

University of Minnesota 2019 Bicycle Plan



Table of Contents

About the University of Minnesota Twin Cities Bicycle Plan	3
Purpose.....	3
Vision	3
Guiding Principles	3
Objectives	4
University of Minnesota’s Role	4
Related Plans	5
University of Minnesota, Twin Cities Campus Master Plan, 2009.....	5
University of Minnesota, Twin Cities Campus Bicycle Transportation Plan, 1997	6
Bicycle and Pedestrian Coexistence	6
Modal Priorities	6
Current Conditions	7
Programs	7
University Bicycle Committee.....	7
Bicycle and Pedestrian Counts	7
Bicycle Parking.....	7
Nice Ride Bike Share.....	8
Helmets and Headlights	8
Bike Center	8
Education and Outreach.....	10
Enforcement.....	11
Ongoing Priorities.....	11
Project Coordination	11
Education.....	11
Completed Improvements.....	11
Vehicle Parking Space Conversion.....	11
East Bank	11
15 th Avenue SE/Pleasant Street.....	12
University Avenue/4 th Street.....	13
East River Road	13
Regional	14
6 th Street Protected Bikeway.....	14

Dinkytown Greenway	14
Planned Improvements & Future Considerations	14
Campus Related Projects.....	14
East Bank Bridge Access	14
West Bank.....	14
Regional Projects	15
City of Minneapolis Projects.....	15
City of Saint Paul Projects.....	15
The Future of Campus Mobility.....	16
APPENDIX A:.....	17
Bicycle Map – East and West Banks Twin Cities Campus	17
APPENDIX B:.....	18
Bicycle Map – East Bank Twin Cities Campus.....	18
APPENDIX C:.....	19
Bicycle Map – West Bank Twin Cities Campus	19
APPENDIX D:	20
Bicycle Map – Saint Paul Twin Cities Campus	20
APPENDIX E:	21
Roadways with Bus Lanes.....	21
Bikes on Buses	21
APPENDIX F:	22
RFID (Zap) Program.....	22
What is Zap?	22
How does the system work?	22
APPENDIX G:	23
Bicycle Friendly Business & University Awards	23
Bicycle Friendly Business	23
Bicycle Friendly University.....	23
APPENDIX H:	24
Protected Bike Lanes	24
APPENDIX I:.....	25
Church Street Bike Lanes.....	25

About the University of Minnesota Twin Cities Bicycle Plan

Purpose

The 2019 University of Minnesota Twin Cities Campus Bicycle Plan seeks to guide and set strategies and goals that encourage and support bicycling as a sustainable and equitable transportation mode to/from/on the Twin Cities Campus, as well as improve on-campus and regional bicycling conditions. This document describes the campus' vision, current conditions, and upcoming projects and programs intended to make bicycling a viable commuting mode. The University's goal is to lead the nation in bicycle infrastructure and programming.

This plan addresses and builds upon the vision and guiding principles of the University of Minnesota Twin Cities Campus Master Plan (2009). This plan is not meant to serve as a standards manual for bicycle facility design and construction. Rather, it is intended to inform the development and implementation of bicycle-friendly infrastructure.

Vision

"A bicycle-friendly University; bicycling is an equally safe, efficient, and convenient mode of transportation, and a pleasant non-motorized experience is cultivated through safe, thoughtfully planned multi-modal and shared-use corridors."

Guiding Principles

The following principles are meant to guide future infrastructure planning discussions and to aid in the creation of bicycle routes and facilities on the Twin Cities campus.

The guiding principles are as follows:

Embrace Bicycle Commuting: Embrace bicycle transportation as a commuter mode of equal priority, stature, and use.

Foster Bicycle & Pedestrian Coexistence: Foster campus bike-ability and walkability to increase safety and minimize conflict.

Enhance Public Spaces: Enhance the quality of campus streets and open spaces by providing a human scale to all open spaces on Twin Cities' campuses.

Mitigate Infrastructure Stress: Mitigate existing stress on campus transportation and minimize future demands on infrastructure by reducing automobile dependency.

Support Education & Enforcement: Support education and enforcement of traffic laws for all modes of transportation to keep all road users safe.



Objectives

These objectives are meant to guide future infrastructure planning discussions and to aid in the creation of bicycle routes and facilities on the Twin Cities campus.

The objectives are to:

Support

- A strong and well-connected bicycle network within a one to two mile radius around campus.
- Fast, safe and pleasant bicycle connector routes to the campus area from nearby neighborhoods for concentrations of the University population living within a 5-mile radius of campus.
- A bicycle system with a strong intermodal bike, bus, and train system.

Promote

- Bicycle and intermodal commuters with trip travel times that are competitive with average automobile commute times.
- Bicycling as a safe and accepted mode of transportation, considering pedestrian safety and needs in all plans and designs.

Ensure

- The plan is physically and financially realistic.
- The plan is implemented.

University of Minnesota's Role

Non-motorized options can reduce the need for parking and roadway space and can reduce stress on existing roadway and parking infrastructure. Encouraging bicycling and walking can alleviate some of the economic and environmental challenges presented by vehicular travel. Continued motor vehicle congestion has the potential to compromise the user-friendly objectives of the Twin Cities Campus Master Plan.

The University of Minnesota is in a unique position to be a champion of non-motorized commuting. Due to the University's location and population, it can provide access to/integration of various transportation modes. The University can become a national role model – as an advocate and facilitator for the implementation of physical and programmatic infrastructure that supports and promotes bicycle and pedestrian transportation.

On any given fair-weather day, up to 9,000 people bike to the University. The volume of bicyclists and pedestrians traveling to, on, and through the University of Minnesota Twin Cities Campus dictates that the University must

develop a plan to not only accommodate, but actively plan, for growing levels of non-motorized transportation traffic.

The University of Minnesota must seize the opportunity to be a role model in the planning, design, and construction of a comprehensive network of complete streets, open spaces, and buildings that adequately incorporate non-motorized transportation on campus. The University of Minnesota has the opportunity to implement one of the most complete, attractive, and effective bicycle transportation systems in the country.

