Connects to regional trails
- Connects to destinations
- Connects to transit
- Is legible and visible
- Has easy access for residents

2. *ENHANCE SAFETY*

- Improves crossing safety
- Has safe and minimal crossings points
- Has desirable traffic conditions (for on-street bikeways: space, speed, ADT, truck/bus use)
- Improves a safe route to school
- Has adequate lighting or improves lighting conditions

3. *BE FEASIBLE*

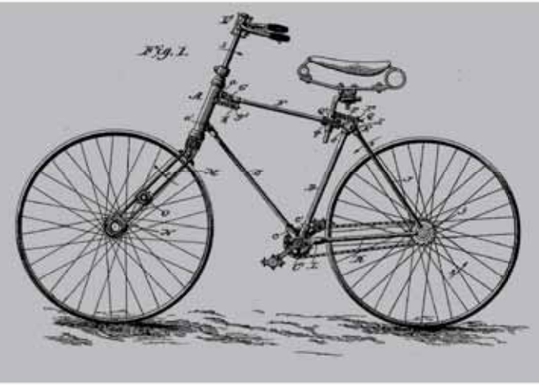
- Is cost effective
- Has available space - R.O.W., public space, acceptable private space
- Has community support
- Has minimal environmental impact
- Has reasonable timing for implementation
- Has funding potential
- Has a suitable grade/elevation

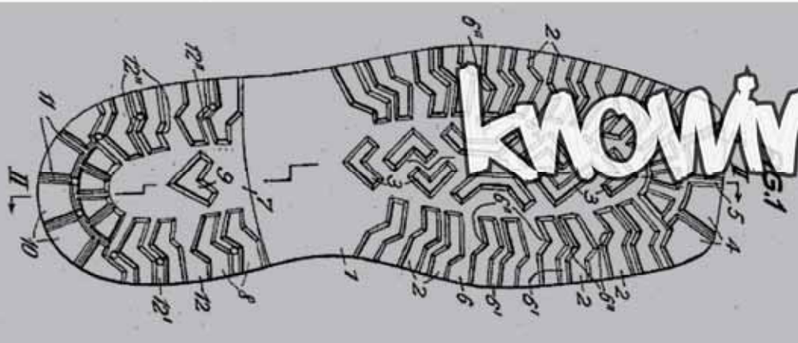
4. *ENHANCE USER'S EXPERIENCE*

- Is a direct route
- Has minimal stops/intersections
- Improves travel time
- Has a smooth road surface (on-street bikeways)
- Is a comfortable/pleasant environment – aesthetics, buffering, noise, visible, safe
- Has a reasonable grade/slope for most users
- Create looped routes to battle monotony

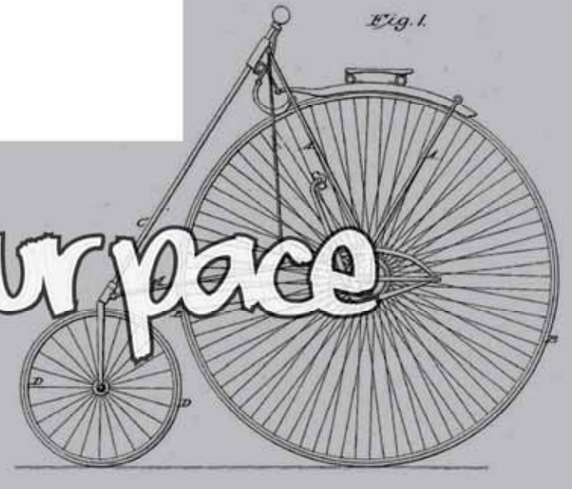
These objectives and criteria guided decision making about potential connections, amenities and improvements and were used to select the priority project recommendations.

CHAPTER TWO - EXISTING CONDITIONS





knowing your pace



EXISTING LAND USE

The study area is comprised of a variety of land uses and land use patterns. The cities of St. Louis Park and Golden Valley are considered to be fully developed communities. Existing land uses within the study area range from a mix of residential uses, big box retail development, light-industrial uses, offices, and retail services. This mix of land uses provides for a diverse area that offers a variety of services and destinations for pedestrians and bicyclists. The study area is heavily traveled by vehicles and bus transit, and is designed primarily with the vehicle in mind.

LAND USE PLANS

St. Louis Park and Golden Valley have both updated their comprehensive plans in 2008. An element from the comprehensive planning process is a land use plan that looks out to the year 2030. Figure 5 depicts the land use plan for the project area as indicated in the 2030 Comprehensive Plans[1]. In the years ahead, the focus for both communities will be on high-quality redevelopment or infill of under utilized sites. The redevelopment of certain sites may provide important opportunities for incorporation of pedestrian and bicycling pathways. Sites with high potential for infill/redevelopment are the land owned by MnDOT north of I-394 and east of Turners Crossroads, some vacant land west of Xenia Ave and south of Laurel Ave, and the currently under construction West End redevelopment.

THE PEDESTRIAN NETWORK

Existing sidewalks and trails through the study area lack connectivity. Many of the pedestrian routes from neighborhoods to office and retail destinations are cut off by railroad and vehicular barriers. These barriers not only cause a physical disconnect, but create unsafe pedestrian crossings. The progress of work done since the 1999 St. Louis Park Sidewalk and Trails Master Plan has been largely concentrated south of the BNSF Railroad, and mostly out of our study area[2]. Currently under construction is the West End retail center and Park Place Boulevard from I-394 to Cedar Lake Road. With this new construction comes an off-street trail along the west side of Park Place Blvd., a wide sidewalk on the east side, and a better controlled crossing at 16th Street West, Wayzata Boulevard, and Gamble Drive. These improvements will enhance mobility for pedestrians and cyclists.

THE BICYCLE NETWORK

The study area is blessed with two regional cycling and walking corridors which extend for many miles both east and west into the Twin Cities. The North Cedar Lake Regional Trail along the south half of the study area starts at Highway 169 and Excelsior Boulevard (intersecting with the Cedar Lake LRT Regional Trail) in Hopkins and ending in downtown Minneapolis. The celebrated Minneapolis Grand Rounds Scenic Byway passes along the east border of the study area and encircles most of Minneapolis with 50 plus miles of off- street trails. These regional trails are a great asset to the community, however access from the study area is limited.

1 City of St. Louis Park Comprehensive Plan 2008 and City of Golden Valley Comprehensive Plan 2008.
2 According to the Active Living Sidewalks and Trails Plan completed in 2007/2008

SAFETY

An Intersection Safety Analysis was conducted in 2007/2008 for the St. Louis Park Active Living Sidewalks and Trails Plan[3]. It identified intersections throughout St. Louis Park where accidents with pedestrians were reported from 2001 to 2006. This pedestrian accident data can be skewed due to the fact that not all accidents are reported and recorded into a database. Pedestrian access within the study area is relatively safe while on sidewalks or trails. Safety becomes a larger concern when pedestrians are forced off of a sidewalk or trail and on to a street shoulder, boulevard or worse, crossing active railroads. Most pedestrian crashes in Minnesota happened during rush hour in highly populated areas and due to inattention and failure to yield to the pedestrian's right of way.

Cycling through the study area is challenging for anyone who does not feel comfortable riding next to or with traffic; use of the street is a necessity. Roadways such as Cedar Lake Road and Glenwood Avenue have wide shoulders for cyclists to ride on; however, these shoulders are not marked and are not friendly to young or inexperienced riders. Bicycle crashes in Minnesota jumped 8% between 2006 and 2007. Most crashes happen in the warm months and during evening rush hour. Places like the study area, with a high population density, put more cyclists on the roads, adding to the amount of confusion and chance of crashes.

3 Figure 1 shows problem intersections within our study area. Image from Active Living Sidewalks and Trails Plan 2007/2008.

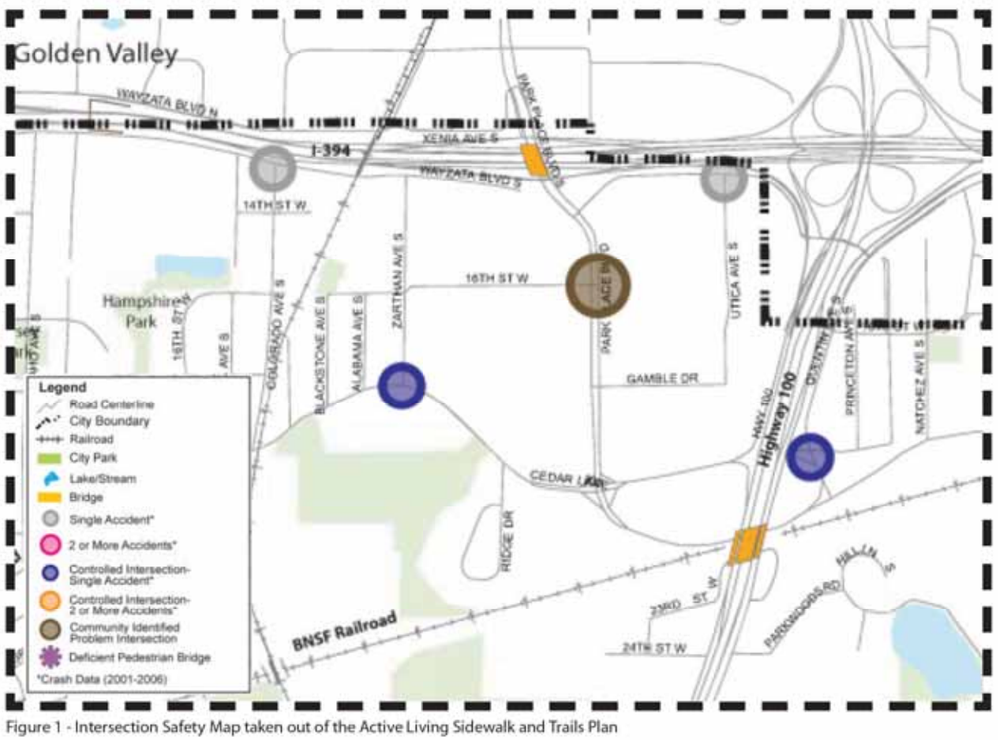


Figure 1 - Intersection Safety Map taken out of the Active Living Sidewalk and Trails Plan

Safety is of utmost concern for pedestrians and cyclists as our communities move into more active living lifestyles. We need to provide citizens with safe passage to work, school, retail centers, and recreation spaces.

TRANSPORTATION RIGHT OF WAY

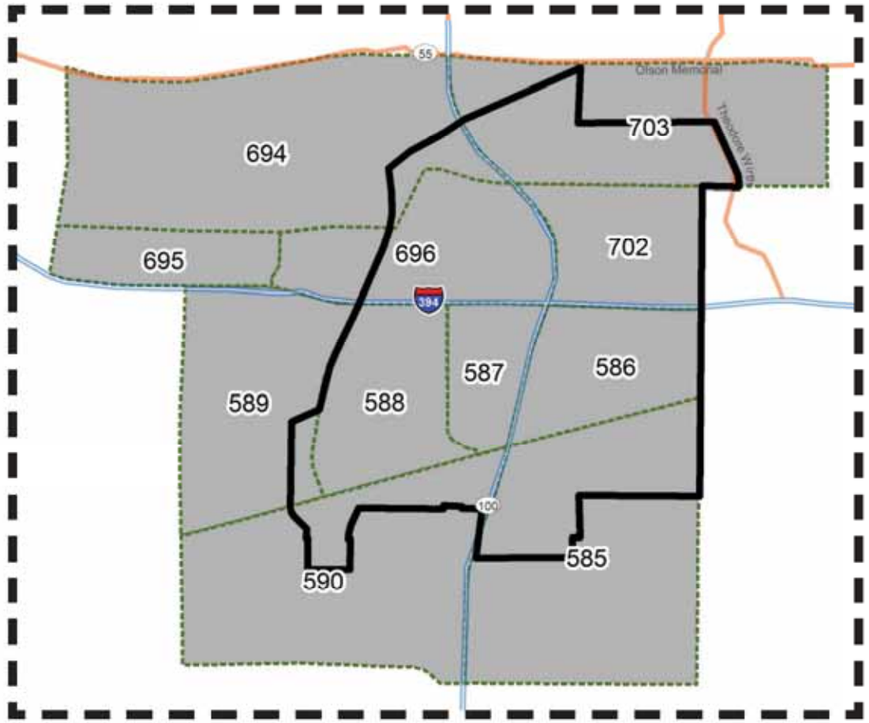
The project area is dissected into four quadrants by two major vehicular routes: Interstate 394 and Trunk Highway 100. Both routes serve a principal arterial function and are maintained by the Minnesota Department of Transportation (Mn/DOT). U.S. Highway 55 is another principal arterial and runs parallel with the northern border of the project area. The County maintains County State Aid Highway (CSAH) 40 (Glenwood Ave.) This particular segment runs east-west north of I-394 and serves an "A" Minor Arterial function. The remaining roadways within the project area are maintained by the Cities of St. Louis Park and Golden Valley.

TRAFFIC FORECASTS

Over the last ten years the region has seen a significant increase in daily traffic volumes. Average Daily Traffic (ADT) counts show the principal arterials ranging anywhere from 90,000 to 150,000 trips per day. It is estimated that these numbers will continue to grow over the next 20 years. The seven-county metropolitan area is also projected to grow in population size, households and employment. This growth, in some respects, will continue to influence our transportation system and add pressure to an already congested system. However, the rapidly fluctuating prices for gasoline, coupled with other economic changes, has made it less affordable for individuals to travel by automobile. Recent trends have also shown an increase in transit ridership and an increase in using alternative modes of transportation. Park Place Boulevard has 16,000 trips per day, and is considered to be one of the busiest thoroughfares in St. Louis Park and Golden Valley.

TRAFFIC MODELING

The purpose of a traffic model is to provide an indication of future travel patterns based on growth assumptions. The Metropolitan Council Travel Demand Model is a regional traffic forecasting tool for the seven-county metropolitan area. This particular model follows a four-step process that attempts to simulate human travel behavior and allocates trips by mode choice.

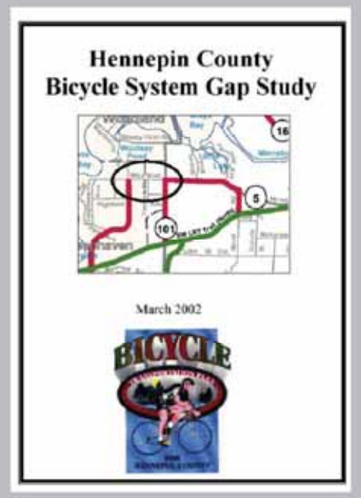


Study Area TAZs - Traffic Modeling Areas with the study area (outlined in black). These areas' forecasted numbers were merged together to make the above percentages for the whole area.

Figure 2 - Mode Split for the Study Area
Source: Metropolitan Council Travel Demand Model

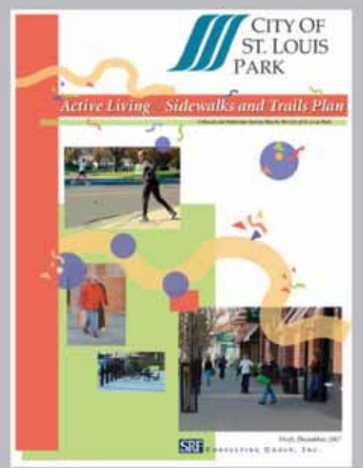
	Individual Ride			Shared Ride			
2005	Walk	Bike	SOV	SOV	HOV	Transit	Total
Total	7.1%	2.0%	52.3%	35.8%	2.1%	0.7%	100.0%
2010							
Total	6.4%	2.1%	51.5%	37.0%	2.2%	0.9%	100.0%
2030							
Total	6.7%	2.1%	51.2%	36.3%	2.3%	1.3%	100.0%

"...THE AREA, DESIGNED WITH TODAY'S INFRASTRUCTURE, DOES NOT PROVIDE THE FACILITIES TO ACCOMMODATE SIGNIFICANT BICYCLE AND PEDESTRIAN MODE INCREASES."



Hennepin County Bicycle Gap Study


Golden Valley Parks and Trails section of their Comprehensive Plan



St. Louis Park's Active Living: Sidewalks and Trails Plan

The model provides trip forecasts by Traffic Analysis Zones (TAZs). Figure 2 shows the modal split by walking, biking, transit, single-occupancy vehicles (SOV) and high-occupancy vehicles (HOV) for the study area TAZs. In addition, the table provides forecasts for the year 2010 and 2030 which shows an increase of transit ridership and a minimal decrease in SOV use. These forecasts show that the area, designed with today's infrastructure, does not provide the facilities to accommodate significant bicycle and pedestrian mode increases. This study provides suggestions on how to better accommodate biking, walking, and transit use.

REGIONAL PLANS

Existing regional plans allow coordination of study area plans with other related plans. The contextual relationship is a necessity when planning any type of transportation system; the study area is not its own entity, but a part of a complex system of corridors.

THE BICYCLE GAP STUDY

In 2006 Hennepin County produced a study that identified regional trail (bike and walk) corridor gaps. The Bicycle Gap Study, found over ninety gaps in the County's trail system, three of which are within the study area.

- Gap Number 106 - Located between the Cedar Lake Trail and Cedar Lake Road.
- Gap Number 23a - Located along Xenia Avenue/Park Place Blvd between Glenwood Avenue and Cedar Lake Road.
- Gap Number 108 - Located along France Ave, just south of the Cedar Lake Trail.

This study identifies specific improvements to address these gaps.

BICYCLE TRANSPORTATION SYSTEM PLAN

Updated in September of 2001, the Hennepin County Bicycle Transportation System Plan laid out a network of regional corridors linking state trails, regional parks, municipal loop trails, schools, parks, public facilities, libraries, and commercial centers. The plan serves as support for bicycle studies for area jurisdictions. The bicycle plan map was recently updated in May of 2007. Routes identified in the plan within the Xenia/Park Place study area are:

- South Frontage Road of I-394.
- Along Glenwood Avenue.
- Along Cedar Lake Road.
- A portion of Zarthan Avenue South, north of Cedar Lake Road.
- The Golden Valley portion of the Theodore Wirth Regional Trail.

LOCAL PLANS

Local bicycle and transportation plans offer great insight as to where current efforts are focused. Along with staff support, stakeholder input and recommendations, existing planning documents can be built upon and enhanced to a greater level of detail.

ST. LOUIS PARK

The 2000-2020 Comprehensive Plan's Chapter I - Transportation mentions trails and sidewalks briefly and gives no detailed recommendations for improvement. The Comprehensive Plan relies on the 1999 Trails and Sidewalks Master Plan to address recommendations in greater depth.

The Trails and Sidewalks Master Plan, identified gaps in the City's sidewalk and trail network. This study then gave way to the latest plan: the 2007/2008 Active Living: Sidewalks and Trails Plan. The plan identifies "existing conditions and gaps in the pedestrian, bicycle and transit system" and describes "the analysis and recommend improvements" in St. Louis Park.[4] Our study area receives good attention from this plan, suggesting multiple crossings of the BNSF railroad, and the trail and sidewalk along Park Place Blvd. The Active Living: Sidewalks and Trails Plan recommendations helped guide this study.

GOLDEN VALLEY

A bicycle and pedestrian section has been incorporated into the Golden Valley Comprehensive Plan that addresses priority routes for bike routes, regional trail connections, and sidewalks. Routes were taken from the Hennepin County Bicycle Transportation Plan mentioned above. These routes follow and provide a foundation for this study's recommendations.

4 Active Living: Sidewalks and Trails Plan

FIGURE 3.
CURRENT TRAIL AND SIDEWALK SYSTEM AND PROPOSED TRAILS AND SIDEWALKS

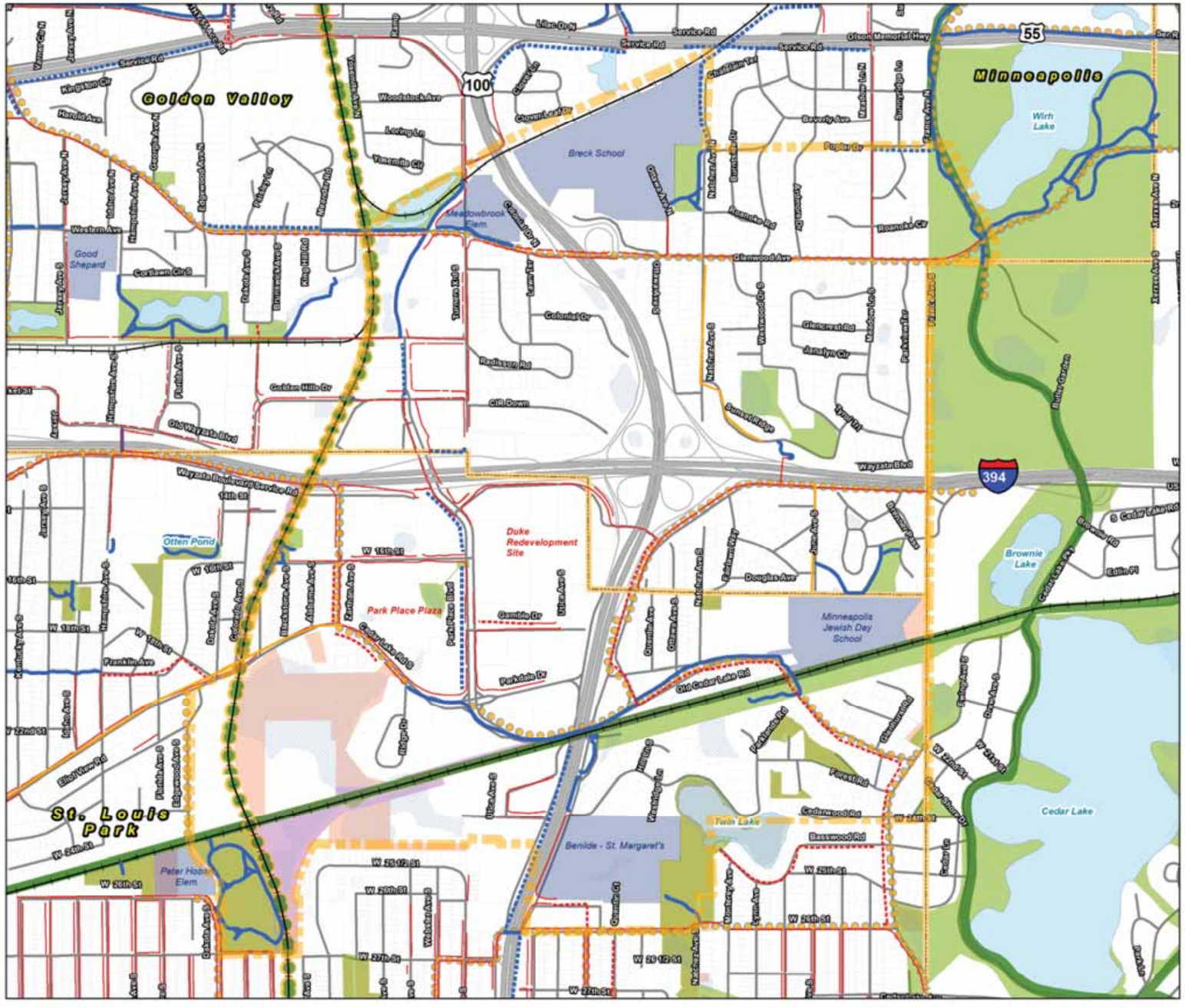


FIGURE 4.
CURRENT LAND USE (2005)

