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BICYCLE & PEDESTRIAN PLAN

THE CITY OF UNIVERSITY CITY, MISSOURI



prepared by TRAILNET & H3 STUDIO

JUNE 2012

Steering Committee

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Terry Crow, City Council First Ward
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Acknowledgements

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Executive Summary

University City has a rich history that is reflected in its current assets and amenities; its location as an inner-ring suburb and its interconnected street grid presents unique opportunities for enhancing walking and biking for transportation, recreation, and fitness. In an effort to move University City towards being one of the most sustainable cities in the St. Louis Metropolitan region, the Bicycle and Pedestrian Plan builds upon University City's outstanding historic character and seeks to provide viable transportation options for all residents.

The Bicycle and Pedestrian Plan is a partnership between The City of University City and Trailnet, a non-profit organization working throughout the St. Louis area. The Bicycle and Pedestrian Plan is funded through a grant from the Missouri Department of Transportation and supports the goals of the *Mayor's Task Force on Bike and Walk-ability* by providing recommendations and design options to promote *equity in mobility* for all University City residents, regardless of their age, income, or ability. The planning process took place over the course of 14 months and included regular meetings with the *Mayor's Task Force on Bike and Walk-ability*, Steering Committee, Stakeholder Interviews, two Public Workshops, and special workshops with City staff, Commissioners, and elected officials.



VISION & GOALS

University City possesses remarkable physical connectivity, access to transit, and regionally-significant location and amenities. The Plan aims to make University City the St. Louis region's premier walk-able and bike-able city by creating a community with universal accessibility and transportation alternatives that enable residents, no matter their age or ability, to walk and bike to their destinations—school, work, shopping, recreation, and play. The Plan intends to achieve this vision by fulfilling the following Goals:

- Create an “equity of mobility” within University City by providing universally-accessible transportation alternatives;
- Support and increase ongoing investment in and revitalization of University City;
- Encourage walking and cycling as legitimate modes of transportation and promote public health and healthy and active lifestyles.

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ELEMENTS OF THE PLAN

The Bicycle and Pedestrian Plan outlines capital improvement projects, policy and operational initiatives, cost opinions, available funding sources, and implementation priorities. Elements include:

BICYCLE AND PEDESTRIAN FACILITY NETWORK: The *Facility Network* consists of four facility types designed to accommodate existing street dimensions while ensuring that all University City residents are within one quarter mile (five-minute walk) or less of a bicycle and pedestrian route. Facility types include Bike/Walk Streets; Super Sharrows; Bike Lanes; and Bike Routes. All bike and pedestrian routes include streetscape enhancements to improve pedestrian comfort and safety by delineating pedestrian zones, providing shade and nighttime lighting, and beautification.

IMPLEMENTATION GUIDE: The *Implementation Guide* is the "how-to" of the Bicycle and Pedestrian Plan. It is structured to support and facilitate existing and ongoing initiatives and prioritize capital improvement projects with a high value-to-cost ratio in order to build momentum for the implementation of the Plan. Projects that the community intends to complete or consider in order to implement the Bicycle and Pedestrian Plan are categorized by timeframes of 1-5 Years; 5-15 Years; and 10-20 Years.

POLICIES, OPERATIONS & MAINTENANCE: In addition to capital improvement projects, the Plan includes several policy, operations, and maintenance recommendations. These recommendations are designed to enhance safety, awareness, and usership of new and improved bike and pedestrian facilities and evaluate the success of implementation initiatives over time.

OPINION OF PROBABLE COST: An *Opinion of Probable Cost* has been assembled to assist University City in developing capital improvements programming, departmental budgeting, grant writing, and fund-raising. It is based on the *Gateway Bike Plan* and similar projects in the St. Louis Region.

FUNDING SOURCES: Creative *Funding Sources* are necessary for the development of a bicycle- and pedestrian-friendly community and University City should seek to draw from the diverse range of federal, local, and private-sector funding programs available to fund both infrastructure improvements and programs. Local funds should be leveraged as match for external funding in order to maximize the City's investment.



Introduction

The City of University City has a rich history that is reflected in its current assets and amenities. University City has many pedestrian-friendly, historic neighborhoods with tree-lined streets; accessible business areas; and neighborhood schools and parks. The Delmar Loop—the premier shopping and entertainment district in the St. Louis region—is the City’s most recognizable asset. University City’s location as an inner-ring suburb and its interconnected street grid presents unique opportunities for enhancing walking and biking for transportation, recreation, and fitness. At the same time, the City’s aging infrastructure presents challenges to achieving this goal.

In an effort to move University City towards being one of the most sustainable cities in the St. Louis Metropolitan region and to make the streets safer for bicyclists and pedestrians, a *Mayor’s Task Force on Bike and Walk-ability* was established in October 2010. This task force is charged with reviewing best practices locally, nationally, and internationally to determine how to make University City’s streets safe for walking and biking, and discovering how to move forward on making University City a “complete streets” community. The Bicycle and Pedestrian Plan builds upon University City’s outstanding historic character and the mandate of the Bike Walk Task Force. The Plan focuses on improving existing pedestrian- and bicycle-oriented neighborhoods and commercial districts, supporting the creation of new walk-able and bike-able infrastructure, and connecting to amenities in University City and neighboring communities. Through the integration of programming, policy, and planning, the Bicycle and Pedestrian Plan provides viable transportation options for all residents.

The Bicycle and Pedestrian Plan is a partnership between The City of University City and Trailnet, a non-profit organization working throughout the St. Louis Metropolitan Area to foster healthy and active communities through innovative programs, planning, and policies that promote walking and bicycling. The Bicycle and Pedestrian Plan is funded through a grant from the Missouri Department of Transportation (MoDOT) *Surface Transportation Program (STP)* for the development of Walk-able Bike-able Communities (Phase 3.) The Plan supports the goals of the *Mayor’s Task Force on Bike and Walk-ability* by providing recommendations and design options to promote *equity in mobility* for all University City residents, regardless of their age, income, or ability.



Planning Process

The Planning Process for the Bicycle and Pedestrian Plan is divided into a Pre-Planning stage and four Phases covering each of the project tasks and work products. These Phases are: **Phase A: Analysis of Existing Data & Conditions**; **Phase B: Plan Goals, Vision & Objectives**; **Phase C: Bicycle & Pedestrian Plan (including Design Options)**; and **Phase D: Implementation & Funding Strategy**. This process took place over the course of 14 months and included regular meetings with the *Mayor's Task Force on Bike and Walk-ability*, Bicycle and Pedestrian Plan Steering Committee, Stakeholder Interviews, two Public Workshops, and special workshops with City staff, Commissioners, and elected officials.

BICYCLE & PEDESTRIAN PLAN STEERING COMMITTEE

The Steering Committee consisted of the *Mayor's Task Force on Bike and Walk-ability* as well as representatives from Great Rivers Greenway, Saint Louis County Highways and Traffic, MoDOT, University City School District, and University City staff. The Steering Committee served as a representative, decision-making body to guide the planning process, lead public outreach efforts and spread the word about the Plan, and provided feedback and critique on the various phases of the Plan. The Steering Committee met four times throughout the process, at the conclusion of each project phase.

STAKEHOLDER FOCUS GROUPS

The City of University City and the Steering Committee identified 26 Stakeholders to be interviewed as part of the Planning Process. Stakeholders included University City residents, business and property owners, merchants, institutions, and other interested parties. The Stakeholders were interviewed over the course of two days in small focus groups. These *Stakeholder Focus Groups*, along with a professional analysis of bike-able and walk-able conditions in University City, resulted in a list of *Consensus Issues* that were developed and revised through a process of public review and feedback.



BICYCLE & PEDESTRIAN PLAN PUBLIC ENGAGEMENT SCHEDULE

STAKEHOLDER INTERVIEWS

April 4-5, 2011

STEERING COMMITTEE MEETING 01 - Analysis of Existing Data & Conditions

May 3, 2011

PUBLIC WORKSHOP 01 - Analysis of Existing Data & Conditions

May 18, 2011

STEERING COMMITTEE MEETING 02 - Plan Goals, Vision & Objectives

July 5, 2011

PLAN COMMISSION PRESENTATION - Plan Goals, Vision & Objectives

August 24, 2011

STEERING COMMITTEE MEETING 03 - Plan Design Options

September 6, 2011

PUBLIC WORKSHOP 02 - Plan Design Options

September 22, 2011

STEERING COMMITTEE MEETING 04 - Draft Bicycle & Pedestrian Plan

December 6, 2011

CITY COUNCIL WORKSESSION - Draft Bicycle & Pedestrian Plan

PLAN COMMISSION PRESENTATION - Draft Bicycle & Pedestrian Plan

CITY COUNCIL PRESENTATION - Final Bicycle & Pedestrian Plan

BICYCLE & PEDESTRIAN PLAN APPROVAL

DEVELOPMENT OF THE PLAN

The *Consensus Issues* and summary of the site analysis conducted in Phase A were presented to the Steering Committee at their first meeting and to the University City community in the first Public Workshop. Following this Workshop, the Steering Committee approved the draft *Plan Goals, Vision, and Objectives* for the Bicycle and Pedestrian Plan. The *Plan Goals, Vision, and Objectives* represent the consensus values of the University City community for bike- and walk-ability and serve as the foundation for the Bicycle and Pedestrian Plan.

Next, a draft *Bicycle and Pedestrian Facility Network* was developed. This included particular routes and alignments for proposed facility types—including bike-walk streets, on-street bike lanes, super sharrows, off-street paths, streetscape improvements, and greenways—and design options for each facility type. These design options were presented to the Steering Committee at their third meeting and to the University City community in the second Public Workshop for review and feedback.

Utilizing the public input gathered at the second Public Workshop in coordination with the *Mayor's Task Force on Bike and Walk-ability*, University City City Council, and the Plan Commission, the City developed the final Bicycle and Pedestrian Plan. The Plan includes the final *Bicycle and Pedestrian Facility Network*, an *Implementation Guide* outlining specific *Projects*, an *Opinion of Probable Cost*, and a description of possible *Funding Sources*.

This comprehensive sequence of public engagement, summarized in detail to the left, has resulted in a Plan and implementation strategy developed with transparency and supported by public input among neighborhood residents. These are the hallmarks of a successful public planning process. Following completion of the planning process, the Bicycle and Pedestrian Master Plan shall be adopted as an Addendum to the City of University City Comprehensive Plan.

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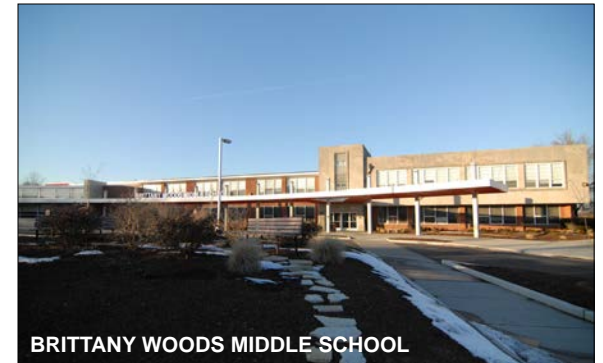
Existing Conditions

University City is located in the heart of the St. Louis Metro area. The 5.9 square-mile City sits between Interstate 170 and the City of St. Louis city limits and is intersected by major regional arterial corridors. Additionally, the City is served by the Metrolink light rail transit system and Metrobus lines, making University City one of the most well-connected communities in the Metro region.

University City has shown an excellent capacity to plan for its future in an environmentally-, socially-, and economically-sustainable way. Public space and planning initiatives including streetscape improvements to the Delmar Loop; Chuck Berry Plaza; Great Rivers Greenway (GRG) Centennial Greenway (incorporated in this Plan but designed and implemented by GRG); the ongoing Parkview Gardens Neighborhood Sustainable Development Plan (with which this Plan has been closely coordinated); cross-jurisdictional development planning for the I-170/Olive Boulevard interchange with Olivette; and pending adoption of a City-wide *Complete Streets Ordinance* (see page 38) all demonstrate University City's commitment to the creation of great places rooted in University City's history. These efforts have been augmented by continued private investment throughout University City, evidenced by the ongoing stability of University City's residential and retail markets. The Bicycle and Pedestrian Plan is intended to unify the City's planning efforts under the vision of a bike-able and walk-able community, supported by vibrant commercial districts, great streets, and public spaces.



MONA TERRACE BIKE PATH



BRITTANY WOODS MIDDLE SCHOOL

ISSUES & CHALLENGES

University City faces a number of challenges to improving biking and walking conditions. University City is divided by a number of arterial roads including Big Bend Boulevard, Delmar Boulevard, Hanley Road, McKnight Road, Midland Boulevard, North and South Avenue, Olive Boulevard, Vernon Avenue, and Woodson Road. These arterial roads are under the jurisdiction of St. Louis County Highways and Traffic and MoDOT. Historically, these streets were developed as major regional arteries. With the construction of I-64 and I-170, traffic volumes on several of these arteries has declined and some have excess capacity for vehicular traffic. As a result, traffic speeds often exceed posted limits and these streets are perceived as dangerous to pedestrians and cyclists. It will be essential for University City to coordinate future improvements on these streets with St. Louis County and MoDOT and advocate for improvements to benefits all types of users.

There are a number of traffic signals and crossing points throughout the city that are perceived as unsafe or do not provide high levels of service to cyclists and pedestrians. These include a lack of manual- or automatic activation for bikes (Jackson Avenue at Delmar Boulevard), lack of pedestrian-only crossing modes at intersections with limited visibility (Big Bend Boulevard at Delmar Boulevard), and pedestrian crossings of arterial roads without electric signals (Delmar Boulevard at Trinity Avenue; Olive Boulevard at Heman Park.) Finally, many existing sidewalks are not accessible, lacking curb cuts or designated crossing points at intersections, and a number of neighborhoods in areas west of North & South Avenue have no sidewalks or curbs, or sidewalks on one side of the street only. The comprehensive list of *Consensus Issues* and an illustrative map are presented on the following page.

ASSETS & OPPORTUNITIES

University City's gridded streets provide excellent connectivity within and between neighborhoods, with numerous pedestrian and bicycle alternative routes to major streets. In addition, University City's seventeen parks, fourteen primary and secondary schools, and numerous regional and neighborhood commercial districts are well-distributed throughout this city; over fifty-percent of University City residents live within a five-minute walk (one-quarter mile) of a park, school, and commercial district, and nearly all residents live within a five-minute bike ride (one mile). University City is also exceptionally well-served by regional transportation. There are six Metrolink stations in and around University City, and all regional arterials host Metrobus lines. The planned *Centennial Greenway* also bisects the City in its route from Forest Park to Creve Coeur Lake, placing University City at the doorstep of the "River Ring" greenway network. Nearly all of University City residents are within a five-minute walk (one-quarter mile) of a Metrobus stop, over thirty-percent are within a ten-minute walk (one-half mile) and nearly all residents are within a ten-minute bike ride (two miles) of Metrolink and the *Centennial Greenway*.

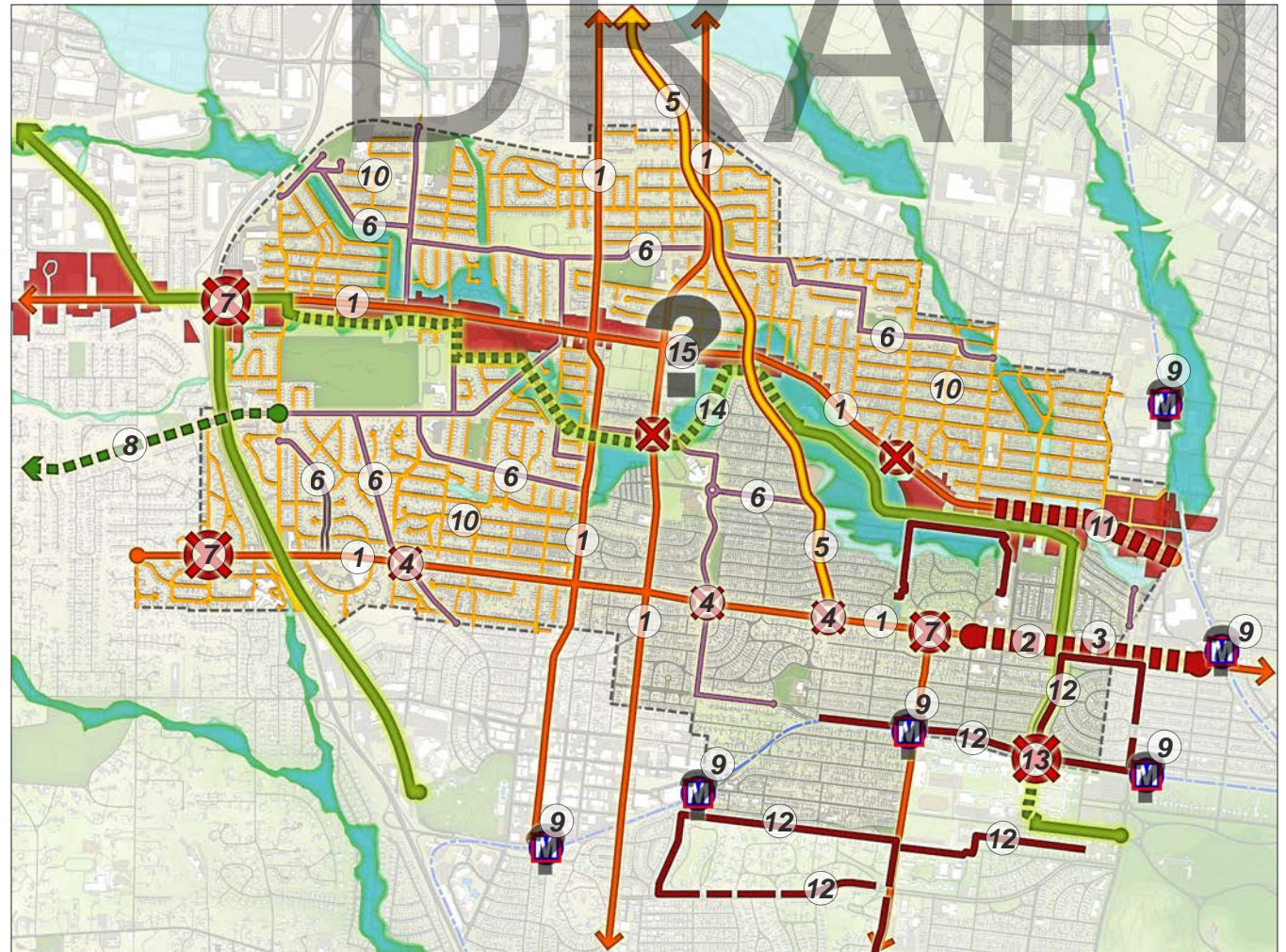
University City's existing connectivity and access to regional transit and amenities provides a remarkable framework for increasing walk and bike-ability. This puts University City in the unique position to deliver true transportation equity to its residents, making walking, biking, or utilizing transit for daily trips as easy as driving. Following through with this opportunity can help make University City the first walk-able, bike-able, and truly car-optional community in the St. Louis region.



NON-CONTINUOUS CROSSING POINTS AT VANDERBILT AVENUE AND AMHERST AVENUE

CONSENSUS ISSUES

1. Major corridors lack sufficient pedestrian amenities including sidewalks, crosswalks, lighting, shade, and A.D.A.-accessible curb cuts and are uncomfortable or perceived as unsafe to walk or bike.
2. The Loop is congested with both cars and pedestrians and is uncomfortable and perceived as unsafe for bikes.
3. There is a lack of visible and conveniently-located bicycle parking and storage facilities in the Loop.
4. Many major intersections along Delmar Boulevard are perceived as unsafe.
5. Midland Boulevard is a good bike route, but traffic speed and parked cars result in negative perceptions of safety and comfort.
6. Existing, dedicated bike routes and pedestrian paths do not connect to meaningful destinations; city-wide and regional bike routes are not well-identified or -marked.
7. Traffic signals at the crossing of major arterial roads, are not timed for cyclists and do not activate when bikes are present.
8. Bicycle connectivity to the west is limited to one route along Old Bonhomme Road.
9. There is a lack of direct and identified bike and walk routes to Metrolink.
10. Many streets lack sidewalks and curbs, particularly in west of North & South Avenue.
11. Sidewalks along Olive Boulevard, east of Ferguson Avenue, are often obstructed.
12. There are numerous physical barriers preventing connectivity to the south and east.
13. The Centennial Greenway bridge at Forest Park Parkway is not ADA-accessible.
14. Topography and the River Des Peres corridor result in fundamental issues of flooding for sections of University City.
15. The Olive Boulevard commercial corridor lacks a coherent regional identity.



Vision

“To make University City the region’s premier walk-able and bike-able city by creating a community with universal accessibility and transportation alternatives. To enable residents, no matter their age or ability, to walk and bike to their destinations—school, work, shopping, recreation, and play.”

Plan Vision, Goals & Objectives

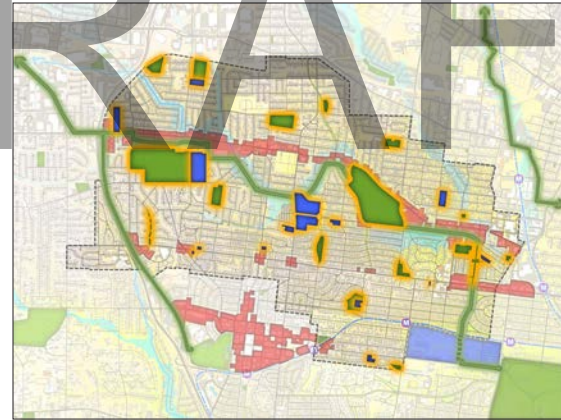
University City recognizes the unique opportunity presented by its remarkable physical connectivity, access to transit, and regionally-significant location and amenities. In order to realize this potential to make University City the premier walk-able and bike-able community in the St. Louis Metro area, the Bicycle and Pedestrian Plan intends to fulfill the following *Goals*:

- 1) **Create an “equity of mobility” within University City by providing universally-accessible transportation alternatives**, including biking, walking, and transit for all residents on a daily basis, including children, the elderly, the disabled, and the disadvantaged.
- 2) **Support and increase ongoing investment in and revitalization of University City** by providing amenities, services, tools, and policies that increase the competitiveness of University City as a premier business, shopping, entertainment, and residential community in the St. Louis region, supported by access to transit and walk-able, bike-able neighborhoods and districts.
- 3) **Encourage walking and cycling as legitimate modes of transportation and promote public health and healthy and active lifestyles** through facility and infrastructure improvements; programming; special events and activities; public outreach; data collection; and safety education and enforcement.