The University must develop and maintain a direct focus on implementation and promotion of non-motorized transportation to achieve the goals of this plan and to provide attractive and competitive bicycle, pedestrian, and transit options to its commuters.

Related Plans

University of Minnesota, Twin Cities Campus Master Plan, 2009

“The Master Plan is driven by the belief that an integrated, beautiful, well-maintained university campus will advance the institution's mission. A sustainable attractive environment is integral to the University's reputation and competitiveness in the nation and the world.”

The Twin Cities Campus Master Plan calls attention to three elements: **Community Connections, Natural Features and Systems, and Public Spaces and Buildings**. Each of these elements is followed by corresponding guidelines. The plan elements and guidelines all speak to the eleven guiding principles that are presented as the “foundational principles that describe the Master Plan's core values.”

Eleven Guiding Principles:

1. Cultivate a sense of community.
2. Strengthen connections to adjacent communities.
3. Create a cohesive, memorable system of public spaces.
4. Provide a compatible and distinctive built environment.
5. Steward historic buildings and landscapes.
6. Foster a safe, secure and accessible campus.
7. Preserve and enhance natural systems and features.
8. Integrate transportation systems to emphasize pedestrians, bicycles and transit.
9. Optimize the use of campus land and facilities and apply best practices.
10. Utilize the campus as a living laboratory to advance the University's mission.
11. Make the campus environmentally and operationally sustainable.



The University sees a future where the impact of the automobile on campus and in the surrounding neighborhoods is reduced. The University seeks to enhance bicycle transportation as a mode of equal priority, stature, and use with all

University of Minnesota, Twin Cities Campus Bicycle Transportation Plan, 1997

The 1997 plan aligned with principles developed for the 1996 Twin Cities Campus Master Plan, which included giving special priority to the pedestrian environment. The plan provided detailed assessments of key areas of campus and outlined plans for implementing new facilities and various types of bicycle infrastructure.

The principles informing that plan included:

- “The University seeks to enhance the quality of campus streets and open spaces and provide a human and pedestrian scale to all open spaces on the Twin Cities campus.”
- “The University seeks to reduce the stress on existing roadway and parking infrastructure on campus and in the surrounding neighborhoods and sees a future where growing needs for roadway and parking infrastructure are reduced.”
- Pedestrian crosswalks intersecting the bicycle lanes in shared corridors.
 - The use of large planters to indicate shared space (Bruininks Hall - *as seen on right*).
 - Yield to pedestrian pavement markings (various locations).
 - Shared space signage (Church Street north of Washington Avenue).



Bicycle and Pedestrian Coexistence

The University of Minnesota supports the establishment of regulations, traffic safety education, and enforcement programs that specifically address the safety of all commuters who share the road, including pedestrians, bicyclists, automobiles, transit vehicles and others. All users benefit when bicycles are considered during the early stages of infrastructure design and planning.

There are some corridors on campus where bicyclists and pedestrians share space. Coexistence of bicyclists and pedestrians in these areas can be enhanced to make them safer for all users.



Some examples of these enhancements are:

- Marked bicycle lanes (throughout East and West Bank & along Washington Avenue Bridge – *as seen on right*).
- Pedestrian crosswalks intersecting the bicycle lanes in shared corridors (Bruininks Hall).
- The use of large planters to indicate shared space (Bruininks Hall-*as seen above*).
- Yield to pedestrian pavement markings (various locations).
- Shared space signage (Church Street north of Washington Avenue).



Modal Priorities

Specific modal priorities must be described to guide the more specific and detailed decisions that are made during project development efforts, policy making, and regulation setting activities - all of which are equally critical to the realization of the plan.

Without a specific statement of agreement on modal priority, auto-oriented priorities prevail in the detailed activities directly influencing the built environment. The 2009 University Master Plan established the modal priority detailed below and this plan supports those priorities.

The following are recommended policies to guide specific and detailed non-motorized transportation activities on and around the University of Minnesota Twin Cities campus:

In general, pedestrians receive the highest priority, bicycles have the second priority, transit has the third, and the automobile has fourth priority.

Integrated transportation systems ensuring pleasant and safe access and movement give priority to pedestrians and bicyclists, followed by mass transit and then automobiles.

In traffic, pedestrians receive the highest traffic priority, bicycles receive the next highest priority, followed by transit, and then all other motor vehicles.

Current Conditions

Programs

University Bicycle Committee

The Committee for the Advancement of University Bicycle Commuting: The University Bicycle Committee is charged with exploring, addressing, and recommending possible solutions for barriers to the growth of bicycle commuting. Central to the process is the opportunity to draw on the diverse interests and expertise of the committee members.

The committee approaches its work by examining what the current status of facilities and programs, long term- and short-term priorities, and what partners can the University reach its objectives—the promotion of bicycle commuting and increased bicycle use on campus.

Bicycle and Pedestrian Counts

To provide relevant data, PTS conducts annual campus-wide bike counts and supplements that count with smaller spot-counts throughout the year in selected areas. The City of Minneapolis partners with PTS to include the University in its monthly corridor counts.

Specific corridor counts have helped to determine bicycle movement on campus, and should be further developed to utilize both camera technology and human counters for more precise numbers.



Bicycle Parking

There are approximately **10,000 bike parking spaces** on the Twin Cities Campus, including nearly **450 secure rental spaces** in bike lockers and in parking ramps. Secure rental spaces are charged on an annual basis. PTS advocates for providing bike parking for 20% of new building occupancy, with 20% of that total in secure space. These recommendations are tied to current trends and are subject to revision as bicycle usage increases. Safety,

convenience, and aesthetics guides site decisions. Abandoned bicycles are removed on an annual and complaint basis.

Nice Ride Bike Share

Nice Ride MN is a bicycle sharing program that seeks to “enhance the quality of our urban life by providing a convenient, easy-to-use bike sharing program that will provide residents and visitors a healthy, fun, different way to get around town.”