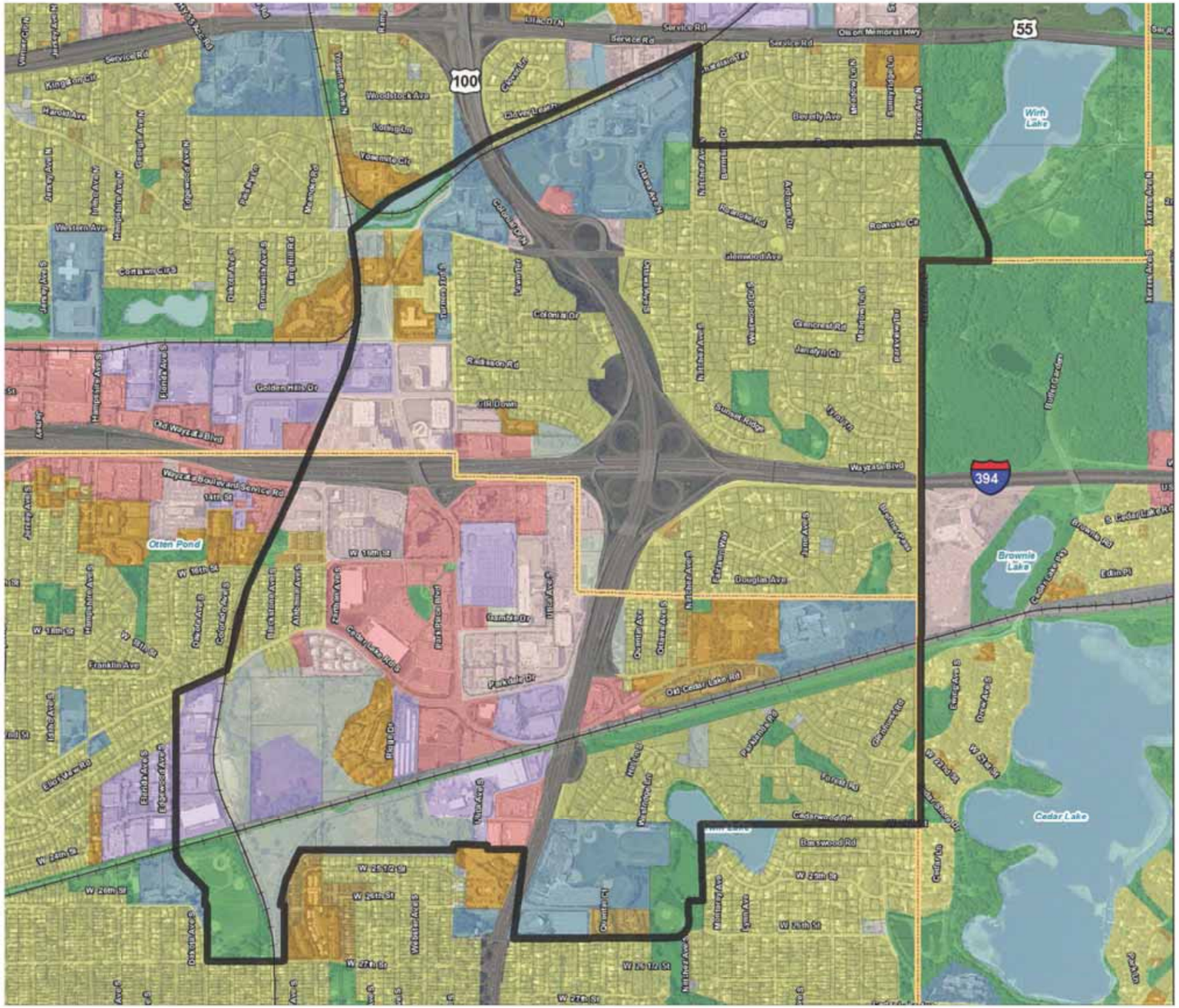
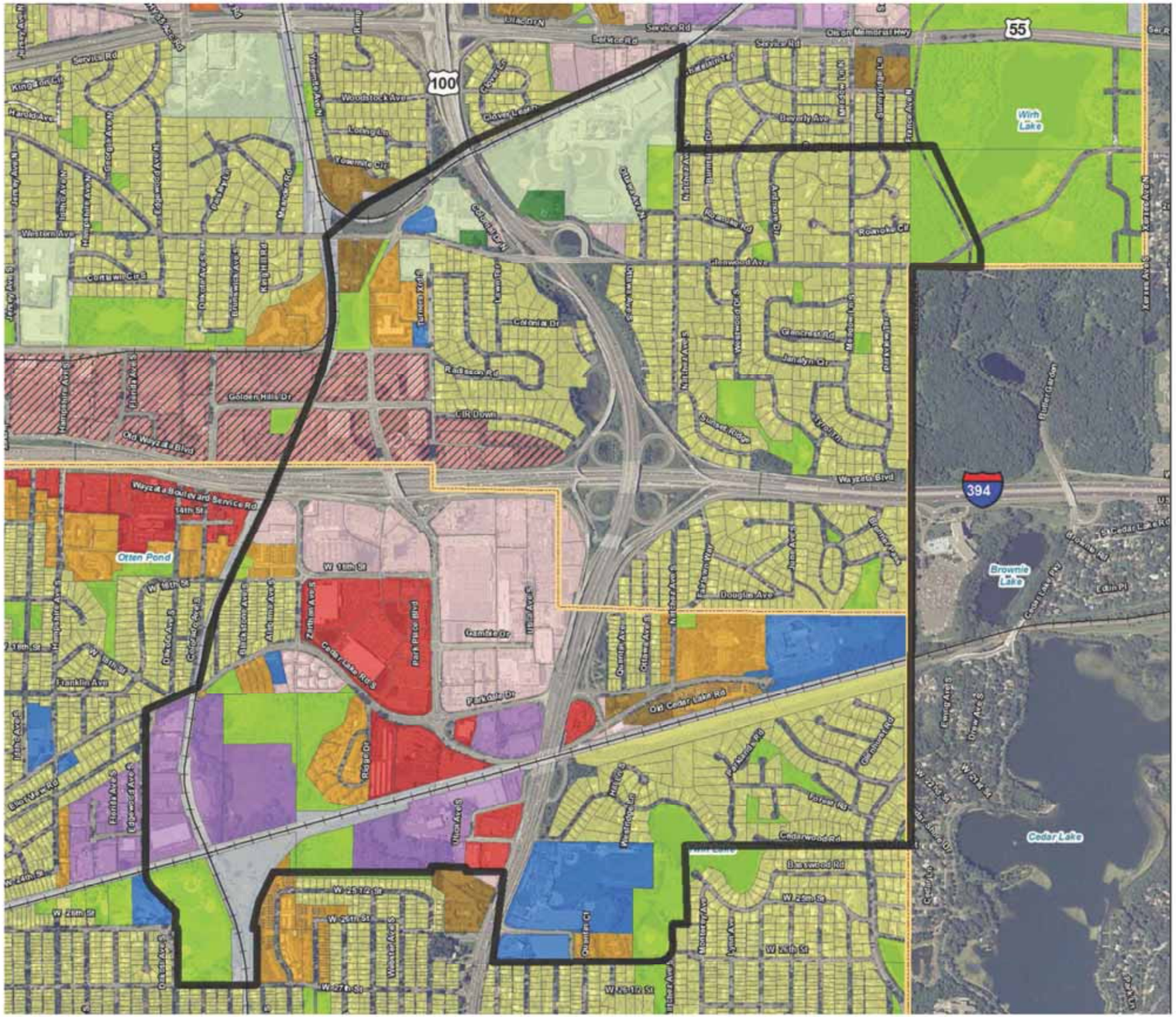


FIGURE 5.
CURRENT PLANNED LAND USE (2030)



Legend

- Project Area
- City Boundary

Planned Land Use - St. Louis Park

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Office
- Commercial
- Commercial - Mixed Use
- Industrial
- Civic Mixed-Use
- Civic
- Park and Open Space
- Railroad right-of-way
- Right of Way

Planned Land Use - Golden Valley

- LOW
- MEDIUM
- HIGH
- OFFICE
- RETAIL-SERVICE
- LIGHT IND
- IND
- MIXED USE
- OPENSPACE
- INSTITUTIONAL
- PUBLIC
- SEMIPUBLIC
- RR
- V

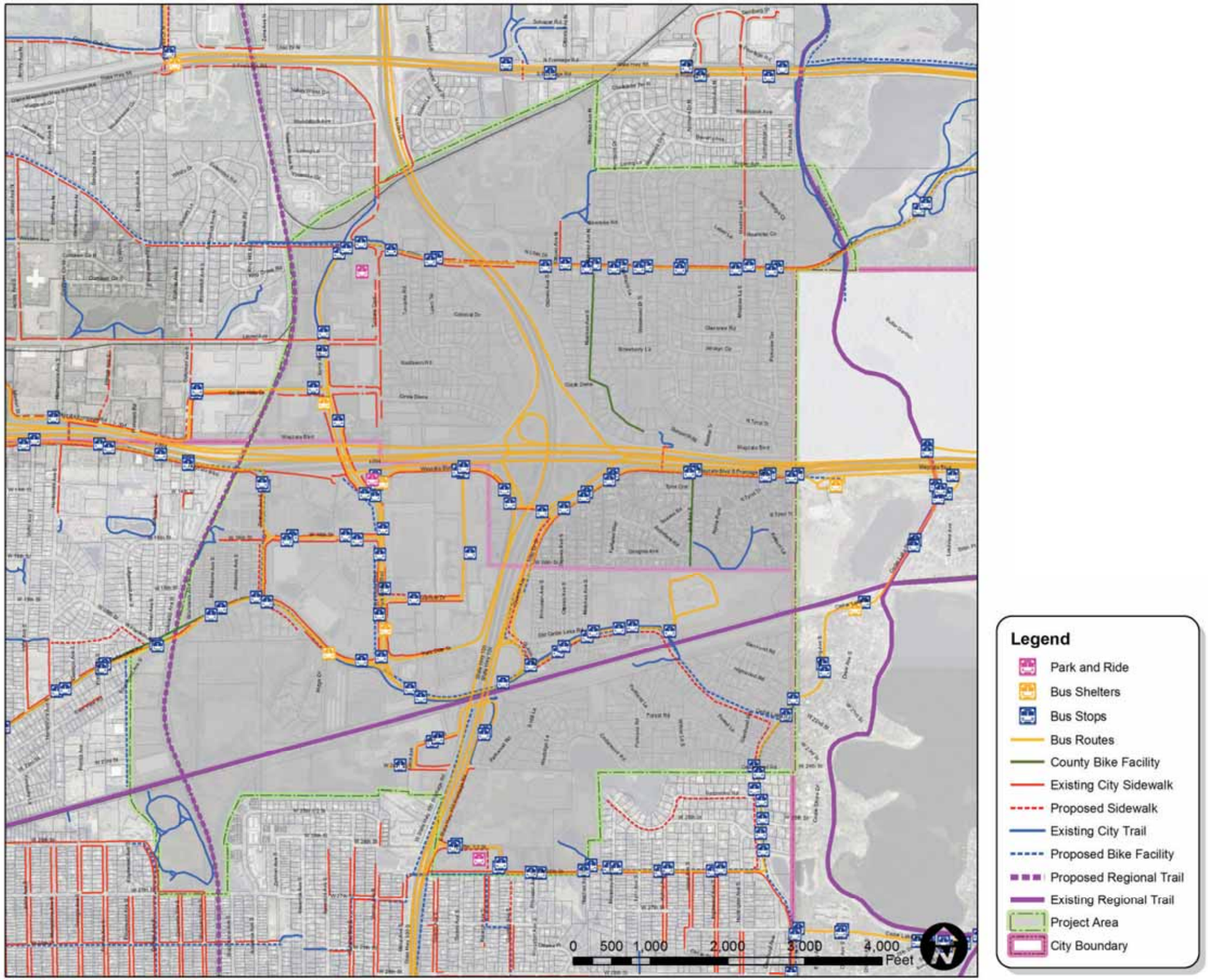
N

0 500 1,000 2,000 Feet

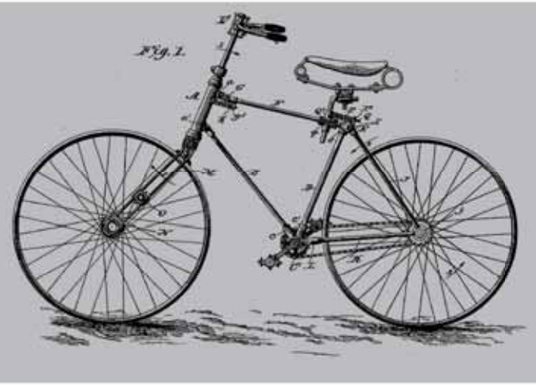
0 0.125 0.25 0.5 Miles

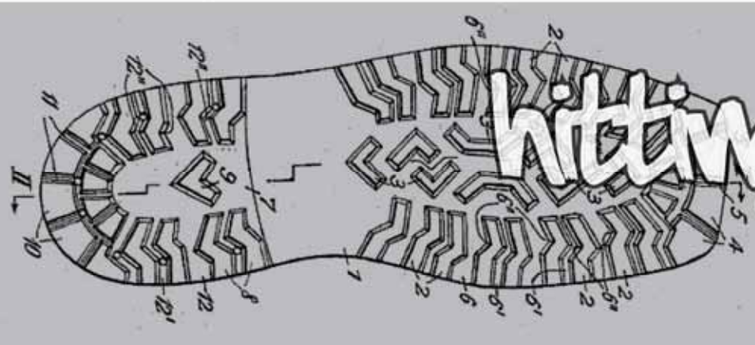
Map Date: Augus 6, 2008

FIGURE 6.
CURRENT TRANSPORTATION NETWORK AND TRAILS & SIDEWALKS WITH TRANSIT FACILITIES



CHAPTER THREE - NEEDS ANALYSIS





hitting the streets

PUBLIC INPUT PROCESS

The public has been shown this document at a meeting for area residents and at a meeting for area businesses. Both meetings were facilitated by the City of St. Louis Park, where a draft plan and maps were presented. We received many suggestions which helped to shape this study.

OUTREACH TO AREA EMPLOYEES

Employees in the Xenia/Park Place Corridor are an essential constituency when designing new bike and pedestrian facilities in the area. With over 20,000 individuals working in such a small area, there is a relatively high number of people who may choose to bike to work, go for a walk over lunch, or save money by riding the bus each day. To engage these individuals, the City completed an office to office outreach process to develop a list of interested employees. A presentation using an open house format, open to invitees and passers-by, was later used in the entry level of the 1600 Tower at 1600 Utica Avenue South. Employees were able to review the proposed changes to infrastructure in the area and give suggestions for the prioritization of the improvements.

CITIZEN OUTREACH

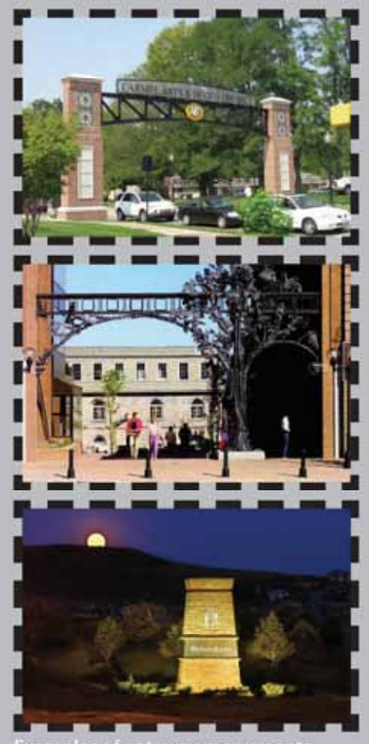
Citizens living within the Xenia/Park Place Corridor have easy access to numerous amenities: downtown Minneapolis, the lakes, countless restaurants and shopping options, and many recreational opportunities. Still, it is not easy to cross many barriers in the Corridor. At a neighborhood meeting at St. Louis Park City Hall, neighbors in attendance discussed the importance of improving access to various amenities in the area. The proposed study graphics were presented in a discussion facilitated by City and consultant staff. Input from residents has provided a background to place the study firmly within the grasp of what may be realistically accomplished in both a short and long term time-frame.

GOLDEN VALLEY PROCESS

Employees and citizens in the Golden Valley portion of the study area have similar priorities in comparison to their counterparts in St. Louis Park. The City process functions differently, however. In Golden Valley, the study has been reviewed on several levels: the City Council, Planning Commission, and even the Sidewalk Committee have been engaged to review and provide input and guidance for the study.

PUBLIC OPINION SURVEY

Most people that took the survey visit the study area 4 to 5 times per week going to work or for shopping/dining. Many people currently prefer to access the study area first by car and second by bike or foot. Regional trail access and connections through the study area are very important to the public. About half the people surveyed feel somewhat safe walking and biking in the study area, while the other half feel somewhat unsafe. Safety, on-street bike lanes, off-street trails, and wayfinding/ signage were high priorities for future improvements. On average, most people would walk about 1/2 to 1 mile and bike up to 5 miles to reach their destinations.



Examples of gateway monuments which announce a visitors entry.

OPPORTUNITIES AND OPTIONS

The study team reviewed the existing conditions, current planning documents, and conducted an analysis while visiting the study area. The evaluation findings are shown on three maps: Barrier and Corridor Crossings; Issues and Opportunities; and Origins and Destinations.

GATEWAYS

The study area is bordered by many gateways that range in quality from harsh concrete highways to soft green parkways. Bicyclists and pedestrians experience their surroundings at a much slower pace than an automobile, thus they are able to take in more scenery and feel what is around them personally. The bike and walk friendly gateways, shown on the following page, are a chance to announce the entrance to somewhere special. Many parks, community districts, housing developments, and business parks use gateway monuments as symbols of arrival. Gateways can range from simple garden plantings to large stone monuments with fences and planting beds depending on the appropriate scale and community desire. Successful urban centers require a cohesive set of design standards that tie the area together; announcing gateways are wonderful ways to achieve familiarity and prosperous communities. Travelers may currently have trouble distinguishing the boarders of the study area, Minneapolis, St. Louis Park, and Golden Valley.

BARRIER AND CORRIDOR CROSSINGS

Barriers

The study area sits at the crossroads of two major freeways within the inner ring of the Twin Cities Metro Area. TH 100 going north and south and Interstate 394 going east and west are major barriers to the pedestrian and cyclist. Other important barriers are the Canadian Pacific (CP) and Burlington Northern Santa Fe (BNSF) Railroads. These lines are large barriers for pedestrians and bicycles to cross not only for safety reasons, but trespassing as well. These railroad rights of way also have opportunities to become trail corridors. Pedestrian and cycling gateways are where collector streets and city/ regional trails enter the study area. See Figure 7 for descriptions of the barriers and gateways.

St. Louis Park and Golden Valley, like many cities, have transportation systems primarily dedicated to vehicles. These systems make it easy to get from point "a" to point "b" via car, however for those on foot or on a bike, travel is a bit more difficult. Vehicular bridges with sidewalks, pedestrian bridges, and railroad bridges cross these two barriers however, pedestrians and bicycles have limited safe or convenient crossings.

Over time, these barriers have been broken down on an informal level. Throughout St. Louis Park and Golden Valley there are a multitude of informal paths that lead people through, over, or under the barriers despite governmental disapproval. Some of these paths are on private property, and some of them are on public property. The paths represent the quickest and easiest route humans, over time, have chosen to walk or ride to their destinations. Currently there are many informal paths leading to railroad lines. The railways offer a walker or biker continuous, albeit trespassing, route of travel with an

absence of stops and large hills; this makes the railways irresistible at times. It also makes railway corridors great candidates for right of way sharing with regional trails.

Corridors

A corridor for pedestrians and cyclists offers travelers movement along its axis. Corridors take the form of trails, greenways, parkways, collector roads, and public lands connecting parks, schools, retail centers, job centers, and other corridors. Conserving existing and building new corridors helps bridge the patchwork of land uses outside the realm of the automobile. Corridors are important to the success and sustainability of our communities.

ISSUES AND OPPORTUNITIES

The study team biked, walked, and drove throughout the project area and surrounding context and identified many issues and opportunities that should be addressed or capitalized on. Figure 8 shows a map of issues and opportunity areas with descriptions.

The barriers previously mentioned are an issue for circulation within the study area. Cyclists and pedestrians have to take lengthy detours to cross the BNSF tracks. These detours are what leads to people blazing their own trails across railroad tracks, along railroad bridges, and through private properties.

ORIGINS AND DESTINATIONS

To be effective, a bikeway and walkway network must get people safely and directly to their destination. A simple cohesive network of trails, bikeways, and sidewalks is needed to join points of origin to destinations in a safe and functional manner. Points of origin include employment centers, retail and commercial centers, schools, places of worship, public land, parks, and residences. These points also become destinations depending on the trip purpose.

BIKE AND WALK FRIENDLY GATEWAYS:

Glenwood Ave through Theodore Wirth Parkway from the east.

Cedar Lake Trail from the east.

Old Cedar Lake Road from the east.

Cedar Lake Trail from the west.

Cedar Lake Road from the west.

Laurel Ave from the west.

Glenwood Ave from the west.

Wayzata Blvd along I-394 from the west.

Turners Crossroads and Xenia Ave from the north.

BIKE AND WALK UN-FRIENDLY GATEWAYS:

Interstate 394 from the east and the west, impassible.

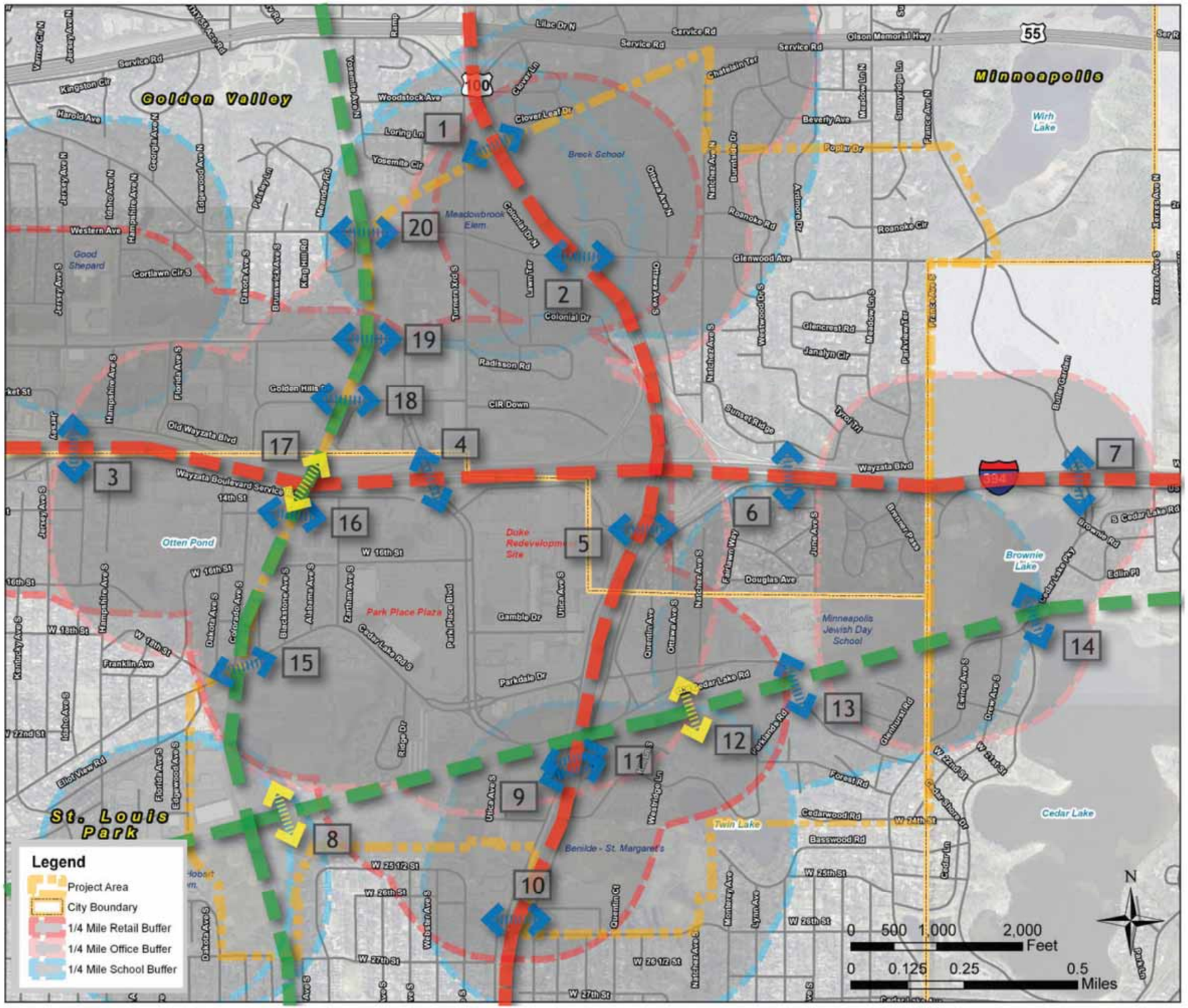
Highway 100 from the north and south, impassible.