The Bicycle and Pedestrian Plan *Vision* unifies the three Goals and also outlines the consensus values and desires of the University City community. The Bicycle and Pedestrian Plan *Objectives*, presented on the following pages, outline specific strategies to achieve these Goals and fulfill the project *Vision*.

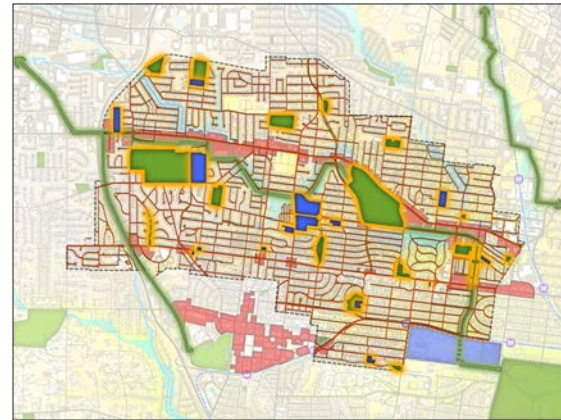
Objective #1

Improve pedestrian access to University City parks and schools by enhancing existing sidewalks and constructing new sidewalks and, A.D.A.-accessible crosswalks, safe intersections, streetscapes and public realm amenities surrounding parks and schools.



Objective #2

Create an equity of mobility for all residents by enhancing walkability through the creation of great streets throughout University City. Develop sustainable landscapes; improve the condition and accessibility of existing sidewalks, crosswalks, intersections, and facilities; implement new sidewalks where possible; promote multi-modal usership with traffic-calming design, signage, programming, and enforcement; and implement operations and maintenance standards and programs.



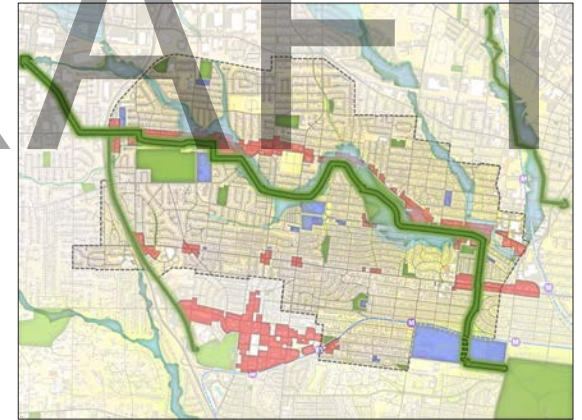
Objective #3

Improve the safety and comfort of pedestrian connectivity across major regional arterials, including Delmar Boulevard, North Hanley Road, Midland Boulevard, North & South Road, Olive Boulevard, McKnight/Woodson Road, and Big Bend Boulevard through the implementation of enhanced safe crosswalks, signals, safety enforcement, and programming



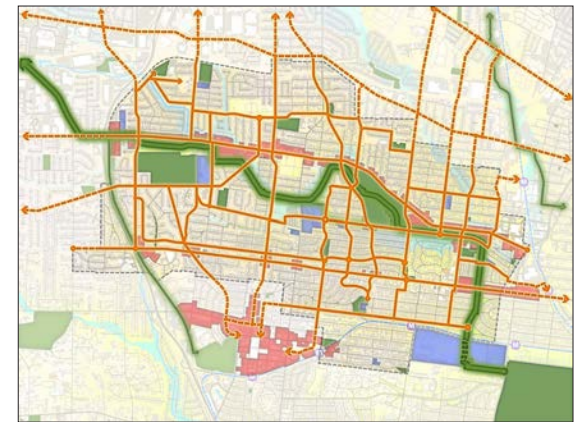
Objective #4

Utilize the unique landscape of the River Des Peres to develop regional connections to the south and west by coordinating with Great Rivers Greenway to promote and facilitate the development Centennial Greenway.



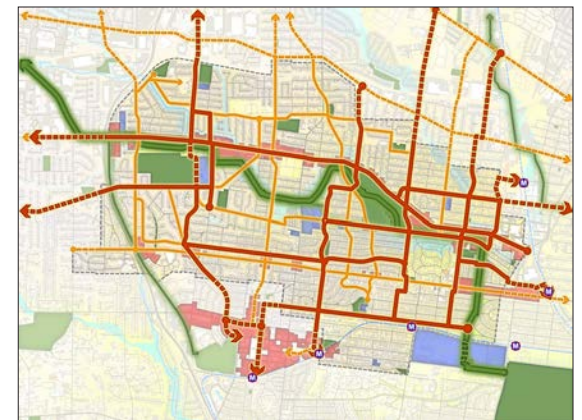
Objective #5

Enhance north/south and east/west pedestrian and bicycle connectivity between neighborhoods, commercial and recreational destinations, amenities, and transit with on-street pedestrian and bicycle routes consisting of improved sidewalks and streetscapes, intersections, share-the-road signage and markings, and bike lanes where possible.



Objective #6

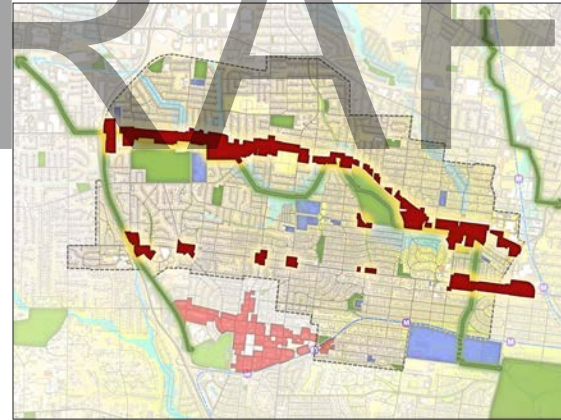
Connect University City neighborhoods to regional business districts, greenway networks, and transit with a system of bicycle and pedestrian routes consisting of bicycle boulevards, on-street bike lanes, and off-street path connectors linking University City parks, schools, Olive Boulevard, and the Delmar Loop



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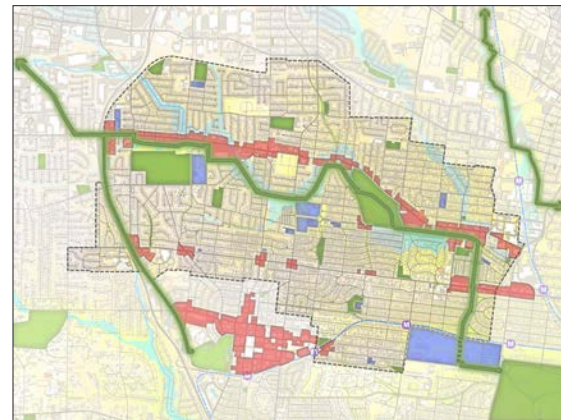
Objective #7

Create walk-able, neighborhood- and resident-oriented commercial districts by facilitating pedestrian-oriented new and infill development and supporting the creation and retention of businesses that attract regional visitors while supporting neighborhood needs and local residents.



Objective #8

Promote an increase in walking and cycling by developing walking and bicycling programs and activities; engaging school children, families, senior citizens, and community organizations; and implementing an ongoing, scheduled data-collection program to establish baseline pedestrian and cycling data and to quantify improvements in pedestrian and cycling use throughout the implementation of the Bicycle & Pedestrian Plan.



Objective #9

Coordinate with existing and ongoing planning efforts including the St. Louis Regional Bike Plan, Centennial Greenway, Olive Boulevard Design Guidelines, the Parkview Gardens Sustainability Plan, the Loop Trolley, and neighboring bike/walk plans to develop a relevant Bicycle & Pedestrian Master Plan for University City that contributes to city-wide and regional interconnectivity, mobility, and investment.



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Bicycle & Pedestrian Facility Network

The Bicycle and Pedestrian Plan's *Facility Network* consists of four primary facility types designed to accommodate existing street dimensions and ensuring that all University City residents are within one quarter mile (five-minute walk) or less of a bicycle and pedestrian route. These facility types are:

BIKE/WALK STREETS: Also known as “bicycle boulevards,” these are **shared-use streets that give preference to bikes over vehicular traffic**. They are indicated with markings, signage, and optional traffic calming devices. This is the preferred facility type on low-volume neighborhood streets.

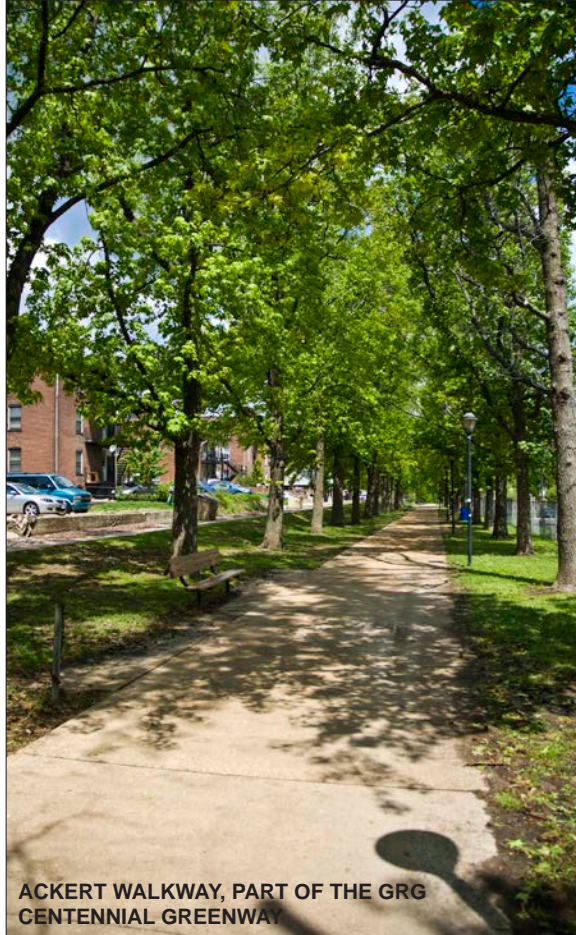
SUPER SHARROWS: Super Sharrows utilize **printed, full-lane width enlarged shared lane markings with signage**. Enlarged shared lane markings are optionally paired with bicycle-zone lane markings (the “Big Green Stripe.”) This is the preferred facility type where bike lanes are not possible.

BIKE LANES: Bike Lanes are **dedicated, directional traffic lanes for bicycles**, located outside of vehicular traffic lanes. They are a minimum of 5-feet wide and indicated with stripes, directional arrows, and signage. This is the preferred facility type for all roads where possible.

BIKE ROUTES: Bike Routes consist of Share-the-Road and Bicycle Route signage and optional shared-lane markings (as permitted.) It is recommended for streets where dedicated bicycle facilities are either not possible due to road width or traffic conditions or not permitted by governing agencies.

All facility types include streetscape enhancements consisting of curb and sidewalk improvements/replacement, tree lawns, street trees, and optional decorative street lighting. These enhancements improve pedestrian comfort and safety by delineating pedestrian and vehicular zones, discouraging right-of-way obstruction by parked cars, providing shade and nighttime lighting, and beautification.

The proposed GRG *Centennial Greenway*, while considered part of the Bicycle and Pedestrian Facility Network and utilizing existing and proposed off-street facilities including Heman Park, Mona Terrace, and the Wilson Avenue buyout area, is an initiative of Great Rivers Greenway and is not discussed in further detail. Details for each facility type are presented on the following pages.



ACKERT WALKWAY, PART OF THE GRG CENTENNIAL GREENWAY

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BICYCLE & PEDESTRIAN FACILITY NETWORK

BIKE/WALK STREETS

- A. North Bike/Walk Corridor
- B. Central Bike/Walk Corridor
- C. North & South Connector
- D. Etzel Avenue
- E. Pennsylvania Connector
- F. Kingsbury Connector

SUPER SHARROWS

- G. Jackson Avenue
- H. Purdue Avenue
- I. Old Bonhomme Road/Swarthmore Lane
- J. 82nd Boulevard
- K. Enright Avenue Connector
- L. Sutter Avenue Connector
- M. 81st Avenue
- N. Kingsland Avenue

BIKE LANES

- O. Olive Boulevard
- P. Kingsland Avenue
- Q. Old Bonhomme Road
- R. Ferguson Avenue
- S. Pershing Avenue

BIKE ROUTES

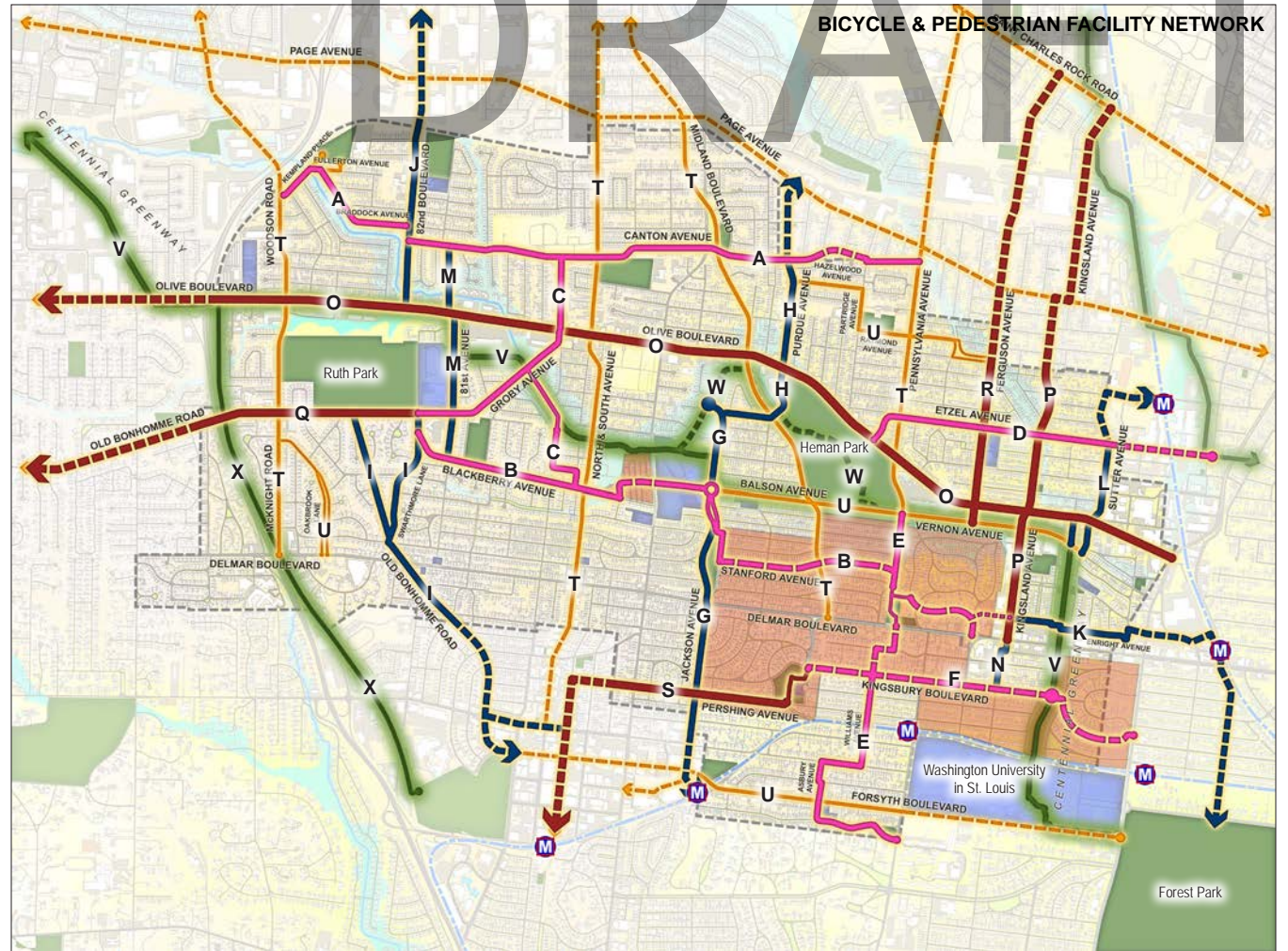
- T. St. Louis County Arterials
- U. Neighborhood Streets & Connectors

CENTENNIAL GREENWAY*

- V. Centennial Greenway
- W. Centennial Greenway Alternate Route
- X. Shaw Park Spur

- Bike/Walk Streets
- Super Sharrows
- Bike Lanes
- Pedestrian & Streetscape Improvements
- Centennial Greenway

- Bike/Walk Streets, Private Subdivisions
- Centennial Greenway Alternate Route



*Centennial Greenway is a previously-approved planning initiative of Great Rivers Greenway (GRG) and is included as-is in the University City Bicycle & Pedestrian Plan. GRG maintains full authority over ongoing and future planning, design, and implementation of the Centennial Greenway.

Bike/Walk Streets, also known as Bicycle Boulevards, are shared-use streets that give priority to bicycles over vehicular traffic. Bike/Walk Streets are ideally implemented on low-volume, low-speed residential streets that parallel arterial roads. Bike/Walk Streets encourage cyclists to avoid major thoroughfares by providing alternate routes, and encourage vehicular through-traffic to avoid neighborhood streets. Design, programming, and enforcement initiatives include:

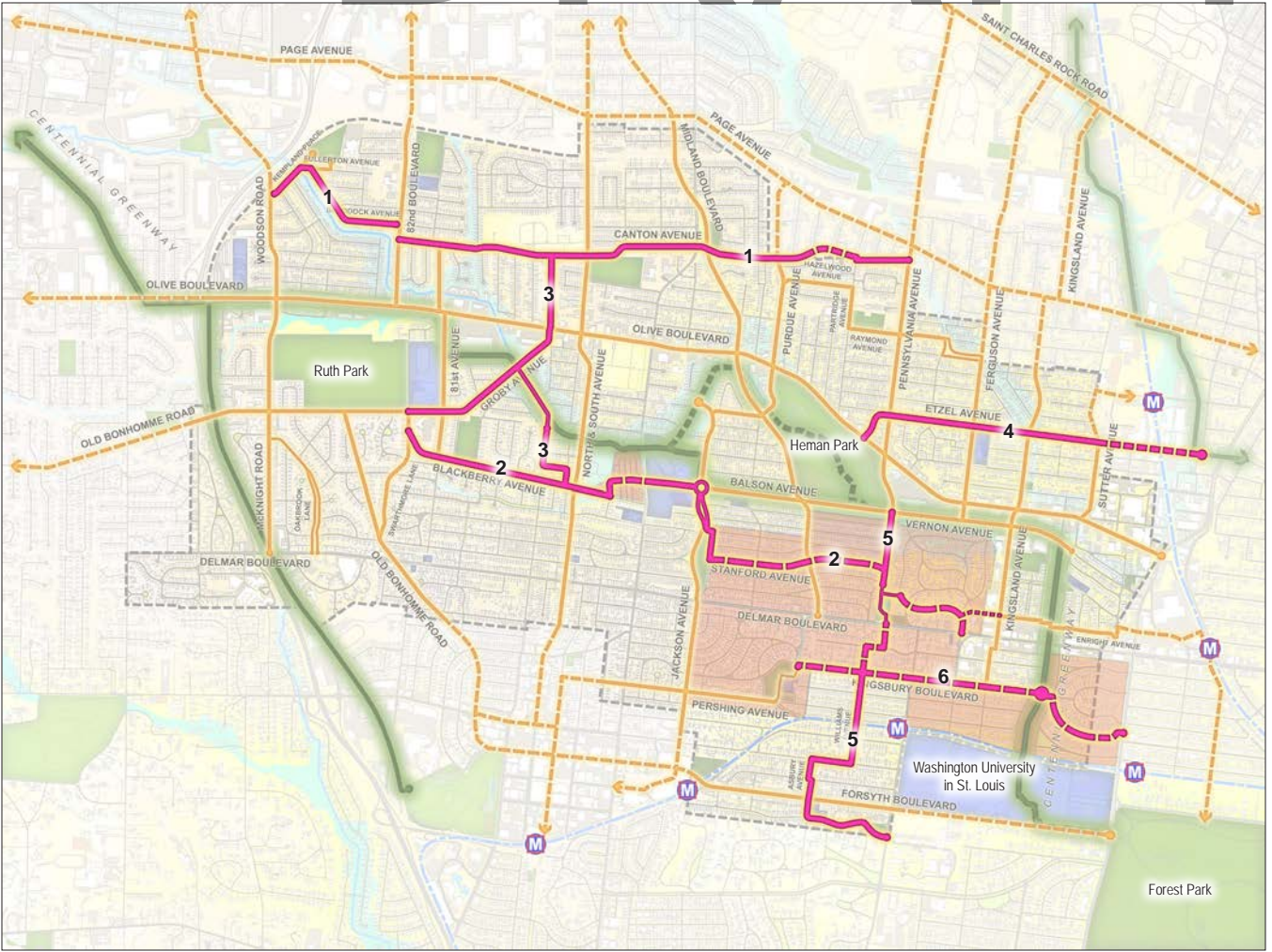
- **STOP SIGNS:** Existing 4-way stop intersections should be changed to 2-way stop intersections for cross traffic, allowing Bike/Walk Street cyclists and traffic to proceed without stopping.
- **SPEED LIMITS:** Speed limits on Bike/Walk Streets should not exceed 20 miles per hour.
- **LANE MARKINGS AND SIGNAGE:** Bike/Walk Streets should be indicated with enlarged, full-lane width shared-lane markings (bike-and-chevron stencil), striping, and way-finding signage.
- **TRAFFIC-CALMING:** Bike/Walk Streets can include optional traffic-calming elements, including speed tables, rumble-strips, curb bulb-outs, and chicanes.
- **DIVERTERS:** Bike/Walk Streets can include optional traffic diverters at designated cross streets. These diverters will direct vehicular traffic onto parallel collector or arterial roads, restricting vehicular traffic to local traffic only while allowing bicycle traffic to pass through.
- **STREETSCAPE ENHANCEMENTS:** Bike/Walk Streets should include curb and sidewalk improvements, tree lawns, street trees, and optional decorative street lighting.

A number of proposed Bike/Walk Streets pass through private subdivisions. While subdivision residents have been involved in the planning process, coordination with and approval of subdivision Trustees will be required to implement planned facilities. The Bike/Walk Street facility network is illustrated on the facing page, and design details for Bike/Walk Streets are presented on page 18.