There are **196 Nice Ride** kiosks available in Minneapolis neighborhoods, including Downtown, Uptown; Saint Paul; and the Twin Cities Campus. There are **20 on-campus kiosks**. Many additional kiosks are located just off campus. University employees are eligible for a reduced annual rate through the Wellbeing Program. The University continues to participate in and advise on the campus and regional growth of Nice Ride.

The University is currently planning for the implementation of “dockless” bike share. These systems are successful through market saturation with large fleets of bikes that do not need docking stations. Dockless bike share relies on established mobile payment apps. This new business model has resulted in staggering growth and challenges with right-of-way obstruction from illegally parked bikes. To reduce the possibility of similar “bike clutter” from illegally parked bikes, the University should require that dockless bikes be parked at bike racks only, subject to impoundment and a fine if parked elsewhere.

Helmets and Headlights

All University students, staff, or faculty can purchase a helmet and headlight set for \$34.95 at the Boynton Health Service Pharmacy by presenting their U card. This program is well-received and many members of the University community have taken advantage. This campaign has been successful.

In the U.S., 600 crashes annually result in deaths directly linked to head trauma.

Nearly 50% of bicycle fatalities occur after dark.

Minnesota statute requires all cyclists to illuminate their bikes after dark. A white front light must be visible from a distance of 500 feet with a red reflector on the rear. For better visibility, it is recommended bicyclists use a red light on the rear in addition to the rear red reflector.

Bike Center

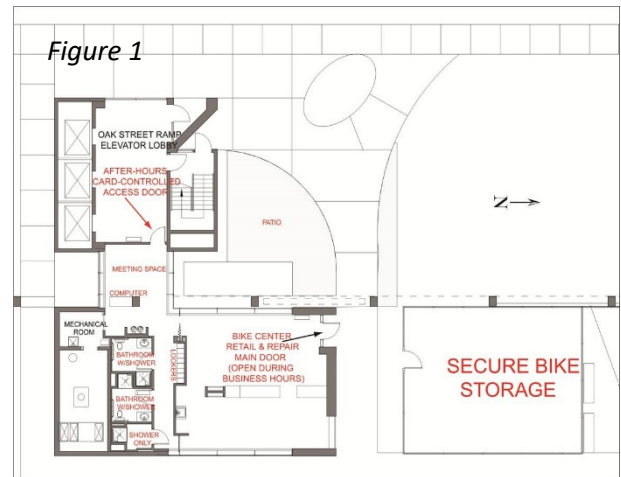
The University Bike Center is an important element of University efforts to increase bicycle usage. It was constructed in a former transit waiting area of the University’s Oak Street Parking Ramp, situated at the intersection of Oak and Delaware Streets SE (*Figure 1, below*). This location is within



one block of a major transit corridor on Washington Avenue SE; two blocks from the main commuter route of East River Parkway and next to large concentrations of high-density housing.

Services include:

- Program space for offering repair and commuter clinics, outreach activities such as brown-bag luncheon discussions and gathering space for bicycle-related groups and clubs.
- Showers, restrooms/changing rooms, clothing lockers.
- ZAP – the radio-frequency identification (RFID) commuter benefit tracking system.
- Electronic trip-planning kiosk to better facilitate transit and cycling connections.
- Retail – primarily commuter-related such as tires, racks, tubes, fenders, etc.
- Secure, card-accessed 24-hour bike storage.
- Repair – both regularly-scheduled hours by professional mechanics and do-it-yourself options.



The RFID portion of the project consists of small electronic tags affixed to registered users’ bicycles by Bike Center personnel. A series of RFID receivers installed at strategic locations around campus read and wirelessly transmit the tag information to a server accessible to users and the institution, thus verifying commute trips.

Paired with the establishment of the University Bike Center, RFID technology (*Appendix D*) creates an entirely new system of self-reinforcing components. Traffic to the bike center is driven in part by existing and potential commuters eager to have their trips verified through the installation of RFID tags, while return trips are generated by bike center specific incentives such as reduced cost tune-ups and commuter gear.

As a first-in-the-nation program, the University broke new ground in the promotion and encouragement of bicycle commuting. The possibilities are wide-ranging; from the serious - like carbon offset programs in which large employers and producers of carbon can offset their output via their employees’ bicycle use - to the fun and competitive such as commuter leagues.

Community Benefit from the Bike Center

The Bike Center serves as a hub to foster a culture of biking and walking and to ensure the University’s legacy as a Non-Motorized Transportation (NTP) Program. Central to this outcome are outreach and engagement efforts that shape and mold lifelong values and behaviors. Shifting the values, investments, and culture in these places spill over into the broader community. ***This is true for two very important reasons:***



First, the University of Minnesota is one of the largest employers in Minneapolis. A preeminent research institution, the University influences the social, public, and private sectors of the region. It is a leader for businesses across the spectrum. It is a major destination for employees, students, conference attendees, community partners, and other employers from the NTP program area. To change the University's culture would be a significant accomplishment, but it can also serve as a blueprint for other campuses around the nation.



Second, a central tenet of the Bike Walk Twin Cities initiative was to create a culture of biking and walking. Scholars and practitioners agree that changing the educational culture has to be a core element of that shift. For this reason, it is necessary that the foundation of walking and biking be established in institutions of learning. This has begun in Minnesota's K-12 systems through the Safe Routes to School program.

The innovative combination of Bike Center and RFID technology is the answer. The RFID technology has allowed the University to break a barrier in participation from large employers/institutions. The Bike Center meets the cultural and educational needs of its community.



Education and Outreach

Education is a crucial aspect to improving the environment for bicyclists and pedestrians on campus. The programmatic elements incorporated into the operation of the Bike Center provide educational opportunities for the entire University community.

The education programming is designed in cooperation with key partners such as the Bicycle Alliance of Minnesota, University Security and Bike Monitors, and The Hub Bike Co-op.

Safety and bicycling education courses are offered through the League of American Bicyclists' Smart Cycling curriculum. Courses include: Traffic Skills 101 & 102, Commuter Skills, and Basic Bike Maintenance.