Xenia Ave-Park Place Blvd bridge, harsh with high volumes of automobile traffic. Lack of separation of pedestrians from 4 lanes of traffic. Many dangerous vehicle turning movements.

Park Place Blvd, satisfactory for pedestrians, potentially unsafe for cyclists. New multi-use trail under construction south of I-394.

Xenia Ave, satisfactory for pedestrians, potentially unsafe for cyclists.

FIGURE 7.
BARRIER AND CORRIDOR CROSSINGS



BARRIER CROSSINGS

1 Connection Along Glenwood Ave

2 Pedestrian/Bicycle/ Auto Connection Along Glenwood Ave Over Highway 100

3 Pedestrian/Bicycle Bridge Over I-394

4 Pedestrian/Bicycle/ Auto Connection Along Xenia/Park Place Over I-394

5 Pedestrian/Bicycle/ Auto Connection Under Highway 100 Along Wayzata Boulevard

6 Pedestrian/Bicycle Bridge Over I-394

7 Pedestrian/Bicycle/ Auto Connection Along Cedar Lake Parkway Over I-394

8 Informal/Illegal At-Grade Crossing of Railroad Tracks

9 Connection Under Highway 100 Along Service Road

10 Pedestrian/ Bicycle Bridge Over Highway 100

11 Connection Under Highway 100 Along Cedar Lake Trail

12 Informal/ Illegal At-Grade Crossing of Railroad Tracks

13 Pedestrian/ Bicycle Bridge Over Cedar Lake Trail and Railroad

14 Pedestrian/ Bicycle Bridge Over Cedar Lake Trail and Railroad Along Cedar Lake Parkway

15 At-Grade Bike/ Pedestrian/Auto Connection Along Cedar Lake Road Over CP Railroad

16 At-Grade Auto Crossing of CP Railroad Along Wayzata Blvd

17 Informal/Illegal Crossing of I-394 Along CP Railroad Bridge

18 At-Grade Pedestrian/Auto Connection Over CP Railroad Along Golden Hills Drive

19 At-Grade Pedestrian/Auto Connection Over CP Railroad Along Laurel Avenue

20 Pedestrian/Bicycle/ Auto Connection Under CP Railroad Along Glenwood Avenue

Yellow = Illegal Barrier Crossing

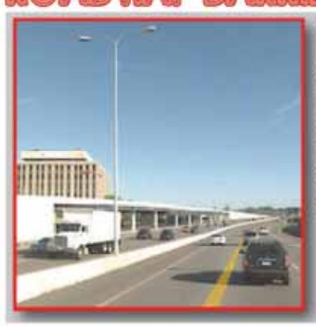
Blue = Legal Barrier Crossing

RAILWAY BARRIERS

It is very hard to cross railroad tracks along the north side of the Cedar Lake Trail. Currently there are only two safe/legal crossing points within our study area.

The Canadian Pacific (CP) Railroad run along the west edge of our study area. There are a few at-grade crossing of this rail. It currently has about 1 train per day at 10 MPH.

ROADWAY BARRIERS



Crossing Highway 100 within the study area is a daunting task. Currently there are six crossings, five of which offer sidewalks, and one which offers a bike facility

Currently there are four crossings of I-394. There are two pedestrian/bike bridges, one vehicular bridge with sidewalks only, and one vehicular bridge with sidewalk and trail.

FIGURE 8.
CORRIDOR ISSUES AND OPPORTUNITIES

1 Road width along Glenwood Ave is good for Trail and on street bike lane.

2 CP Railroad corridor, potential future Three Rivers regional trail.

3 Possible neighborhood park location, some historic value.

4 Good connection under TH 100, however poor connection to Xenia Ave trail.

5 Four-way trail crossing is safe at stop lights on Glenwood and Xenia Aves.

6 Long hill along bike route to Ped Bridge over I-394

7 Road width along Glenwood Ave is good for Trail and on street bike lane.

8 Excellent connection from Glenwood Ave to Theodore Wirth Parkway.

9 Laurel Ave is a good trail corridor. Trail pavement should be consistent for safety.

10 Current trail along Xenia Ave stops.

11 Ped./bike bridge over I-394.

12 Poor sidewalk connection to ped. bridge over I-394. North walk ends 1000 feet from bridge.

13 RR bridge connection over I-394. Possible future Three Rivers regional trail.

14 No safe bike connection and sidewalk is next to heavy traffic.

15 Good pedestrian circulation. Poor bike circulation, no shoulders or paths.

16 Potential for future development along the north side of I-394.

17 Unused TH100 ROW

18 Good connection of North and South Tyrol neighborhoods over I-394.

19 Poor marking of Ped./bike bridge over I-394.

20 Sidewalk connection to Target Corp. and Theodore Wirth Parkway.

21 Theodore Wirth Parkway Connection.

22 CP Railroad corridor, potential future Three Rivers regional trail.

23 Wide roadway along Cedar Lake Road, possible bike lanes.

24 Large unused openspace with forest and wetlands. Possible trail/greenway connections.

25 Park Place roadway under construction. New trails and sidewalks in plan.

26 No sidewalk or trail along West Side Drive connecting to TH100 ped./bike bridge.

27 Short trail connection in front of Westside VW. This trail is disconnected from other trails.

28 Good sidewalk connections along the south side of I-394. Walks are bumpy, no bike lanes.

29 Informal/illegal crossing issues.

30 Informal/illegal entrance to BNSF railroad. Railroad property used as trail corridor.

31 Good connection to the Cedar Lake Trail from the neighborhoods to the south.

32 CP railroad crossing over Cedar Lake Trail. Topography supports possible ped./bike bridge.

33 Informal path connections to Cedar Lake Trail and Dakota Park.

34 Large unused openspace with forest and wetlands. Possible trail/greenway connections.

35 Informal path connections to industrial area and West Side VW.

36 Good crossing under TH100 for peds only. No bike access.

37 Poor crossing under TH100. No ped. or bike access.

38 Cedar Lake Trail connection to southeast side of TH100 only.

39 Informal/illegal crossing of BNSF railroad. Used by many peds. and bikers.

40 Ped. and bike connection over and to the Cedar Lake Trail from North and South Tyrol.

41 Informal path along north side of Cedar Lake Trail to the Theo Wirth Park trail system.

42 Connection from Cedar Lake Trail to South Tyrol and Kenwood Neighborhoods.

43 Connection to and under Theo Wirth Parkway. Connection to Minneapolis Grand Rounds.

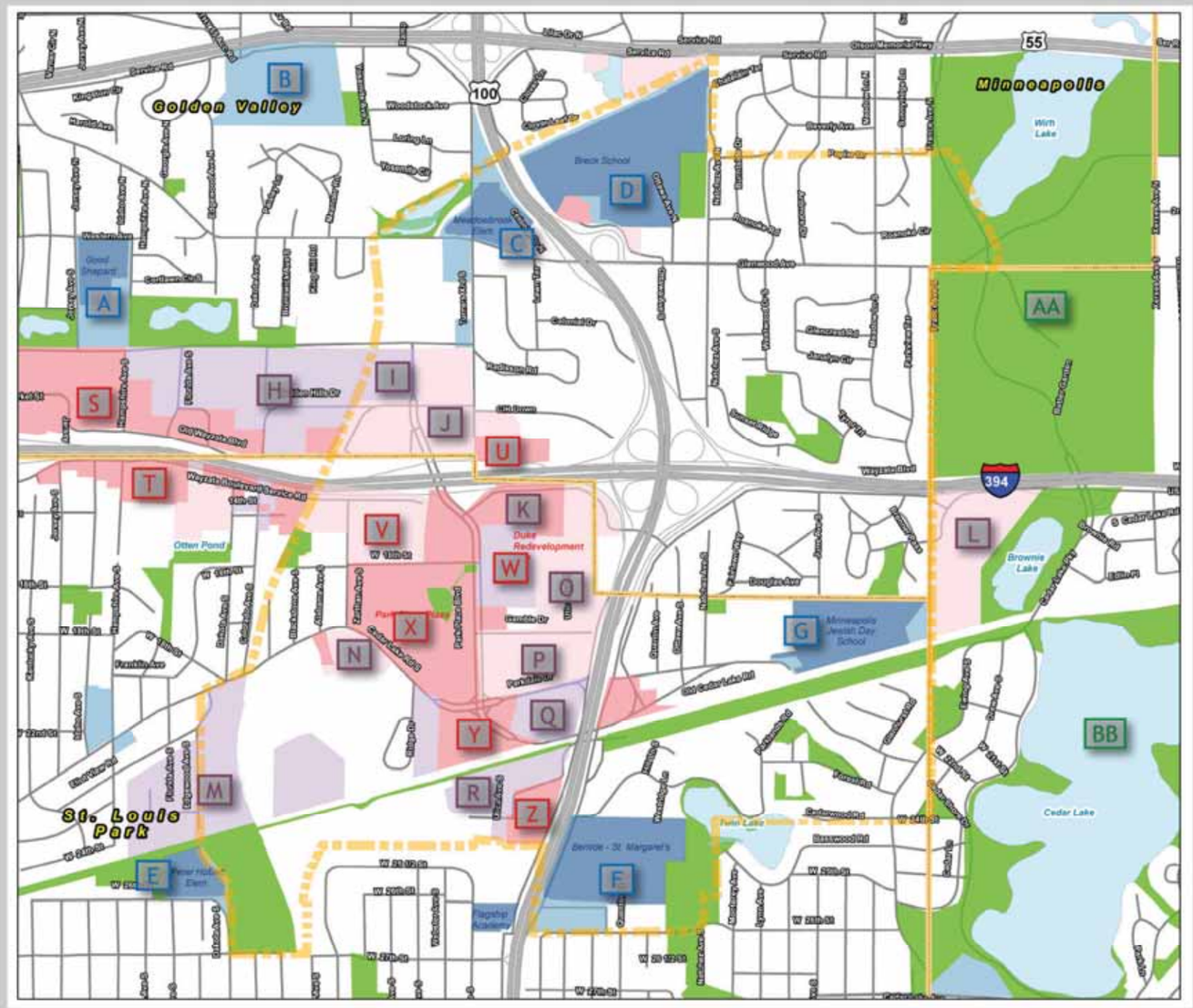
44 Possible connection to Cedar Lake Parkway. Connection to Minneapolis Grand Rounds.

45 Ped./bike bridge over TH100. Poor bike route connections.

46 Possible north/south corridor along France Ave.

47 Possible connection to Theodore Wirth Parkway. Connection to Minneapolis Grand Rounds.

FIGURE 9.
ORIGINS AND DESTINATIONS



School Destinations

- A Good Shepard School
- B Perpich Center for Arts
- C Meadowbrook Elementary
- D Breck School
- E Peter Hobart Elementary
- F Benilde St. Margaret's School
- G Minneapolis Jewish Day School

Office and Industrial Use Destinations

- H Office Property (Preferred One, Etc.)
- I Future mixed Use Retail Redevelopment
- J Office Property (Colonade, Allianz, Etc.)
- K Office/Retail Property (Bank, Restaurants)
- L Office Property (Target Corp.)
- M Edgewood Industrial Park
- N Sunset Ridge Business Park
- O Future Office Redevelopment
- P Office Property (Health Partners, Etc.)
- Q Office Property (Podany's, Etc.)
- R Industrial Property (Abra Auto Body, Etc.)

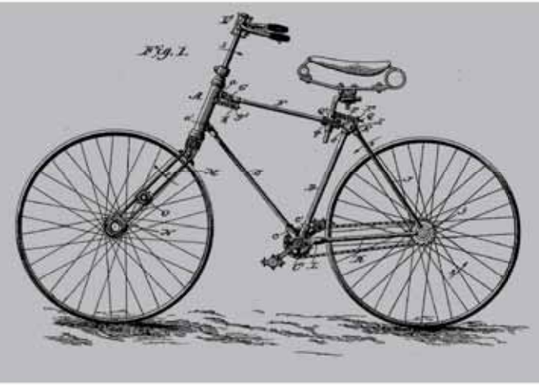
Commercial and Retail Destinations

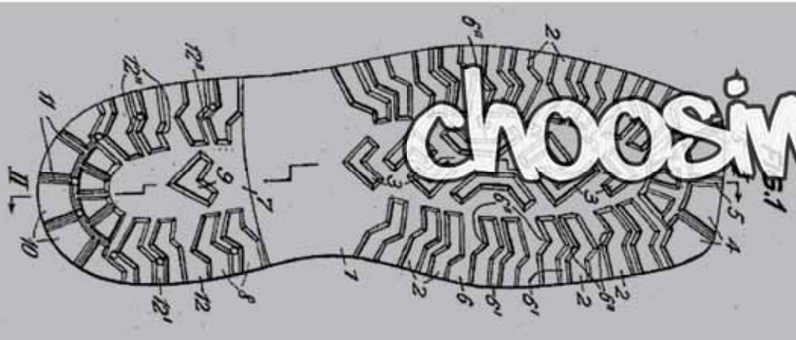
- S Hospitality/Retail Area (Restaurants, Hotels, Menard's)
- T Hospitality/Office Area (Restaurants, Hotels, Park Place West)
- U Retail Building (Restaurant, Banquet Hall, Good Day Cafe)
- V Hospitality/Office Area (Restaurants, Hotels, Park Place East)
- W Future West End Retail Redevelopment (Movie Theater, Grocery Store, Etc.)
- X Park Place Plaza retail (Home Depot, Costco, Office Max, Pet Smart, Etc.
- Y Fitness Center, Strip mall retail (Lifetime Fitness, Caribou Coffee, FedEx Kinko's, Pei Wei, Etc.)
- Z Westside Volkswagon

Major Recreation Destinations

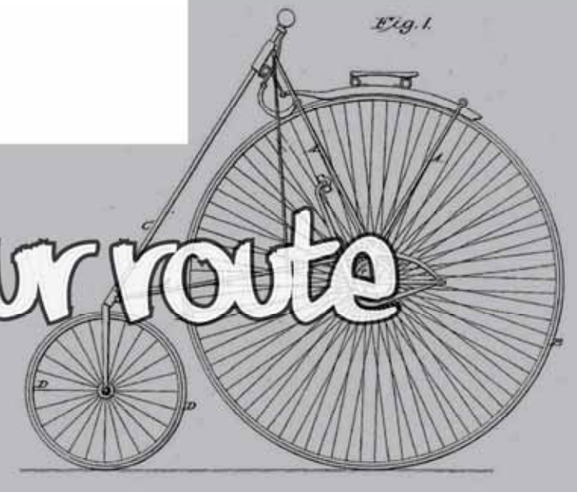
- AA Theodore Wirth Park (Minneapolis)
- BB Cedar Lake Park and Parkway (Minneapolis)

CHAPTER FOUR - RECOMMENDED IMPROVEMENTS





choosing your route



QUICK DEFINITIONS:

- Sidewalk/Walkway - An off-street paved walk dedicated exclusively for pedestrian use.
- Bicycle Facility/Bikeway - An on-street striped bike lane dedicated exclusively for biking or a designated shared use bike route with signage and pavement markings. Use could be shared with autos or buses and taxies.
- Multi-Use Trail - An off-street paved trail shared by bicyclists and pedestrians.

SELECTION PROCESS

This chapter illustrates potential bike and walk options and highlights recommended bikeway and walkway routes/improvements. The study area evolved beyond its original boundaries shown in Chapter 1 and 2. This gave it the opportunity to better tie together the surrounding neighborhoods and existing bike/walk facilities. Improvements were based on the criteria identified on page 4.

UNIVERSE OF ROUTES AND IMPROVEMENT IDEAS

The Universe of Routes Map (Figure 10) illustrates potential/feasible bikeway and walkway routes through the study area. This map was the framework for choosing recommended bike and pedestrian routes. Recommended primary routes follow along corridors which provide mass transit, acceptable right of way width, connections to destination points, and follow the approved design criteria stated in Chapter 2. Recommended secondary routes connect and support primary routes.

The process for identifying route options began by researching existing bicycle and pedestrian plans at the city-wide and county-wide level. Next, the existing patterns of traffic: auto, bicycle and pedestrian, and conflict points were identified. Then destinations points: office, school, retail, and public uses were analyzed. Finally, bike and walk routes connecting origin and destination points and crossing barriers were identified to produce the universe of routes map. From this map, primary and secondary routes were selected using the criteria identified on page 4 of Chapter 1.

POTENTIAL NEW ROUTES HIGHLIGHTED

Figure 11 illustrates how the highlighted potential bike and walk routes overlay the existing and currently planned bike and walk facilities. The bold/dashed lines represent potential bike and walk routes, while the faded/solid or faded/dashed represent existing facilities and currently planned facilities, respectively.

RECOMMENDED BIKE AND WALK CORRIDORS

Figure 12 shows the recommended priority corridors. The priority bike/walk corridors are identified by their route function:

- Regional - A Regional Corridor efficiently moves pedestrian or bicycle travelers to their regional destinations, such as the West End Shopping District or their place of employment. It is similar to an arterial automobile route.
- City - A City Corridor is similar to a collector automobile route. It conveys pedestrian and bicycle travelers from a regional route to their final destinations.
- Neighborhood - The Neighborhood Corridors allow pedestrian and bicycle travelers to move from their homes and less regional locations to their final destinations.

Priority routes were selected based on a comprehensive connection to the system, a connection across barriers, and links to existing trails and destinations.

POTENTIAL ROUTES & RECOMMENDED PRIORITY CORRIDORS WITH EXISTING ROUTES

Figure 13 shows how the first two maps overlay each other to make a comprehensive system of walks, bike lanes, and off-street trails.

RECOMMENDED BIKE WALK CORRIDORS IN RELATIONSHIP TO BUS ROUTES AND STOPS

Figure 14 shows the relationship between the existing transit system (bus stops, shelters, depots, park and rides) and the recommended priority bike/walk corridors.

WALKABILITY ZONE

The benefits of walking and leading an active lifestyle are numerous. The walkability zone depicted in Figure 15 shows the area in which pedestrians require a great level of mobility due to the high level of employment and retail destinations. The zone covers the central portion of the study area where commercial, retail, office, high density residential, and entertainment venues thrive. It is designed to provide connections to multiple destinations by foot rather than by auto. This helps to relieve congestion and the need for wider roads and more traffic. This allows a visitor to park or arrive by bus at one location and go to multiple destination by foot rather than driving to multiple locations.

FIGURE 10.
UNIVERSE OF BIKEWAY AND WALKWAY ROUTES AND IMPROVEMENT OPTIONS
(PROPOSED AND EXISTING ROUTES COMBINED)

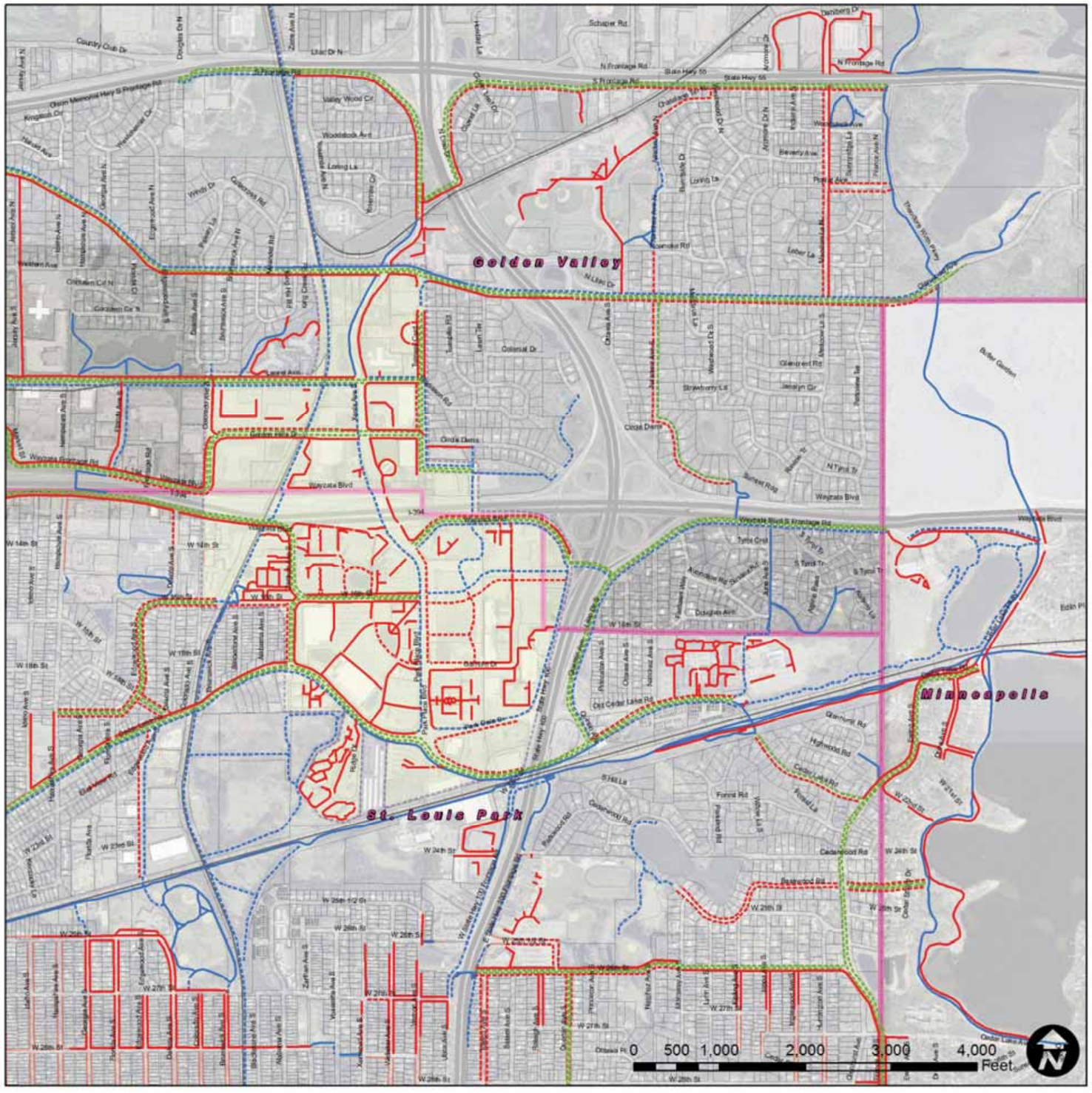


FIGURE 11.
POTENTIAL NEW BIKE AND WALK ROUTES HIGHLIGHTED

(STUDY ROUTES OVER FADED EXISTING AND EXISTING PROPOSED ROUTES)