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FACILITY TYPES Bike/Walk Streets (Bicycle Boulevards)

- 1. North Bike/Walk Corridor
- 2. Central Bike/Walk Corridor
- 3. North & South Connector
- 4. Etzel Avenue
- 5. Pennsylvania Connector
- 6. Kingsbury Connector



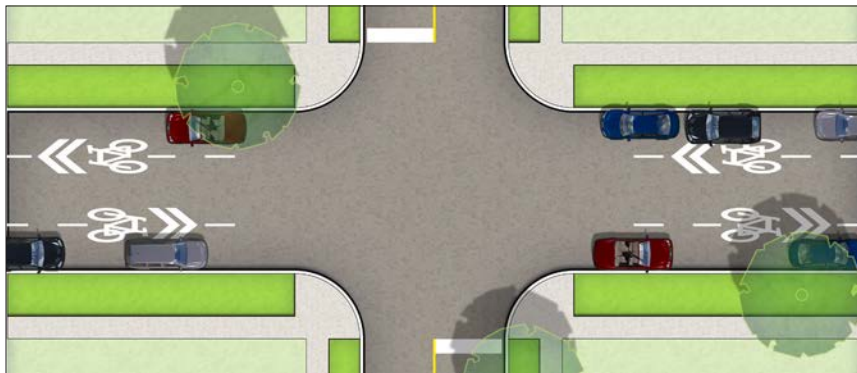
FACILITY TYPES

Bike/Walk Streets (Bicycle Boulevards)



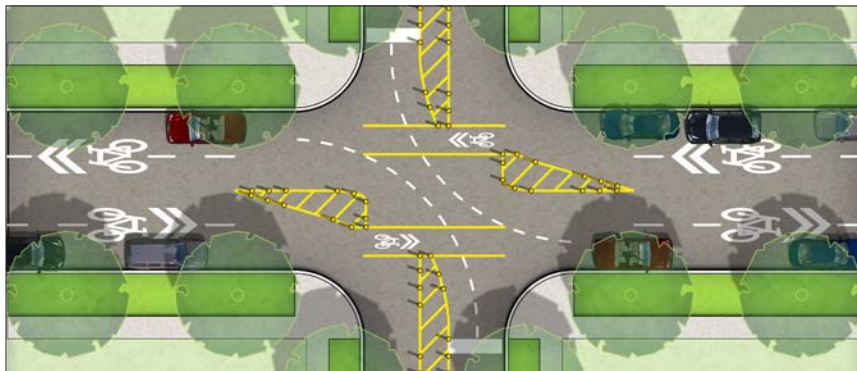
EXISTING CONDITIONS

- Two (2) Travel Lanes (TR)
- Two (2) Parking Lanes (P)



PHASE 1

- Bicycle boulevard pavement markings (1 per 100 feet)
- Bicycle boulevard striping
- Bicycle boulevard signage
- All improvements within existing curb-to-curb right-of-way



PHASE 2

- Traffic-calming devices as required
- Repair curbs and sidewalks as required
- Street trees
- Decorative street lighting (OPTIONAL)
- Underground utilities (OPTIONAL)

UNIVERSITY CITY BICYCLE & PEDESTRIAN PLAN
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Super Sharrows consist of full-lane width enlarged shared-lane markings (bike-and-chevron stencil), Share-the-Road signage on shared-use streets. Bike/Walk Streets are ideally implemented on low- to medium-volume, low-speed and medium-speed residential streets and secondary connector streets where the development of Bike/Walk Streets or Bike Lanes is not feasible or possible due to street width or required through-traffic connectivity. Super Sharrows can improve cyclist safety by calling attention to cyclists from motorists. Design, programming, and enforcement initiatives include:

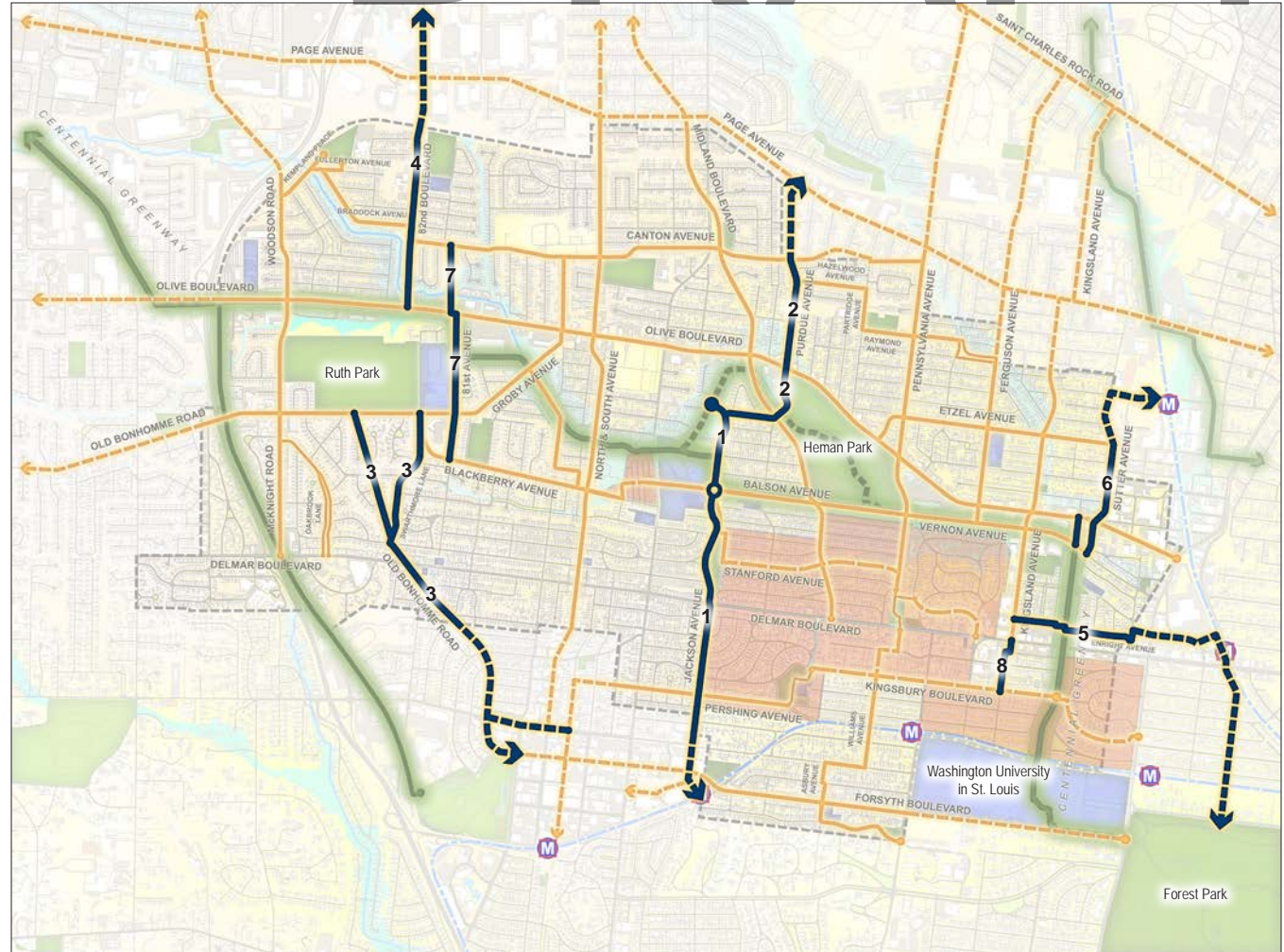
- **ENLARGED SHARED-LANE MARKINGS:** Streets with Super Sharrows should be indicated with enlarged shared-lane marking (bike-and-chevron stencil.) Markings should be 8- to 10-foot wide and located in the center of the traffic lane (outside traffic lane on 4-lane roads.)
- **SPEED LIMITS:** Speed limits on streets with Super Sharrows should not exceed 30 miles per hour.
- **SIGNAGE:** Streets with Super Sharrows should be indicated with Share-the-Road signage, optional Bike Route signage, and way-finding signage to parks and other amenities.
- **BICYCLE-ZONE LANE MARKINGS:** Streets with Super Sharrows can include optional bicycle-zone lane markings, also referred to as “the Big Green Stripe.” Bicycle-zone lane markings should consist of a 5- to 7-foot painted green lane between two white stripes, located in the outer half of traffic lane (outside traffic lane on 4-lane roads.)
- **STREETScape ENHANCEMENTS:** Streets with Super Sharrows should include curb and sidewalk improvements, tree lawns, street trees, and optional decorative street lighting.

The Super Sharrow facility network is illustrated on the facing page, and design details for streets with Super Sharrows are presented on page 22.

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FACILITY TYPES
Super Sharrows

1. Jackson Avenue
2. Purdue Avenue
3. Old Bonhomme Road/
Swarthmore Lane
4. 82nd Boulevard
5. Enright Avenue Connector
6. Sutter Avenue Connector
7. 81st Avenue
8. Kingsland Avenue



FACILITY TYPES
Super Sharrows

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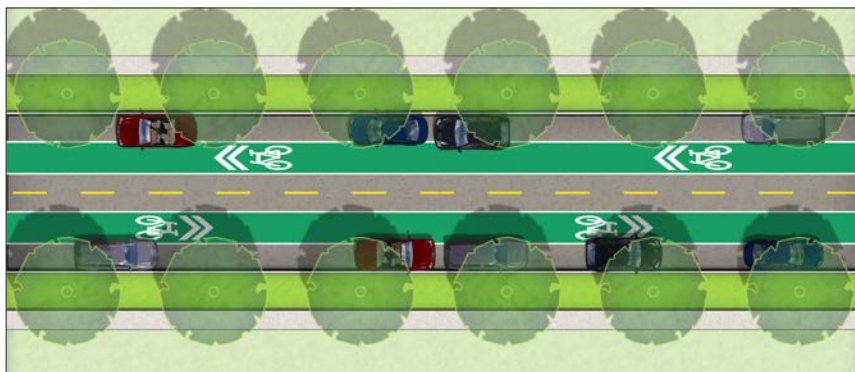
EXISTING CONDITIONS

- Two (2) Travel Lanes (TR)
- Two (2) Parking Lanes (P)



PHASE 1

- Lane-width Share-the-Road Arrows (1 per 175 feet)
- Share-the-Road signage
- All improvements within existing curb-to-curb right-of-way



PHASE 2

- Bicycle-zone lane markings (the “Big Green Stripe”)
- Repair curbs and sidewalks as required
- Street trees
- Decorative street lighting (OPTIONAL)
- Underground utilities (OPTIONAL)

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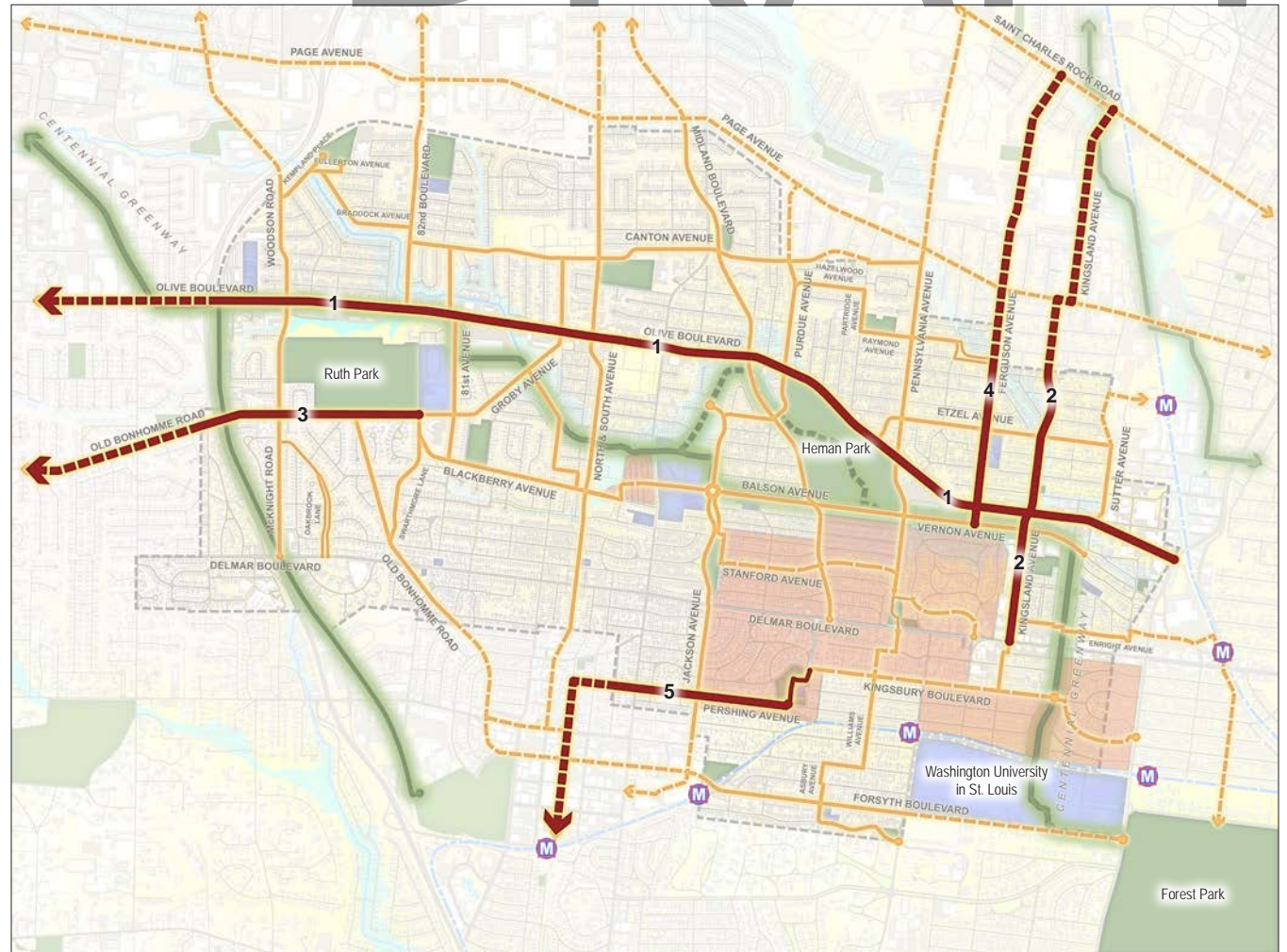
Bike Lanes consist of dedicated, striped lanes within the curb-to-curb dimension of the roadway. Regional standards for bike lane design are 2 one-way bike lanes located on the outside of the traffic lanes on each side of the roadway. Bike lanes are positioned between outermost traffic lane and the curb or the parallel parking lane, if present. Bike lanes are the preferred facility type for all roadways, given sufficient right-of-way or pavement width exists. Design, programming, and enforcement initiatives include:

- **STRIPED LANES:** Bike Lanes are one-way, 5- to 6- feet wide, and indicated by two white stripes. Bike Lanes should be located on the outside of traffic lanes, between the outermost traffic lane and the curb or parallel parking lane, if present. If Bike Lanes are located between traffic lanes and parallel parking lanes, the combined width of the Bike Lane and parallel parking lane should be a minimum of 13 feet to minimize door zone conflicts.
- **SPEED LIMITS:** Speed limits on streets with Bike Lanes should not exceed 40 miles per hour.
- **SIGNAGE:** Bike Lanes should be indicated with Bike Lane and Share-the-Road signage and way-finding signage to parks and other amenities.
- **STREETSCAPE ENHANCEMENTS:** Streets with Bike Lanes should include curb and sidewalk improvements, tree lawns, street trees, and optional decorative street lighting.

The Bike Lane facility network is illustrated on the facing page, and design details for Bike Lanes are presented on pages 26 to 28.

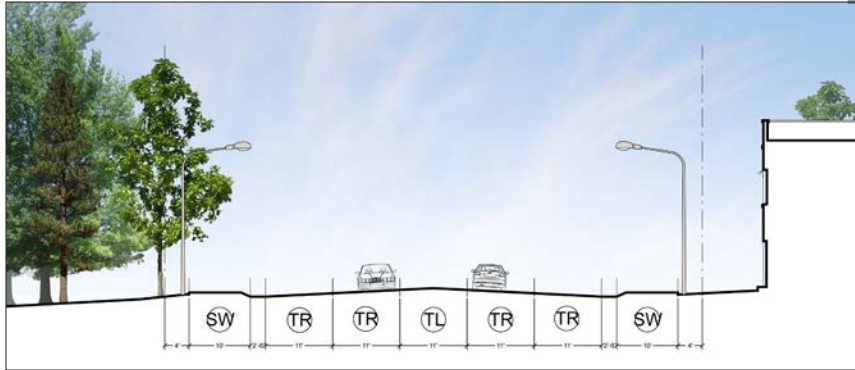
FACILITY TYPES Bike Lanes

1. Olive Boulevard
2. Kingsland Avenue
3. Old Bonhomme Road
4. Ferguson Avenue
5. Pershing Avenue



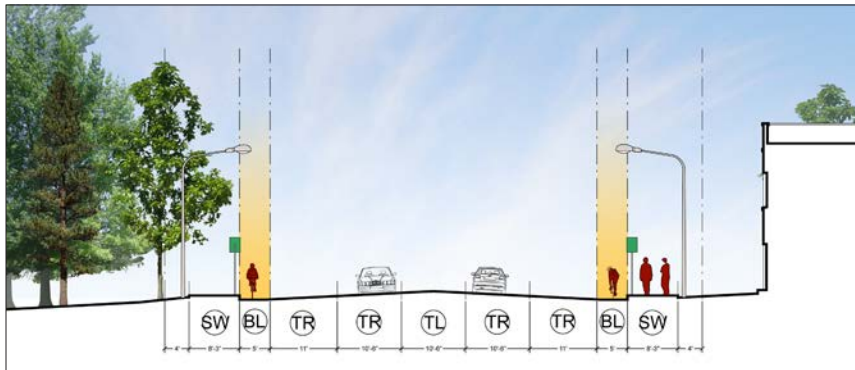
FACILITY TYPES

Bike Lanes : Olive Boulevard



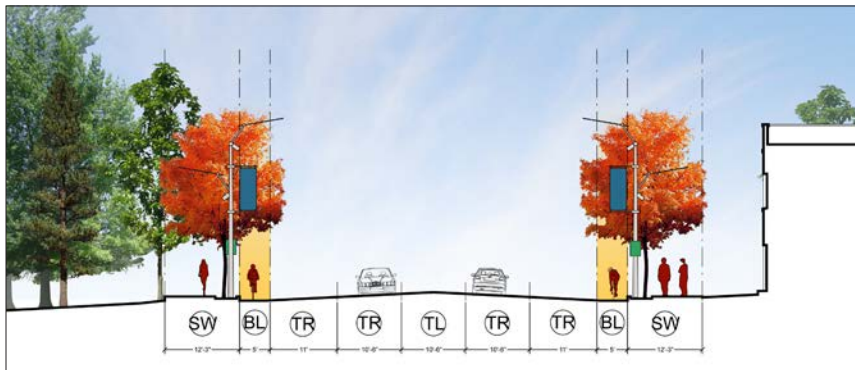
EXISTING CONDITIONS

- One (1) Center Turn Lane (TL)
- Four (4) Travel Lanes (TR)



PHASE 1

- One (1) Center Turn-Lane (TL)
- Four (4) Travel Lanes (TR)
- Two (2) striped Bike Lanes (BL)
- Lane widths as shown
- All improvements within existing curb-to-curb right-of-way



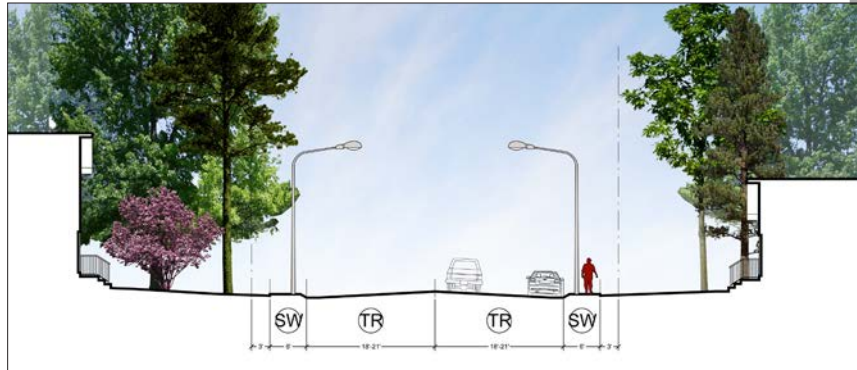
PHASE 2

- Tree lawns
- Repair curbs and sidewalks as required
- Street trees
- Decorative street lighting (OPTIONAL)
- Underground utilities (OPTIONAL)

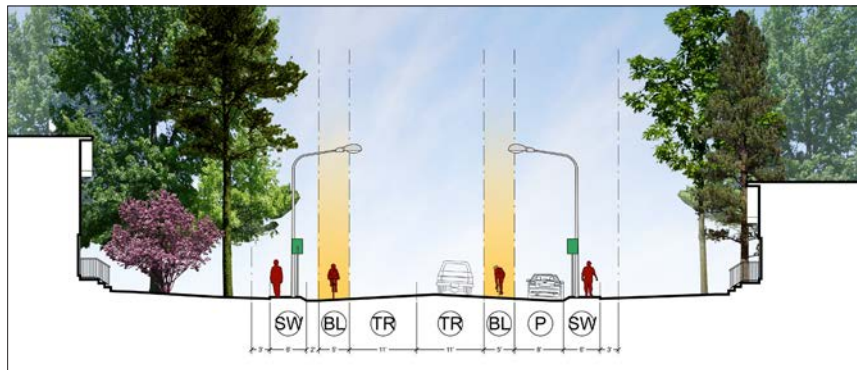
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FACILITY TYPES

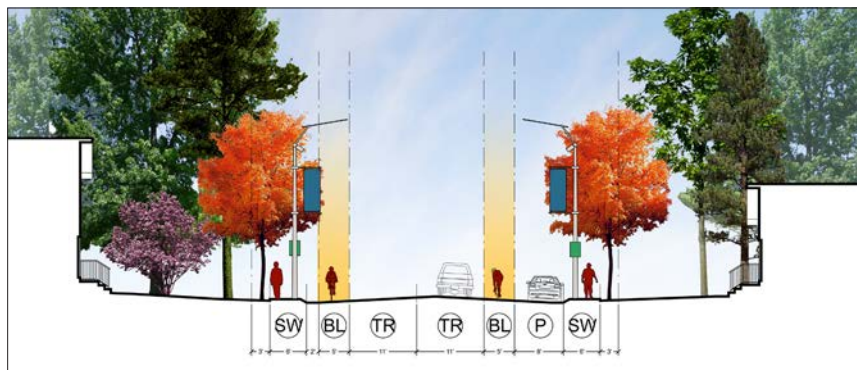
Bike Lanes : 2-Lane Streets



- EXISTING CONDITIONS**
- Two (2) Travel Lanes (TR)
 - Two (2) Parking Lanes (P)