The Hub Bike Co-op operates the Bike Center and offers superb bicycling and maintenance courses.

Additional planned activities to help others start bicycling are:

Informational Brown Bag Seminars – specific and timely topics or events regarding bicycling in the Twin Cities.

Transportation Fairs – one-on-one interactions to promote bicycling and get the word out about sharing the road.

Beginner or Pre-Beginner Info Sessions – provide an open and supportive environment for new or interested bicycling and walking commuters.

Seasonal Bicycling and Walking Tip seminars – Minnesota weather provides some unique meteorological barriers; these seminars will provide assistance to those who wish to bike or walk more year-round.



Enforcement

Currently, student bicycle monitors focus on enforcing bicycle parking. Per Regent’s traffic ordinance, student bicycle monitors also have the authority to enforce bicycle rules and regulations on campus (they currently do not exercise that authority). Therefore, the use of special bike-trained UMPD officers must be a critical component of any education and enforcement effort.

Regular patrols during the May–October bike season focus on enforcing current laws and regulations, such as sidewalk riding, wrong-way travel, and traffic control device violations. There is no substitute for consistent enforcement and changing behavior requires sustained, committed efforts by trained police officers.

Ongoing Priorities

Project Coordination

Close working relationships with local and regional government planning authorities afford the University a position to efficiently and successfully execute bicycle projects in the future. These working partnerships enhance access to projects of opportunity that may be designed and completed concurrently with development and redevelopment of new and existing infrastructure.

The University continues to work with these regional and local government agencies to explore options for improving non-motorized access to and through the University of Minnesota Twin Cities campus. Current and future bicycle planning efforts must make conscious efforts to further address the Campus Master Plan guiding principles.



Education

Coexistence between all modes of transportation on the Twin Cities campus is desired. Education of bicyclists, pedestrians, drivers, and transit users improves safety for the entire University community. Outreach efforts focusing on education and enforcement of the rules of the road, and teaching all users about modal equity helps to achieve this goal of safety for all. Fostering efforts to improve safety and minimize modal conflict continues to be a main focus of future bicycle planning efforts on the University of Minnesota Twin Cities campus.

Completed Improvements

Vehicle Parking Space Conversion

Given the degree of difficulty associated with siting and administering individual bike lockers, the University has turned instead to converting car parking spaces in parking ramps into secure bike parking facilities. Approximately a dozen car parking spaces in three ramps have yielded **241 bike parking spaces**. Access to the spaces is controlled by University ID card and all of the facilities are equipped with security cameras and bike fix-it stations.

East Bank

The University of Minnesota’s East Bank has the highest concentration of bicycles in Minnesota, both in terms of mode share and raw numbers. Recently completed City of Minneapolis bicycle facility projects, and those scheduled for construction, have the potential to substantially increase bicycle usage. The construction of the

University Bike Center and the addition of the Zap (RFID) commuter validation program have increased bicycle use. This dynamic situation highlights the necessity of thoughtfully planned University infrastructure improvements that complement those of the adjacent jurisdictions. This document attempts to address both specific corridor concerns as well as larger policy issues.

15th Avenue SE/Pleasant Street

The traffic condition on Pleasant Street is one of the most complex on campus. When Pleasant Street crosses University Avenue to the north it, becomes 15th Avenue S.E. The entire corridor is heavily populated with pedestrians, bicycles, and buses. The 15th Avenue block between University Avenue and 4th Street has the highest on-street bike count of any street in Minneapolis.

Some of the busiest transit stops on campus are located on Pleasant Street. The street also provides access to classroom buildings, student services, serves as the only access point for southbound motor vehicle traffic, and is one of two bicycle access points across the Washington Avenue Bridge. Whereas all types of traffic must be served by this corridor, its heavy use by pedestrians and bicycles, the most vulnerable of the traffic modes, requires that pedestrians be allocated the highest priority and bicycles the second highest priority.

The improvement made was to place bicycle lanes between the automobile and the bus lanes on the portion of Pleasant between Pillsbury Drive and University Avenue. Recent experience in other areas (Madison, Wisconsin and Seattle, Washington) has shown that the configuration of a bicycle lane to the left of a bus lane is safer than a lane configured to the right.

There are two reasons for this. First, a lane configured to the left of the bus provides the driver a continuous and complete view of all cyclists at all times. A lane configured to the right of the bus hides cyclists within the considerable space of the bus's blind spot. Second, conflicts between bicyclists and bus riders at transit stops are eliminated.

The portion of Pleasant between Pillsbury Drive and Arlington Street that was too narrow to accommodate both on-street bike lanes and 12' travel lanes (the 12' travel lanes are necessary due to the large volume of bus traffic) was rebuilt to accommodate bike lanes. This has provided an on-street connection to the terminus of the Washington Avenue Bridge bike lanes and the necessary continuity throughout the Pleasant Avenue corridor. This connection may a good candidate for federal transportation funding as it fills a systems gap in the regional bike transportation network. Consideration should be given to apply for funding in the 2020 Regional Solicitation for Federal Transportation Funding.



Figure 2



Another benefit of this configuration is that the through movement of bicyclists is encouraged in the corridor and will help alleviate general congestion. If the bicycle lane were to be configured to the right of the bus lane, bicyclists would need to proceed at the stop-and-go pace of the bus (and inhale bus fumes). The placement of cyclists in the middle of this multi-modal corridor makes cyclists very visible users of the street (*Figure 2, above*).

University Avenue/4th Street

The City of Minneapolis, Hennepin County, and MnDOT evaluated a protected bikeway along University Avenue SE and/or 4th Street SE between Central Avenue SE and Oak Street SE. Following a technical review of the corridor and feedback from stakeholders, the City, County and MnDOT, the final recommendation is the installation of a pair of one-way protected bike lanes on University Avenue SE (eastbound) and 4th Street SE (westbound) between Central Avenue SE and Oak Street SE.