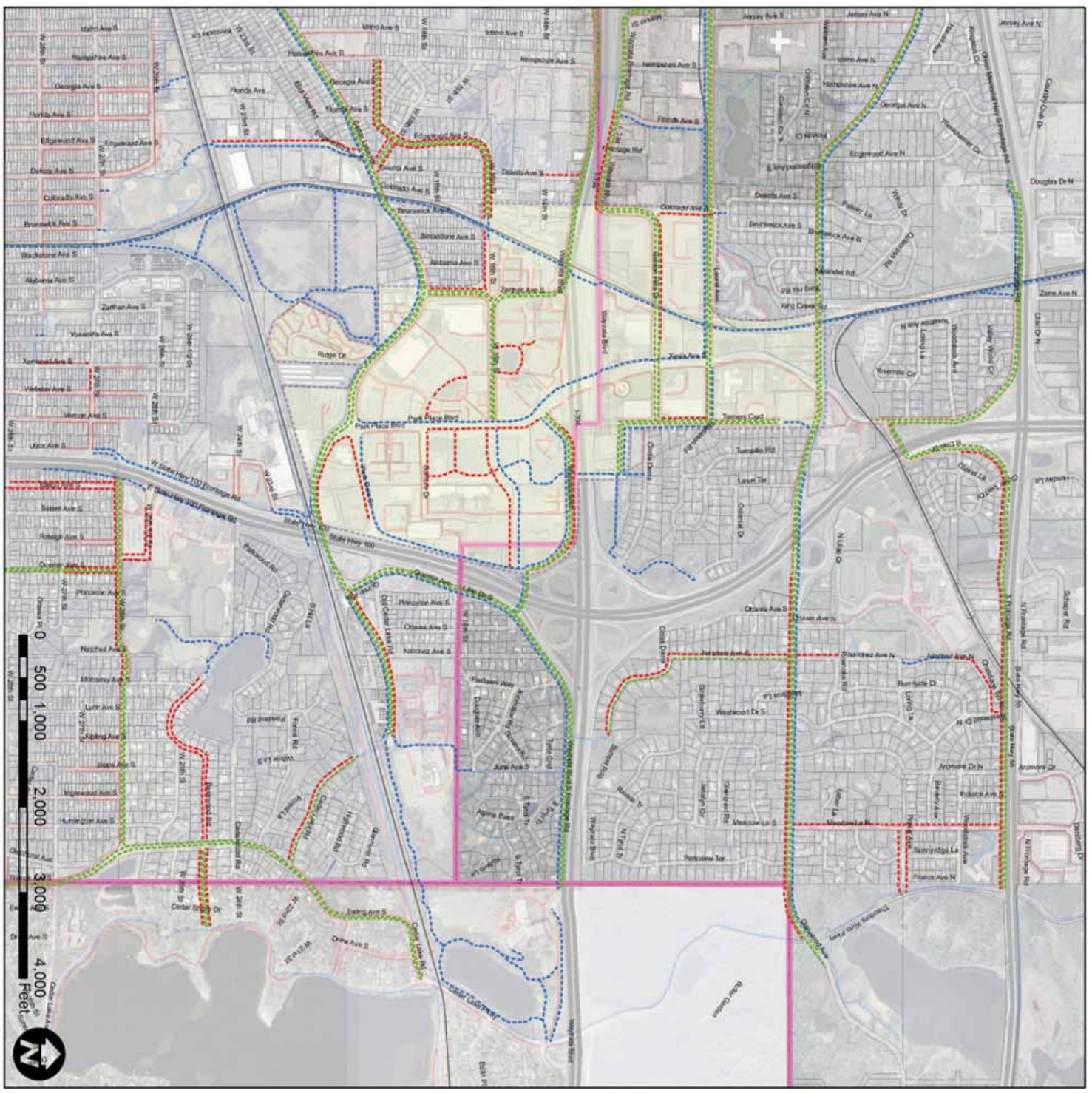


FIGURE 12.
RECOMMENDED BIKE AND WALK PRIORITY CORRIDORS

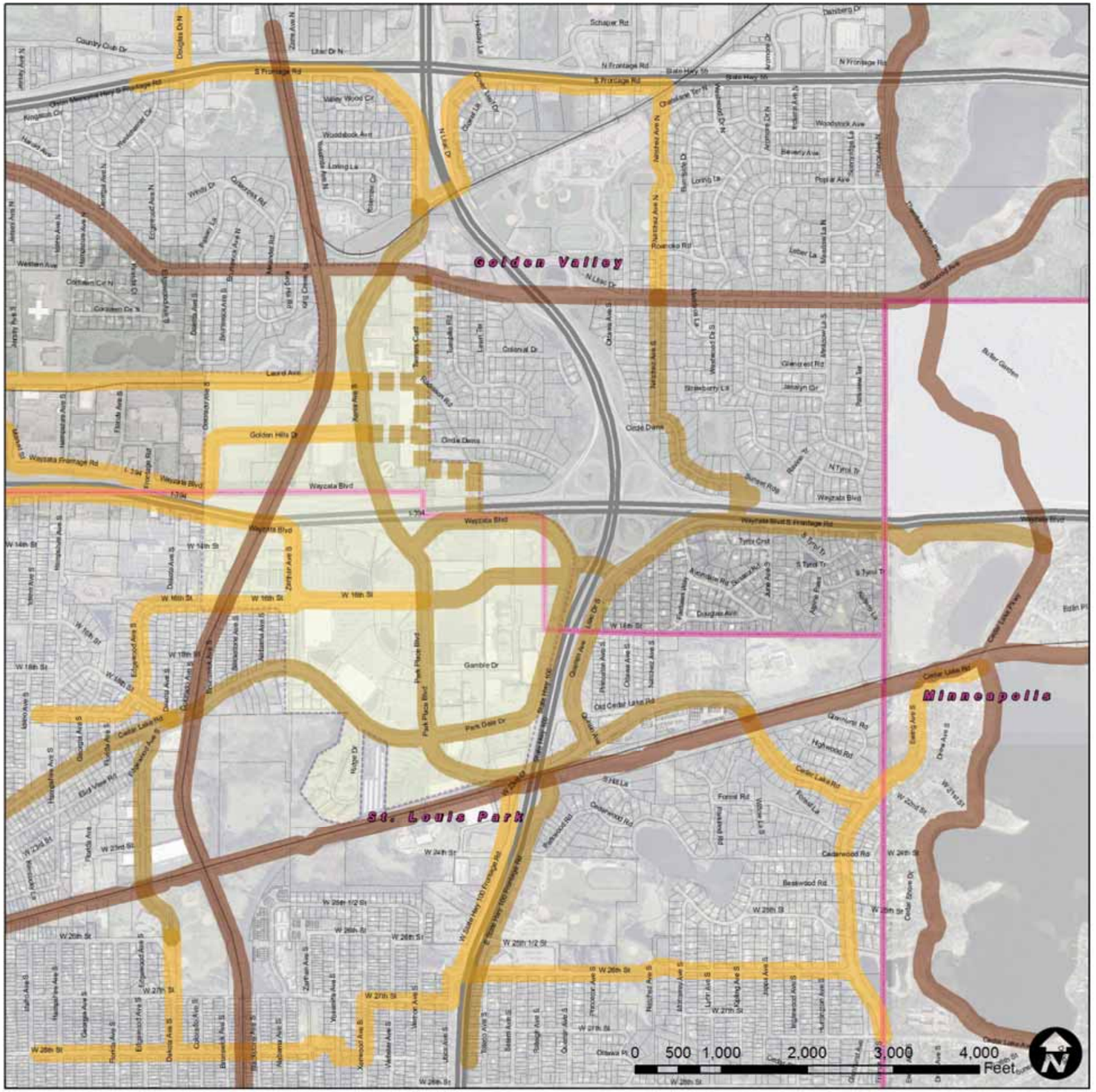
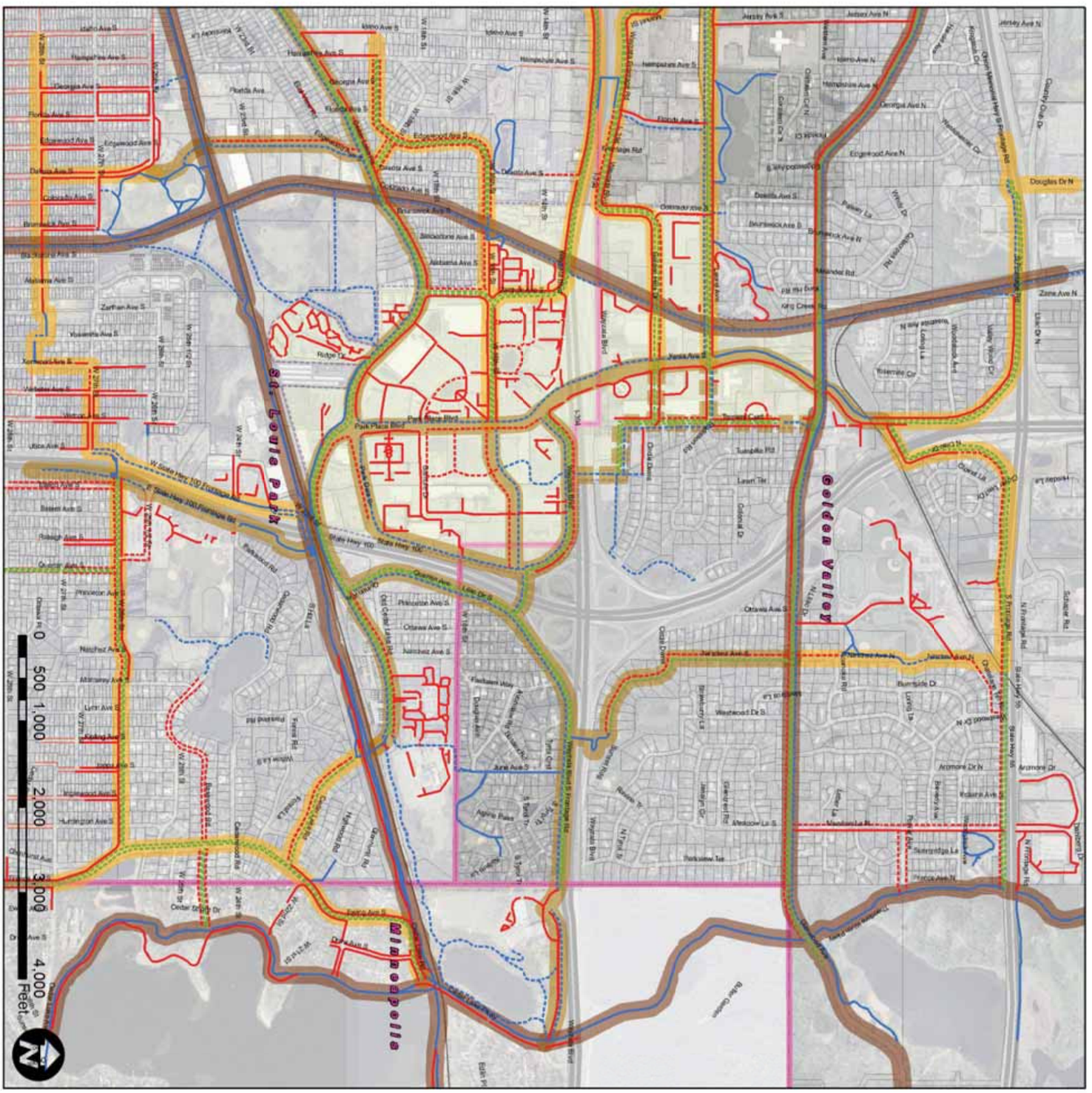


FIGURE 13.
RECOMMENDED BIKE AND WALK PRIORITY ROUTES, ALL POTENTIAL ROUTES AND EXISTING SIDEWALKS AND TRAILS



Legend

- Existing Bicycle Facility
- Existing Sidewalks
- Existing Multi-Use Trail
- Recommended Bicycle Facility
- Recommended Sidewalks
- Recommended Multi-Use Trail
- Regional Bike/Walk Corridor
- City Bike/Walk Corridor (Option)
- City Bike/Walk Corridor
- Neighborhood Bike/Walk Corridor
- Walkability Study Area
- City Boundary

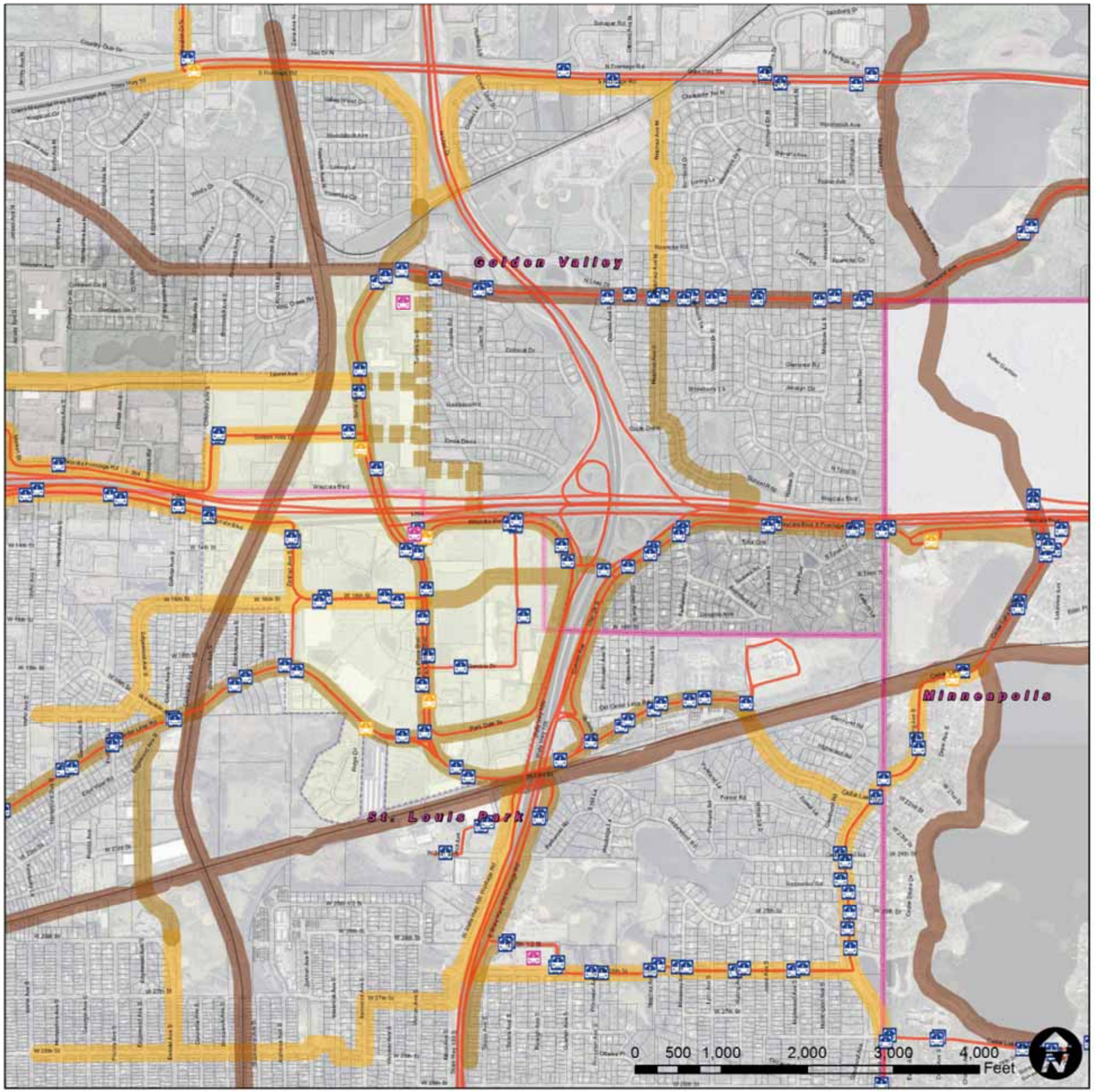
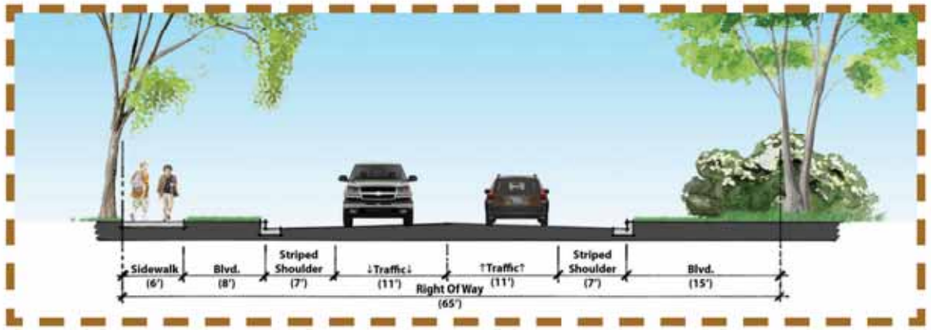
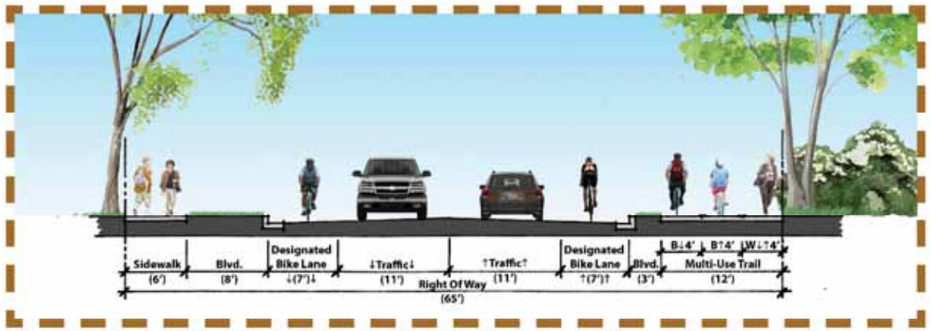


FIGURE 14.
RECOMMENDED BIKE AND WALK CORRIDORS IN RELATIONSHIP TO CURRENT BUS ROUTES AND STOPS

FIGURE 15.
WALKABILITY ZONE MAP



Section 1.1 (Before) - Glenwood Avenue East of Xenia Avenue



Section 1.2 (After) - Glenwood Avenue East of Xenia Avenue

The cross section drawings shown on pages 29 to 33 illustrate the recommended priority bike/walk corridors. The "before" section drawings show the existing conditions with approximated dimensions and the "after" drawings show the street section with the addition of bikeways and/or walkways. The locations of the cross section drawings within the study area are shown on Figure 16, the Cross Section Location Map on page 34.

REGIONAL BIKE/WALK CORRIDOR CROSS SECTIONS

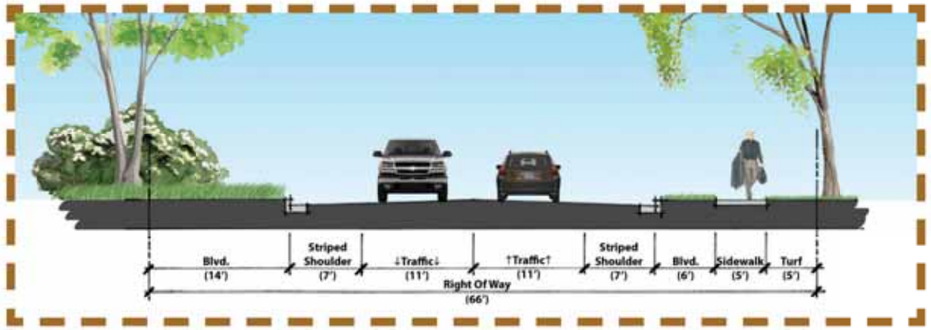
The before sections are a representation of what the cross section of the street looks like today. The measurements are estimations and not indicative of the whole street length. The regional corridors, as they are today, are well-suited for additions of bike lanes and multi-use trails. They have wide shoulders suitable for marking and signing as bike lanes. The after sections represent suggested improvements to add bicycle and pedestrian facilities. Improvements range from striping/marking/signing a bike lane to installing new trails and sidewalks.

- Section 1.1 Before - Glenwood Avenue East of Xenia Avenue

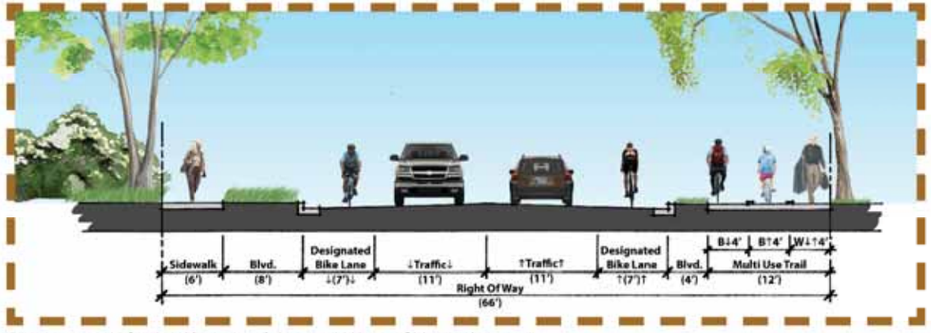
  - Glenwood Ave. is a direct link from Golden Valley to downtown Minneapolis and the Minneapolis park system. Glenwood Ave. compliments the already popular Cedar Lake Trail in St. Louis Park which also connects to downtown Minneapolis, the park system, and many other regional destinations.

- Section 1.2 After - Glenwood Avenue East of Xenia Avenue

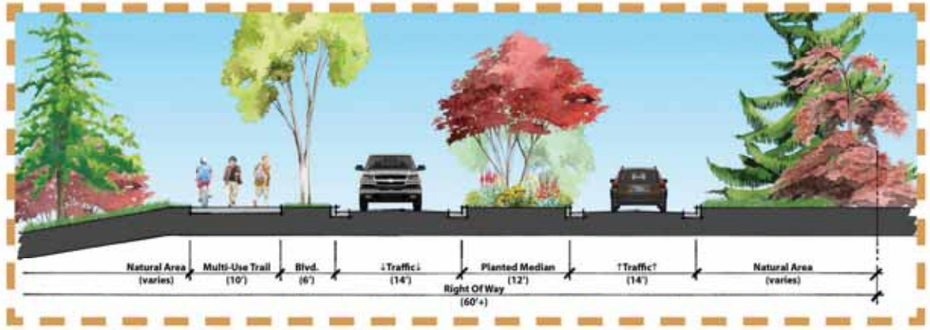
  - A trail should extend along Glenwood Ave. from the existing trail near Xenia Ave. Bike lane striping, marking and signage should be installed for commuters. The existing striped shoulder should be connected into a designated bike lane. On-street parking will have to be minimized to appropriate locations.



Section 2.1 (Before) - Glenwood Avenue West of Xenia Avenue



Section 2.2 (After) - Glenwood Avenue West of Xenia Avenue



Section 4.1 (Before) - Xenia Avenue North of I-394

- Section 2.1 - Glenwood Avenue West of Xenia Avenue

  - Glenwood Ave, running west, has a connection across Highway 55 and to the Luce Line Trail running all the way to Baker Park. Currently, this is a missing link to the regional trail corridor system.

- Section 2.2 - Glenwood Avenue West of Xenia Avenue

  - A trail should extend west along Glenwood Ave. from the existing trail near Xenia Ave. Also bike lane striping, marking and signage should be installed for commuters. The existing striped shoulder should be converted into a designated bike lane. On-street parking will have to be minimized to appropriate locations.