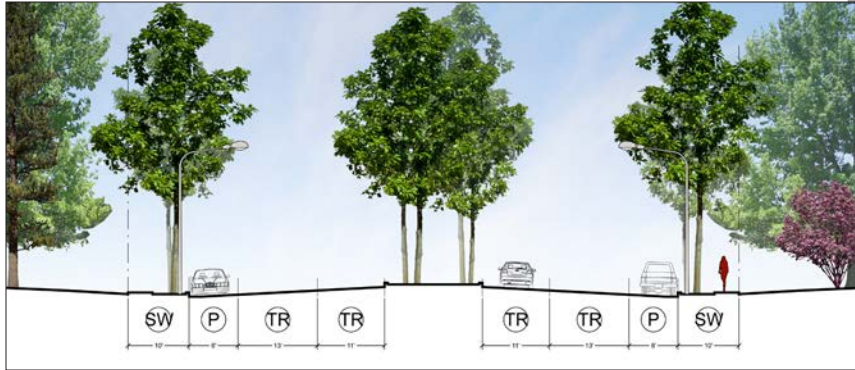
- PHASE 1**
- Two (2) Travel Lanes (TR)
 - Two (2) striped Bike Lanes (BL)
 - One (1) or Two (2) Parking Lanes (P)
 - Lane widths as shown
 - All improvements within existing curb-to-curb right-of-way



- PHASE 2**
- Repair curbs and sidewalks as required
 - Street trees
 - Decorative street lighting (OPTIONAL)
 - Underground utilities (OPTIONAL)

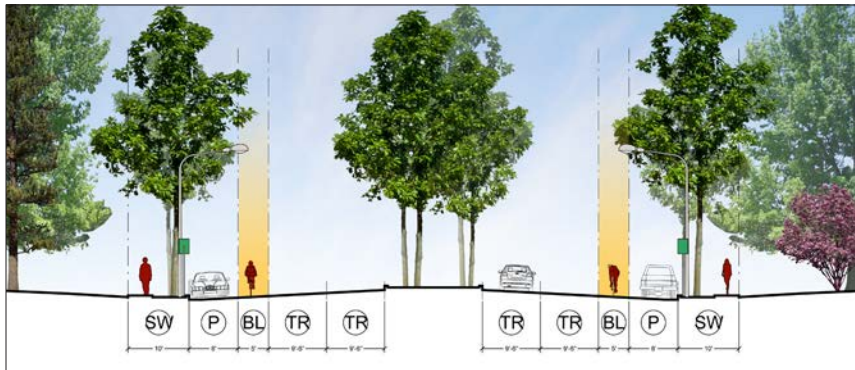
FACILITY TYPES

Bike Lanes : Divided Streets



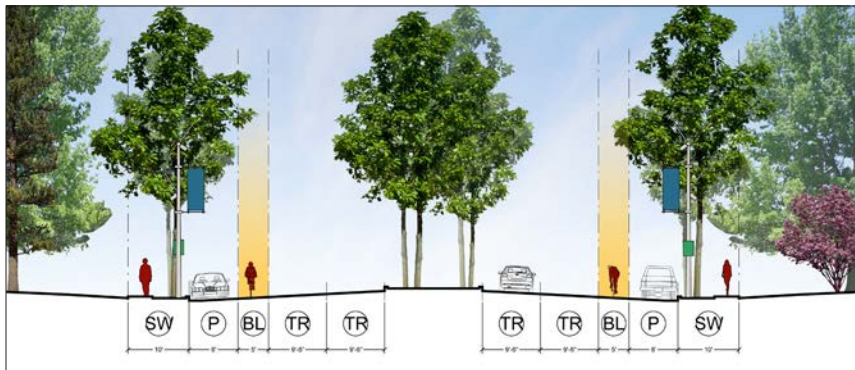
EXISTING CONDITIONS

- Four (4) or Two (2) Travel Lanes (TR)
- Two (2) Parking Lanes (P)
- Center median



PHASE 1

- Four (4) or Two (2) Travel Lanes (TR)
- Two (2) striped Bike Lanes (BL)
- Two (2) Parking Lanes (P)
- Lane widths as shown
- All improvements within existing curb-to-curb right-of-way



PHASE 2

- Repair curbs and sidewalks as required
- Street trees
- Decorative street lighting (OPTIONAL)
- Underground utilities (OPTIONAL)

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Bike Routes consist of roads that are designated as bicycle and pedestrian routes, but do not feature dedicated bicycle facilities or markings on the road itself. Bike Routes are roads that are either required for comprehensive bicycle connectivity and/or currently designated as University City bike routes but on which dedicated bicycle facilities are not possible due to road width and right-of way constraints, or not permitted due to jurisdictional regulations. Roads under the jurisdiction of St. Louis County Highways and Traffic are included in this facility type. Design, programming, and enforcement initiatives include:

- **SPEED LIMITS:** Speed limits on Bike Routes should not exceed 35 miles per hour.
- **SIGNAGE:** Bike Routes should be indicated with Share-the-Road signage and way-finding signage to parks and other amenities.
- **SHARED-LANE MARKINGS (Where Permitted):** Bike Routes can be indicated with standard shared-lane markings (bike-and-chevron stencil.) Markings should conform to standards set forth in the Gateway Bike Plan, the regional bicycle master plan completed in 2011 by Great Rivers Greenway District. Shared-Lane Markings should be implemented on all streets where permitted; Shared-Lane Markings are currently not permitted on roads in the St. Louis County Arterial Road System (ARS.)
- **STREETSCAPE ENHANCEMENTS:** Bike Routes should include curb and sidewalk improvements, tree lawns, street trees, and optional decorative street lighting.

The Bike Lane facility network is illustrated on the facing page, and design details for Bike Lanes are presented on pages 32.

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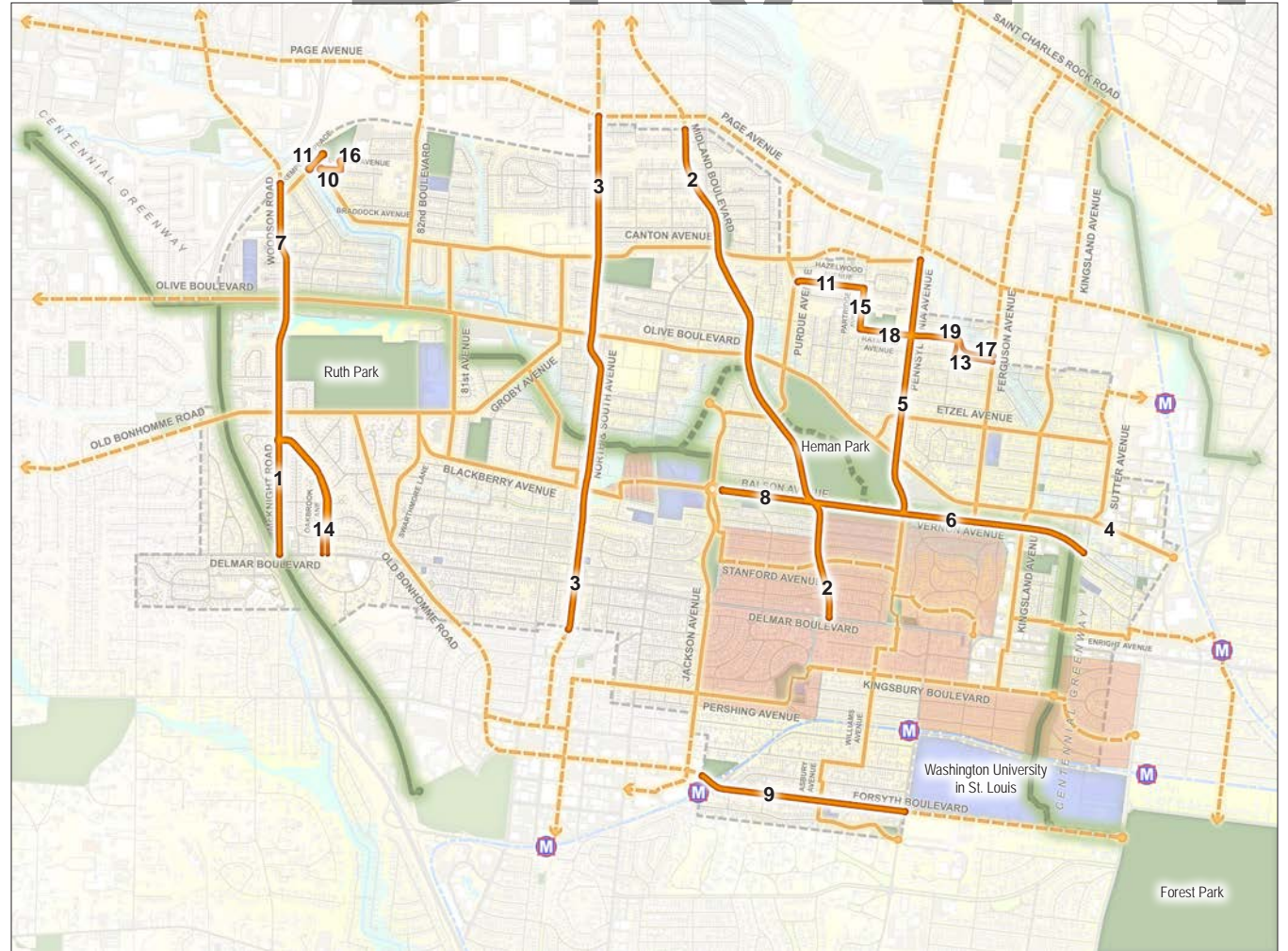
FACILITY TYPES Bike Routes

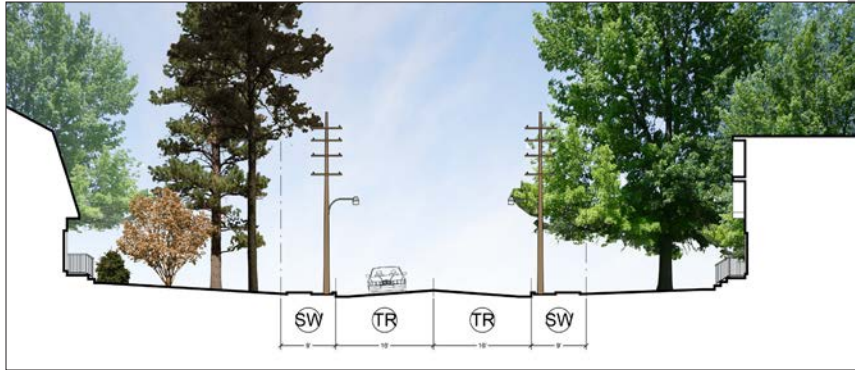
ST. LOUIS COUNTY ARTERIAL ROADS

1. McKnight Road
2. Midland Boulevard
3. North & South Avenue
4. Olive Boulevard
5. Pennsylvania Avenue
6. Vernon Avenue
7. Woodson Road

UNIVERSITY CITY STREETS

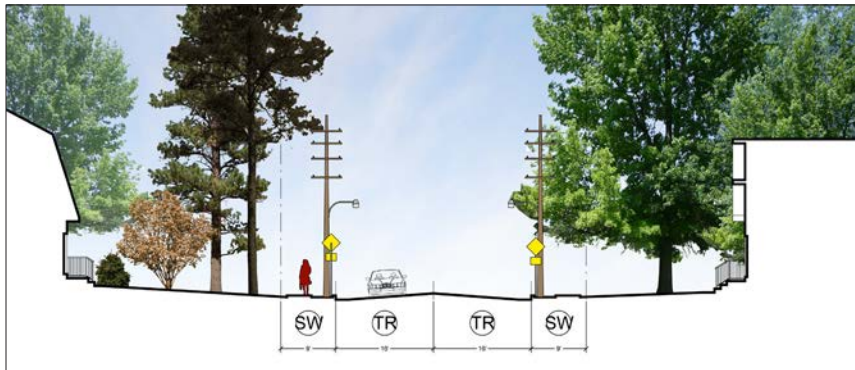
8. Balson Avenue
9. Forsyth Boulevard
10. Fullerton Avenue
11. Hazelwood Lane
12. Kempland Place
13. Melrose Avenue
14. Oakbrook Lane
15. Partridge Avenue
16. Polk Avenue
17. Purcell Avenue
18. Raymond Avenue
19. Roberts Avenue





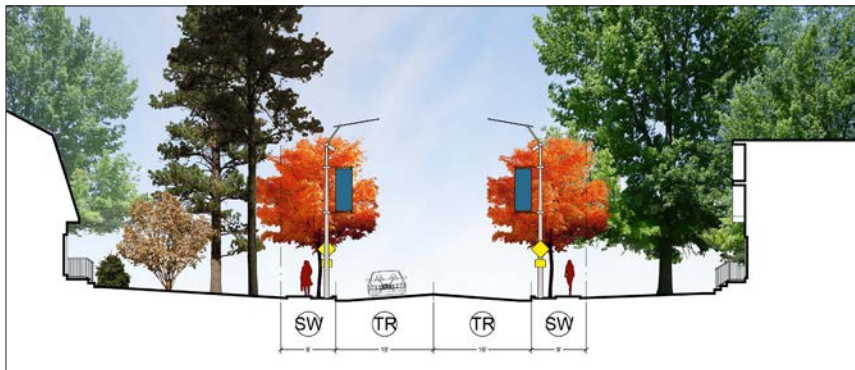
EXISTING CONDITIONS

- Two (2) Travel Lanes (TR)
- Two (2) Parking Lanes (P)



PHASE 1

- Share-the-Road signage
- Share-the-Road lane markings (as permitted)



PHASE 2 & PHASE 3

- Repair curbs and sidewalks as required
- Street trees
- Decorative street lighting (OPTIONAL)
- Underground utilities (OPTIONAL)

Implementation Guide

The *Implementation Guide* is the “how-to” of the Bicycle and Pedestrian Plan. The Plan is an ambitious vision that encompasses 30 miles of on-street bicycle and pedestrian facilities and streetscape enhancements. The *Implementation Guide* organizes and prioritizes the various projects, as specified by the City of University City and the Plan Steering Committee.

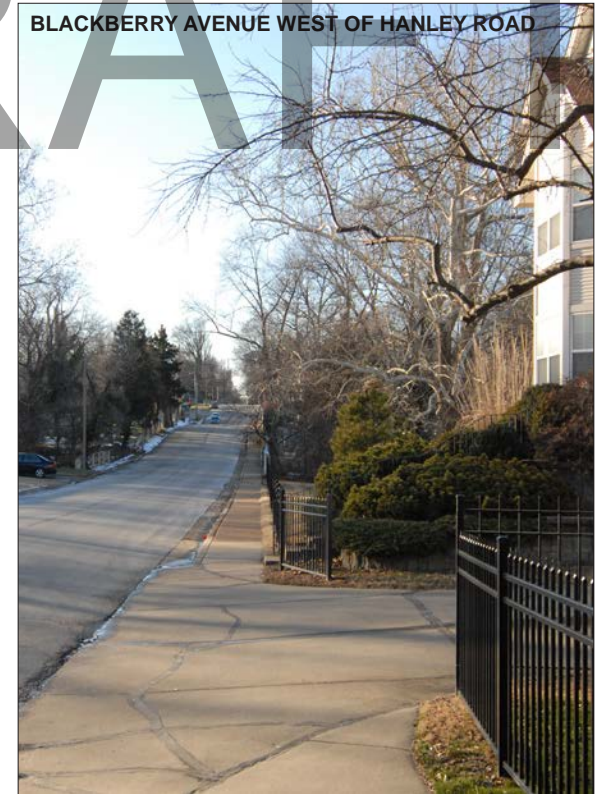
The following tables are a detailed *Project List* and actions that the community intends to complete or consider in order to implement the Bicycle and Pedestrian Plan. These projects and actions consist of *Phases* with corresponding *Priority Levels* and time frames. Projects are categorized by the following *Priority Levels*:

PRIORITY LEVEL 1 (SHORT-TERM; 1-5 Years)
PRIORITY LEVEL 2 (MEDIUM-TERM; 5-15 Years)
PRIORITY LEVEL 3 (LONG-TERM; 10-20 Years)

Within each *Priority Level*, individual projects may be prioritized based on a variety of considerations and ongoing evaluation. Examples of priority considerations may include:

- Connectivity to existing bike routes and/or bicycle and pedestrian plans in neighboring cities
- Equitable distribution of bicycle and pedestrian routes throughout University City
- Conversion of existing University City bike routes to new bicycle and pedestrian facilities
- Connectivity to *Centennial Greenway* existing and planned routes and/or Metrolink Stations

This *Implementation Guide* is structured to support and facilitate existing and ongoing initiatives and prioritize projects with a high value-to-cost ratio in order to build momentum for the implementation of the Bicycle and Pedestrian Plan. It does not prohibit existing or future projects from occurring outside the priority recommendations.



PROJECT LIST

BIKE/WALK STREETS (BICYCLE BOULEVARDS)

North Bike/Walk Corridor Central Bike/Walk Corridor North & South Connector Etzel Avenue Pennsylvania Connector Kingsbury Connector	Phase 1	Implement bicycle boulevard pavement markings (1 per 100 feet), striping, and road signage on identified streets. Review and modify if necessary location and orientation of stop-street intersections.	Priority Level 1
	Phase 2	Repair or replace sidewalks and street curbs as necessary. Replace existing roll curbs with vertical curbs. Implement new sidewalks if no sidewalks exist. Replace missing or damaged street trees as necessary. Implement traffic-calming devices at intersections if necessary.	Priority Level 2
	General Improvements	Address all intersections and crosswalks for universal accessibility, safety, and pedestrian comfort & walk-ability. Implement educational programming, traffic-safety monitoring, and enforcement.	Priority Level 1

SUPER SHARROWS

Jackson Avenue Purdue Avenue Old Bonhomme Road 82nd Boulevard Sutter Avenue Connector 81st Avenue Kingsland Avenue	Phase 1	BASIC IMPLEMENTATION: Implement lane-width shared lane markings (1 per 175 feet, outside traffic lanes) on each side of the road and two Share the Road signs per mile.	Priority Level 1
	Phase 2	ENHANCED IMPLEMENTATION: Implement colored, bicycle zone lane markings ("the Big Green Stripe") on outside lanes as desired. Repair, replace, or construct new sidewalks as necessary. Replace damaged or missing street trees as necessary.	Priority Level 3
	General Improvements	Address all intersections and crosswalks for universal accessibility, safety, and pedestrian comfort & walk-ability. Implement educational programming, traffic-safety monitoring, and enforcement.	Priority Level 1
Enright Avenue Connector <i>(East City Limits to Kingsland Avenue via Enright/Loop North)</i>	Phase 1	BASIC IMPLEMENTATION: Implement lane-width shared lane markings (1 per 175 feet, outside traffic lanes) on each side of the road and two Share the Road signs per mile.	Priority Level 1
	Phase 2	ENHANCED IMPLEMENTATION: Repair, replace, or construct new sidewalks as necessary. Replace damaged or missing street trees as necessary.	Priority Level 3
	General Improvements	Address all intersections and crosswalks for universal accessibility, safety, and pedestrian comfort & walk-ability. Implement educational programming, traffic-safety monitoring, and enforcement.	Priority Level 1

PRIORITY LEVEL 1 (SHORT-TERM; 1-5 Years)
PRIORITY LEVEL 2 (MEDIUM-TERM; 5-15 Years)
PRIORITY LEVEL 3 (LONG-TERM; 10-20 Years)

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PROJECT LIST

BIKE LANES

Olive Boulevard Kingsland Avenue	Phase 1	Implement two bike lane lines and bike-and-arrow symbols (1 per 175 feet) on each side of the road.	Priority Level 1
	Phase 3	Replace damaged or missing street trees as necessary. Implement OPTIONAL signature street lighting. Implement OPTIONAL underground utilities.	Priority Level 3
	General Improvements	Address all intersections and crosswalks for universal accessibility, safety, and pedestrian comfort & walk-ability. Implement traffic-safety monitoring and enforcement.	Priority Level 1
Old Bonhomme Road Ferguson Avenue Pershing Avenue	Phase 1	Implement two bike lane lines and bike-and-arrow symbols (1 per 175 feet) on each side of the road.	Priority Level 1
	Phase 3	Replace damaged or missing street trees as necessary.	Priority Level 3
	General Improvements	Address all intersections and crosswalks for universal accessibility, safety, and pedestrian comfort & walk-ability. Implement traffic-safety monitoring and enforcement.	Priority Level 1

PEDESTRIAN & STREETScape IMPROVEMENTS

St. Louis County Arterials <i>(McKnight Road, Midland Boulevard, North & South Avenue, Pennsylvania Avenue, Vernon Avenue, Woodson Road)</i>	Phase 1	Implement Share the Road signage (2 per mile, or at the beginning/end of each street segment.)	Priority Level 2
	Phase 2	Repair or replace sidewalks and street curbs as necessary. Replace existing roll curbs with vertical curbs. Implement new sidewalks if no sidewalks exist.	Priority Level 2
	Phase 3	Replace damaged or missing street trees as necessary. Implement OPTIONAL signature street lighting. Implement OPTIONAL underground utilities.	Priority Level 3
	General Improvements	Address all intersections and crosswalks for universal accessibility, safety, and pedestrian comfort & walk-ability. Implement traffic-safety monitoring and enforcement.	Priority Level 2

PRIORITY LEVEL 1 (<i>SHORT-TERM; 1-5 Years</i>)
PRIORITY LEVEL 2 (<i>MEDIUM-TERM; 5-15 Years</i>)
PRIORITY LEVEL 3 (<i>LONG-TERM; 10-20 Years</i>)

PROJECT LIST

PEDESTRIAN & STREETScape IMPROVEMENTS

Neighborhood Streets and Connectors <i>(Balsan Avenue, Forsyth Boulevard, Fullerton Avenue, Hazelwood Lane, Kempland Place, Melrose Avenue, Oakbrook Lane, Partridge Avenue, Polk Avenue, Purcell Avenue, Raymond Avenue and Roberts Avenue)</i>	Phase 1	Implement shared lane markings (1 per 175 feet, outside traffic lanes) on each side of the road. Implement Share the Road signage (2 per mile, or at the beginning/end of each street segment.)	Priority Level 2
	Phase 2	Repair or replace sidewalks and street curbs as necessary. Replace existing roll curbs with vertical curbs. Implement new sidewalks if no sidewalks exist.	Priority Level 3
	Phase 3	Replace damaged or missing street trees as necessary.	Priority Level 3
	General Improvements	Address all intersections and crosswalks for universal accessibility, safety, and pedestrian comfort & walk-ability. Implement traffic-safety monitoring and enforcement.	Priority Level 2
CENTENNIAL GREENWAY*			
Centennial Greenway*	General Improvements	Support continued property acquisition, planning, approval, and facilitation.	Priority Level 2

PRIORITY LEVEL 1 (SHORT-TERM; 1-5 Years)
PRIORITY LEVEL 2 (MEDIUM-TERM; 5-15 Years)
PRIORITY LEVEL 3 (LONG-TERM; 10-20 Years)

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Policies, Operations & Maintenance

In addition to the *Projects* previously listed, the Bicycle and Pedestrian Plan includes several policy, operations, and maintenance recommendations. These City-wide initiatives include enhancing universal accessibility; *Complete Streets* enhancements; programming; operations and maintenance for enforcement, education, and data-collection.

