# CHAPTER 2: BICYCLE AND TRAIL PLANNING

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# CHAPTER 2: BICYCLE AND TRAIL PLANNING

## Introduction

Over the last 20 years there have been great strides taken in Oklahoma City to improve the bicycle and trail networks, creating momentum that will lead to even greater progress in the future. This chapter discusses the future of bicycle and trail infrastructure in Oklahoma City, and recommends projects needed to make Oklahoma City a world class place to ride a bike on streets and on trails.

The methodology for developing the bicycle and trail plan was to study current conditions and identify opportunities to build a bicycle and trail network that meets the needs and desires of the community. Planners analyzed the existing bicycle network to determine where people currently ride and determined through technical analysis, steering committee input, and public surveys what portions of the network need improvement. This plan proposes bicycling opportunities for cyclists of all skill levels.

The plan proposes expansion of the existing bicycle network and improvements to current facilities, resulting in more than 100 new or upgraded facilities totaling greater than 300 miles of on- and off-street bicycle facilities. Proposed improvements meet the following goals:

- Connect existing bicycle facilities: Tie existing facilities and close gaps between them.
- Connect people to destinations: Connect residential, shopping, and recreational areas to trails and on-street facilities.
- Create safe cycling experiences: Design facilites with safety as a main priority.
- Create barrier crossings: Cross natural and man-made barriers.

### WHY RIDE A BIKE?

People choose to ride a bike when it is faster and more convenient than walking, riding the bus, or driving a car. Additionally, people choose to ride a bike for recreation or exercise. The distance people cycle is dependent on their confidence and experience. Many people will choose to cycle to nearby destinations such as a school, local park, corner shop, or friend's house. This is especially true when they can get there safely and conveniently. If it is an easy ride, people are more comfortable riding further distances for destinations such as high schools or colleges, shopping districts, large parks, sports facilities, libraries, and for entertainment (e.g. movie, theater, restaurant, bar). Additionally, commuting to work longer distances is attainable when convenient and comfortable facilities are present. One of this plan's goals is to make it possible for Oklahoma City residents to choose to cycle to these destinations.

Figure 2.1 displays the relationship between destinations and cycling distances.