CITY BIKE/WALK CORRIDOR CROSS SECTIONS

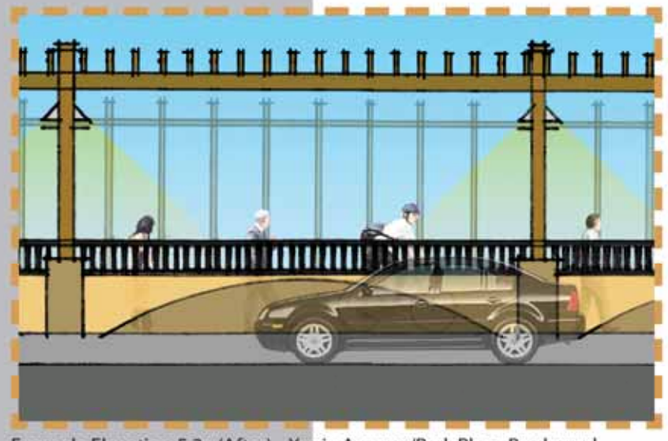
The before sections are a representation of what the cross section of the street looks like today. The measurements are estimations and not indicative of the whole street length. The city corridors are well-suited for adding pedestrian and bicycle facilities. Many of the routes chosen have wide shoulders and right of way to handle improvements. The after sections represent suggested improvements and additions to the bicycle and pedestrian facilities. Improvements range from striping/marking/signing a bike lane to installing new trails and sidewalks.

» Section 4.1 - Xenia Avenue North of I-394

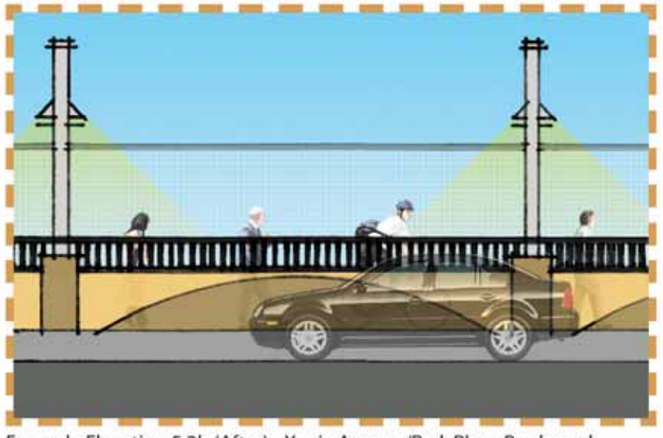
- This section of Xenia Avenue is already well-designed. It has a nice parkway feel which slows vehicular traffic. The existing trail on the west side is in good condition, although striping and signage for the trail is suggested to avoid conflicts between walkers and bikes.

» Section 5.1 Before - Xenia Avenue/Park Place Boulevard Bridge Over I-394

- The bridge over I-394 is a very inhospitable place for pedestrians and cyclists alike. There are currently 8-foot sidewalks on either side of the bridge. The walks are adequate in width for pedestrians, however the lack of separation between the walking and the 8 lanes of traffic make it a very unfriendly and stressful place to traverse.



Example Elevation 5.2a (After) - Xenia Avenue/Park Place Boulevard Bridge Over I-394 with the addition of a sidewalk buffer.



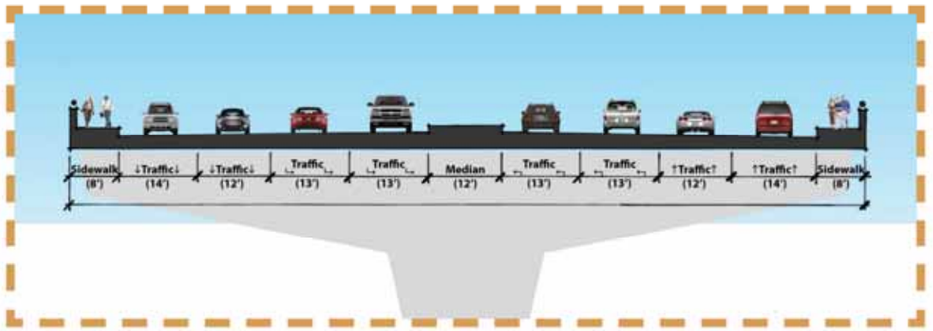
Example Elevation 5.2b (After) - Xenia Avenue/Park Place Boulevard Bridge Over I-394 with the addition of a sidewalk buffer.

» Section 5.2a After - Xenia Avenue/Park Place Boulevard Bridge Over I-394

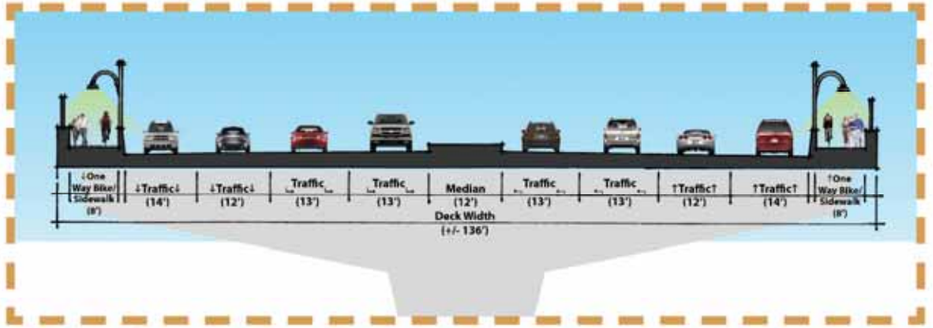
-This option would add a concrete barrier between the existing sidewalk and adjacent vehicular lane. The walk would remain 8-feet wide while the adjacent lane would be reduced a minor amount for the concrete barrier. On top of the barrier could be light posts with hanging baskets of plants, decorative banners, or flags, etc. to make the bridge more hospitable for non-motorized crossing. Cyclists would be required to ride in one direction on either side of the bridge, flowing with traffic. This mixing of bikes and walkers is not ideal and only functions at low pedestrian and bicycle volumes.

» Section 5.2b After - Xenia Avenue/Park Place Boulevard Bridge Over I-394

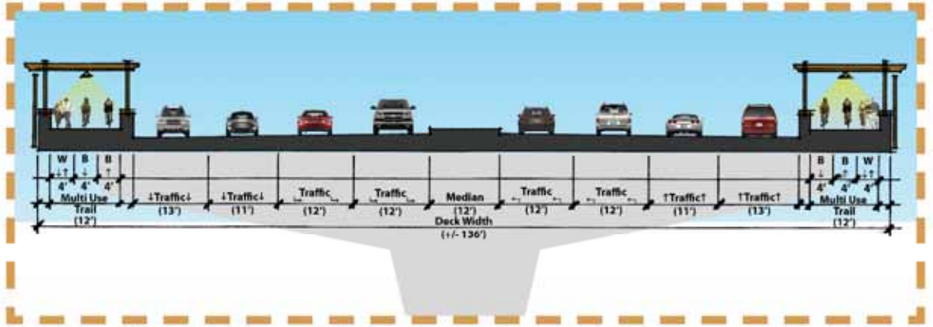
- The second option would reduce the traffic lanes to their minimum required width to make room for an expanded sidewalk/trail. Above the trail could be roof or shade structure to better



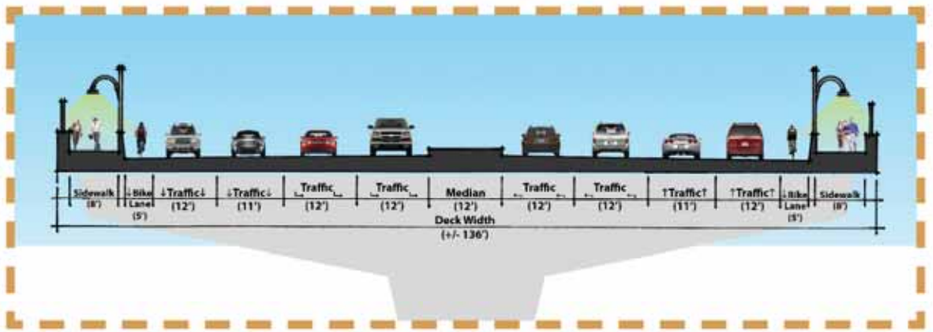
Section 5.1 (Before) - Xenia Avenue/Park Place Boulevard Bridge Over I-394



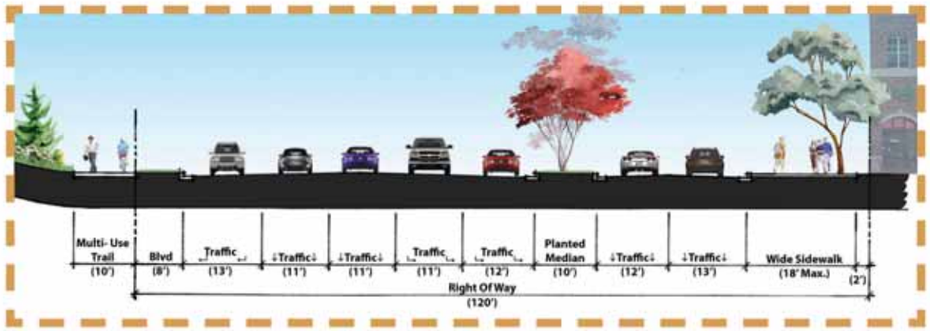
Section 5.2a (After) - Xenia Avenue/Park Place Boulevard Bridge Over I-394



Section 5.2c (After) - Xenia Avenue/Park Place Boulevard Bridge Over I-394



Section 5.2c (After) - Xenia Avenue/Park Place Boulevard Bridge Over I-394



Section 6.1 (Before) - Park Place Boulevard South of Wayzata Boulevard

enclose pedestrians and cyclists.

» Section 5.2c After - Xenia Avenue/Park Place Boulevard Bridge Over I-394

- The third option would add a concrete barrier between the existing sidewalk and adjacent vehicular lane. The walk would remain 8-feet wide while the adjacent lane would be reduced a minor amount for the concrete barrier. Vehicle lane widths would be reduced to create room for the addition of bike lanes. Cyclists would ride with traffic on designated bike lanes.

  Another version of this option is to consolidate the double left turn lanes into a single left turn lane. This frees up room for bike lanes and pedestrian buffers. A single left turn also eliminates walk distance, reduces accidents, and lessens crosswalk signal time.

» Section 6.1 Before- Park Place Boulevard South of Wayzata Boulevard

- This section of roadway was under construction during the time this study. The illustrated section above is the planned final product which should be completed in the spring of 2009. It will incorporate wide sidewalks, a multi-use trail, and landscape plantings which enhance both bicycle and pedestrian use of this section of Park Place Boulevard.

» Section 8.1 Before - Cedar Lake Road West of Park Place Boulevard

- Cedar Lake Road continues west to connect thousands of homes in St. Louis Park, Hopkins, and Minnetonka to the regional trail system. It currently has excess roadway capacity due to its wide shoulders.

» Section 8.2 After - Cedar Lake Road West of Park Place Boulevard

- The wide shoulders offer a great opportunity for the addition of bike lanes. A trail on the south side of the road would also allow this corridor to transport pedestrians and recreational cyclists along its length.

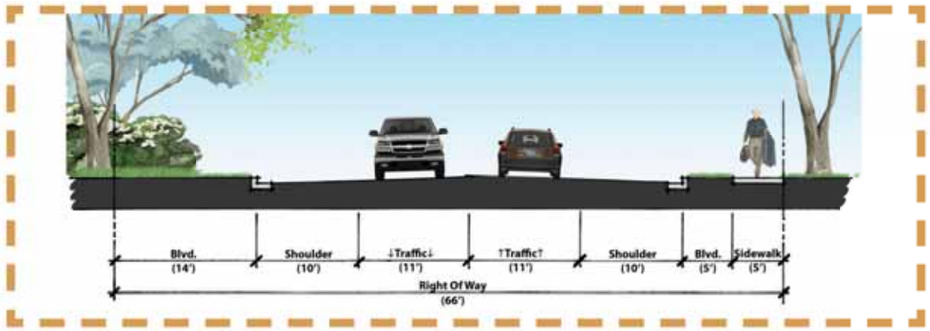
» Section 9.1 Before - Cedar Lake Road East of Park Place Boulevard

- This corridor holds high importance to the study area. It is one of the few routes that connects over the BNSF railroad to the Cedar Lake Trail. There is currently a trail in need of repair/ replacement along most of the south side and a portion of the north side of the road. This section of Cedar Lake road is highly used by pedestrians and cyclists. There are also illegal crossings of the BNSF railroad along Cedar Lake Road just east of TH 100.

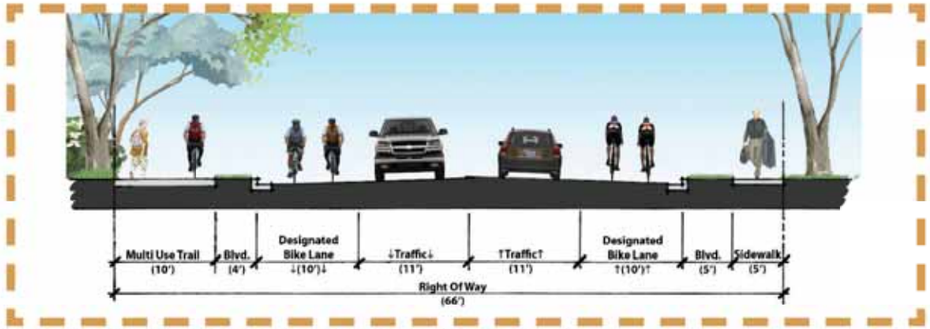
» Section 9.2 After - Cedar Lake Road East of Park Place Boulevard

- Replacing the trail with new bituminous and locating it entirely along the south side of the road would benefit the area. Also the addition of a sidewalk on the opposite side of the road would make crossing the street safer and more convenient. Connections to the Jewish Community Center must be preserved.

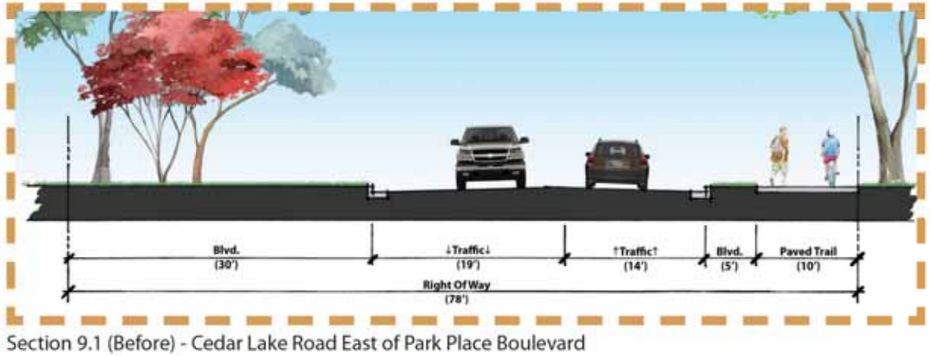
» Section 10.1 Before - Wayzata Boulevard East of Highway 100



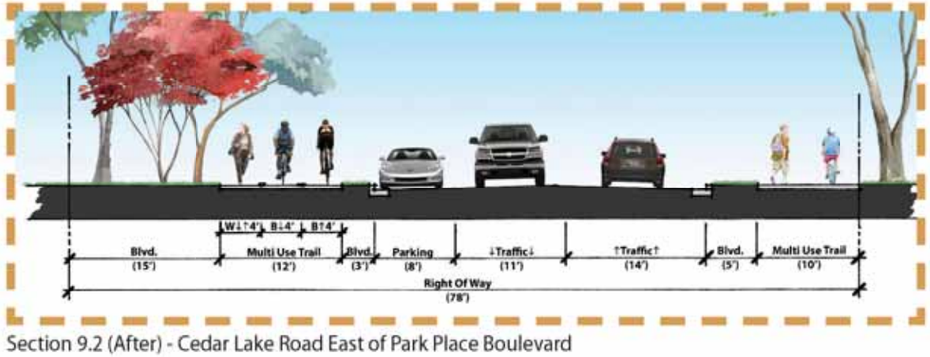
Section 8.1 (Before) - Cedar Lake Road West of Park Place Boulevard



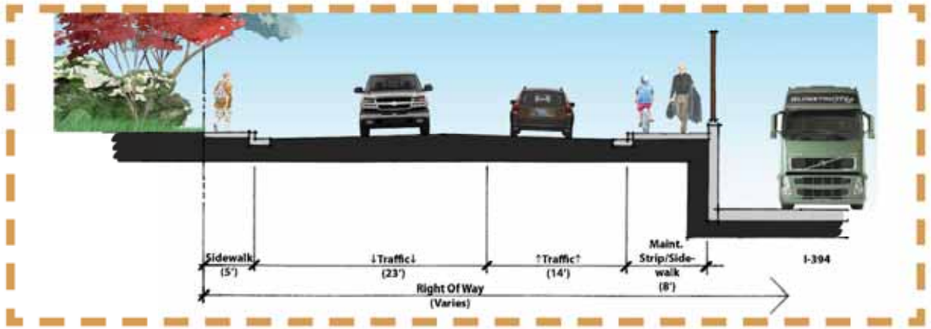
Section 8.2 (After) - Cedar Lake Road West of Park Place Boulevard



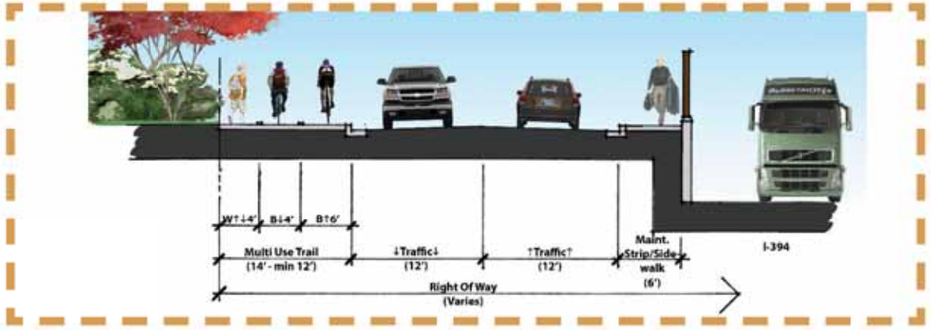
Section 9.1 (Before) - Cedar Lake Road East of Park Place Boulevard



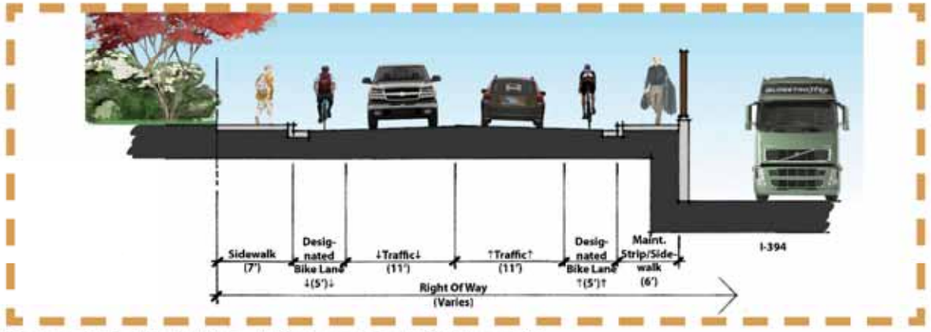
Section 9.2 (After) - Cedar Lake Road East of Park Place Boulevard



Section 10.1 (Before) - Wayzata Boulevard East of Highway 100



Section 10.2a (After) - Wayzata Boulevard East of Highway 100



Section 10.2b (After) - Wayzata Boulevard East of Highway 100

- This city corridor links Theodore Wirth Park, Target Corp., and the Minneapolis Grand Rounds to the heart of the study area. There are few stop signs along its length which many drivers tend to take advantage of by speeding. The public right of way is narrow, however there is excess pavement width along the shoulders.

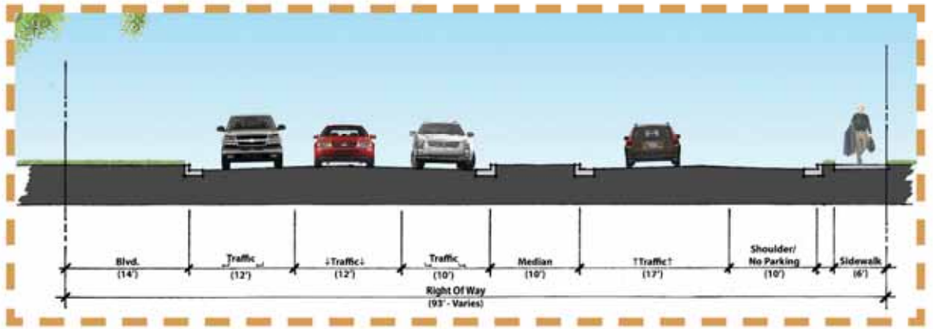
» Section 10.2a After - Wayzata Boulevard East of Highway 100

- Currently under consideration by the City of Golden Valley for construction, this option employs a wide multi-use trail and a reduction in roadway pavement. This reduction in pavement area also has a traffic calming affect.

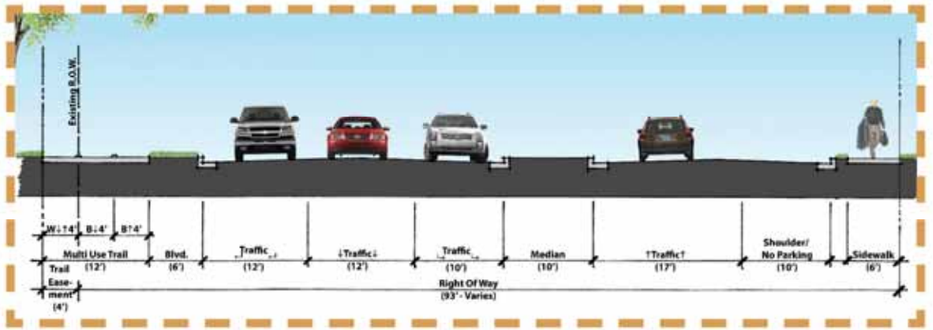
» Section 10.2b After - Wayzata Boulevard East of Highway 100

- The second option for the city corridor is to use the excess pavement for bike lanes and reuse the existing sidewalk. The addition of bikes lanes would allow this road to be posted 25 MPH[1] instead of the current 35 MPH speed limit, thus reducing safety concerns and vehicular speeders.

1 As suggested by the Transit for Livable Communities Group.



Section 11.1 (Before) - Xenia Avenue North of I-394 and South of Laurel Avenue



Section 11.2 (After) - Xenia Avenue North of I-394 and South of Laurel Avenue

» Section 11.1 Before - Xenia Avenue North of I-394 and South of Laurel Avenue

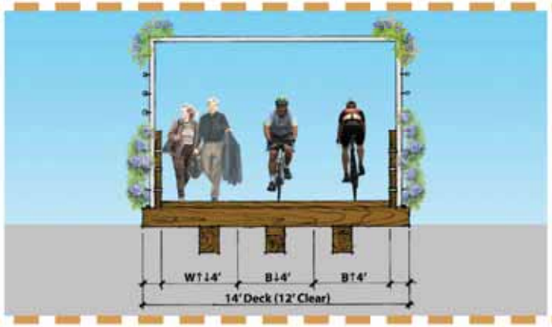
- High rise office buildings flank the sides of this section of Xenia Ave bringing with it a large amount of commuters. Currently there are only partial sidewalks along its sides and little room to maneuver a bicycle.

» Section 11.2 After - Xenia Avenue North of I-394 and South of Laurel Avenue

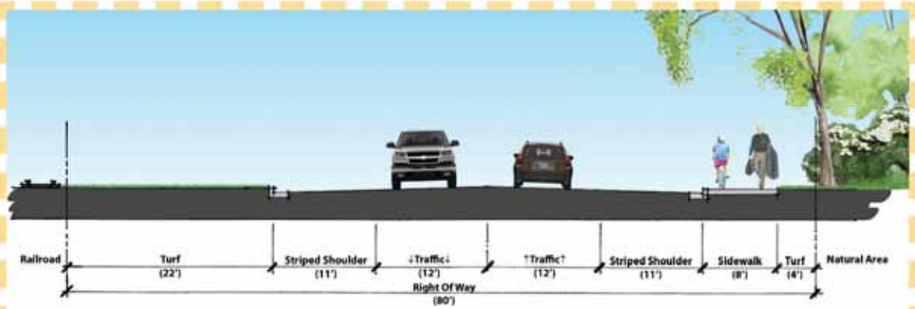
- With redevelopment and rezoning along the west side of the corridor, there is an opportunity to install a multi-use trail to better convey walkers and cyclists. Depending on the design of the Xenia/Park Place bridge over I-394, it is recommended there be bike lanes in the street to match the bike lanes over the bridge. Bike lanes are preferred over multi-use trails due to the possibility of cyclists hitting pedestrians and allowing the cyclist to be better seen by motorists.