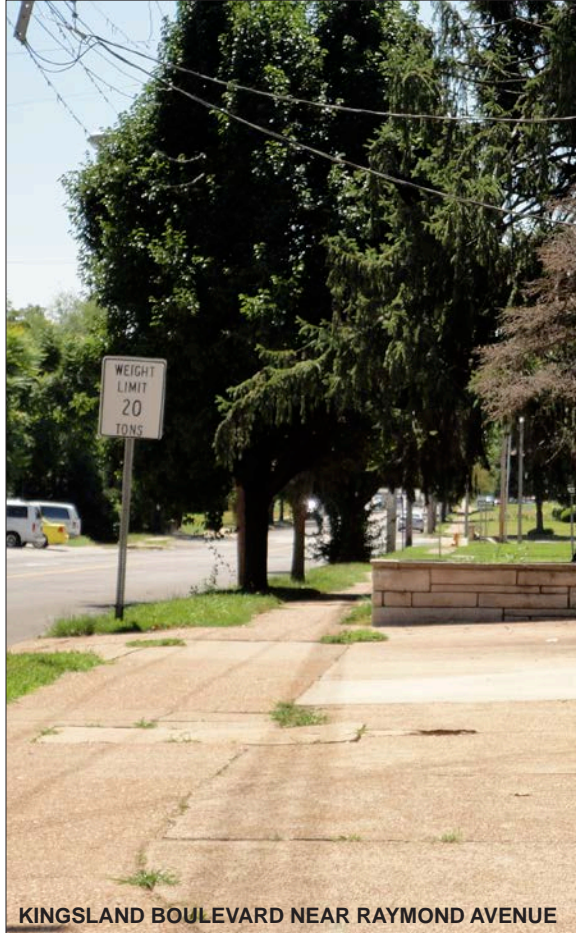
COMPLETE STREETS

Complete Streets refers to the idea that streets need to work for everyone; people who drive but also pedestrians, cyclists, transit-users, the old and young, and the able-bodied and the disabled. One of the first items completed by the *Mayor's Task Force on Walk and Bike-ability* was the development of a *Complete Streets* ordinance for University City; this ordinance is pending adoption by the University City City Council. Bicycle and pedestrian facilities proposed in the Plan have been designed to achieve the pending *Complete Streets* ordinance. In addition, the Plan recommends the implementation of *Complete Streets* on all University City-owned streets, including the construction of new vertical curbs along existing streets, the replacement of roll-curbs with vertical curbs, and the construction of sidewalks along streets where sidewalks do not currently exist. These improvements should be prioritized based upon the recommendations of the Bicycle and Pedestrian Plan.

UNIVERSAL ACCESSIBILITY

Through the planning process, University City learned that, while many streets throughout the city may be ADA-accessible, they do not necessarily provide a high level of service to users with disabilities. The Bicycle and Pedestrian Plan recommends a City-wide program to provide enhanced universal accessibility through intersection, sidewalk, crosswalk, and signal design, including:

- 1) **Designated crossing points at all intersections with accessible-curb cuts oriented perpendicular to the street;**
- 2) **Tactile surface changes at curb cuts and crosswalks;**
- 3) **Traffic and walk signals countdown timers, audible signals, and protected crossing phases (pedestrian-only) where necessary (i.e. Big Bend Boulevard at Delmar Boulevard);**



KINGSLAND BOULEVARD NEAR RAYMOND AVENUE

- 4) Installation of at least one electronic, on-demand pedestrian-crossing signal at Olive Boulevard between Midland Boulevard and Pennsylvania Avenue.

PROGRAMMING & OPERATIONS

The Bicycle and Pedestrian Plan recommends continued recreational, educational, and public outreach activities and events. In addition, the Plan recommends specific programming and operational initiatives to help fulfill the goals of the Plan and provide ongoing management, including:

UTILIZE CITY STAFF TO FACILITATE ONGOING IMPLEMENTATION: In order to maintain long-term momentum and accountability for the Plan and to provide a clearing house for all bicycle- and pedestrian-oriented improvements, the Plan recommends utilizing city staff within the Department of Public Works and Parks and the Department of Community Development to serve as cheerleaders and provide a single point of contact for ongoing implementation of the Plan and other bicycle and pedestrian amenities and enhancements.

SAFETY OUTREACH, PROGRAMMING, AND ENFORCEMENT: The Plan recommends safety education and outreach programming. These programs can be coordinated through the University City Police and Fire Departments and should utilize public safety professionals and local experts. These programs can be implemented through University City schools, existing City programs and events, and community groups including Scout troops, churches, and civic organizations. In addition, the Plan recommends a comprehensive, city-wide speed-limit, traffic signal, and pedestrian safety enforcement programs. A list and detailed descriptions of potential programming opportunities may be found on page 78 of the *Appendix*.

DATA COLLECTION, BENCHMARKING, AND MEASUREMENT: In order to establish achievable goals and evaluate the success of the Plan, it is recommended that an ongoing data collection and measurement program be implemented and maintained. This program would consist of initial data collection to establish baseline conditions for increasing safety, awareness, and daily instances of walking and biking. An annual data collection program to measure actual increases in safety, awareness, and daily instances of walking and biking should be conducted for a recommended minimum of five years.



MAINTENANCE

The bicycle and pedestrian network will require periodic maintenance, including street sweeping, road resurfacing, road restriping, replacement of deficient sidewalk segments, replacement of worn signage, pot hole filling, and other activities. These maintenance activities should be considered during the development of an annual capital budget. Timing for maintenance varies by activity.

The sweeping of on-street bicycle facilities can be incorporated into the Department of Public Works and Parks regular street sweeping program. Generally, on-street bicycle facilities should be swept a minimum of two times a year. If a roadway is resurfaced with chip seal or a similar surface, loose gravel should be swept shortly after resurfacing to reduce negative impacts to cyclists.

Pavement re-striping and repainting of pavement markings should be completed every two to three years, or as needed. The placement of pavement markings will have an impact on their lifespan and need for replacement. A shared lane marking will last longer when placed in the middle of the travel lane, as directed in the MUTCD, rather than to the right of the travel lane or in the wheel track, where constant wear and tear from vehicle tires can reduce the lifespan of pavement markings.

Outdated, missing, or damaged route signs, "Share The Road" signs, and other signs installed as part of the non-motorized transportation network will require replacement on an as-needed basis. Reflectivity and readability may also factor into the decision to replace signs.

Common sidewalk maintenance issues like tree root damage, cracking, ponding, and step separation are addressed as part of the City's annual sidewalk improvement program. The City's currently utilizes a rating system to determine need for improvements on a block-by-block basis, addressing blocks most in need of attention, as funding is available.

Additional information relating to bicycle facility maintenance can be found in the Gateway Bike Plan, the regional bicycle master plan completed in 2011 by Great Rivers Greenway District. Relevant information can be found in Appendix D (maintenance concerns and scheduling) and Appendix L (maintenance costs – P. 48) of the Gateway Bike Plan.

Opinion Of Probable Cost

An *Opinion of Probable Cost* has been assembled for each project in the Bicycle and Pedestrian Plan. It is based on the *Gateway Bike Plan, Appendix L (Facility Cost Tool)* and on similar projects in the St. Louis Region. This *Opinion* will assist the City of University City in developing capital improvements programming, departmental budgeting, grant writing, and fund-raising for bicycle and pedestrian projects. Cost *Opinions* provided in this section include options that may not be necessary for all projects, and as such, actual costs may be lower than the averages used here. The *Opinion of Probable Cost* is presented in the tables on the following pages.

COST OPINION CONTINGENCY

The *Opinion of Probable Cost* includes a Contingency of Thirty-Percent (30%) in addition to enumerated unit-costs. This Contingency is intended to account for planning, design, engineering, and site preparation work not reflected in enumerated unit-costs.

DISCLAIMERS

This *Opinion of Probable Cost* represents a good-faith effort by the City of University City, supported by the most current information that is publicly available. All proposals contained herein are understood by the City of University City to: 1) be representative of public consensus from the Bicycle and Pedestrian Plan, and; 2) have the expressed approval of the City of University City.

This *Opinion of Probable Cost* is limited only to the conditions and factors expressly enumerated herein. All other conditions and factors that have not been expressly enumerated herein are excluded from this *Opinion of Probable Cost*, including but not limited to:

DEMOLITION

Unless otherwise noted, all potential costs associated with demolition of existing buildings, roads, sidewalks, and infrastructure, are deemed to be indeterminate and are not included in this *Opinion of Probable Cost*.

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LAND ACQUISITION

Unless otherwise noted, all potential costs associated with land acquisition are deemed to be indeterminate and are not included in this *Opinion of Probable Cost*.

ENVIRONMENTAL REMEDIATION

Unless otherwise noted, all potential costs associated with environmental remediation are deemed to be indeterminate and are not included in this *Opinion of Probable Cost*.

UTILITIES & PUBLIC INFRASTRUCTURE

Unless otherwise noted, all potential costs associated with the installation, repair, upgrade, or augmentation of utilities and infrastructure within public right-of-ways (excluding Street, Streetscape, and Bicycle & Pedestrian Improvements as enumerated herein) are deemed to be indeterminate and are not included in this *Opinion of Probable Cost*.

This *Opinion of Probable Cost* is completely and totally non-binding and is provided for purposes of comparison only. It is not intended or authorized to serve as a cost estimate for the purpose of contracts, construction cost determinations, or soliciting bids. All lengths, areas, quantities, facility types, and projects provided for in this *Opinion of Probable Cost* are based upon the Bicycle and Pedestrian Plan with the approval of the City of University City.

The figures presented in the *Opinion of Probable Cost* are expressed in 2012 U.S. dollars and do not account for future inflation.

CONDITIONS OF USE

This *Opinion of Probable Cost* is recognized and acknowledged to be a non-binding document. The City of University City offers no guarantee or warranty, expressed or implied, for the information contained herein. Any individual or entity using this *Opinion of Probable Cost* for any purpose agrees to save and hold harmless the City of University City, Trailnet, and H3 Studio, Inc. from any and all costs or damages, direct or otherwise, that may arise from said use of this *Opinion of Probable Cost*.

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BICYCLE & PEDESTRIAN PLAN OPINION OF PROBABLE COST

ONE HUNDRED PERCENT (100%) BICYCLE FACILITY IMPLEMENTATION

Shared Lane Marking/Signage Treatment

Shared lane marking/signage treatment assumes 30 shared lane marking symbols per mile on each side of the road, plus two "Share the Road" signage assemblies per mile.

Street Name	Length (ft)	Length (mi)	Cost Per	
			Mile	Cost Per Segment
Forsyth Boulevard	3,690	0.70	\$21,000.00	\$14,676.14
Westgate Avenue	670	0.13	\$21,000.00	\$2,664.77
Balson Avenue	1,812	0.34	\$21,000.00	\$7,206.82
Oakbrook Lane	2,636	0.50	\$21,000.00	\$10,484.09
Melrose Avenue	753	0.14	\$21,000.00	\$2,994.89
Purcell Avenue	819	0.16	\$21,000.00	\$3,257.39
Roberts Avenue	341	0.06	\$21,000.00	\$1,356.25
Raymond Avenue	1,913	0.36	\$21,000.00	\$7,608.52
Partridge Avenue	1,090	0.21	\$21,000.00	\$4,335.23
Hazelwood Lane	1,350	0.26	\$21,000.00	\$5,369.32
Kempland Place	372	0.07	\$21,000.00	\$1,479.55
Fullerton Avenue	342	0.06	\$21,000.00	\$1,360.23
Polk Avenue	450	0.09	\$21,000.00	\$1,789.77
Sub-Total				\$64,582.95
Contingency (30%)				\$19,374.89
Shared Lane Marking/Signage Totals	16,238	3.08		\$83,957.84

Shared Lane Signage Treatment

Assumes 2 "Share the Road" signage assemblies every mile, or at the end/beginning of each street segment.

Street Name	Length (ft)	Length (mi)	Cost Per	
			Mile	Cost Per Segment
Vernon Avenue*	5,296	1.00	\$1,000.00	\$1,003.03
Midland Boulevard*	9,906	1.88	\$1,000.00	\$1,876.14
North & South Avenue*	9,605	1.82	\$1,000.00	\$1,819.13
McKnight Road*	4,822	0.91	\$1,000.00	\$913.26
Pennsylvania Avenue*	4,857	0.92	\$1,000.00	\$919.89
Woodson Road*	2,220	0.42	\$1,000.00	\$420.45
Olive Blvd (Kingsland to E City Limits)*	2,930	0.55	\$1,000.00	\$554.92
Sub-Total				\$7,506.82
Contingency (30%)				\$2,252.05
Shared Lane Signage Treatment Totals	39,636	7.51		\$9,758.86

* St. Louis County Arterial Road System (ARS)

** Missouri Department of Transportation (MoDOT)

BICYCLE & PEDESTRIAN PLAN OPINION OF PROBABLE COST

ONE HUNDRED PERCENT (100%) BICYCLE FACILITY IMPLEMENTATION

Super Sharrows

The super sharrow treatment assumes 30 lane-width shared lane markings on each side of the road, plus two Share the Road signage assemblies per mile.

Street Name	Length (ft)	Length (mi)	Cost Per Mile	Cost Per Segment
Kingsland Avenue	1,068	0.20	\$42,000.00	\$8,495.45
Enright Avenue	1,173	0.22	\$42,000.00	\$9,330.68
Loop North	812	0.15	\$42,000.00	\$6,459.09
Sutter Avenue	2,570	0.49	\$42,000.00	\$20,443.18
Jackson Avenue	6,380	1.21	\$42,000.00	\$50,750.00
Ahern Avenue	922	0.17	\$42,000.00	\$7,334.09
Purdue Avenue	3,210	0.61	\$42,000.00	\$25,534.09
Old Bonhomme Road	4,244	0.80	\$42,000.00	\$33,759.09
Swarthmore Lane	2,587	0.49	\$42,000.00	\$20,578.41
81st Avenue	1,877	0.36	\$42,000.00	\$14,930.68
Hafner Place	1,283	0.24	\$42,000.00	\$10,205.68
82nd Boulevard	3,473	0.66	\$42,000.00	\$27,626.14
Sub-Total				\$235,446.59
Contingency (30%)				\$70,633.98
Super Sharrows Total	29,599	5.61		\$306,080.57

Bike Lane Treatments

Bike lane facility assumes 2 lane lines and 30 bike and arrow symbols per mile on each side of the road.

Street Name	Length (ft)	Length (mi)	Cost Per Mile	Cost Per Segment
Olive Boulevard (W City Limits to Kingsland)**	16,394	3.10	\$31,560.00	\$97,991.41
Kingsland Avenue*	5,203	0.99	\$31,560.00	\$31,099.75
Ferguson Avenue	3,675	0.70	\$31,560.00	\$21,966.48
Pershing Avenue	3,150	0.60	\$31,560.00	\$18,828.41
Groby Road	4,593	0.87	\$31,560.00	\$27,453.61
Old Bonhomme Road	2,921	0.55	\$31,560.00	\$17,459.61
Sub-Total				\$214,799.27
Contingency (30%)				\$64,439.78
Bike Lane Totals	35,936	6.81		\$279,239.05

* St. Louis County Arterial Road System (ARS)

** Missouri Department of Transportation (MoDOT)

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BICYCLE & PEDESTRIAN PLAN OPINION OF PROBABLE COST

ONE HUNDRED PERCENT (100%) BICYCLE FACILITY IMPLEMENTATION

Bike/Walk Streets (Bicycle Boulevards)

This treatment type assumes bicycle boulevard pavement markings every 100 feet and 2 signs per block (300 feet). Does not include traffic calming devices.

Street Name	Length (ft)	Length (mi)	Cost Per Mile	Cost Per Segment
Northmoor Drive	1,584	0.30	\$44,100.00	\$13,230.00
Asbury Avenue	1,123	0.21	\$44,100.00	\$9,379.60
Maryland Avenue	763	0.14	\$44,100.00	\$6,372.78
Williams Avenue	2,270	0.43	\$44,100.00	\$18,959.66
Washington Avenue	349	0.07	\$44,100.00	\$2,914.94
Vassar Avenue	470	0.09	\$44,100.00	\$3,925.57
Kingsbury Boulevard	4,674	0.89	\$44,100.00	\$39,038.52
Yale Avenue	203	0.04	\$44,100.00	\$1,695.51
Stanford Avenue	1,494	0.28	\$44,100.00	\$12,478.30
Pennsylvania Avenue	1,377	0.26	\$44,100.00	\$11,501.08
Cornell Avenue	3,368	0.64	\$44,100.00	\$28,130.45
Balson Avenue	1,910	0.36	\$44,100.00	\$15,952.84
Blackberry Aveue	4,133	0.78	\$44,100.00	\$34,519.94
Wild Cherry Lane	331	0.06	\$44,100.00	\$2,764.60
Burr Oak Lane	470	0.09	\$44,100.00	\$3,925.57
Warder Avenue	764	0.14	\$44,100.00	\$6,381.14
Mt. Olive Avenue	1,396	0.26	\$44,100.00	\$11,659.77
Canton Avenue	8,867	1.68	\$44,100.00	\$74,059.60
Braddock Drive	2,228	0.42	\$44,100.00	\$18,608.86
Fullerton Avenue	226	0.04	\$44,100.00	\$1,887.61
Kempland Place	793	0.15	\$44,100.00	\$6,623.35
Sub-Total				\$324,009.72
Contingency (30%)				\$97,202.91
Bike/Walk Street Totals	38,793	7		\$421,212.63

* St. Louis County Arterial Road System (ARS)

** Missouri Department of Transportation (MoDOT)

BICYCLE & PEDESTRIAN PLAN OPINION OF PROBABLE COST

ENHANCED STREETScape & PEDESTRIAN IMPROVEMENTS TO MEET COMPLETE STREET GUIDELINES

Curb & Sidewalk Improvements

This improvement assumes 6-inch concrete curbs and 4-foot concrete sidewalks on each side of the road. This improvement assumes that 80% of facility lengths will receive these improvements.

Street Name	Length (ft)	Length (mi)	Cost Per Mile	Cost Per Segment
All Streets	128,162	24	\$464,640.00	\$11,278,220.80
Sub-Total				\$11,278,220.80
Contingency (30%)				\$3,383,466.24
Curb & Sidewalk Improvements Totals	128,162	24		\$14,661,687.04

Street Tree Improvements

This improvement assumes 2 inch caliper, deciduous hardwood trees, 40 feet on-center, on each side of the road. This improvement assumes that 60% of facility lengths will receive these improvements.

Street Name	Length (ft)	Length (mi)	Cost Per Mile	Cost Per Segment
All Streets	96,121	18	\$31,500.00	\$573,450.34
Sub-Total				\$573,450.34
Contingency (30%)				\$172,035.10
Street Tree Improvements Totals	96,121	18		\$745,485.44

* St. Louis County Arterial Road System (ARS)
 ** Missouri Department of Transportation (MoDOT)

UNIVERSITY CITY BICYCLE & PEDESTRIAN PLAN
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Funding Sources

Creative *Funding Sources*, both internal and external, are necessary for the development of a bicycle- and pedestrian-friendly community. Funding programs for bicycle and pedestrian improvements vary significantly with regard to type of improvement, total allowable project cost, required local match, competitiveness, and other important characteristics. The City of University City should seek to draw from the diverse range of federal, local, and private-sector funding programs available to fund both infrastructure improvements and programs. Local funds should be leveraged as match for external funding in order to maximize the City's investment. As a policy, the City should integrate bicycle and pedestrian improvements with planned and scheduled capital improvement projects. The list of funding sources presented below should be referenced throughout plan implementation.

FEDERAL FUNDING SOURCES

It is important to note that a number of federal programs are tied to the current federal transportation bill, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Originally set to expire in 2009, a series of short-term Surface Transportation Extension Acts have kept SAFETEA-LU and its many programs funded through March 31, 2012. The Surface Transportation, Transportation Enhancements, Highway Safety Improvement, Section 402, and Safe Routes to School, Job Access Reverse Commute, and New Freedom Programs are all funded through SAFETEA-LU. The future of these programs is largely dependent on the priorities, scope and funding amounts set forth in the next federal transportation bill. University City should make it a priority to monitor additions and extensions of SAFETEA-LU and other federal funding sources.

- **Surface Transportation Program (STP)**

The *Surface Transportation Program* provides flexible funding that may be used by states and localities for projects on any federal-aid highway, including the National Highway System, bridge projects on any public road, transit capital projects, and intra-city/intercity bus facilities. On-street bicycle facilities, off-street trails, ADA (Americans with Disabilities Act)-compliant sidewalks, crosswalks, bicycle and pedestrian signals, and bicycle parking facilities are eligible for funding. While the program is intended only for federal-aid highways, bicycle and pedestrian

projects may be located on local roadways. In addition to physical improvements, STP funds may support coordinator positions, encouragement programs, and bicycle and/or pedestrian maps. The STP is administered by MoDOT through the East West Gateway Council of Governments on an annual basis.

More information:

<http://www.ewgateway.org/>

<http://www.fhwa.dot.gov/safetealu/factsheets/stp.htm>

- **Highway Safety Improvement Program (HSIP)**

Developed to reduce traffic fatalities and serious injuries on all public roads, the HSIP provides a funding source for local entities to develop countermeasures to improve bicyclist and pedestrian safety. Eligible projects include safety improvements for cyclists and pedestrians both on-road and on publicly owned bicycle and pedestrian pathways or trails.

More information:

<http://safety.fhwa.dot.gov/hsip/>

<http://www.fhwa.dot.gov/safetealu/factsheets/hsip.htm>

- **Transportation Enhancements Program (TE)**

A significant portion of Missouri's Surface Transportation Program funds is required to be set aside projects that increase transportation options, enhance the transportation experience, and provide a sense of place. TE projects must meet at least one of the twelve eligible categories, including trail and greenway development, landscaping and beautification, provision of safety and education programs for pedestrians and bicyclists, and historic preservation. A local match of 20 percent is required. The program is administered by Missouri Department of Transportation (MoDOT) in cooperation with East West Gateway Council of Governments.

More information:

<http://www.ewgateway.org/>

<http://www.enhancements.org/>

<http://www.fhwa.dot.gov/environment/te/>

- **Congestion Mitigation and Air Quality Program (CMAQ)**

The CMAQ Program funds projects and programs that improve air quality by reducing automobile emissions. Potential projects include bicycle and pedestrian facilities, encouragement and education programs, traffic flow improvements, diesel engine retrofits, and shared ride services.