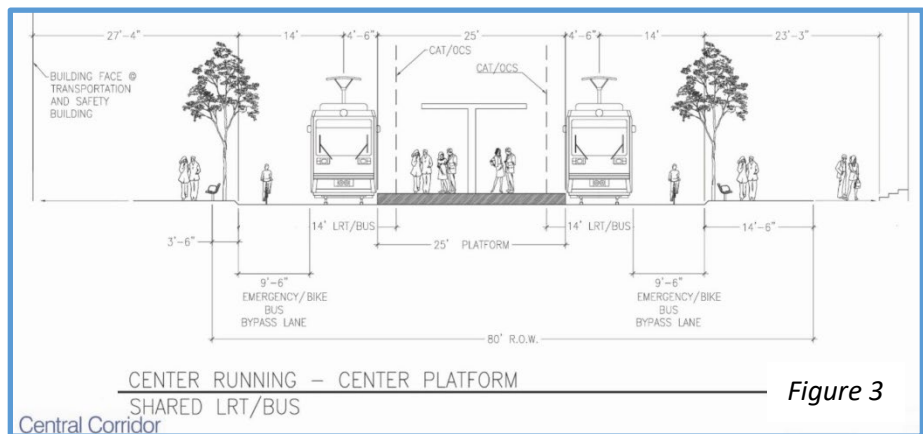
East River Road

The portion of East River Road (ERR) north from Arlington to University Avenue SE is under the jurisdiction of the University. That portion of East River Road south of Arlington is under the jurisdiction of The Minneapolis Park Board (MPB). There is a regionally significant MPB off-street bike path adjacent to the roadway south of Arlington. That facility continues south of the city limits into Saint Paul. Missing is an off-street connection to the Dinkytown Greenway - itself a regionally significant facility connecting the two downtowns via the University Transitway and Como Avenue.

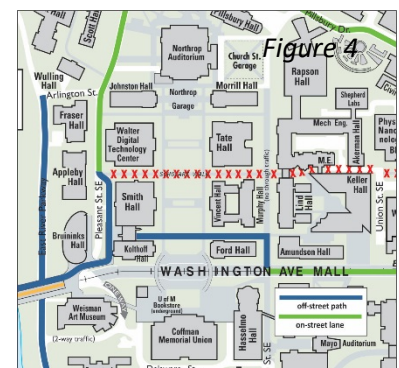
While the right-of-way (ROW) on the University's portion of ERR is constrained by the Mississippi River bluff and University buildings, it is possible to fit an off-street facility from Arlington to the Education Science building. Current motorcycle parking in this area would have to be relocated and sheet-piling would be necessary along the bluff to provide the necessary width.

Washington Avenue

Prior to the construction of LRT, Washington Avenue was so uncomfortable for bicycle travel that few cyclists were seen on the street. However, with the construction of LRT, bi-directional facilities in the form of 9.5' shared bike/emergency vehicle lanes have been added (*Figure 3, right*). This addition has moved cyclists off the sidewalk onto the street.



One improvement for east/west travel was to dedicate, with bike lane striping, and other appropriate context-sensitive markings, the southernmost sidewalk crossing the Northrop Mall to bicycle traffic (*Figure 4, right*). This route sends bicyclists west from Church Street on the sidewalk between Ford and Murphy Halls, across the Mall and continuing between Smith and Kolthoff Halls to connect to the bike lanes on the west side of Kolthoff Hall that lead to both Pleasant Avenue and the pedestrian level of the bridge. This alignment



provided a direct bike lane connection from Washington Avenue to the elevated facilities on the heavily-traveled bridge. The addition of a legal route through the area was beneficial.

The addition of a two-way protected bike facility in 2014 between East River Road and Washington Avenue, with a planned extension to University Avenue and 4th Street, has and will improve access to the eastern edge of campus.



Regional

6th Street Protected Bikeway

As a first-in-the-city truly protected bikeway, 6th Street SE, connects the University Transitway with the Dinkytown Greenway. This bikeway ties together facilities linking the University with the cities of Minneapolis and Saint Paul.

Dinkytown Greenway

In 2009, the University and City pursued a redesign of the project that required local, state, federal and University approval to proceed. This is a good example of how the University and City, working together on this and other projects, have improved bicycling transportation infrastructure in Minneapolis and on campus.



Planned Improvements & Future Considerations

Campus Related Projects

East Bank Bridge Access

There is currently no one east/west space dedicated to bicycles between Washington Avenue on the south and Pillsbury Drive on the north. A pair of north/south spaces is dedicated to bicycles on Harvard Street between Washington Avenue and Pillsbury Drive and on Pleasant Street between University Avenue and the Scholars Walk. An additional north/south facility was considered for Church Street (*Appendix I*).

East Bank East/West Routing

There is currently no specific east/west space dedicated to bicycles between Washington Avenue on the south and Pillsbury Drive on the north. A pair of north/south spaces is dedicated to bicycles on Harvard St between Washington Avenue and Pillsbury Drive and on Pleasant Street between University Avenue and the Scholars Walk. An additional north/south facility was considered for Church Street (*Appendix I*).

West Bank

The configuration of the West Bank campus buildings and their plazas has created a "backyard" space without clear definition for bicycle travel. The steps located on the western end of the Washington Avenue Bridge divide the upper and lower plazas and span the entire width of the main plaza. A concrete ramp covers a portion of the steps to allow cyclists to move from one plaza level to another.

This plan recommends that the West Bank Plaza bicycle lanes follow the route that is in place today. The current configuration of the bicycle lanes is the safest. The existing West Bank Plaza route to the east of the Linden Grove in the middle of the plaza, up the ramp taking bicyclists over the stairs and to the bicycle route on the north side of the bridge, should be maintained, until major changes are made to the plaza or to the configuration of the Washington Avenue Bridge.

The route works well today and is the only satisfactory route down the stairs that separate the upper and lower plazas. Routes to either side of the stairs would place the bicycle route too close to the doors of West Bank buildings or across the heavy pedestrian flow on the south side of the Washington Avenue Bridge. The current configuration through this busy pedestrian plaza works well placing cyclists in full view through the middle of the plaza (*Figure 5, right*).