» Section 12.2 - (Suggested Long-Term Option) - Pedestrian Bridge Over I-394 East of Xenia/Park Place Bridge (walking loop)

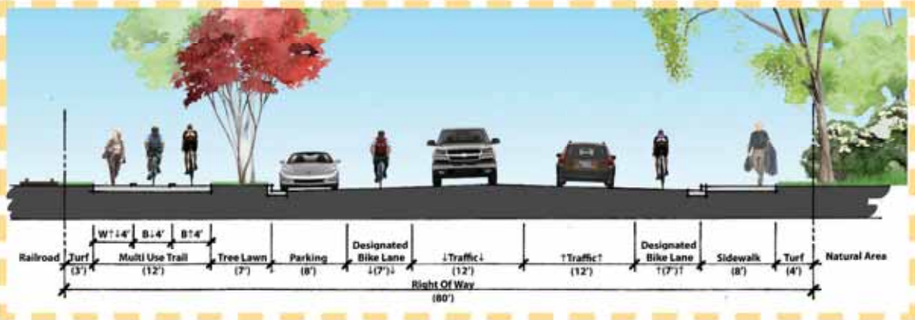
- A suggested long-term option or addition to the redesign of the Xenia/Park Place bridge over I-394 is a new pedestrian/bicycle bridge. This will relieve pressure from the vehicular bridge and better link the two sides adjacent to I-394. MnDOT owns a piece of valuable property north of I-394 and east of Turners Crossroads which could develop in the future as housing, office space, or retail uses. Linking this development to the West End retail center would be a key connection to preserve the vitality of the area. Plus, the addition of a second route over I-394 makes a simple walking loop for area employees over their lunch breaks. A separate pedestrian/bike bridge eliminates walk/bike conflicts with traffic turning on and off I-394 at Xenia/Park Place.



Section 12.2 (Suggested Option) - Pedestrian Bridge Over I-394 East of Xenia/Park Place Bridge



Section 3.1 (Before) - Laurel Avenue West of Xenia Avenue



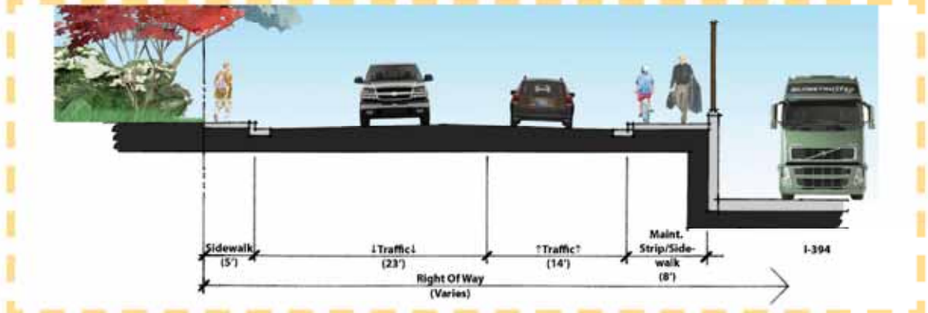
Section 3.2 (After) - Laurel Avenue West of Xenia Avenue

NEIGHBORHOOD BIKE/WALK CORRIDOR CROSS SECTIONS

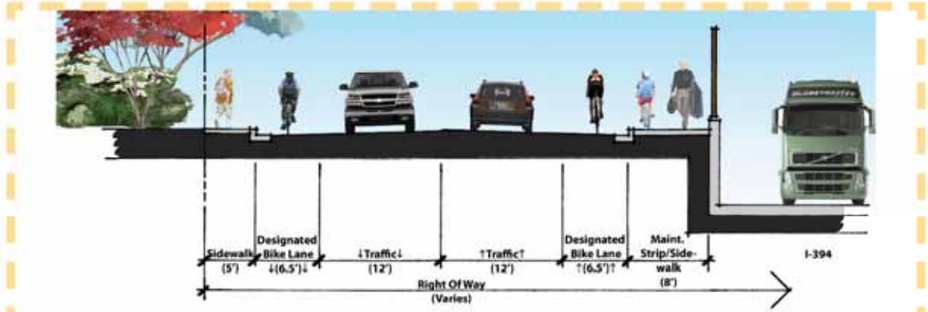
The before sections are a representation of what the cross section of the street looks like today. The measurements are estimations and not indicative of the whole street length. These neighborhood corridors relay people short distances between other corridors or destinations. The after sections represent suggested improvements to the bicycle and pedestrian facilities and range from striping/ marking/signing a bike lane to installing new trails and sidewalks.

» Section 3.1 Before - Laurel Avenue West of Xenia Avenue

- This section of Laurel Ave. in Golden Valley is an example of under-used roadway pavement. There are shoulders and a wide right of way that offers opportunities for non-motorized improvements. The railroad to the south is used infrequently and is suggested to be acquired to gain public open space.



Section 7.1 (Before) - Wayzata Boulevard West of Zarthan Avenue



Section 7.2 (After) - Wayzata Boulevard West of Zarthan Avenue

» Section 3.2 After - Laurel Avenue West of Xenia Avenue

- Since the road has a wide right of way, it is suggested that it take on more of a parkway character. The addition of a multi-use recreational trail and bike lanes would sufficiently transfer travelers along its length. The addition of trees along the south side of the road will bring a better sense of enclosure for users. Parking is suggested along portions of the road to better serve local businesses.

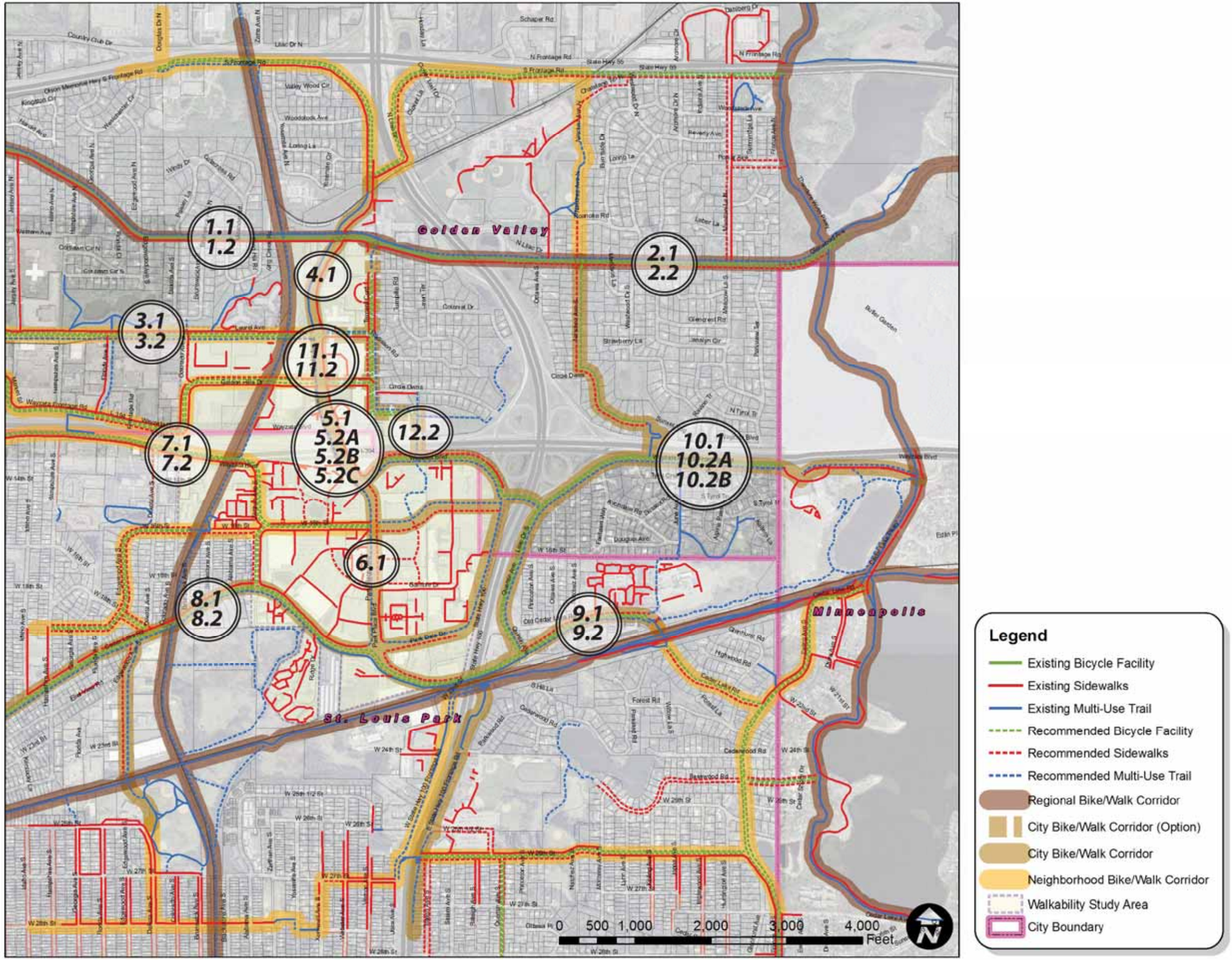
» Section 7.1 Before - Wayzata Boulevard West of Zarthan Avenue

- This section of roadway is similar to the section east of Hwy 100. It is a narrow right of way, however, it has excess pavement width allowing for the addition of bicycle facility improvements. There are many businesses along the south side of the road and few residential areas.

» Section 7.2 After - Wayzata Boulevard West of Zarthan Avenue

- The addition of bike lanes to this section will allow safer and more reliable travel. Parking may be added where appropriate, minimum bike lane width next to a parked car is 5-feet and next to a curb is 4-feet.

FIGURE 16. CROSS SECTION LOCATION MAP OVER RECOMMENDED PRIORITY BIKE AND WALK ROUTES



Precedent: At-grade crossing at the intersection of Cedar Lake Parkway and the Kenilworth Trail in Minneapolis

Precedent: At-grade crossing at the intersection of Hiawatha Ave and 42nd Street in Minneapolis. LRT trains are very frequent and offer just as much danger as heavy freight trains.

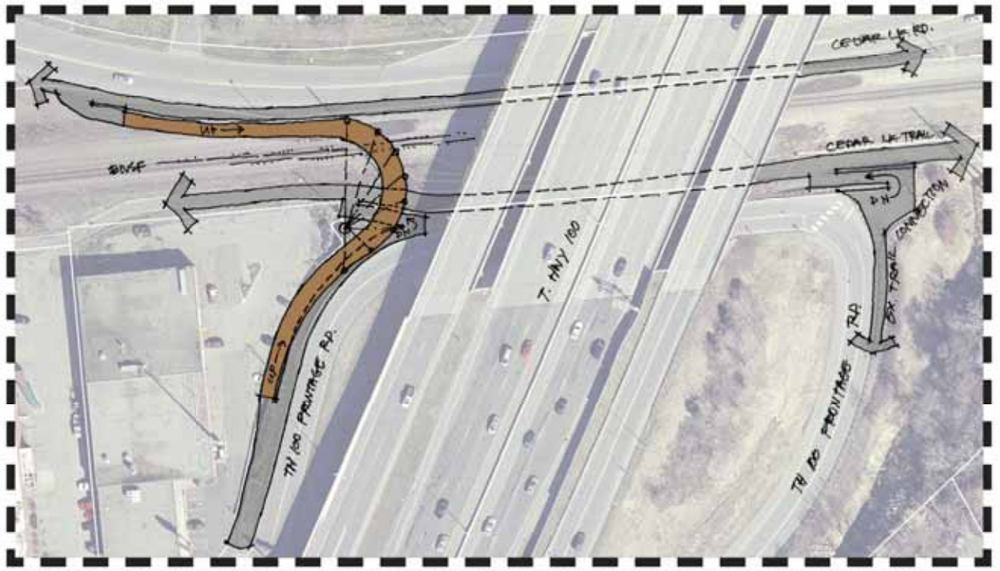
Precedent: At-grade crossing at the intersection of Excelsior Blvd and Milwaukee Street in Hopkins

CROSSING BARRIERS

The barriers listed in Chapter 3 require specific planning, design, and engineering to allow pedestrians and bicyclists to safely cross them. Many of the barriers can be dealt with using innovative design and engineering methods. The placement of the pedestrian and bike crossings should be about every 1/2 mile to ensure service to all residents and to discourage unsafe or illegal crossings.

BRIDGES OVER BARRIERS

A pedestrian and bicycle bridge has been suggested to go over the BNSF railroad along the west side of TH 100. This would improve connections and safety dramatically. Less people would feel the need to illegally cross the BNSF tracks.



Bridge Design: Example of a pedestrian and bicycle bridge crossing the BNSF railroad just west of TH 100.

Crossing Design: Example of a potential at-grade crossing of the BNSF railroad near Dakota Park west of TH 100.

Example of a "Z" shaped device which forces people to look both ways before crossing the railroad tracks

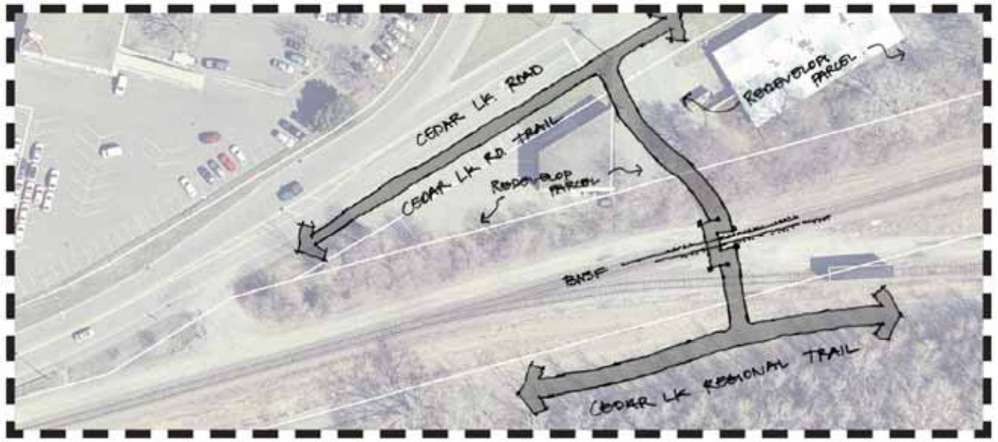
Example of a gating device which forces people to look both ways before crossing the railroad tracks

Rails with trails - Rails to Trails Conservancy.

Plowing in the winter

Year round use

Covered parking for all weather



Crossing Design: Example of an at-grade crossing of the BNSF railroad east of TH 100. Currently there are illegal and unsafe crossings taking place.

AT-GRADE RAILROAD CROSSINGS

Adequate railroad crossings are needed to discourage illegal and unsafe trespassing. Two proposed at-grade crossings of the BNSF tracks are highlighted for more detailed design. One is by Dakota Park west of TH 100. The other is at the existing popular illegal crossing just to the east of TH 100 between Cedar Lake Road and the Cedar Lake Trail. It is best to have the person look both ways when crossing railroad tracks. One way to force a person to look both ways it to use a "Z" shaped crossing which makes the person face each direction in order to cross. At-grade "Z" crossings are used throughout the world including near Hiawatha LRT and 24th Ave in Minneapolis. The BNSF Railroad running on the north side of the Cedar Lake Trail has a reported 9 trains a day traveling at 40 mph. These speeds are fast, however the frequency of trains is much less than an LRT, for example, and the viewing distance of an oncoming train at the suggested crossing locations is upwards of a half mile. The viewing distance to an oncoming train is enough to give the trail user plenty of time to cross, about 45 seconds.

RAILROAD RIGHT OF WAY PLANNING

RAILS TO TRAILS

The Rails to Trails Conservancy (RTC) offers a Trail-Building Toolbox for the public's use. The toolbox is located online at: http://www.railstotrails.org/whatwedo/trailbuilding/technicalassistance/toolbox/toolbox_index.html. The RTC suggests the following actions in their toolbox:

- Corridor Research
- Railbanking
- Acquisition
- Outreach
- Plan, Design, Build
- Management & Maintenance

West metro railroad speeds and frequencies. Study Area is highlighted in yellow. Note: BNSF 40 mph @ 9/day (green) and CP 10 mph @ 3/day (red). Map credit to MnDOT.

THE CP RAILROAD

A portion of the Canadian Pacific (CP) Railroad follows the western edge of the study area. It is an important aspect of the study because it has the potential to convey bicyclist and pedestrians along its corridor from Bloomington to New Hope. It is currently an active line and is suggested to share its right-of-way with a paved multi-use trail, which in turn will increase east /west and north/south crossings through the study area. Currently, the Three Rivers Park District is conducting a study for the feasibility of the trail along the CP railroad. The cities of Golden Valley and St. Louis Park have shown the CP railroad trail corridor on their respective Comprehensive Plans.

ALL SEASON USE

We are fortunate to live in a state where we can experience all four seasons. We need to adapt to frigid temperatures and staggering snowfalls when winter shows us its fury. Ways we can make use of our trail and sidewalk investment during the winter months are:

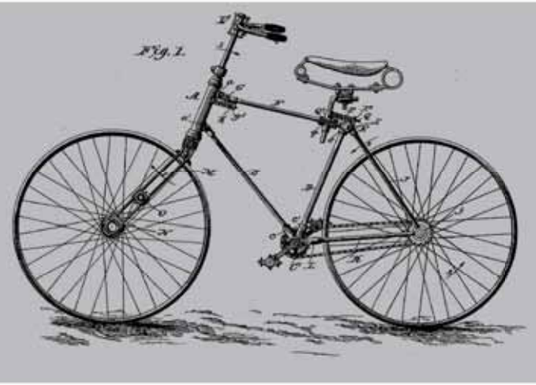
- Plowing - Plowing the trails and sidewalks on regular basis allows people to move about their communities via foot or bike rather than auto.
- Covered parking - Bike parking in rain, sleet, or snow is no fun. What happens if you ride to your destination when it is sunny and before you leave, the elements of Mother Nature turn severe; you'll be stuck with a cold, wet seat. Covered parking also brings a sense of formality to a bike parking location, possibly decreasing the chances of theft.
- Grooming portions for cross-country skiing - As Minnesotans, we try to thrive in the winter and keep our outdoor spirits high. Cross-country skiing has long been a Minnesota tradition; why not groom portions of trail corridors for skiing?
- Safety from automobiles when icy - Opening trail corridors to users takes them off the icy, vehicle saturated roads. People require safe routes to schools, commercial centers, work, and recreational destinations.
- Lights during dark winters - Let's face it, 5:00PM brings darkness to most of Minnesota during the winter. Adding lights to trail corridors is essential to bringing security to our community members.

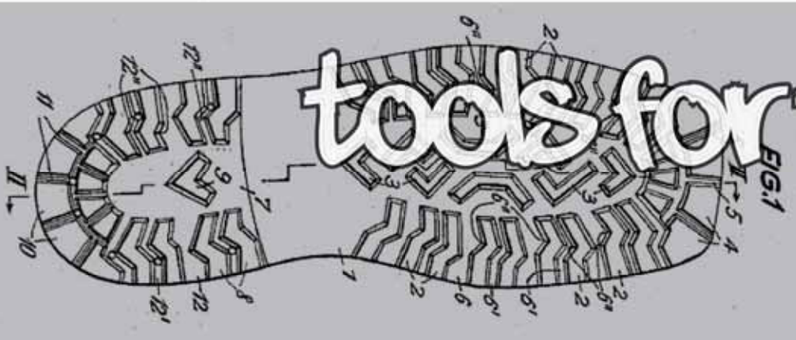




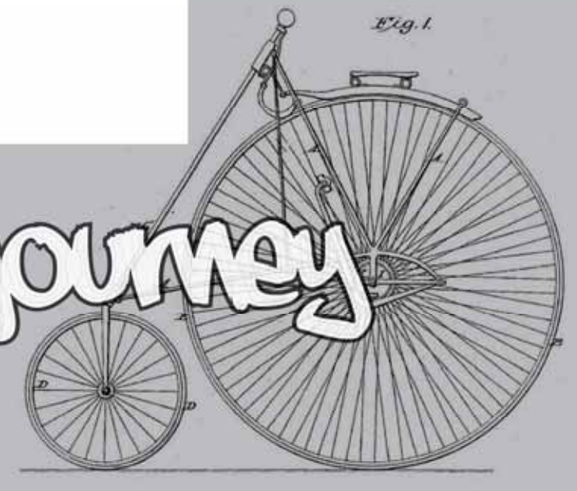


CHAPTER FIVE - IMPLEMENTATION





tools for the journey



IMPLEMENTATION PRIORITIES

When the City of St. Louis Park applied for funding from Transit for Livable Communities (TLC) their intentions were to strive for innovation and to be a model for other communities to draw inspiration. The major focus of this plan is to "connect St. Louis Park and Golden Valley residents and employees in the study area to Theodore Wirth Park, the Cedar Lake Trail, and the rest of Minneapolis for bicycles, pedestrians and transit users."[1] From this we abstracted the following priority connections/corridors within the study area:

PRIORITY IMPROVEMENTS INCLUDE:

- Bikeway striping, signing, and lane marking projects along corridors with wide shoulders.
- Incorporation of this study's suggestions into future planning documents, and future redevelopment projects.
- Adding a pedestrian and bike bridge over the Burlington Northern Sante Fe Railroad (BNSF) railroad near TH 100, a crossing which is currently under study by Three Rivers Park District.
- Adding bicycle parking at retail areas and employment centers.
- Sidewalk additions within the Xenia/Park Place Walkability Zone.

NEAR-TERM IMPROVEMENTS INCLUDE:

- Adding at-grade crossings across the BNSF railroad tracks near Dakota Park.
- Improving the pedestrian/bicycle crossing of I-394 along the Xenia Ave./Park Place Blvd. bridge.
- Adding new off-street trail facilities to encourage connectivity.
- Working with retailers and developers to incorporate pedestrian/bicycle friendly design.
- Encouraging area employers to provide secure bicycle parking for employees.

LONG-TERM IMPROVEMENTS INCLUDE:

- Incorporate a regional trail along the Canadian Pacific Railroad, in conjunction with Three Rivers Parks District.
- Construct a new pedestrian/bicycle bridge over I-394 just east of the Xenia Ave./Park Place Blvd. bridge.
- Connection over I-394 on the Xenia Ave./Park Place Blvd. Bridge.
- Connections to the Cedar Lake Regional Trail from the north, crossing the BNSF railroad.

The connection over I-394 is top priority for the Xenia Ave./Park Place Blvd. Corridor. It is the missing link in the system right now. The existing bridge was made to the standards of the automobile and left the crossing of a pedestrian or cyclist as an after thought.