More information:

http://www.fhwa.dot.gov/environment/air_quality/cmaq/

- **State and Community Highway Safety Grant Program (Section 402)**

Section 402 Highway Safety Funds can be used to develop and support programs that aim to reduce traffic crashes and increase pedestrian safety. While these funds are more commonly used to increase law enforcement activities and develop statewide data systems, they can be utilized to develop safety education programs and community-wide pedestrian safety campaigns.

More information:

<http://safety.fhwa.dot.gov/policy/section402/>

<http://www.bikeleague.org/resources/reports/section402.php>

- **Safe Routes to School (SR2S)**

Funding is available annually from the Missouri Department of Transportation through federal highway safety funds to provide for safe biking and walking infrastructure and behavior programs for children in grades K-8, including children with disabilities.

More information:

<http://www.modot.mo.gov/safety/SafeRoutestoSchool.htm>

<http://safety.fhwa.dot.gov/saferoutes/>

<http://www.saferoutesinfo.org/>

- **Transportation, Community and System Preservation Program (TCSP)**

The Federal Highway Administration's TCSP program provides funding for planning grants, implementation grants, and research that investigates the links between transportation, com-

munity, and system preservation. The implementation grants have been used to fund pedestrian improvements, bike paths, multi-use paths, complete streets implementation, and other non-motorized transportation initiatives.

More information:

<http://www.fhwa.dot.gov/tcsp/projects.html>

- **Job Access Reverse Commute Program (JARC)**

The *JARC Program* was developed to improve transportation facilities and operations to assist low income persons with access to job opportunities and employment destinations. While most funds have been allocated to extend transit services and operations, there have been a number of bicycle-related projects funded through JARC. In Portland Oregon, the Community Cycling Center's Create A Commuter Program uses JARC funds to teach low-income residents on-road bicycle training and provide participants with fully equipped commuter bicycles. Since 2001, the program has supported over 1,500 area residents in accessing job opportunities.

More information:

http://www.fta.dot.gov/funding/grants/grants_financing_3550.html

http://www.communitycyclingcenter.org/?page_id=11

- **New Freedom Program (NFP)**

The *New Freedom Program* was developed to address barriers that prevent Americans with disabilities from integrating into the workforce and fully participating in society. The program provides financial assistance for capital and operating expenses for public transportation services beyond those required by the Americans with Disabilities Act of 1990 (ADA). The program can be used to fund pedestrian improvements like sidewalks, curb ramps and accessible pedestrian signals.

More information:

http://www.fta.dot.gov/funding/grants/grants_financing_3549.html

- **Recreational Trails Program**

Grants are available for motorized and non-motorized trail development, renovation, and preservation for cities, counties, schools, and all business types. Projects require a 20% minimum match. The grant application period ends in August and is administered by the Missouri Department of Natural Resources-Division of State Parks. The funding is provided through the Federal Highway Administration.

More information:

<http://www.mostateparks.com/grantinfo.htm>

<http://www.fhwa.dot.gov/environment/rectrails/>

- **Rivers, Trails and Conservation Assistance Program (RTCA)**

Administered by the National Parks Service, the RTCA works throughout the country to assist community-led natural resource conservation and outdoor recreation projects. While the RTCA does not provide direct funding for projects, they do provide valuable technical assistance for conceptual planning, capacity building, and organizational development.

More information:

<http://www.nps.gov/hcra/programs/rtca/>

- **Land & Water Conservation Fund**

Grants are available to cities, counties and school districts for outdoor recreation facilities, including trails. Projects require a 55% match. Funded facilities must remain for the purpose of public outdoor recreation in perpetuity. LWCF grants are funded by the US Department of Interior, National Park Service and administered by the Missouri Department of Natural Resources-Division of State Parks.

More information:

<http://www.mostateparks.com/grantinfo.htm>

<http://www.nps.gov/lwcf/>

LOCAL FUNDING SOURCES

Local funding sources play a vital role in developing a bicycle and pedestrian network. While external funds are available for many projects, most require a local match of 20 to 50 percent. A number of different options should be explored to create a dedicated stream of funding for bicycle and pedestrian infrastructure and programming, including use of existing local option sales taxes as well as new taxes, impact fees, and capital improvements set-asides.

- **Local Option Sales Taxes**

In 1995, the Missouri State Legislature approved enabling legislation that allowed cities to levy a sales tax for park improvements and/or storm water control purposes. Since 1995, over 100 municipalities in the state have voted to levy such a tax. In November 2001, voters in the City of University City approved a ½ cent sales tax on all retail sales in the City's corporate boundaries to fund construction, maintenance and repair of park infrastructure. These funds can be used to provide a local match for external funding sources, thus maximizing the impact of local investment. Additionally, the City also has a ½ cent capital improvement sales tax, which can be directed towards bicycle and pedestrian facilities as well. It is important to note that University City's Local Option Sales Tax is restricted to projects located on Olive Boulevard or in the section of the Delmar Loop located in University City only.

- **System Development Charges/Developer Impact Fees**

As new development occurs, the municipality may charge developers to fund the additional service capacity required by the development. These development charges, or impact fees, can be used to construct transportation infrastructure, including roads, transit stations or stops, and bicycle and pedestrian facilities.

More information:

<http://www.impactfees.com/index.php>

<http://www.mdt.mt.gov/research/toolkit/m1/ftools/dei/if.shtml>

- **Community Improvement Districts (CIDs)**

A CID is a defined area in which property owners pay an additional tax or fee to finance capital improvements, additional security, or marketing the district as a commercial destination. Potential capital improvements include sidewalks, street lighting, benches, trash receptacles, information kiosks, public art projects, and other pedestrian-oriented features.

More information:

<http://www.moga.mo.gov/const/a03038c.htm>

http://www.stlrcga.org/Documents/Incentives/MO_CID%20Detail.pdf

<http://www.missouridevelopment.org/community%20services/Local%20Finance%20Initiatives/Community%20Improvement%20District.html>

- **Neighborhood Improvement Districts (NIDs)**

Similar to CID's, NID's are created to finance public-use improvements through special tax assessments to property owners in which the improvements are made. Typical improvements in NID's include sidewalk and crosswalk improvements, street lighting systems, parks and recreational facilities, pedestrian bridges, overpasses or tunnels, and landscaping enhancements.

More information:

<http://www.moga.mo.gov/statutes/C000-099/0670000453.HTM>

<http://www.missouridevelopment.org/community%20services/Local%20Finance%20Initiatives/Neighborhood%20Improvement%20District.html>

- **Capital Improvement Budget Set-Asides**

Amending the capital improvement budget to require a set-aside for bicycle and pedestrian projects can ensure a constant annual funding stream for plan implementation. A set aside can be allocated as a percent of the total budget, or as a fixed dollar amount. These bicycle and pedestrian funds can be used to fully finance projects or can be leveraged as local match to secure external funding.

- **Special Issue Bonds**

Local governments use bonds as a means of financing infrastructure needs, which include, but are not limited to, streets, schools, highways, bridges, sewer and water systems, parks, and trails. In many cases, municipalities and other local agencies will allocate a specific amount of the bond for bicycle and pedestrian projects. In King County, Washington, for example, \$33 million of a \$100 million bond to protect open space in urban areas was set aside for trail development.¹ In most cases, like that in King County, bicycle and pedestrian projects are part of a larger bond issue, most often a component of transportation or parks bonds.

REGIONAL FUNDING SOURCES

There are at least two funding sources dedicated to parks and greenways in the St. Louis region.

- **St Louis County Municipal Park Grant**

This program provides roughly \$3 million annually for the 91 municipalities throughout St. Louis County to fund regional and local parks initiatives. The Funds are administered through the St. Louis County Municipal League.

More information:

<http://www.muniparkgrants.org/>

- **Great Rivers Greenway District (GRG)**

GRG, the local parks and recreation tax district for City of St. Louis, St. Louis County, and St. Charles County, has partnered with municipalities and counties in the St. Louis Metropolitan Area to develop an interconnected system of trails and greenways. While GRG does not directly provide funds to local municipalities, GRG collaborates frequently with local government agencies to develop construction and maintenance agreements. The Centennial Greenway, a GRG project that will connect University City and other St. Louis County communities and the City of St. Louis through recreational and alternative transportation opportunities, is currently in the

¹Baltimore Regional Transportation Board (Maryland). The Baltimore Regional Bicycle, Pedestrian, and Greenway Transportation Plan. Baltimore: Baltimore Regional Transportation Board (2001). Retrieved from <http://www.baltometro.org/> on January 20, 2012.

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early stages of development. Projects like the Centennial Greenway rely on creative partnerships with local agencies to ensure these assets will serve the region for years to come.

More information:

<http://www.greatrivers.info/>

PRIVATE SECTOR FUNDING SOURCES

- **The Kodak American Greenways Program**

Funded by The Conservation Fund, Eastman Kodak Company, and the National Geographic Society, the program provides “seed” grants for the planning and design of greenways and other open space systems. Since 1989, the program has granted over \$800,000 to nearly 700 organizations across the country.

More information:

http://www.conservationfund.org/kodak_awards

- **Bikes Belong Grant Program**

Bikes Belong is a national organization dedicated to putting more people on bikes more often. The organization funds multi-use trails, bicycle mountain cross (BMX) facilities, mountain bike trails, and advocacy efforts, with a strong desire to leverage federal funding. Bikes Belong has awarded over 200 grants since 1999, investing \$1.7 million and leveraging close to \$650 million in federal, state, and private funding.

More information:

<http://www.bikesbelong.org/grants/>

- **Missouri Foundation for Health’s Healthy and Active Communities Program**

MFH, the state’s largest healthcare foundation, works to improve health in the communities it serves. Through the H&AC program, MFH funds organizations to combat obesity through changes in policy, environment, and social networks. Funded projects include community-wide

intervention strategies, bike-to-school programs, increasing multi-use trail accessibility, efforts to adopt complete streets policies, bike check-out programs, and other innovative programs and infrastructure improvements to increase physical activity.

More information:

<http://www.mffh.org/>

- **Robert Wood Johnson Foundation**

The Robert Wood Johnson Foundation (RWJF) offers a wide range of funding opportunities dealing with healthy and active living. Anyone is eligible to apply, but check the website to make sure that you meet requirements per grant. For more information, check the website periodically for new calls for proposals.

More information:

<http://www.rwjf.org/applications/solicited/cfplist.jsp>

OTHER FUNDING SOURCES

- **Adopt a Bikeway/Sidewalk/Trail Program**

Local organizations, businesses and community groups often engage in civic projects, including Adopt-A-Highway programs and other landscaping and beautification projects. The City could develop an “Adopt-A-Trail” or “Adopt-A-Sidewalk” program to assist in the routine maintenance or landscaping of the City’s bicycle and pedestrian network.

- **Community Fundraising**

While community fundraising cannot and should not be looked to fund all bicycle and pedestrian projects, it can be an innovative way to raise projects funds while also building community awareness and support for bicycle and pedestrian transportation and recreation. Fundraising events, “buy-a-brick” programs for sidewalk projects, and other creative funding strategies have been utilized in other communities in the United States with great success.

- **Corporate Partnerships**

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Corporate donations and partnerships can provide an unconventional source of funds for bicycle and pedestrian projects. Many businesses understand the value of bicycle and pedestrian infrastructure, parks and open space, and opportunities for healthy and active living as contributing factors to both economic development and quality of life for employees. As such, corporations and local businesses alike have funded trail and greenway projects across the nation. The City should seek out opportunities to partner with the business community to aid in the implementation of this plan.

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BICYCLE & PEDESTRIAN PLAN FUNDING SOURCES MATRIX

	Federal Funding Sources										Local Funding Sources						Regional Funding Sources			Private Sector Funding Sources						
	STP	HSIP	TE	CMAQ	Section 402	SRTS	TCSIP	JARC	New Freedom	RTP	LWCF	Local Option Sales Tax	System Development Charges/Developer Impact Fees	CID	NID	CIP Set Asides	Special Issue Bonds	St Louis County Municipal Grant	GRG	Kodak American Greenways	Bikes Belong Grant Program	MFH	RWJF	Adopt-A-Trail/Adopt-A-Sidewalk	Community Fundraising	Corporate Partnerships
81st Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
82nd Boulevard		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Ahern Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Asbury Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Balson Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Blackberry Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Braddock Drive		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Burr Oak Lane		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Canton Avenue	X	X	X	X		X	X	X			X	X	X	X	X	X				X					X	X
Clemens Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Cornell Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Ferguson Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Forsyth Blvd	X	X	X	X		X	X	X			X	X	X	X	X	X				X					X	X
Fullerton Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Fullerton Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Groby Road		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Hafner Place		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Hazelwood Lane		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Jackson Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Kempland Place		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Kempland Place		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Kingsbury Boulevard		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Kingsland Avenue	X	X	X	X		X	X	X			X	X	X	X	X	X				X					X	X
Kingsland Avenue	X	X	X	X		X	X	X			X	X	X	X	X	X				X					X	X
Maryland Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
McKnight Road	X	X	X	X		X	X	X			X	X	X	X	X	X				X					X	X
Melrose Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Midland Boulevard	X	X	X	X		X	X	X			X	X	X	X	X	X				X					X	X
Mt. Olive Avenue		X	X	X		X	X				X	X	X	X	X	X				X					X	X
North & South Avenue	X	X	X	X		X	X	X			X	X	X	X	X	X				X					X	X
Northmoor Drive		X	X	X		X	X				X	X	X	X	X	X				X					X	X
Oakbrook Lane		X	X	X		X	X				X	X	X	X	X	X				X					X	X

**BICYCLE & PEDESTRIAN PLAN
FUNDING SOURCES MATRIX**

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	Federal Funding Sources										Local Funding Sources						Regional Funding Sources			Private Sector Funding Sources						
	STP	HSIP	TE	CMAQ	Section 402	SRTS	TCSIP	JARC	New Freedom	RTP	LWCF	Local Option Sales Tax	System Development Charges/Developer Impact Fees	CID	NID	CIP Set Asides	Special Issue Bonds	St. Louis County Municipal Grant	GRG	Kodak American Greenways	Bikes Belong Grant Program	MFH	RWJF	Adopt-A-Trail/Adopt-A-Sidewalk	Community Fundraising	Corporate Partnerships
Old Bonhomme Road	X	X	X	X		X	X		X			X	X	X	X	X					X				X	X
Olive Boulevard	X	X	X	X		X	X		X			X	X	X	X	X					X				X	X
Partridge Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Pennsylvania Avenue	X	X	X	X		X	X		X			X	X	X	X	X					X				X	X
Pennsylvania Avenue (south of Vernon)		X	X	X		X	X					X	X	X	X	X					X				X	X
Perhsing Avenue	X	X	X	X		X	X		X			X	X	X	X	X					X				X	X
Polk Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Purcell Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Purdue Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Raymond Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Roberts Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Stanford Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Sutter Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Swarthmore Lane		X	X	X		X	X					X	X	X	X	X					X				X	X
Vassar Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Vernon Avenue	X	X	X	X		X	X		X			X	X	X	X	X					X				X	X
Warder Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Westgate Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Wild Cherry Lane		X	X	X		X	X					X	X	X	X	X					X				X	X
Williams Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
Woodson Road	X	X	X	X		X	X		X			X	X	X	X	X					X				X	X
Yale Avenue		X	X	X		X	X					X	X	X	X	X					X				X	X
EDUCATION PROGRAMS		X	X	X		X	X					X				X					X	X	X		X	X
ENFORCEMENT PROGRAMS		X	X	X		X	X					X				X					X	X	X		X	X
ENCOURAGEMENT PROGRAMS		X	X	X		X	X		X	X		X				X					X	X	X		X	X
EVALUATION/PLANNING		X	X	X		X	X					X				X					X	X			X	X

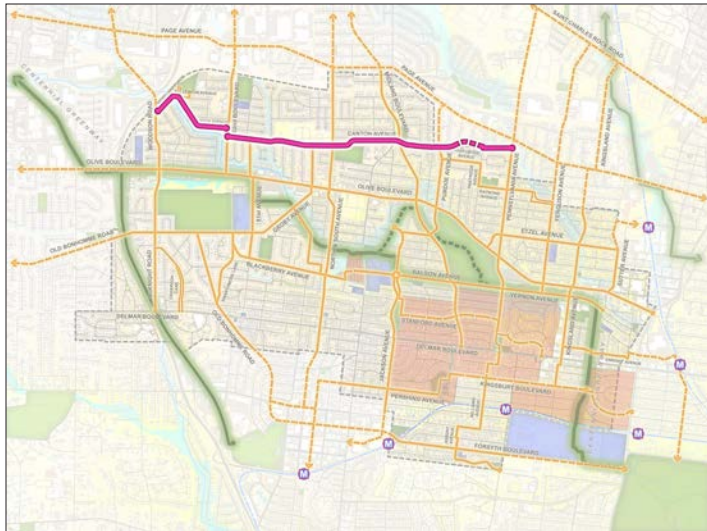
UNIVERSITY CITY BICYCLE & PEDESTRIAN PLAN
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Projects Extents

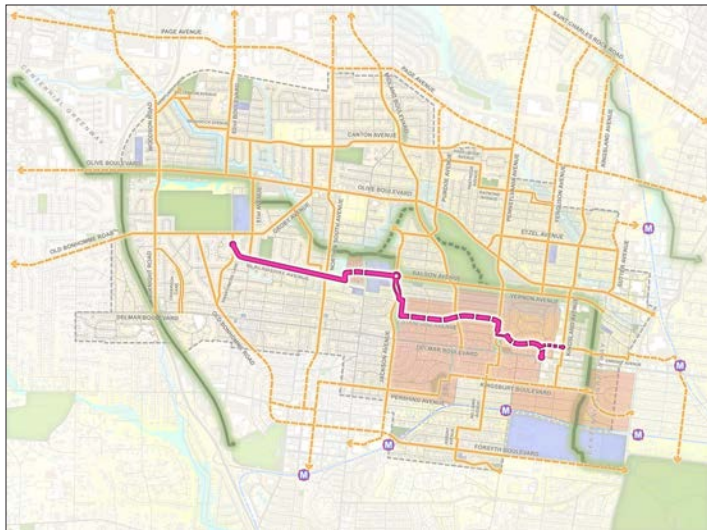
PROJECT EXTENTS
North Bike/Walk Corridor



STREETS

- Canton Avenue
- Braddock Drive
- Fullerton Avenue
- Kempland Place

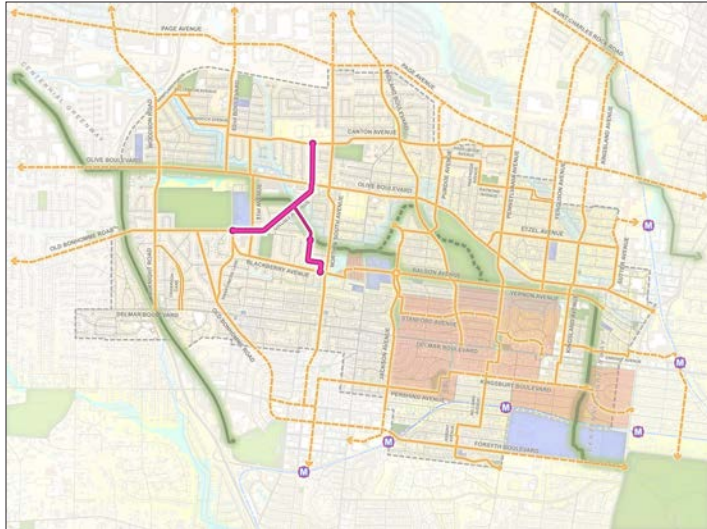
PROJECT EXTENTS
Central Bike/Walk Corridor



STREETS

- Yale Avenue
- Lewis Park
- Pennsylvania Avenue
- Stanford Avenue
- Vanderbilt Avenue
- Jackson Avenue
- Balson Avenue
- Blackberry Avenue

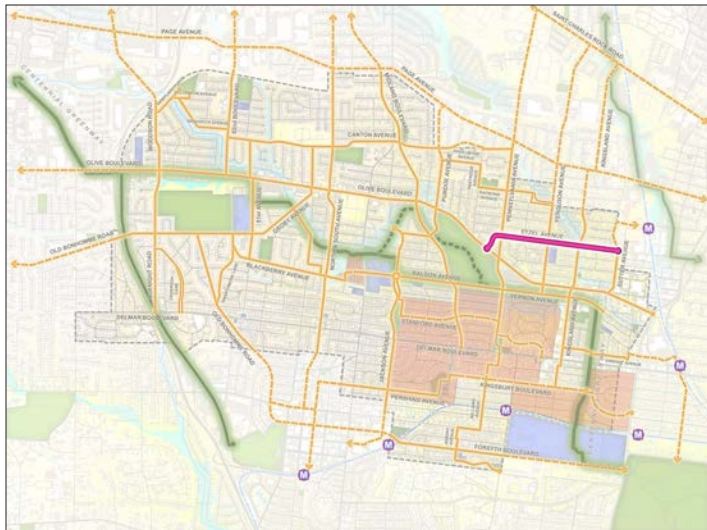
PROJECT EXTENTS North & South Connector



STREETS

- Wild Cherry Lane
- Burr-Oak Lane
- Warder Avenue
- Mona Terrace Park
- Groby Road
- Mt. Olive Avenue

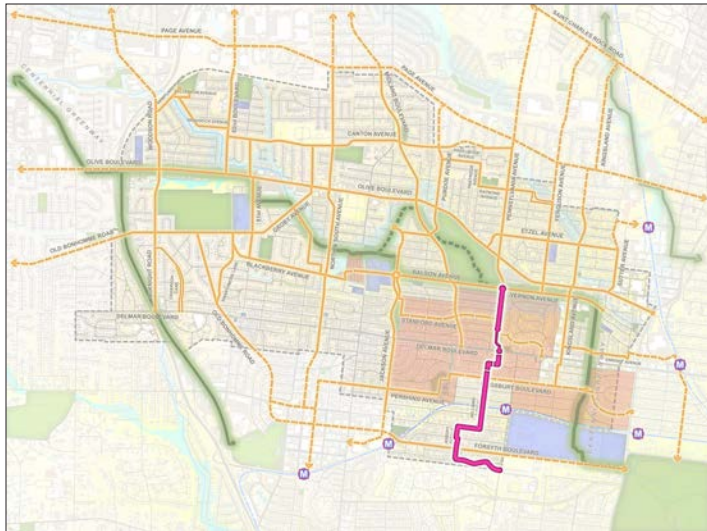
PROJECT EXTENTS Etsel Avenue



STREETS

- Etsel Avenue, East City Limits east to Olive Boulevard

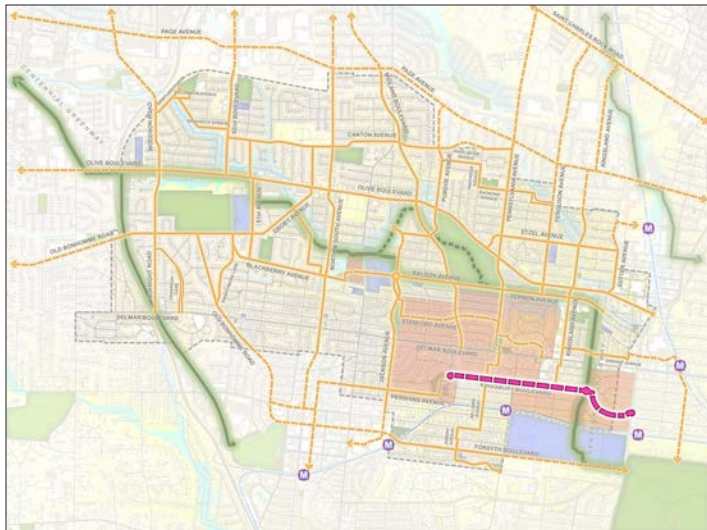
PROJECT EXTENTS
Pennsylvania Connector



STREETS

- Pennsylvania Avenue
- Vassar Avenue
- Washington Avenue
- Williams Avenue
- Maryland Avenue
- Asbury Avenue
- Lindell Boulevard
- Northmoor Drive