Regional Projects

City of Minneapolis Projects

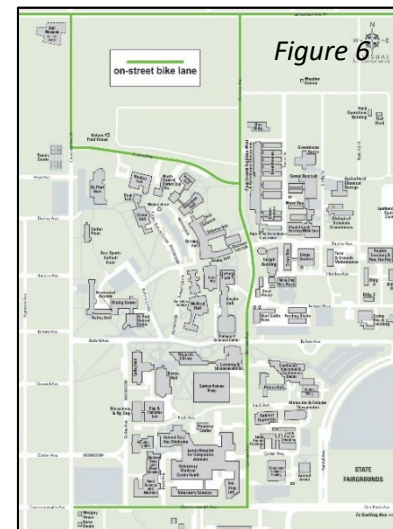
In 2019, Minneapolis Public Works is proposing to install 2.6 miles of protected bikeways connecting the University of Minnesota and the surrounding neighborhoods of Como, Marcy Holmes, and Cedar Riverside. Between 400 and 4,000 people currently bike along these corridors each day, making them the highest demand area for bicycling in the city. The project aims to improve many existing bike lanes and complete important gaps in the cities bikeway network.

The project goals are:

- **Enhance** safety and predictability for all users
- **Support** active transportation options around the U of M
- **Improve** existing bicycle connections to better accommodate existing bicycle demand
- **Complete** the NE Diagonal Trail/18th Avenue SE bikeway gap

City of Saint Paul Projects

The Saint Paul campus is well-served by the current configuration of existing bike lanes on Commonwealth, Gortner, and Folwell Avenues (*Figure 6*). One possible exception is the lack of bike lanes on Buford Avenue, but narrower street widths prevent the addition of standard bike lanes. This is mitigated in large part by Buford’s low traffic volume and 20 mph speed limit. The 2011 construction of bike and pedestrian facilities connecting the University to northern destinations, including the Rosedale Shopping Mall, has increased the potential for additional bike usage.



The Future of Campus Mobility

While it is hard to predict what the future will bring for campus transportation options, *three outcomes seem inevitable*:

1. Electrification of all modes of transportation.
2. Decreased private vehicle ownership as commercial, free-floating shared-use vehicle operations expand.
3. Smaller form electric vehicle replacing short walking trips.



Substantial private equity capital has been invested in startups looking to provide last-mile solutions for urban travel. Human-powered and electric dockless bike share, dockless, electric stand-up scooters are among the emerging solutions to alleviate congestion in urban area. These new modes present unique challenges. *Where can they safely operate? Where are they allowed to park? How do they charge? Where will charging be located? What happens during the winter?*

The University is working though, by both ordinance and policy, what types of vehicles will be allowed to operate on campus, where they can operate, and what, if any, commercial operations will be allowed. These policies and ordinances will need to be flexible enough to allow for new types of conveyances sure to be invented, while being prescriptive enough to ensure the safety of all campus users.



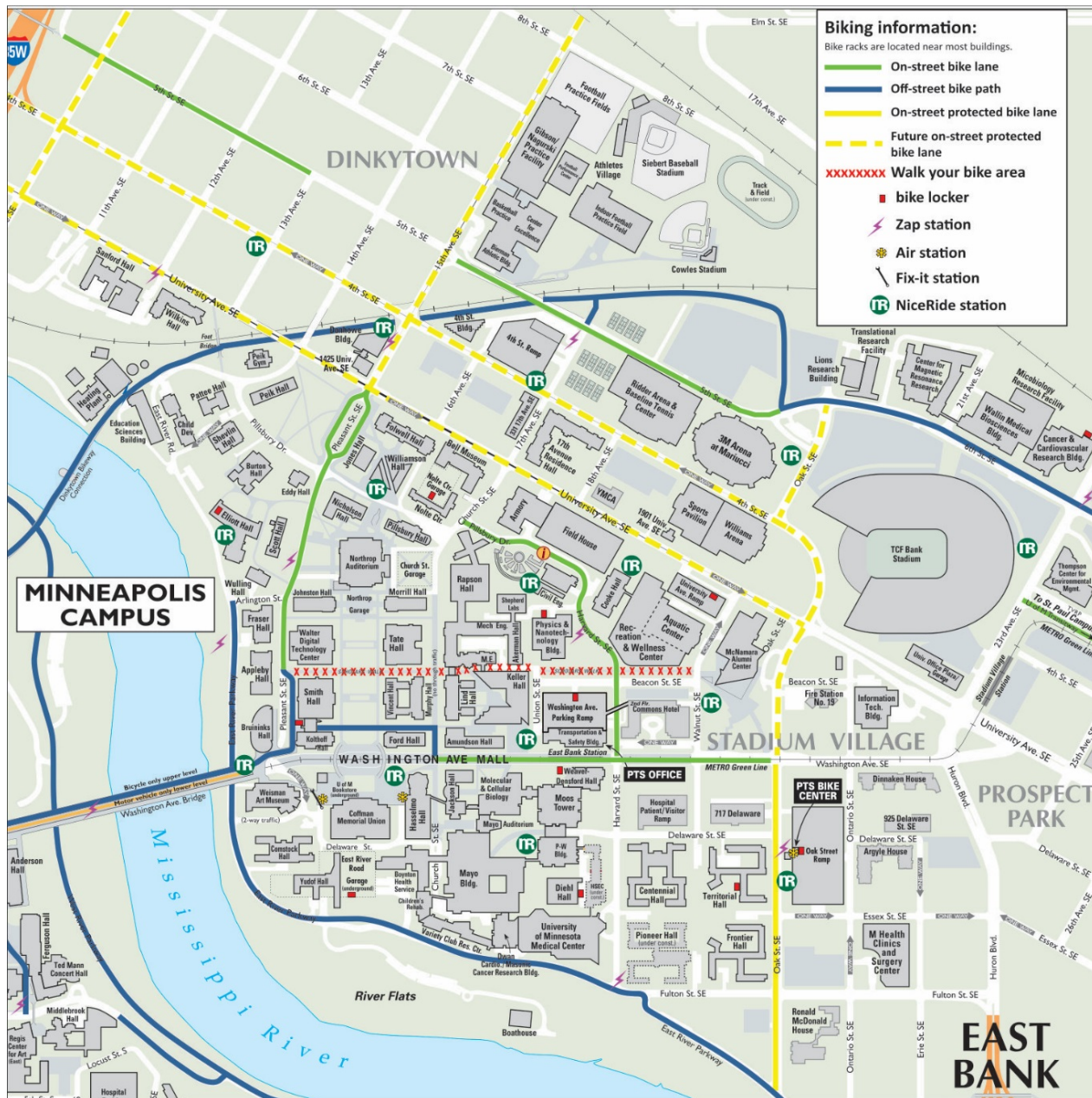
APPENDIX A:

Bicycle Map – East and West Banks Twin Cities Campus



APPENDIX B:

Bicycle Map – East Bank Twin Cities Campus



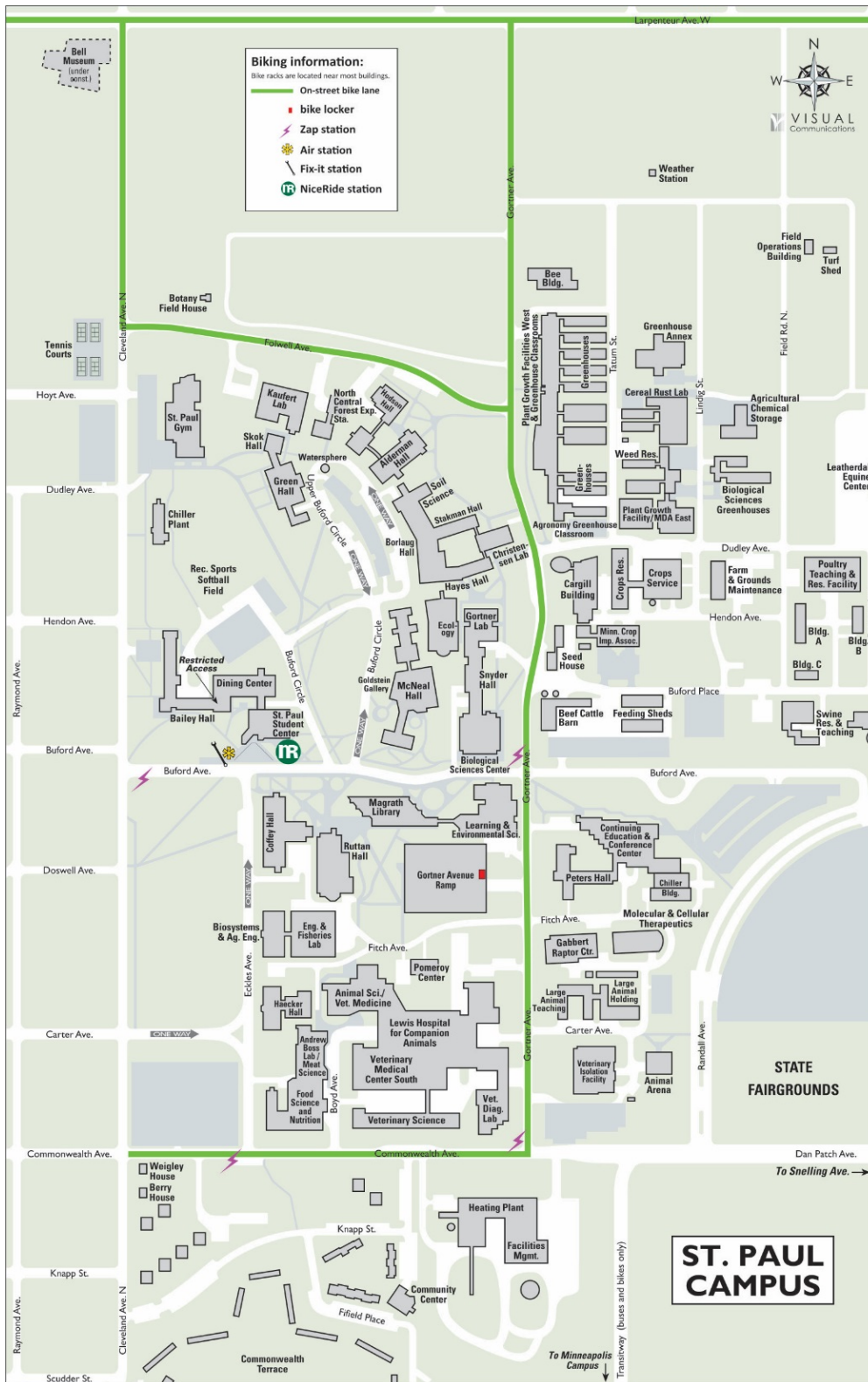
APPENDIX C:

Bicycle Map – West Bank Twin Cities Campus



APPENDIX D:

Bicycle Map – Saint Paul Twin Cities Campus



APPENDIX E:

Roadways with Bus Lanes

On roadways with heavy bicycle and bus usage, it is recommended that bicyclists travel to the left of the bus. Placing the bicycle lane to the left of the bus has a number of significant advantages over placement to the right.

These advantages include:

- Improves driver visibility of bicyclists. This is not true of right-located bus lanes.
- Eliminates unsafe “leap-frog” bus and bike situation. This occurs as a result of bicycles and buses overtaking and passing each other alternately at bus stops.
- Allows for a consistent path and a constant speed for bicyclists without the effects of traveling behind the buses.



Bikes on Buses

There are many advantages of being able to combine bicycle use with transit trips.

These advantages include:

- Increasing the number of transit connections and eliminating transfers
- *For One-Way Commuting:*
 - Ride into work on a bus or train if dressed for work and do not want to change clothes.
 - Pedal in for a morning burst of energy and take transit home from work if tired at the end of the work day.
 - If one direction of your route is mostly uphill, can consider using transit for the portion.
 - For an equipment failure – such as a flat tire.