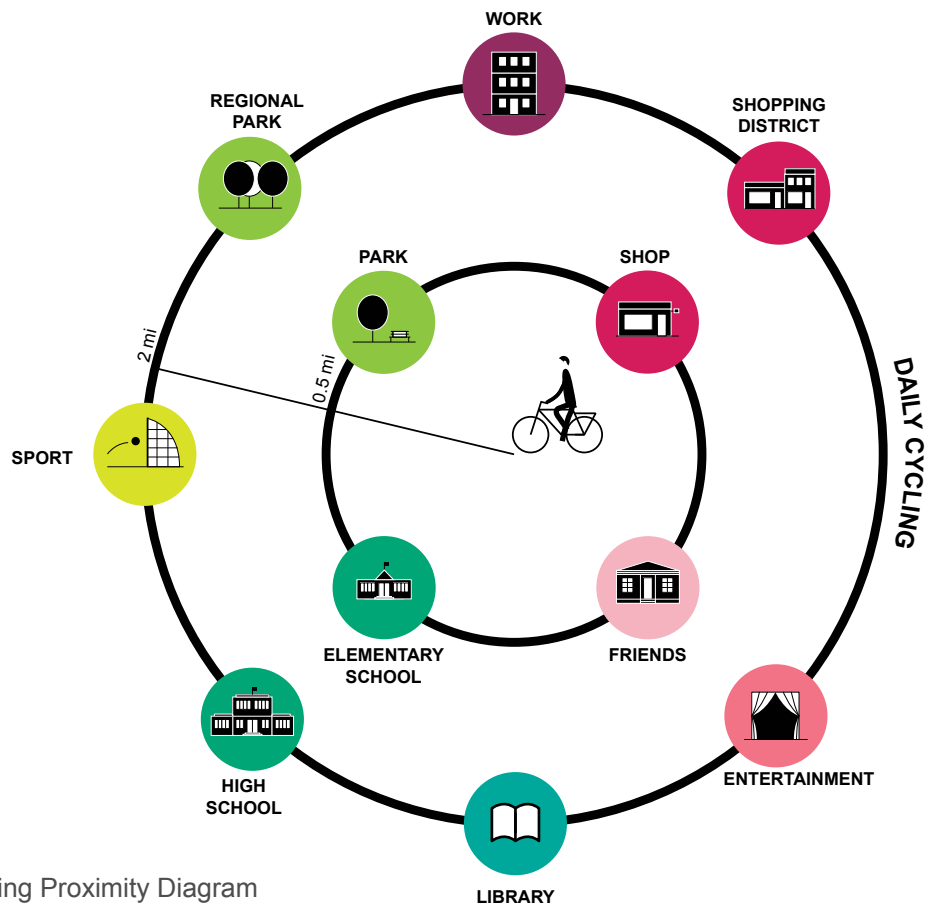



Figure 2.1 Cycling Proximity Diagram

## EXISTING BICYCLE AND TRAIL FACILITIES

Existing bicycle infrastructure within Oklahoma City includes a combination of on-street and off-street facilities. Existing on-street facilities consist of designated bicycle routes and striped bicycle lanes. Bicycle routes typically include signage and sharrow symbols, indicating that cyclists share the travel lane with automobiles. Bicycle lanes provide a dedicated and delineated space for cyclists to ride alongside of automobiles. Existing off-street bicycle facilities include multi-use trails and mountain bike trails. Map 2.1 shows the locations of these facilities.

Oklahoma City's bicycle infrastructure has been constructed using a variety of funds. These include federal funds, GO Bond funds, and MAPS sales tax funding.

## ASSETS AND CHALLENGES

Oklahoma City has many opportunities to improve cycling in the community, as well as several challenges. These assets and challenges are outlined below.