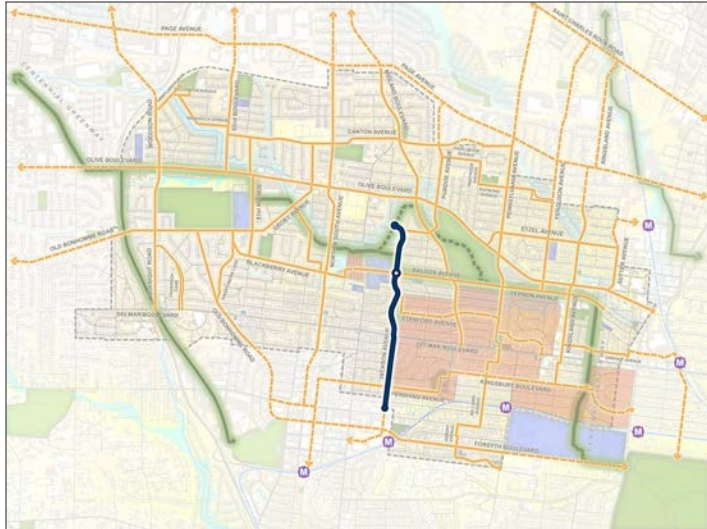
PROJECT EXTENTS
Kingsbury Connector



STREETS

- Waterman Avenue
- Center Street
- Kingsbury Boulevard
- Flynn Park

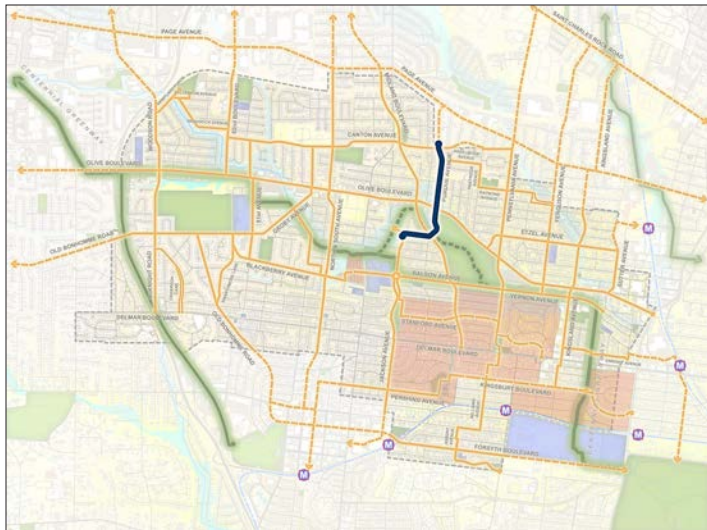
PROJECT EXTENTS Jackson Avenue



STREETS

- Jackson Avenue
- North Jackson Avenue
- Ahern Avenue

PROJECT EXTENTS Purdue Avenue



STREETS

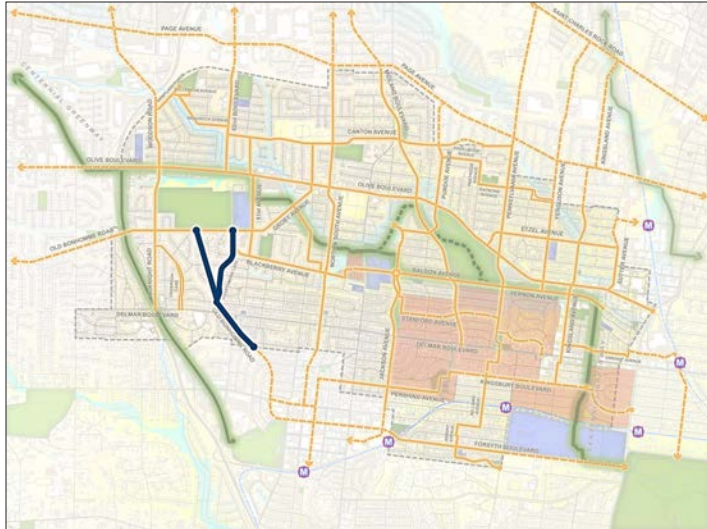
- North City Limits south to Ahern Avenue

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PROJECT EXTENTS

Old Bonhomme Road & Swarthmore Lane

Super Sharrows



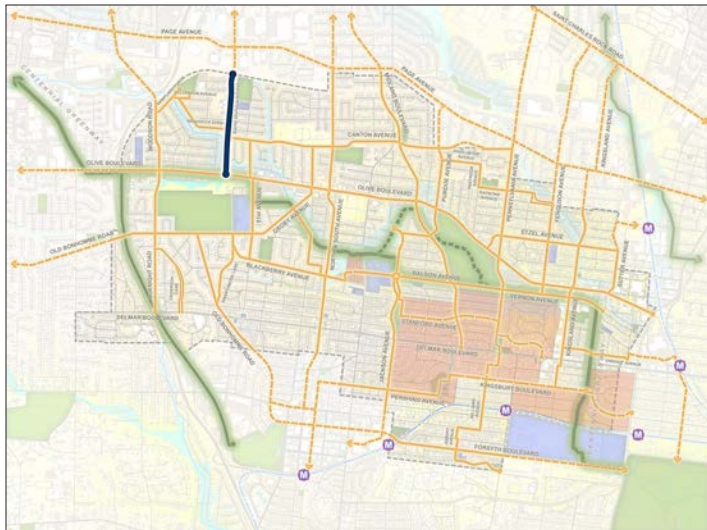
STREETS

- Old Bonhomme Road (South City Limits north to Groby Road)
- Swarthmore Lane (Old Bonhomme Road north to Groby Road)

PROJECT EXTENTS

82nd Boulevard

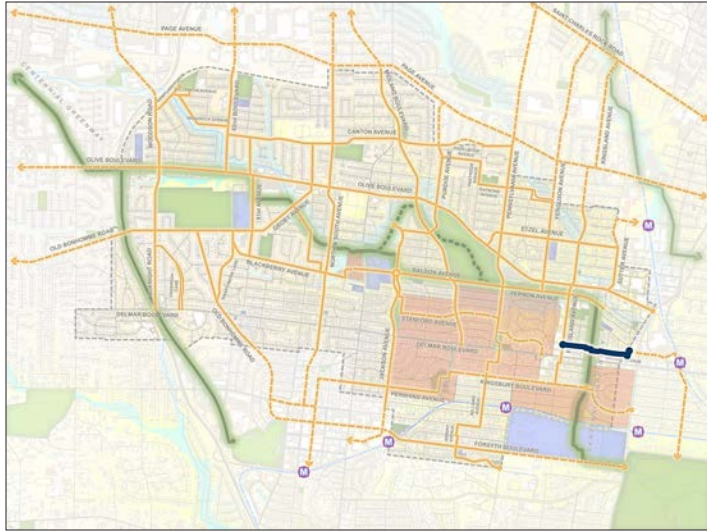
Super Sharrows



STREETS

- North City Limits south to Canton Avenue

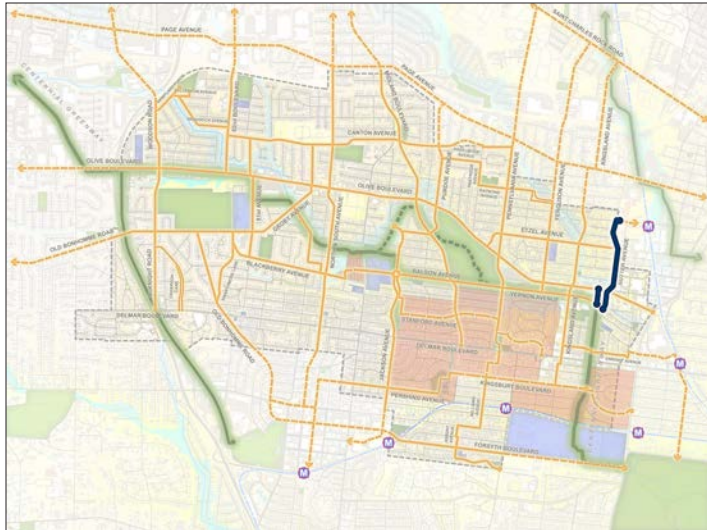
PROJECT EXTENTS Enright Avenue Connector



STREETS

- Enright Avenue
- Loop North

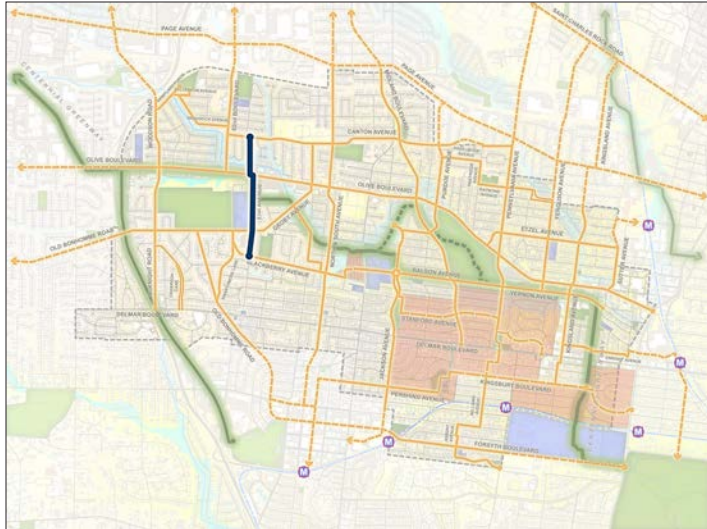
PROJECT EXTENTS Sutter Avenue Connector



STAGE 1

- Sutter Avenue
- Plymouth Avenue

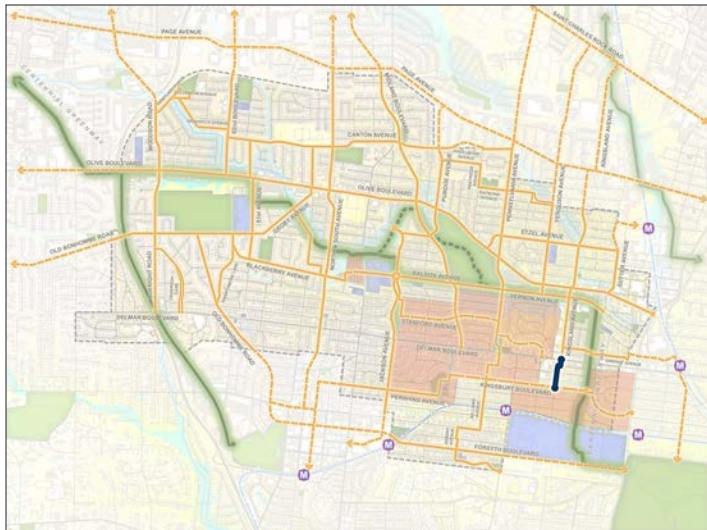
PROJECT EXTENTS 81st Avenue



STREETS

- 81st Avenue
- Hafner Avenue

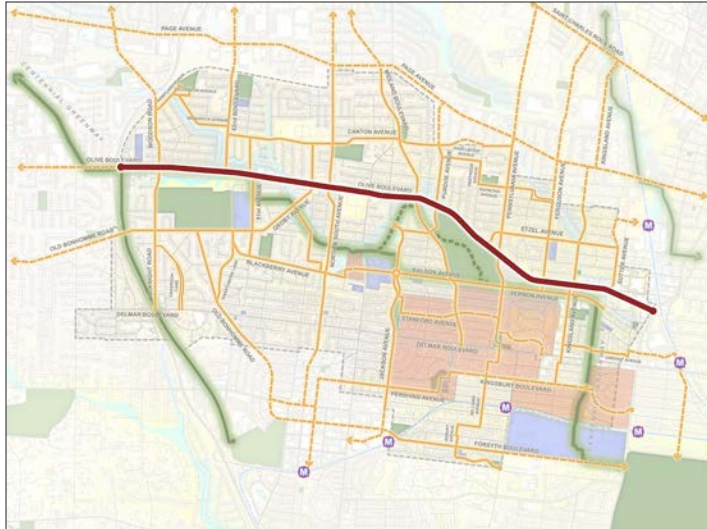
PROJECT EXTENTS Kingsland Avenue



STAGE 1

- Delmar Boulevard south to Kingsbury Boulevard

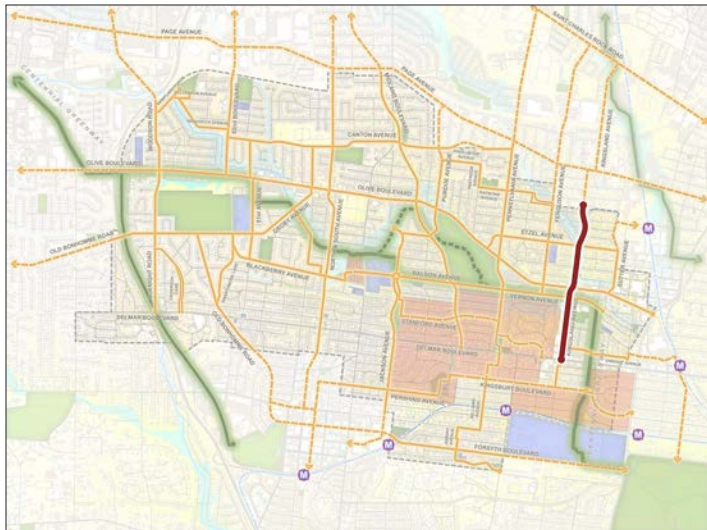
PROJECT EXTENTS Olive Boulevard



STREETS

- West City Limits east to Kingsland Boulevard

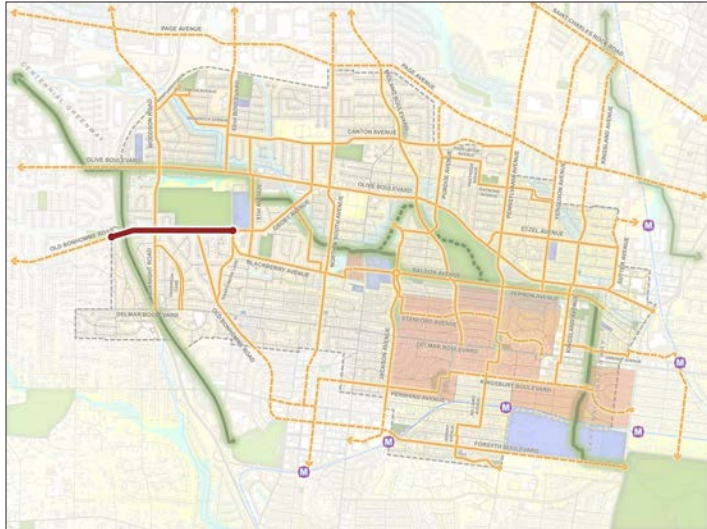
PROJECT EXTENTS Kingsland Avenue



STREETS

- North City Limits south to Delmar Boulevard

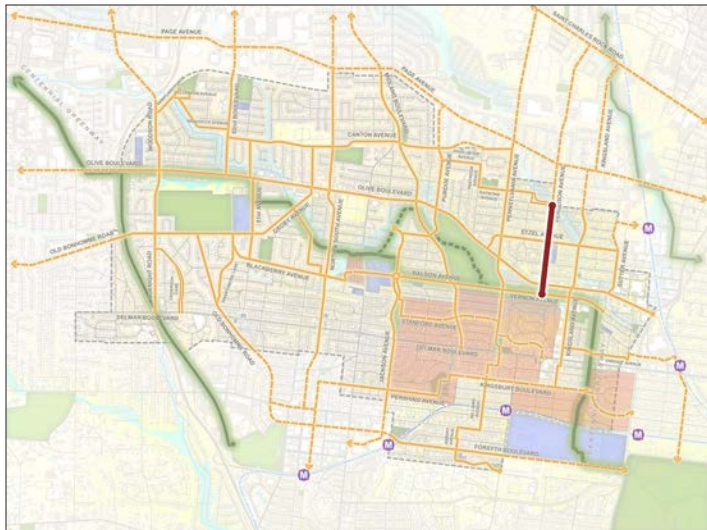
PROJECT EXTENTS Old Bonhomme Road



STREETS

- West City Limits east to 81st Avenue

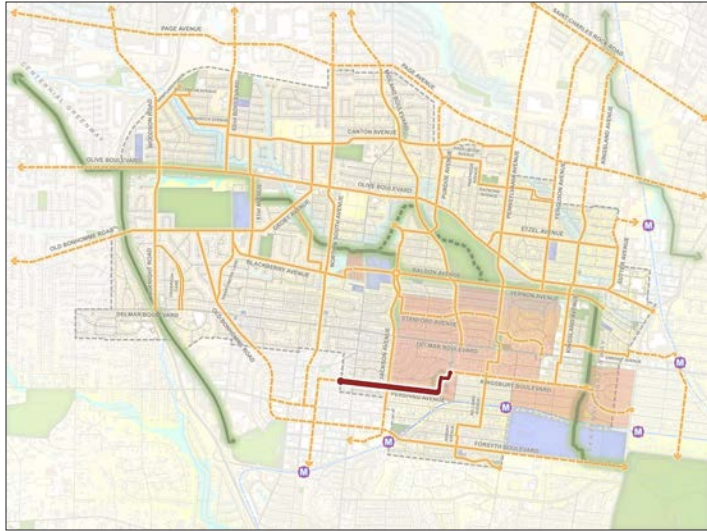
PROJECT EXTENTS Ferguson Avenue



STREETS

- North City Limits south to Vernon Avenue

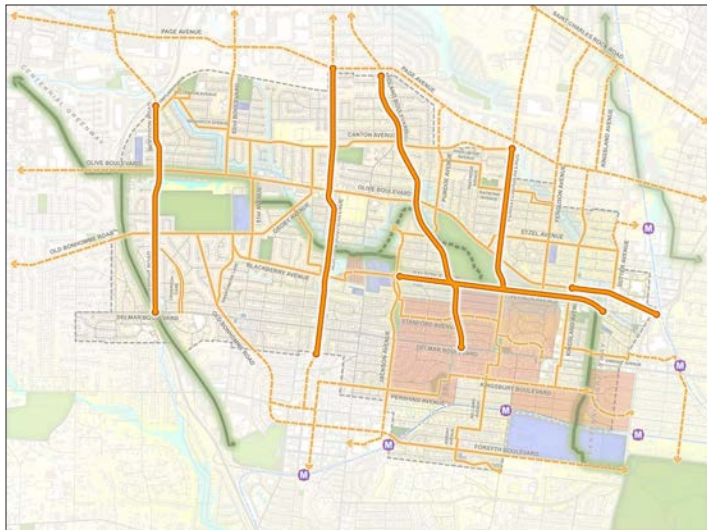
PROJECT EXTENTS Pershing Avenue



STREETS

- West City Limits east to Flynn Park

PROJECT EXTENTS St. Louis County Arterials



STREETS

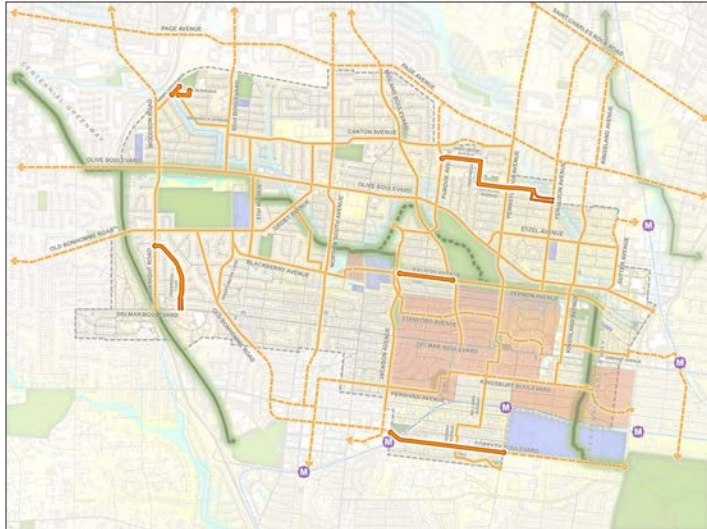
- McKnight Road
- Midland Boulevard
- North & South Avenue
- Olive Boulevard (East City Limits to Kingsland Boulevard)
- Pennsylvania Avenue
- Vernon Avenue
- Woodson Road

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PROJECT EXTENTS

Neighborhood Streets and Connectors

Pedestrian & Streetscape Improvements



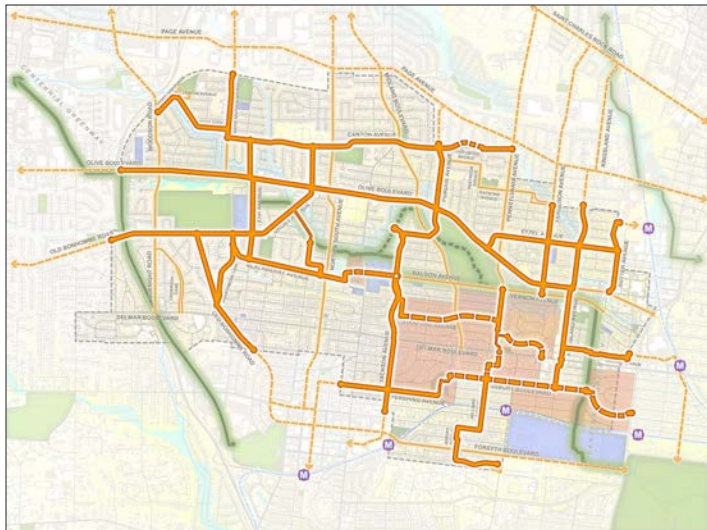
STREETS

- Balson Avenue
- Forsyth Boulevard
- Fullerton Avenue
- Hazelwood Lane
- Kempland Place
- Melrose Avenue
- Oakbrook Lane
- Partridge Avenue
- Polk Avenue
- Purcell Avenue
- Raymond Avenue
- Roberts Avenue

PROJECT EXTENTS

All Bicycle Facility Streets

Pedestrian & Streetscape Improvements



STREETS

- All streets identified for Bicycle Facilities shall receive Pedestrian & Streetscape Improvements as *Phase 2* or *Phase 3* Implementation Items

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Appendix

BICYCLE PLAN 2030

Portland, Oregon

CASE STUDY OVERVIEW

OBJECTIVES

- Equity Analysis: Residents within ¼ mile of a bikeway
- Bicycle Network: ~400 miles of developed bicycle trails and boulevards
- Support local economy

DESIGN ELEMENT

- **Bicycle Boulevards**

OUTCOMES

- More than 50% of residents within ¼ mile of a bikeway after build-out
- Nearly 300 miles of bike network developed
- 2007: Bicycle network contributed \$90 million to local economy and employed 1,150 people

IMPLEMENTATION TOOLS

JARC Program (Federal Program)

- “Job Access and Reverse Commute”
- Portland’s “Create a Commuter”
 - Bicycle availability
 - Bicycle infrastructure
 - 10% of funds used for planning
- Eligible Recipients: states and public bodies, private non-profit organizations, and local governments.