INITIAL INFRASTRUCTURE DEMONSTRATION PROJECT

This section of Cedar Lake Road, just east of the CP railroad tracks, was selected as a demonstration project. The work includes converting the existing paved street into more of a complete street through the addition of on-street bike lanes and an off-street multi-use trail. The demonstration

1 Taken from Item: 041607-4c-Grant Proposal for Non-Motorized Transportation Pilot Program address to the City of St. Louis Park City Council

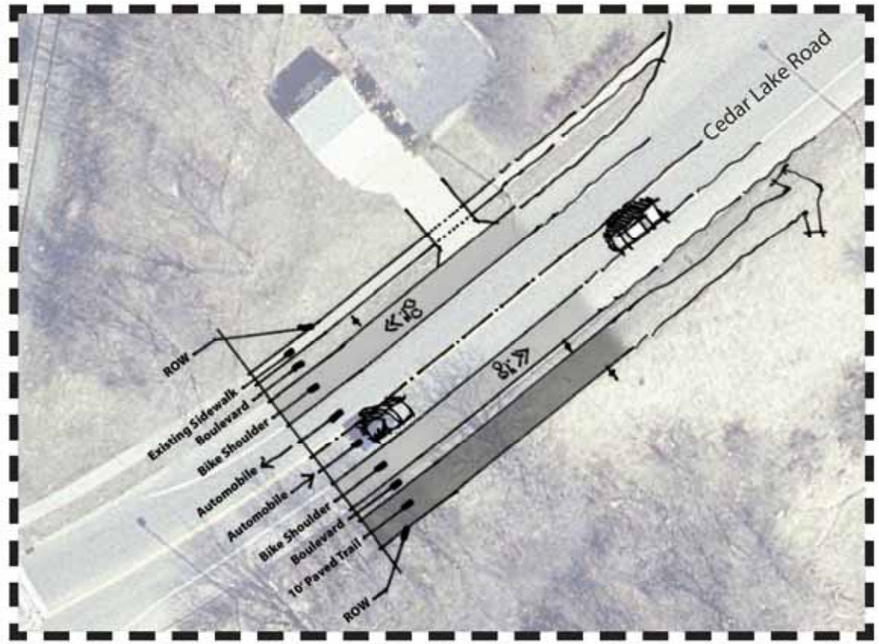


Figure 17, Sample Portion of Cedar Lake Road Just East of the CP Railroad Tracks. See the Bicycle and Pedestrian Facility Guidelines starting on Page 39 for more information on infrastructure design.

	Cedar Lake Road - East of CP Railroad							
	St. Louis Park, Minnesota							
	Preliminary Budget - Feb 26, 2009							
	Prepared by Hoisington Koegler Group Inc.							
	One Mile of Corridor Rehabilitation							
	Description	**Qty.**	**Unit**	**Unit price**		**Totals**	**Subtotals**	**Notes**
1	**Bicycling Facilities**							
	10' Bituminous Trail	5280	LF	$ 25	$	132,000.00		100% New
	Trail Signage	16	EA	$ 100	$	1,600.00		100% New
	Bike Lane Striping at Miscellaneous Locations	4000	LF	$ 2	$	8,000.00		
	Bike Lane Markings	32	EA	$ 300	$	9,600.00		100% New
	Bike Lane Signage	32	EA	$ 100	$	3,200.00		100% New
	subtotal						***$ 154,400.00***	
2	**Walking Facilities**							
	Rebuild portions of Existing Concrete Walk	7920	SF	$ 4	$	31,680.00		25% Rebuild
	subtotal						***$ 31,680.00***	
3	**Miscellaneous**							
	Tree Trimming and Removal	8	EA	$ 600	$	4,800.00		
	New Tree	16	EA	$ 600	$	9,600.00		2x Tree Removal
	Restoration and Seeding	1	LS	$ 20,000	$	20,000.00		
	subtotal						***$ 34,400.00***	
	Construction Subtotal				***$***	***220,480.00***		
	20% Construction Contingency				***$***	***44,096.00***		
	Construction Budget				***$***	***264,576.00***		
	Design and Engineering Costs (12% of construction)				***$***	***31,749.12***		
	Project Budget Per Mile				**$**	**296,325.12**		

project budget shows the estimated cost for a one mile section of the project. The estimate also includes landscaping and bike lane/trail signage.

This portion of Cedar Lake Road is similar to many of the priority corridors in the study; the design utilizes excess pavement and boulevard right of way for bike and walk facility installation or retrofit. In

the case of this portion of roadway, a 10-foot bituminous trail is to be added along the south side of the road, and the wide road shoulders converted to bike lanes.

Route Details and Project Budget

Figure 17 shows the cost of a new trail, signage, markings, bike lanes, and landscaping improvements along a typical one mile length of Cedar Lake Road. The cost estimate shows about $296,000 per mile, or $56 per linear foot to install the updates along the corridor. The recommended Cedar Lake Road bike lane and multi-use trail project is approximately 10,500 linear feet from Louisiana Ave. to the JCC at the far east end of the road. The 10,500 feet makes the estimated total project budget near $600,000.

THE TOOLBOX

This toolbox is designed for the City of St. Louis Park and Golden Valley to use for funding, designing, implementing, and maintaining bikeways and walkways.

BICYCLE AND PEDESTRIAN FACILITY DESIGN GUIDELINES

SCHOOL SAFETY ZONES

PARTNERSHIPS AND AWARENESS FOR AN EFFECTIVE SYSTEM

FUNDING STRATEGIES

OPERATIONS AND MAINTENANCE

BICYCLE AND PEDESTRIAN FACILITY DESIGN GUIDELINES

The Bike Design Guidelines have been created to provide a foundation for describing potential treatments within a bikeway network. Bikeways are a combination of bike routes, bike lanes, off-street trails and bike boulevards that create a comprehensive bicycle network. A viable bikeway network also includes a series of support facilities, such as bike lockers, landscaping and way finding signs. These amenities and others contribute to the overall enhancement of a bikeway. Pedestrian guidelines include shared use trails, sidewalks, crossings, and traffic calming.

The design guidelines recognize there are many types of bicycle and pedestrian treatments and have included the following:

- Bike Routes
- Dedicated Bike Lanes
- Shared Bike Lanes
- Off-Street Trails
- Bike Boulevards
- Traffic Calming
- Sidewalks
- Safe Crossings
- Signage & Pavement Markings
- Bicycle Storage and Parking Facilities
- Personal Facilities
- Amenities
- Low Impact Trails

This plan should not be limited to the above treatments; however, they should serve as a framework for assessing potential treatments within the bikeway. The design guidelines were largely shaped by a set of state and national standards.[1]

Bicycle Design Guideline Resources

Mn/Dot Bikeway Facility Design Manual - Mn/Dot

Trail Planning, Design, And Development Guidelines - MnDNR

Guide For The Development Of Bicycle Facilities - AASHTO

1 Bicycle design guideline resources: Mn/DOT Bikeway Facility Design Manual - Mn/DOT; Trail Planning, Design, and Development Guidelines - MnDNR; Saint Paul Downtown Bicycle Transportation Master Plan - City of Saint Paul; Guide for the Development of Bicycle Facilities - AASHTO

Bike Route Examples:

Dedicated Bike Lane Examples:

BIKE ROUTES

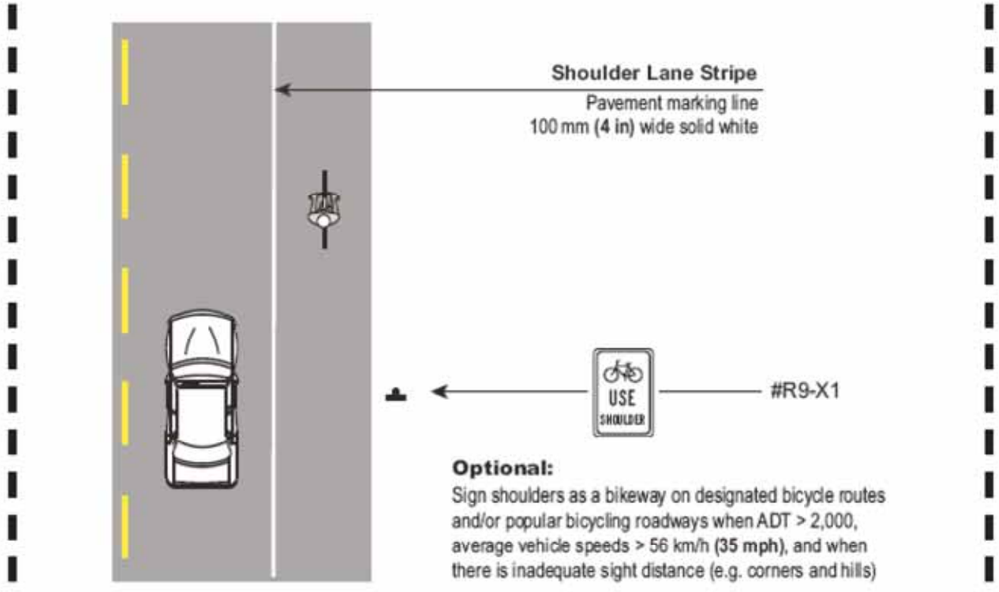
Description:

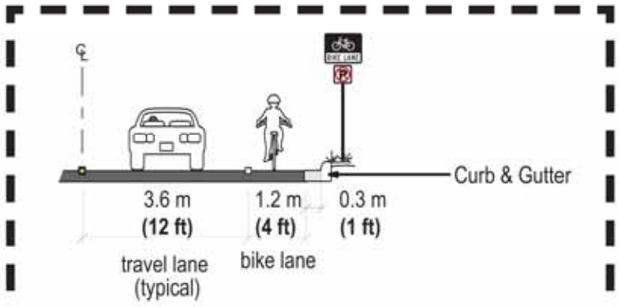
Bike routes are the most commonly used bikeway type to accommodate bicyclists. A bike route is a signed shoulder along a roadway and provides continuity in the overall bikeway network. A bike route typically uses portions of the roadway's shoulder. This type of treatment serves as a flexible option when working with existing right-of-way conditions that are paved.

Typical Design Standards:

A typical bike route is indicated by pavement markings, signage or other techniques. As previously noted, bike routes are fairly flexible when working with existing right-of-way conditions. However, a bike route typically would be located on local streets with paved shoulder widths above 5 feet. Bike routes are appropriate on roadways that meet the following conditions:

- Local Streets
- Average Daily Traffic (ADT) Volumes less than 3,000 - 4,000 trips per day
- Speed Limits up to 35 mph
- Existing or planned traffic control devices
- Provides continuity to the overall bikeway network





DEDICATED BIKE LANES

Description:

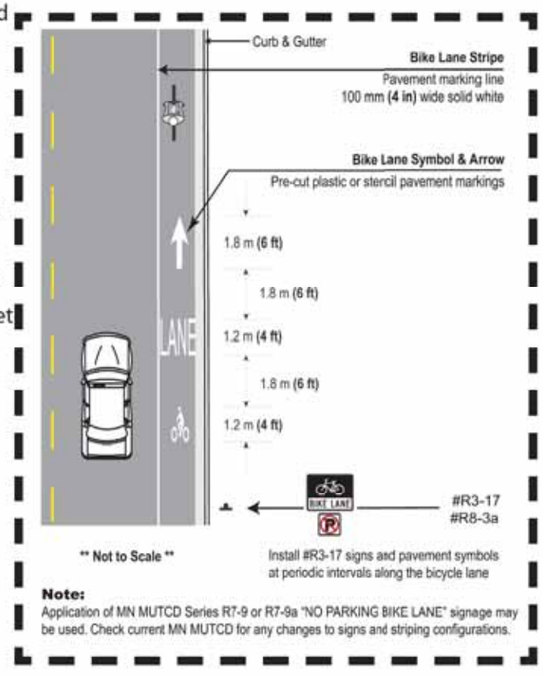
A dedicated bike lane uses pavement markings and signage to indicate the bike lane is solely for bicycles. Dedicated bike lanes can be designed to work in a variety of conditions. Dedicated bike lanes are commonly used in urban environments where there is a higher demand for bicycle treatments. They also work well in environments where there are right-of-way constraints or on-street parking.

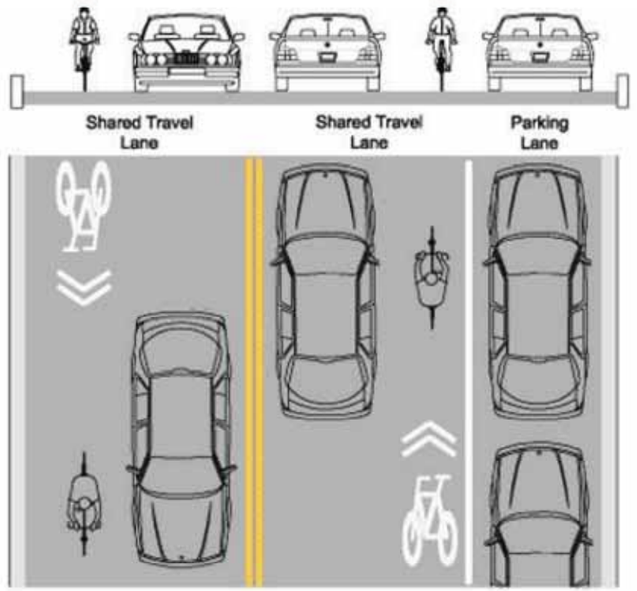
Bike lane striping, pavement markings and signage increases awareness to motorists that bicycle use is part of the roadway and should be treated as a separate lane.

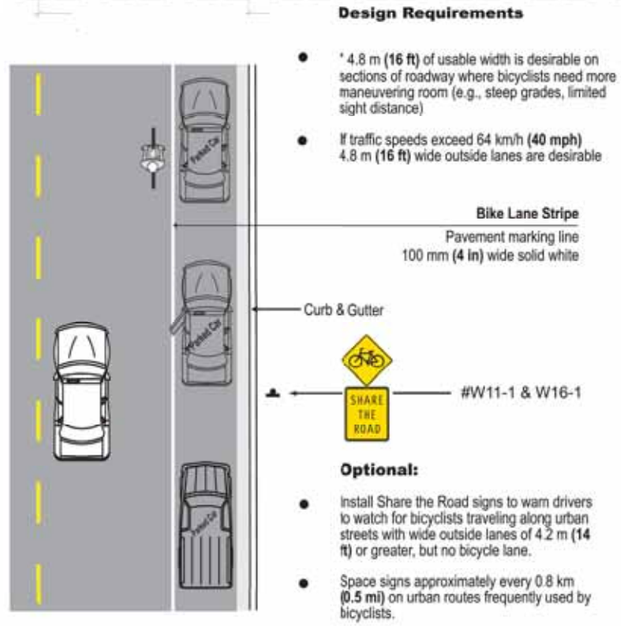
Typical Design Standards:

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 the lane is solely to be used by bicyclists.

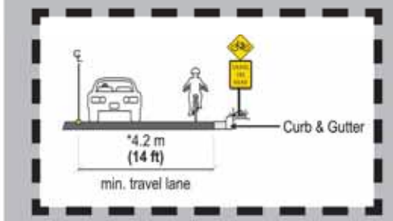
The pavement needed to accommodate a dedicated bike lane may range between 4 – 6 feet in width, depending on the traffic volume, available space, and presence of on-street parking. A minimum of 4 feet is recommended when a bike lane is adjacent to a curb and 5 feet when adjacent to on-street parking. The extra width allows clearance for the opening of car doors.

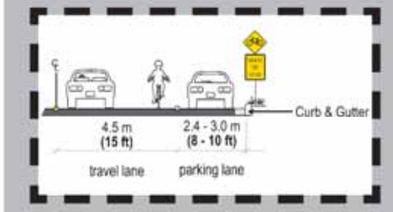






Note: Check current MN MUTCD for any changes to signs and striping configurations.





SHARED BIKE LANES

Description:

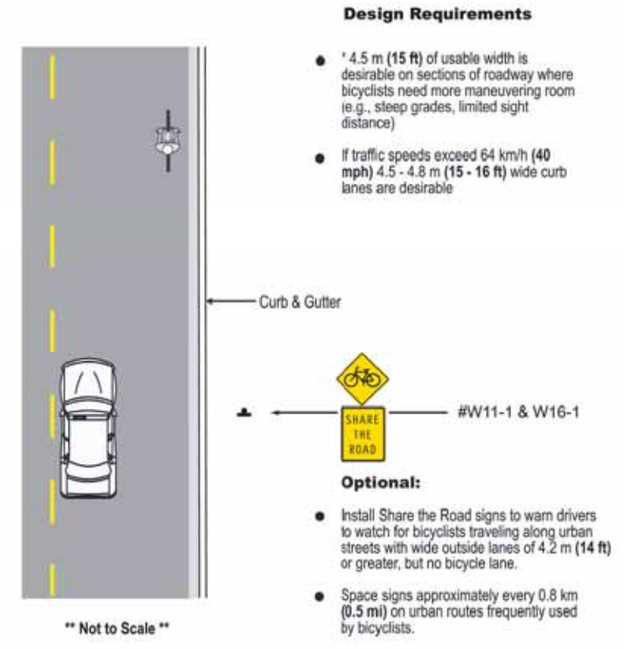
A shared bike lane or sharrow is a roadway that is signed to accommodate both bicyclists and motorists. The treatments are similar to those applied to a bike route or a dedicated bike lane except there is no striped bike lane line. These types of routes are typically found in urbanized environments where roadways are curbed and guttered or have paved shoulders.

Sharing a bike lane with motorized vehicles may not be an ideal environment for some bicyclists. They are typically used by cyclists that are comfortable riding with traffic. The pavement markings and signs remind motorists and cyclists that the lane is to be shared by both users and to follow the rules of the road.

Typical Design Standards:

Shared lanes located in a local residential environment work best when there is a lane width to allow room for passing cars. Lane width requirements may range between 12 – 14 feet in width.

In a more urban environments the available lane width will depend on on-street parking and street design ranging between 14 and 25 feet. Signage and pavement markings are typically required to indicate the lane is to be shared. If the lane is solely being shared with busses additional signage and pavement markings will be needed.



Note: Check current MN MUTCD for any changes to signs and striping configurations.

Shared Bike Lane Example:

Off Street Trail Examples:

Bike Boulevard Examples:

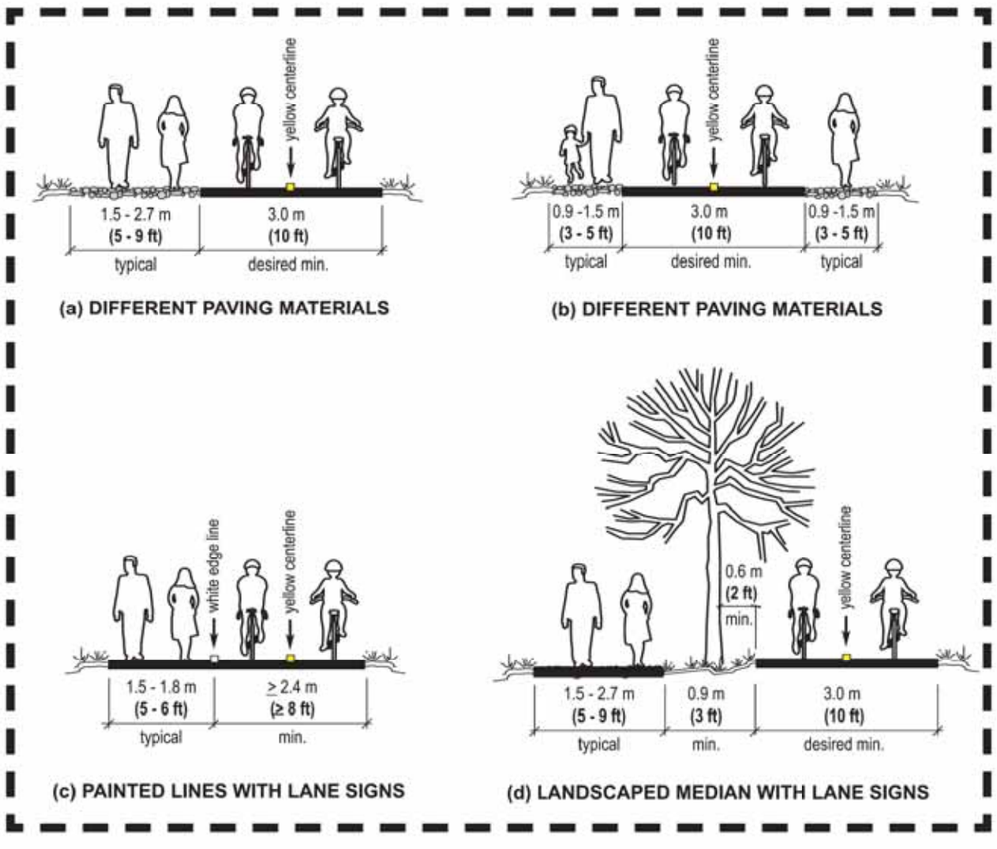
OFF STREET TRAILS

Description:

An off-street trail is completely separated from the roadway. The Twin Cities has been nationally recognized by the American Planning Association (APA) for its extensive network of off-street trails. These routes have been known for their recreational purposes, but in recent years they've become increasingly popular for bicycle commuters. They offer safe, scenic and long-distance routes with little or no interaction with motor vehicles. Off-street trails also enhance the livability and walkability in our neighborhoods. Most off-street trails are shared between pedestrians, bicyclists, in-line skaters, etc. In high use situations, separate bike and walk trails are warranted.

A challenge in implementing an off-street trail in a built environment is finding adequate right-of-way. This process can be challenging at times and costly. The process for off-street trails typically includes a more extensive planning process, which includes environmental documentation, defining a preferred alignment and a public input process.

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



Typical Design Standards:

The width of an off-street trail range from 4 to 10 feet in width, depending on the number of bike lanes and pedestrian ways. Off-street trails that are designed to accommodate bicyclists will need to be paved. A maintenance program should also be in place to ensure pavement upkeep, snow removal, brush/debris removal and general repairs to amenities.

The design process needs to take into consideration the appropriate measures to document and mitigate environmental impacts. Off-street trail planning initiatives should consult the "Trail Planning, Design and Development Guidelines" prepared by the Minnesota Department of Natural Resources".

BIKE BOULEVARDS

Description:

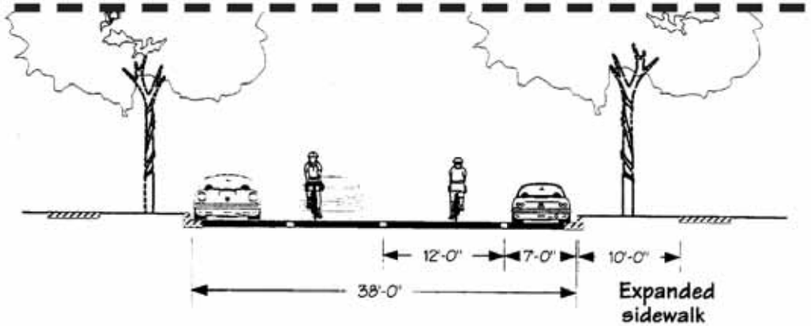
Bike boulevards are a new design technique used to better accommodate bicyclists, walkers and vehicles in today's urban settings. This innovative approach incorporates design standards and traffic calming techniques. The intent is to design a bike route in a manner that emphasizes the presence of pedestrians/bicyclist. In other words, the walker and biker become equal modes of transportation with the motor vehicle.

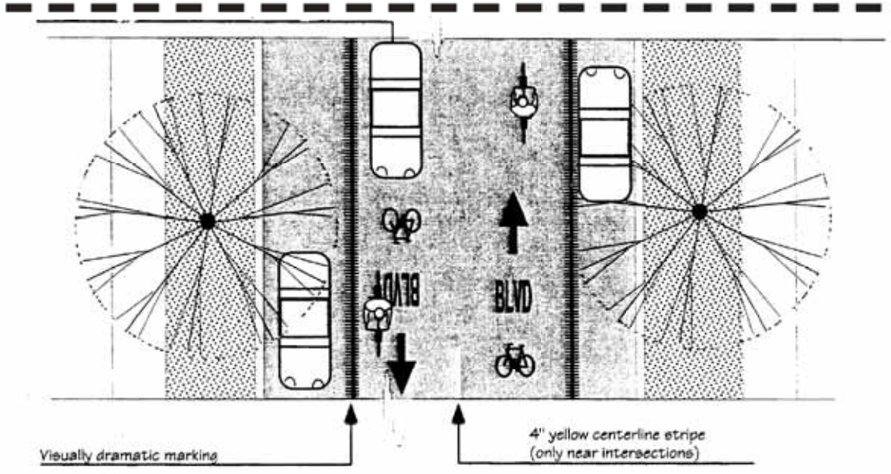
The City of Berkley, California has been the most successful in implementing a bicycle boulevard program. Their "Bicycle Boulevard Design Tools and Guidelines Report" serves as a model for successful traffic calming techniques that can be applied to slow traffic and create safer crossings at intersections. 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. Overall, this strategy has been very successful in creating seven bicycle boulevards, which now serve as the backbone to their bikeway network.