APPENDIX F:

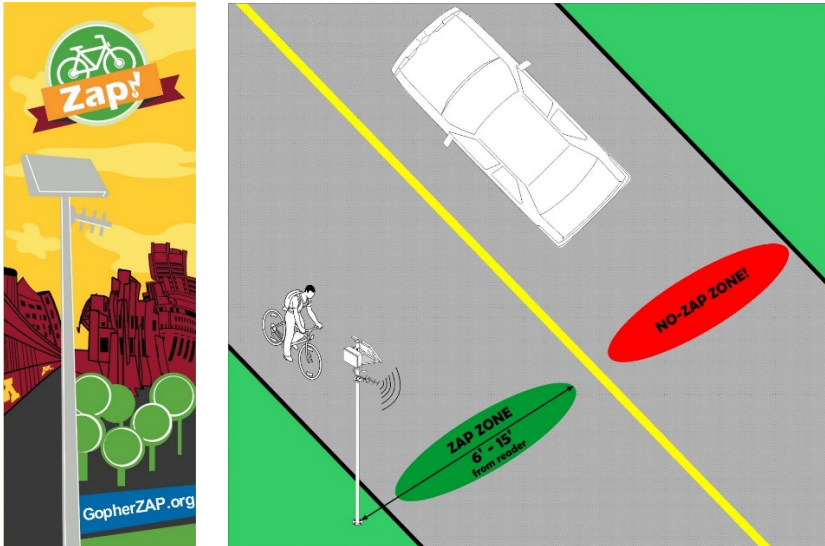
RFID (Zap) Program

What is Zap?

The ZAP Twin Cities bike commuter program uses Dero ZAP hardware and software – an automated bike commuting recognition system pioneered right here at the University of Minnesota. It is an effortless way of verifying and logging bike trips, then rewarding and incentivizing bicycle commuter with prizes and Wellness rewards. To date, the program has registered over 5,000 users.

How does the system work?

A small tag attached to two front wheel spokes is recognized by strategically places ZAP readers installed in rings around downtown Minneapolis, downtown Saint Paul, and the University of Minnesota campus. This way, we capture nearly any bike trips in and out of these areas. Riders passing within 15 feet of the reader will hear a beep, indicating that they have been 'Zapped'. Trip data is uploaded to the Dero website, making it accessible to the cyclist and the administrators of the program.



APPENDIX G:

Bicycle Friendly Business & University Awards

Bicycle Friendly Business

The University of Minnesota was recognized as a 2016 Platinum Level Bicycle Friendly Business by the League of American Bicyclists, as part of their Bicycle Friendly America program. *“This program recognizes employers’ efforts to encourage a more bicycle friendly atmosphere for employees and customers. The program honors innovative bike-friendly efforts and provides technical assistance and information to help companies and organizations become even better for cyclists.”*

The University is one of the only two universities in the country to both receive a University and Business platinum-level designation.

Bicycle Friendly University

The University of Minnesota was recognized as a 2015 Platinum Level Bicycle Friendly University by the League of American Bicyclists, as part of their Bicycle Friendly America program. The Bicycle Friendly University (BFU) program recognizes institutions of higher education for promoting and providing a more bicycle-friendly campus for students, staff, faculty, and visitors.

According to the League’s evaluation criteria, achieving platinum-level status shows the following: *A platinum level Bicycle Friendly University is an exemplary campus for bicyclists. At every level, the campus welcomes cycling and has made it a great option for transportation and recreation. The college or university is commonly referred to as a primary example on how to build the best Bicycle Friendly University in virtually all categories. The bicycling culture is unmistakable. There is a strong institutional-level bicycling program as well as active campus and local advocacy groups and student clubs supporting cycling. Impressive numbers of people are biking at a much higher level than the national average. Platinum-level BFUs stand out in all five categories of their application.*



APPENDIX H:

Protected Bike Lanes

Protected bike lanes have three key characteristics:

1. **Physical separation:** Protected bike lanes have some sort of physical, stationary, vertical separation between moving motor vehicle traffic and the bike lane. Examples of vertical separation include plastic posts, bollards, curbs, planters, raised bumps, or parked cars. Protected bike lanes can be at street level or raised, either to sidewalk level or a level in between street and sidewalk level. Paint alone does not create a protected bike lane.
2. **Exclusively for people on bikes:** Protected bike lanes must define and allocate space exclusively for people on bikes (not shared with pedestrians or motorized traffic) except for brief mixing zones where necessary or at intersections. If the designs are at sidewalk level, there must be separate, identified space for people on bikes and people on foot in order for the facility to be considered a protected bike lane.
3. **On or adjacent to the roadway:** Protected bike lanes are part of the street grid. In some instances, a protected lane may be separated from the road by landscaping or other features, but it runs parallel and proximate to the roadway. This distinguishes protected bike lanes from off-street pathways that follow waterways or rail corridors.



APPENDIX I:

Church Street Bike Lanes

The primary issue to consider is the conflict created by the heavy level of bike and pedestrian traffic on the restricted access portion of Church Street between Ford and Morrill Halls. Church Street is an obvious destination for both bikes and pedestrians and is home to 400+ bike parking spaces along its edges. There currently is no space marked for bike travel, and there have been a number of complaints - primarily from cyclists - about the congestion.

The 2018 project to rebuild this portion of Church Street considered the addition of bike lanes in a variety of configurations. Regardless of which configuration was analyzed, there remained several issues, specifically, the "freeway effect." That is, by providing dedicated space to cyclists, it is almost certain that speed increases and that cyclists feel they own the space and pedestrians using the space are in their way. While providing all users dedicated space has the advantage of providing a physical framework for improving safety, it cannot by itself solve the perennial problem of pedestrians being intimidated by faster-moving bicycles. With all the above as background, a decision was made to treat this area as a destination for bicycles and not to designate a through bike lane.