CMAQ (Federal Program)

- “Congestion Mitigation /Air Quality” Improvement Program
- Funds bicycle/pedestrian paths and facilities to reduce motor vehicle dependence

CITY OF UNIVERSITY CITY FEASIBILITY

JARC Program (Federal/State)

- Match funding from U.S. Department of Labor Workforce Investment Act
- Creates opportunities for residents to safely get to work
- **Example:** Southeastern Missouri’s “Missouri Goes to Work” program
- Use funds to connect eligible areas to MetroBus & MetroLink

MFH (State)

- “Missouri Foundation for Health”
- **Example:** *PedNet Coalition recipient of a \$300,000 grant to construct accessible bicycle paths that connect to regional ADA-accessible trails and improve existing conditions*

BICYCLE TRANSPORTATION PLAN 2000

Madison, Wisconsin

CASE STUDY OVERVIEW

OBJECTIVES

- Increase bicycle storage and parking
- The “5 E’s”
 - *Education*
 - *Encouragement*
 - *Enforcement*
 - *Engineering*
 - *Education*
 -
- Bicycle-friendly development and street design

DESIGN ELEMENT

- Bicycle parking/storage facilities

OUTCOMES

- Bicycle parking and storage for both trip origin and destination points now included in Transportation Master Plans (TMPs)
- Comprehensive design criteria successfully implemented
- 7.6% increase in new bicycle commuters
- Decrease in annual bike crashes

IMPLEMENTATION TOOLS

WisDOT SMIP (State)

- “Statewide Multi-Modal Improvement Program”
- Funds allocated to bicycle and pedestrian paths and maintenance

STP (Federal)

- “Surface Transportation Program”
- Used for:
 - bicycle/pedestrian facilities
 - planning
 - education programs

CITY OF UNIVERSITY CITY FEASIBILITY

MO STIP (State)

- “Missouri Statewide Transportation Improvement Program”
- Funding for non-motorized transportation

MARC STP (State)

- “Mid-America Regional Council’s Surface Transportation Program”
- *Example: Vivion Road Enhancement (U.S. 69), Riverside, MO: Connecting residential areas to nearby parks*
- Includes bicycle and pedestrian paths and wide medians

APPENDIX
Case Studies

TRANSPORTATION MASTER PLAN

Boulder, Colorado

CASE STUDY OVERVIEW

OBJECTIVES

- Complete Streets implementation
- Safe Routes to School initiative
- Inviting and safe urban design

DESIGN ELEMENTS

- Complete Street design

OUTCOMES

- 23% of commuters bicycle to work
- 32 miles of new sidewalks
- SOV decrease 19.2%
- 12 public and 4 private schools participate in Safe Routes To School (SRTS)
 - Award for involving 70% of students in biking and walking activities

IMPLEMENTATION TOOLS

CDOT (State)

- “Colorado Department of Transportation”

SAFETEA-LU (Federal)

- “Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users”

CITY OF UNIVERSITY CITY FEASIBILITY

MoDOT (State)

- Contribute funds to Complete Streets

MFH (State)

- Missouri Foundation for Health
- *Example: Jefferson County Health Department awarded \$159,661 to fund Complete Streets*

Grants (National)

- *Example: Active Living by Design developed “Walking School Buses” in Columbia, MO*

Creating a bicycle and pedestrian-friendly community requires a holistic approach, of which physical improvements are just one component. Education, encouragement, and enforcement programs play a vital role in changing the way people move about their community. In addition to developing programs and activities through the Public Works and Parks Department, the Community Development Department, which houses the Recreation Department, responsible for all recreation programs, the City should reach out to develop partnerships with agencies, organizations, institutions, and associations already present in the community. This section of the plan details current activities underway in University City to support healthy and active lifestyles and safer environments for walking and biking; summarizes community input regarding programming opportunities for education, encouragement, and enforcement; and provides potential programs for University City to pursue.

CURRENT PROGRAMS AND ACTIVITIES

The City of University City has for years offered a variety of recreational programs and facilities to provide residents with opportunities for healthy and active living. With 17 parks, 15 ball diamonds, 10 soccer and football fields, 15 play equipment areas, the Heman Park Swimming Pool, the Community Center, and the Centennial Commons Recreational Facility, University City provides an abundance of recreational facilities for residents and visitors. The variety of recreational facilities allows the City to provide a diverse range of programs and activities, including youth summer recreation programs, teen activities programs, personal and group training sessions, senior fitness classes, and many more. With the development of an on-street bicycle facility network and improvements to the pedestrian environment, the City can expand its health and fitness-related offerings through programs designed to encourage residents to choose active transportation—walking, cycling, and public transit—to reach destinations in and around the community.

COMMUNITY INPUT

Throughout the planning process, community members shared their thoughts regarding programs that support walking, bicycling, and active living through the online plan survey. A number of questions in the survey related to potential education, encouragement, and enforcement programs. While individual responses varied considerably,

APPENDIX Programming Opportunities

Potential Education, Encouragement and Enforcement Programs	
Program	Average Score (5 = highest score; 1 = lowest)
Programs that encourage children to walk and bike to school.	4.05
Greater police enforcement of motor vehicle, bicycle and pedestrian laws.	3.71
Education programs that teach residents and businesses the benefits of walking and bicycling.	3.29
Education programs that teach children basic cycling skills.	3.77
Education programs that teach adults basic road cycling skills.	3.40
Programs that encourage residents to walk and/or bike to local businesses.	3.89
Programs to improve motorist awareness of cyclists, pedestrians and other road users.	4.24

there were a number of programs and ideas that received significant positive support. The table above represents average scores various programming opportunities and their potential effectiveness in the community. Motorist awareness campaigns, Safe Routes to School programs, programs to encourage residents to walk and bike to local businesses, and bicycle education courses for children were the program opportunities that received the greatest positive feedback from survey respondents.

POTENTIAL PROGRAMS

Building on the feedback received in the online community survey and gathered at the public workshops, this section of the plan introduces education, encouragement, and enforcement programming opportunities that can have a significant impact on residents', visitors', and area employee's transportation choices.

PEDESTRIAN & BICYCLIST AWARENESS PROGRAMS/CAMPAIGNS: One of the most challenging barriers to walking and cycling is the potential conflict between automobiles and other road users. High vehicle speeds, heavy traffic volumes, and a perceived lack of respect and consideration for pedestrians and cyclists prevent many residents from walking and cycling to local destinations. The City should consider developing pedestrian and bicyclist awareness campaigns in partnership with local, regional and state entities. Awareness campaigns may

APPENDIX Programming Opportunities



consist of the distribution of educational brochures and pamphlets, the development of print, online, and television media, targeted enforcement of motor vehicle regulations in and around areas of high pedestrian and cyclist activity, and other targeted activities to calm traffic and improve cooperative and courteous behavior among all road users. Potential partners may include the following: St. Louis County Highways and Traffic and the Missouri Department of Transportation, who own and maintain arterial and collector roadways within the City Limits; University City School District; private schools; Loop Special Business District; Olive Business District; neighborhood associations; and other individual businesses and institutions.

NEIGHBORHOOD PACE CAR PROGRAM: A growing number of cities across the country have taken a unique approach to traffic calming: the neighborhood pace car program. Through this program, residents that have pledged to act as pace cars drive slowly and safely, give way to pedestrians and cyclists, and set a standard of respect and behavior for other automobile drivers to follow. Neighborhood pace car programs, most often administered by the local government agency, consist primarily of informational brochures, a dedicated webpage to provide information and updates, and bumper stickers to be adorned by participating pace cars. Links to sample neighborhood pace car programs are provided at the end of this section of the plan.

PROJECT OUTREACH: As new bicycle facilities are constructed, it is important to reach out to adjacent residents, business owners, and other important stakeholders to impart the benefits of active transportation infrastructure, to provide educational material, and to encourage facility usage. Shared lane markings, dedicated bicycle lanes, and other bicycle facility elements will bring changes to the transportation network that few have seen or experienced. Outreach efforts will be an integral component of any new bike facility project and can positively influence the community's perception and usage of these new facilities. The City should consider the use of pamphlets, direct mailings, and door hangers to provide information about new projects and encourage residents to walk and bike for local trips.



INFORMATIONAL DOOR HANGERS

SAFE ROUTES TO SCHOOL PROGRAMS: In 1969, 42 percent of all students from grades 1 through 12 walked

APPENDIX Programming Opportunities

or biked to school, and 49 percent of elementary school students walked or biked.¹ By 2001, less than 15 percent of all trips to school were made on foot or bike, with more than half of students arriving by private automobile (up from 16 percent in 1969).² In an effort to reverse this trend, the Federal Highway Administration initiated the Safe Routes to School Program (SR2S) in 2005. The objective of SR2S is twofold, focusing on infrastructure improvements in school areas and on behavioral programs to increase the number of children walking and biking to school.

Local schools and school districts throughout the St. Louis Metropolitan Area have incorporated Safe Routes To Schools Programs in an effort to promote physical activity for school children. Walking School Busses, Bike Trains, Bike Safety Rodeos, and other events are designed to encourage children (and their parents) to walk and bike to school rather than driving. Some schools have even designated drop-off locations for children who live too far from school to walk to join other walkers on their way to school. In University City, the only school currently involved in any formal Safe Routes To School Program is Christ the King Catholic Elementary School on Balson Avenue. After taking part in two International Walk To School Day events, dedicated parents and school staff created Walking Wednesdays to encourage children and families to walk to school. Students who live too far to walk can join a large group of Christ the King families that meet at Jackson Park on Wednesdays mornings to walk to school. Students can also walk during recess and receive a stamp for their “Walkin’ Wednesday” card.

While many children in University City already walk and, to a lesser extent, bike to school without any formal education or encouragement program, the impact of such a program could have a substantial impact on school children’s health and physical fitness, on motor vehicle congestion, and on carbon emissions. The City of University City should engage the University City School District and local private schools to explore opportunities to increase children walking and cycling to school.

Trailnet, a local non-profit working to foster healthy and active communities throughout the St Louis Metropolitan Area through planning, policy, and programs that promote walking and bicycling, has partnered with communities and school districts in St. Louis County to develop Safe Routes to School programs. Through parent and school



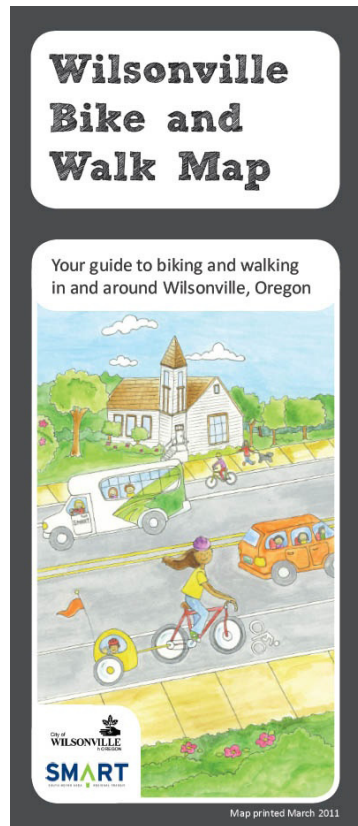
SAFE ROUTES TO SCHOOL EVENT

¹ “Transportation Characteristics of School Children,” Report No. 4, Nationwide Personal Transportation Study, Federal Highway Administration, Washington, DC, July, 1972.

² Federal Highway Administration, National Household Travel Survey, 2001.

APPENDIX Programming Opportunities

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district trainings, Walk To School Day events, Walking School Busses, Bike Trains, and other events, Trailnet has helped over a dozen schools establish, grow and sustain Safe Routes to School programs that have made a lasting impact on local school travel patterns and children's health.

COMMUNITY-WIDE BICYCLE AND PEDESTRIAN MAP: Cyclists' and pedestrians' travel patterns differ from motorists' and are influenced by a variety of factors, including perceived safety, comfort, efficiency, familiarity, and aesthetics. Many would-be cyclists and pedestrians are intimidated by a lack of knowledge of the best routes for walking and cycling to local destination. A map for cyclists and pedestrians can familiarize residents and visitors alike with the preferred routes to destinations throughout the community and encourage walking and cycling as viable transportation options. A community-wide map can have many benefits beyond simply encouraging cycling and walking activity. It can also help to highlight public and private destinations in and around the community, encourage patronage of local businesses, direct residents and visitors to newly developed bicycle and pedestrian infrastructure, and integrate other programming content and information, like bicycle safety tips, for electronic and print distribution.

SHOP BY BIKE/FOOT PROGRAM: Shop by Bike and Shop by Foot programs encourage residents to walk and/or bike to local businesses for short daily trips. Forty percent of all travel trips in the United States are two miles or less, a distance that can be comfortably covered on foot or bicycle; yet 74 percent of these trips are made by automobile.³ Shop by bike and shop by foot programs can help to reduce automobile congestion, lower carbon emissions, improve individual health, and support local businesses. University City should explore opportunities to create such a program with area businesses, the Loop Special Business District, and the Olive Business District. Similar programs across the United States often include an incentive program that rewards customers arriving on bike and foot with discounts, small gifts, and similar benefits.

BICYCLE-FRIENDLY BUSINESSES PROGRAM: Creating a bicycle-friendly community is not limited to actions of local government, residents and advocacy groups. Local businesses can take a number of steps to cater to and improve access for cyclists; however, most businesses are unaware of the resources available to increase

³Federal Highway Administration, National Household Travel Survey, 2001.

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conditions for cyclists. A Bicycle Friendly Businesses Program generally functions in two important ways. First and foremost, by providing the resources, information, best practices, and, in some cases, incentives, to help local businesses create an environment that supports cycling. This can be done by providing safe and secure bicycle parking for customers and employees, developing incentive programs to encourage employees to bike to work, and distributing commuter education materials to employees. By improving conditions in and around their businesses and incentivizing bicycle ridership, local businesses are not just creating opportunities for a greater diversity of customers, but also increasing cycling throughout the community, contributing to the community's desire to weave walking and cycling into the fabric of the community.

In the St. Louis Region, Trailnet works with businesses and community groups through the TravelGreen Program to encourage commuter cycling and help local businesses develop policies, environments, and social networks that embrace alternative transportation. This growing program incorporates Bike To Work Day events, Breakfast for Bikers events, and the Shift Your Commute website (www.shiftyourcommute.com) to support businesses and employees as they seek to incorporate bicycle commuting into their daily routines.

SENIOR BIKING AND WALKING PROGRAMS: In 2009, an estimated 16 percent of the City's population (5,679 of 36,577) was 65 years or older.⁴ Walking and biking programs can help this segment of the population maintain healthy and active lifestyles and retain their transportation independence. Whether through weekly group walks, organized bicycle rides, placing walking and bicycling maps at senior centers, or targeted infrastructure improvements, these programs can have a lasting impact on the health and quality of life of the community's senior population.

YOUTH AND ADULT BICYCLE EDUCATION: Many University City residents have stated their desire to incorporate cycling into their daily routines, but cite high traffic volumes and traffic speeds on busier arterial roads as significant deterrents to cycling throughout University City. Training courses can provide both youth and adult bicycle riders with the basic knowledge, skills and confidence necessary to safely and successfully navigate the variety of roadway conditions present throughout the City. There are currently a number of different bicycle shops



TRAILNET BIKE SMART CLASS

⁴U.S. Census Bureau: 2005-2009 American Community Survey. Retrieved November 1, 2011, from <http://factfinder.census.gov>.

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CREATE-A-COMMUTER BIKE PROGRAM

and local organizations that teach on-road cycling classes, including the Alpine Shop, REI, and Trailnet. The City should seek to partner with a local bicycle shop or an organization like Trailnet, whose new BikeSmart classes prepare area residents with the skills and confidence to bike in a variety of situations.

Another approach to youth cycling instructions is to incorporate basic cycling skills as part of the physical education curriculum in local schools. Although there is no single authoritative guide or curriculum for bicycle education (or youth pedestrian education, for that matter) there are a number of outstanding models and resources to help local communities prepare children of various ages to become safe and responsible cyclists. The Safe Routes To School National Partnership has developed a comprehensive report on the subject, detailing federal efforts, the European model for youth bicycle education, existing programs and curricula, and other important considerations. Another useful resources for both adult and youth bike education is the Bicycle Safety Education Resource Center, developed by the Federal Highway Administration and maintained online by the Pedestrian and Bicycle Information Center. The Bicycle Safety Education Resource Center is an online repository of information that includes the Federal Highway Administration's National Bicycle Safety Education Curriculum Project, the Good Practices Guide For Bicycle Safety Education, and the Resource Database, which guides users to targeted information based on target audience and topic.

LAW ENFORCEMENT TRAINING: Law enforcement can play a significant role in creating safe public spaces for all road users through warnings, ticketing, and increasing public awareness of the rights and responsibilities for motorists, cyclists, and pedestrians. The City should seek additional training for law enforcement officers relating to cyclist, pedestrian, and motorist interactions and proper usage of the public rights-of-way.

“CREATE A COMMUTER” BIKE PROGRAM FOR ADULTS: Many residents of University City rely on walking, cycling and public transportation to access employment, shopping, and other basic necessities on a daily basis. 2000 US Decennial Census data shows that over 11% of households in University City (and nearly 19% of renter-occupied households).⁵ In addition, nearly 10% of the work force 16 years or older used public transportation, biked, walked to get to work, even when some had a private vehicle available.⁶ For some, it is a choice. For others,

⁵ U.S. Census Bureau: 2000 Decennial Census, Summary File 3. Retrieved April 27, 2011, from <http://factfinder.census.gov>.

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it is a necessity. To ensure that all residents of University City have access to employment opportunities, the City should consider establishing a create-a-commuter program to provide low-income residents with bicycle maintenance and on-road skills training, as well as a fully equipped commuter bicycle. Such a program would ensure that low-income residents have a reliable means of transportation to retain and/or find employment. Similar programs have been established in Portland, with funding provided in part by the Federal Highway Administration's Job Access Reverse Commute Program, which focuses on improving job-related transportation for low-income members of the community.

The programs described above are just a starting point for University City. As the City continues improve access to and opportunities for active living throughout the community, other opportunities may arise to incorporate walking and bicycling into the community's social fabric. There are a number of resources available that describe successful programs undertaken by local government agencies and non-profits in North America.

LINKS TO ADDITIONAL INFORMATION AND RESOURCES

GENERAL RESOURCES

Pedestrian and Bicycle Information Center (PBIC)

<http://www.pedbikeinfo.org/>

PBIC's Case Study Compendium

http://www.walkinginfo.org/case_studies/

Federal Highway Administration's Bicycle and Pedestrian Program

<http://www.fhwa.dot.gov/environment/bikeped/>

Federal Highway Administration's Safety Program

<http://safety.fhwa.dot.gov/>

Trailnet, Inc.

<http://trailnet.org/>

Missouri Bicycle and Pedestrian Federation

⁶ U.S. Census Bureau: 2000 Decennial Census, Summary File 3. Retrieved April 27, 2011, from <http://factfinder.census.gov>.

<http://www.mobikedef.org>

Missouri Department of Transportation's Bicycle and Pedestrian Program

<http://www.modot.mo.gov/othertransportation/bicyclepedestriangeneralinformation.htm>

America Walks

<http://americawalks.org/>

NEIGHBORHOOD PACE CAR PROGRAM

Washington, D.C.

http://www.waba.org/education/about_pace_car.php

Springfield, MO

<http://www.springfieldmo.gov/traffic/pacecar.html>

Davis, CA

<http://cityofdavis.org/police/pacecar/>

SAFE ROUTES TO SCHOOL

National Center for Safe Routes to School

<http://www.saferoutesinfo.org/>

Safe Routes to School National Partnership

<http://www.saferoutespartnership.org/>

PBIC's Safe Routes to School Guide

<http://guide.saferoutesinfo.org/>

FHWA Safety Program – Safe Routes to School

<http://safety.fhwa.dot.gov/saferoutes/>

SENIOR BIKING AND WALKING PROGRAM

New York, NY

<http://www.transalt.org/campaigns/pedestrian/safeseniors>

Portland, OR

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<http://www.portlandonline.com/TRANSPORTATION/index.cfm?c=eafeg>

<http://www.streetfilms.org/archives/portland-or-older-adults-bike-program/> (video)

YOUTH AND ADULT BICYCLE EDUCATION

Bicycle Safety Education Resource Center

<http://www.bicyclinginfo.org/education/resource/fhwa.html>

Trailnet's Bike Smart Program

<http://www.trailnet.org/our-work/travelgreen>

PBIC's SRTS Guide – Bike Education Section

<http://guide.saferoutesinfo.org/education/resources.cfm>

League of American Bicyclists

<http://www.bikeleague.org/programs/education/index.php>

Safe Routes to School National Partnership's Bicycle and Pedestrian Curricula Guide: Making the Case for Bicycle and Pedestrian Youth Education

<http://www.saferoutespartnership.org/publications/CurriculaGuide>

CREATE A COMMUTER BIKE PROGRAM FOR ADULTS

Oakland, CA

<http://www.cyclesofchange.org/programs/bike-go-round>

Portland, OR:

<http://www.communitycyclingcenter.org/index.php/programs-for-adults/create-a-commuter/>

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