Typical Design Standards:

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 may vary in range. The design of a bicycle boulevard would take into consideration the following:

- Low volume streets
- Implementing traffic calming techniques
- Increasing the flow of bicycle movement
- Safe intersection crossings
- Visual markings to increase awareness
- Creating an environment that makes the bicyclist and walker equal modes of transportation





Bike Boulevard

TRAFFIC CALMING

Description:

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.

Typical Design Standards:

Traffic calming techniques include numerous treatments utilizing different design standards. Successful traffic-calming techniques have included some of the following treatments in the table provided to the right by the Federal Highway Administration (FHWA).

Devices and 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 diagaonally 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.	
Roundabouts	Barriers placed in the middle of an intersection, directing all traffic in the same direction.	
Speed Tables/ Textured Pavement/ Raised Crossings	Flat-topped speed humps often constructed with a brick or other textured material to slow traffic	
Traffic Circles	Barriers placed in the middle of an intersection, directing all traffic in the same direction. Usually larger than roundabouts.	

Traffic Calming Examples:

Sidewalk Examples:

Safe Crossing Examples:

SIDEWALKS

Description:

Sidewalks are the foundation of community walkability. They serve as connections to transit stops/ stations, shops, restaurants, work and also serve recreational needs. The placement of a sidewalk is typically alongside a roadway and can accommodate moderate changes in grade. They are also designed to primarily serve those on foot and also provide an important accessibility role for those with mobility impairments.

It is common to see a sidewalk on every block in urbanized environments and communities that have developed in a grid system. As extensive as a network may be, some routes are under utilized or have gaps. What makes a route more desirable is based on many influencing factors and its surrounding environment. Questions frequently posed when evaluating a walkway are: is it safe; are there lighting or benches; where is it going to take me; are the intersections safe and easy to cross; is it well maintained; or, do I have to cross any obstacles such as a parking lot? All of these questions, and others, are important to consider when making sidewalk connections and investments.

Typical Design Standards:

The width of a sidewalk can range anywhere between 5 – 12 feet, depending on the adjacent roads functional classification and land use. The preferred material is typically concrete. Bricks and concrete pavers can also be used to give a higher aesthetic quality. A minimum width of 5 feet accommodates two passing pedestrians or a pedestrian and a wheelchair.

In order to ensure a well maintained system, a community should consider implementing an on-going evaluation and maintenance program. A program of this nature may include the following steps:

- Inspect the sidewalks on regular basis
- Determine the maintenance issues and the source of the problem
- Select the appropriate repairs to fix the problem
- Begin a repair plan that fits your Capital Improvement Program (CIP) or budget
- Make improvements

SAFE CROSSINGS

Description:

One of the biggest challenges bicyclists and pedestrians face are intersection crossings. A typical intersection has 32 conflict points when a vehicle approaches an intersection. If a pedestrian is in the intersection the conflict points double to 64. In order to ensure safe crossings there are treatments that can be applied to increase visibility between the pedestrian and motorist. Treatments may vary between additional lighting, pavement markings, cross-walk push buttons, signals, bicycle detector-activated signals, and signal sequencing.

Roundabouts have also become increasingly popular in the State of Minnesota. This traffic calming technique reduces the number of conflict points and slows traffic while maintaining mobility. Local roadway agencies have begun to incorporate the roundabout as preferred alternative in many cases. The Cities of Richfield, Edina, Woodbury, Apple Valley, Cottage Grove, Minneapolis, Champlin, Farmington, and Medford plus Carver and Washington Counties are a examples of communities who have implemented this treatment.

Typical Design Standards:

A number of devices will help reduce the risk of accidents and increase the awareness between pedestrians and motorists. Traffic control devices and intersection designs should be determined on case by case bases.

Roundabouts should be included as an alternative concept when evaluating intersections designs. Right-of-way will depend on the footprint of the roundabout, but typically requires additional space to implement.

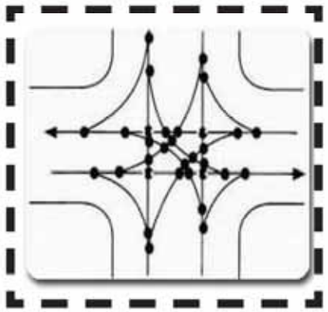


Image 1 indicates the 32 conflict points a traditional intersection has.

Image 2 indicates the 16 conflict points a traditional intersection has.

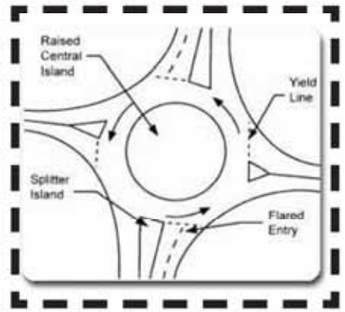


Image 3 depicts the layout of a modern roundabout.

Motor Vehicle Speed	ADT	Bikeway Intersection Treatment
>80 km/h **(>50 mph)**	Any	Grade Separated (Good)
		Traffic Signal and 60 km/h **(40 mph)** Speed Zone (Satisfactory)
70 km/h **(45 mph)**	Any	Grade Separated (Good)
		Traffic Signals (Satisfactory)
60 km/h **(40 mph)**	>7,000	Grade Separated (Good)
		Traffic Signals (Satisfactory)
	<7,000	Traffic Signals (Good)
		Crosswalk + Median Refuge Island (Satisfactory)
50 km/h **(30 mph)**	>9,000	Grade Separated (Good)
		Traffic Signals (Satisfactory)
	5,000 to 9,000	Traffic Signals (Good)
		Crosswalk + Median Refuge Island (Satisfactory)
	<5,000	Crosswalk + Median Refuge Island (Good)
		Crosswalk (Satisfactory)

SIGNAGE AND PAVEMENT MARKINGS

Description:

Signage is one of the most cost effective tools to indicate the presence of bicyclists and pedestrians. In most cases, the design of bicycle and pedestrian routes require signage and pavement markings for preferred treatments. In recent years there have also been innovative devices to help increase the visibility of signs. Reflective materials have been applied along with flashing lights, beacons and solar powered lights. These devices offer alternative methods to the traditional sign to increase the awareness of pedestrian and bicyclist routes.

Typical Design Standards:

Traffic signs and pavement markings should comply with the Minnesota Department of Transportation (MnDOT) Standard Sign Manual, the Manual on Uniform Traffic Control Devices (MUTCD) and other design standards indicated by the State of Minnesota and Federal Highway Administration (FHWA). Common design standards include reflective material, letter styles, icons and the overall size of the sign.

The main classifications of signs used within on-street bicycle facilities and multi-use paths are as follows.

Regulatory Signs

Regulatory signs notify bicyclists, pedestrians, and motorists of traffic laws or regulations. Regulatory signs and markings are also used to assign right of way at intersections, both path/path crossings or at path/roadway crossings.

Figure 7-1:
Regulatory sign
MN MUTCD Sign R9-X1

Warning Signs

Warning signs alert bicyclists or motorists of potentially hazardous conditions on or adjacent to bikeways, trails, streets, and highways. Warning signs and markings let bikeway/path users know about issues such as tight curves, low clearances, obstacles, and other hazards. Typically, signs are used for permanent conditions that cannot be easily corrected. In advance of traffic controls and intersections, it may be helpful to place warning signs that alert users to the specific conditions, especially where a situation is not easily apparent (e.g. an intersection around a curve).

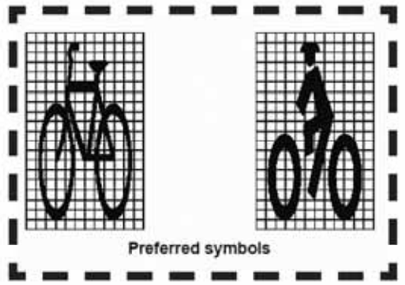
Figure 7-2:
Warning sign
MN MUTCD Sign W7-5

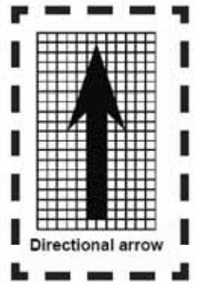
Route Guide Signs and Bicycle Route Markers

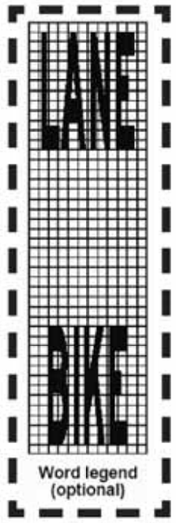
Route Guide Signs inform bicyclists of changes in route direction and help confirm that this direction has been accurately understood. Bicycle Route Markers identify a designated bike route that typically extends through multiple jurisdictions and is of regional significance. Both sign types can be installed on either shared used paths or shared roadways (i.e. bike lanes).

Guide Signs and Route Markers may also be supplemented with destination arrows or supplemental plaques to provide essential information about major destinations and distance markers. Bicyclists often find the supplemental information helpful to know where a path goes and its relationship to the roadway network, the distance to certain destinations, and if a section of a path is named or numbered. Typical destination information includes city limits, bicycle trail and street names, schools, museums, parks, recreational facilities, rivers, streams, historical sites, and business district names.

Figure 7-3:
Guide sign
MN MUTCD Sign D11-1







Word legend
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BICYCLE STORAGE AND PARKING FACILITIES

Description:

Bicycle storage facilities are a key component to making a bus stop, bike route or transit station attractive for the user. Storage facilities are a common amenity that provides convenience and flexibility for bicyclists. Some of the more common storage facilities used today are bike racks and bike lockers. The bike rack is fairly inexpensive to purchase and can be located in just about any environment.

Bike lockers provide more flexibility and security for the bicyclist. They are typically located near bus routes or transit stations. This allows a bicyclist to take advantage of multiple modes of transportation. For instance, a bicyclist is able to bike to a transit station, store their bicycle in a locker and catch a bus to their final destination.

Other methods for storage facilities have been applied throughout other countries where they rely on bikes as their primary mode of transportation. In countries such as Holland and Japan, they've relied on large facilities dedicated to bike storage. These facilities range from bike parking lots and vertical indoor storage. Secure indoor bicycle storage is a part of most new multi-family residential buildings and is increasingly popular in offices and other employment sites.

Typical Design Standards:

The Association of Pedestrian and Bicycle Professionals (APBP) has produced a set of Bicycle Parking Guidelines. According to the guidelines a bike rack should include the following:

- Support the bicycle upright by its frame in two places.
- Prevent the wheel of the bicycle from tipping over.
- Enable the frame and one or both wheels to be secured.

Signage Examples:

Storage Facility Examples:

Personal Facilities Examples:

Amenities Examples:

Bike lockers will need to be evaluated on case by case bases to determine the number of lockers, location and the responsible party that will maintain and operate them. Innovative methods, such as bike parking lots and indoor storage should be considered as part of any implementation plan.

Bike racks, bike lockers, and bike storage needs to be located in a convenient manner and should be along the bicyclist's natural route of travel.

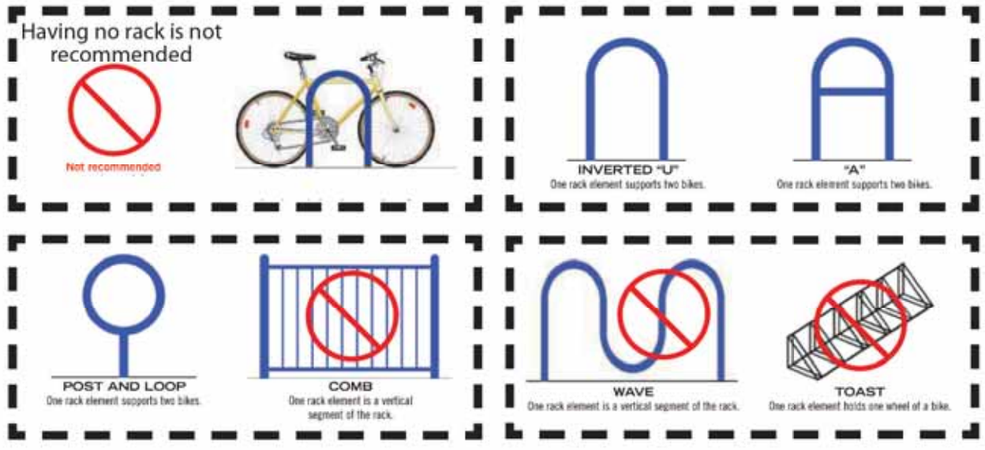
PERSONAL FACILITIES

Description:

Providing personal facilities, such as changing rooms, lockers, and showers, can offer an attractive amenity for bicyclists. They may also be in the form of a bike station, activity center, lifestyle center or recreation hall. The location of a personal facility should be strategically placed to ensure it is used to its fullest potential. Key locations are typically associated near and around transit stops and stations or in major employment concentrations. This allows flexibility for a user to conveniently access a personal facility and transit station or work site within walking distance. The Midtown Greenway Bike Station is a local example of a facility offering bike sales, repair and rental, showers, lockers, and a coffee shop.

Typical Design Standards:

There are no specific design standards between one facility and another. The construction of a facility should follow the appropriate zoning and building codes and meet user needs.



AMENITIES

Description:

The success of a pedestrian/bicycle route can be dependent on its attractiveness. One method of increasing its attractiveness is enhancing public amenities. They may range from simple treatments, like a bench, to more costly initiatives, such as bus shelters. The following list of amenities are examples which can help enhance a route's attractiveness:

- Benches
- Lighting
- Waste Receptacles
- Drinking Fountains
- Bike Racks
- Bike Lockers
- Personal Facilities (Showers, Lockers, Restrooms)
- Bus Shelters
- Emergency Call Buttons

Typical Design Standards:

There are no specific design standards between one facility and another. The construction of a facility should follow the appropriate zoning and building codes.

LOW-IMPACT TRAILS

Description:

Low-impact trails are designed to integrate into nature with less impact than a paved trail. They offer a softer walking surface for runners, pedestrians, dogs, and mountain bikes. Some park users prefer a more country style trail, winding its way through a wildlife habitat, instead of urbanized paved trails. The low-impact is not only for users but for nature as well.

Typical Design Standards:

Low-impact trails are generally mown turf (in open areas) and wood chipped (in wooded areas). Turf and wood chips offer a soft surface which is less likely to erode. Widths can vary from 18 inches to 8 feet depending on the amount of foot traffic. Generally, it is better to have the skinniest possible trail to lessen the impact on the surrounding natural features.

Erosion control measures must be incorporated. Wind, water, foot traffic and bikes can displace or erode soils very easily, especially in organic or sandy soils. Traversing a hill with switchbacks instead of running straight up a hill (which essentially creates a stream bed) is a good way to limit erosion. Also, a good way to divert water off the trail is to use a cross slope or a waterbar. A waterbar is a diagonal object that runs across the trail, diverting up hill water off the trail surface.

Low-Impact Trail Examples:

SCHOOL SAFETY ZONES

Safety for students is a concern that extends beyond the classroom and into the streets. Sidewalks and trails offer safety from busy streets and provide a healthy alternative to taking the bus or being driven to and from school. The addition of marked crossings and crossing guards makes the concentrated amount of school children more visible to autos. Also the width of roads play a large factor to slow auto traffic and create a shorter crossing distance for children; the shorter the crossing, the less wait time for autos. A recent innovation is the walking bus. The walking bus is a group of children lead by adults with a rope. The rope acts a guide for the children and keeps them in a visible group. This idea could be used for children living a suitable distance from school to encourage walking and an active lifestyle.

Visibility of children to autos and potential hazards can be enhanced if school districts and municipalities work together to create an atmosphere of safety and security. It is important to have well maintained, continuous sidewalks and biking routes to public and private schools.

Example of a walking bus

Example of a safe crossing

PARTNERSHIPS AND AWARENESS FOR AN EFFECTIVE SYSTEM

Creating a successful system of bike and walking routes is an inclusive process. It requires groups and organizations to come together for the common good of their community. Some potential partnership groups around the St. Louis Park and Golden Valley area are:

- City of St. Louis Park
- City of Golden Valley
- Surrounding Cities of Minneapolis, Edina, Hopkins, Minnetonka, Etc.
- Minneapolis Parks and Recreation Board - www.minneapolisparks.org
- MnDOT - www.dot.state.mn.us
- MnDNR - http://www.dnr.state.mn.us/index.html
- Hennepin County - www.co.hennepin.mn.us
- Metropolitan Council - www.metrocouncil.org
- Three Rivers Park District - www.threeriversparkdistrict.org
- Twin Cities Bicycle Federation - www.minneapolisbikes.org
- Twin Cities Bicycling Club - www.biketcbc.org
- Minneapolis Bike Walk Ambassadors - www.ci.minneapolis.mn.us/news/20080813BikeAmbassadors.asp
- USA Cycling Clubs - http://www.usacycling.org/clubs/index.php?state=MN
- Minnesota Cycling Federation - www.mcf.net
- Minnesota Off-Road Cyclists - www.morcmtb.org
- Crossniacs Cycling Club, St. Louis Park - www.usacycling.org/clubs/index.php?club=11815
- International Mountain Biking Association - www.imba.com
- National MS Society, Minnesota - www.nationalmssociety.org/chapters/MNM/index.aspx
- Golden Valley Safety Camps - www.ci.golden-valley.mn.us/publicsafety/Safety%20Camps.htm
- Transit for Livable Communities - www.tlcminnesota.org
- American Public Transportation Association - www.apta.com
- Surface Transportation Policy Project - www.transact.org
- Center for Transportation Excellence - www.cfte.org
- MN Parks and Trails Council - www.parksandtrails.org/mnlinks.html
- MN Bicycle and Pedestrian Alliance - www.bikeped.org
- Biking and Walking Solutions/ Safe Routes Minnesota - www.saferoutesmn.org
- Minnesota Bike Trails - www.mnbiketrails.com
- City of Minneapolis bicycling info - www.ci.minneapolis.mn.us/citywork/public-works/transportation/bicycles/index.html
- The National Center for Bicycling and Walking - www.bikewalk.org
- Federal Transit Administration - www.fta.dot.gov
- Metro Commuter Services - www.metrocommuterservices.org
- Congestion Mitigation and Air Quality Improvement Program - www.fhwa.dot.gov/environment/cmaqpgs/index.htm
- U.S. House of Representatives Committee on Transportation and Infrastructure - www.house.gov/transportation/
- U.S. Senate Commerce, Science and Transportation Committee - http://commerce.senate.gov/
- League of American Bicyclists - www.bikeleague.org
- National Center for Bicycling and Walking - www.bikewalk.org
- Active Living Resource Center - www.activelivingresources.org

IDEATION

Potential program and activity examples:

- School and community education classes – Bike riding classes, bike safety, bike commuting, bike maintenance, bike purchasing. Consider mobile education and outreach – State Fair, employers, events, etc. Have "walking buses" of school children walking to school holding a yellow rope. Target youth – Family bike safety, bike with Big Bird, bike safety officers in schools, bike mascot (ala McGruff).
- Employee bike purchase/subsidy programs in lieu of car parking subsidies.
- Hold road closure to vehicle days.
- Hold weekly/monthly ride of Xenia/Park Place Corridor bike routes organized through the Twin City Bicycle Club or others.
- Establish a bike re-use/access program– Have donated bikes and police recovered bikes upgraded and sold cheap to target groups/neighborhoods.
- Promote development of bike and pedestrian oriented businesses – I.e. One on One coffee shop, Portland/Seattle Bike station/bar/cafe.
- Hold ride/walk with the Mayor/City Council days.
- Hold bike/walk rodeos/carnivals – Theme contests, art/costumed bikes, tricycle racing, bike light/pedometer give aways, bike parade, walking parade, dog walking parade.
- Use door hanger notices for bike facility construction/striping.

Use digital methods – Web sites/links are the most cost effective outreach strategy. Make them easy to use and entertaining -i.e. a Cyclopath (www.cyclopath.org) style bike routing on-line tool, You Tube (www.youtube.com) style videos i.e. Bikes on Board video, etc.

FUNDING STRATEGIES

A funding strategy is needed to design, build and maintain the bike/walk system. 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.

Funding for bike/walk projects:

- Transportation Equity Act for the 21st Century (TEA-21, built from ISTEA) - www.fhwa.dot.gov/tea21/
- Congestion Mitigation and Air Quality (CMAQ) Improvement Program - www.fhwa.dot.gov/environment/cmaqpgs/
- Safe Routes to School (SR2S) - www.saferoutesinfo.org/legislation_funding/
- HES
- 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/bkepedtble.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
- Non-Motorized Transportation Pilot Program - www.tlcminnesota.org

Elaborate on a strategy for St. Louis Park and Golden Valley...

OPERATIONS AND MAINTENANCE

This study uses the analogy of a journey to select priority bike and walk improvements for Xenia/Park Place corridor. However, the journey is not over when the physical improvements are constructed. Creating a pleasant and functional walking and biking environment is an on-going effort of both the public and private sector to assure well-maintained and safe sidewalks and bikeways.

Adopting a regular sidewalk and bikeway management program is an important element in assuring well-maintained walk and bike conditions. Patterned after pavement management programs, a bikeway/walkway management program starts with an inventory of existing conditions and an evaluation of maintenance and replacement needs. Needs are prioritized, budgets are established and life cycle improvement plan is adopted. Maintenance and replacement can then occur in a scheduled, budgeted, and logical manner.

ON-GOING EFFORTS

People must be made aware of the bike/walk opportunities through way-finding signage and promotional information. The physical system must be kept accessible at all times of the year, including winter snow plowing. Walking, biking and transit use must be supported in the design and operation of private sector development and area businesses. Continuing to encourage compact, mixed use development patterns which allow access to nearby services, jobs and housing within an easy walk or bike ride. Support facilities at the work place (such as bike racks or secure indoor storage space, showers, lockers/changing facilities, and direct, safe walkways within private development sites to transit stops) are a necessity to encourage employees to live healthy lifestyles. When streets need to be repaired or rebuilt, the street profile should be built as "complete streets." Complete streets is a term for roadways which are designed and operated to enable safe, attractive, and comfortable access and travel for pedestrians, bicyclists, motorists and public transport users of all ages and abilities.

Maintenance Checklist

Item	Frequency
Sign Replacement/Repair	1 - 3 years
Pavement Marking Replacement	1 - 3 years
Tree, Shrub & grass trimming	5 months - 1 year
Pavement sealing/potholes	5 - 15 years/ As needed
Clean drainage system	1 year
Pavement sweeping	Weekly-Monthly/As needed
Shoulder and grass mowing	Weekly/As needed
Trash disposal	Weekly/As needed
Lighting Replacement/Repair	1 year
Graffiti removal	Weekly-Monthly/As needed
Maintain Furniture	1 year
Fountain/restroom cleaning/repair	Weekly-Monthly/As needed
Pruning	1 - 4 years
Bridge/Tunnel Inspection	1 year
Remove fallen trees	As needed
Weed control	Monthly/As needed
Remove snow and ice	Weekly/As needed
Maintain emergency telephones, CCTV	1 year
Maintain irrigation lines	1 year
Irrigate/water plants	Weekly-Monthly/As needed