### Assets

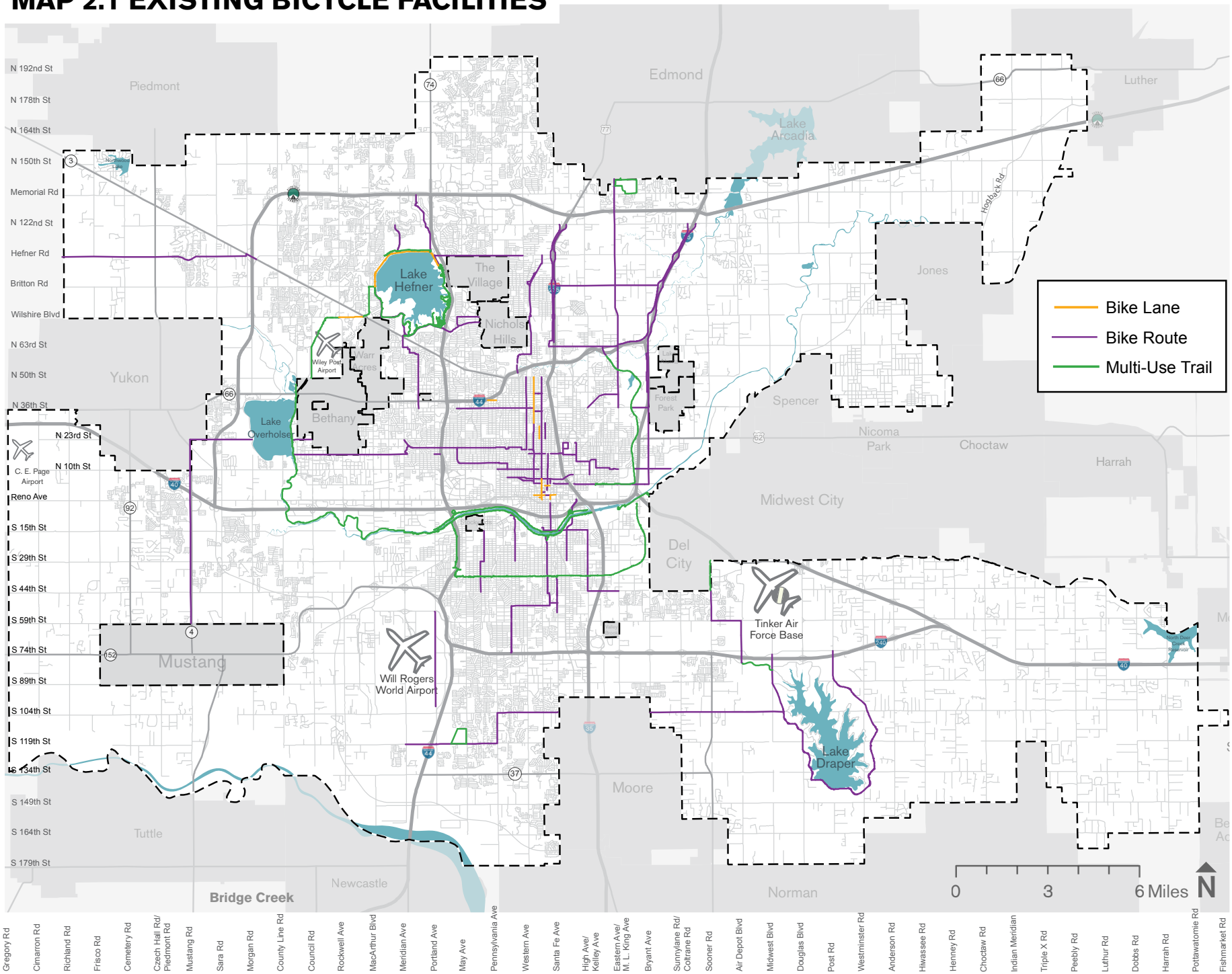
- Implementation of projects outlined in the **2008 Oklahoma City Bicycle Transportation Plan** has resulted in many good bicycle routes that cyclists use extensively.
- The city's **grid network allows** many options for cycling and reaching destinations.
- **New bicycle parking** areas have been installed in downtown and midtown.
- All fixed-route public transportation **buses are equipped with bicycle racks**.
- The local bike share service, **Spokies**, has expanded and is seeing an increase in ridership.
- Cycling is growing in popularity, meaning Oklahoma City **motorists are becoming more accustomed to sharing the road**.
- The City received funding through the **Watch For Me OKC** demonstration project to construct protected bike lanes downtown, which will expand the network and provide additional safety for cyclists.
- **The trails network** currently reaches many portions of the city and allows for transportation and recreational cycling, jogging, and walking.
- Currently, over **20 miles of trails** are in the planning and construction phases.
- Since the opening of the **West River Trail** in 2015, the number of people using the trails has risen.
- The trail system is well-connected to **existing recreational resources**.
- Outside of a few missing links, the trail system nearly completes **a full loop around Oklahoma City**.

### Challenges

- Outside of sign-designated bike routes, **on-street infrastructure for bicycles is limited**.
- **Less than 1%** of the total transportation network consists of marked bicycle lanes.
- **Connectivity** within the transportation network drops off outside of the central city, causing cyclists to utilize arterial streets, which are less safe and uncomfortable.
- The **surface condition and debris** on some roadways make it difficult to cycle.
- **Bicycle parking** is limited throughout the city.
- There is **limited signage and information** on the existing bicycle network.
- The trail network has **few access points**.
- Most of the network is for **recreational use**.
- **Only 17.5%** of Oklahoma City residences are **within one mile of a trail**.

Below: Cyclists enjoy using an existing bicycle lane in Oklahoma City

# MAP 2.1 EXISTING BICYCLE FACILITIES



## CURRENT BICYCLE AND TRAIL INITIATIVES

Several transformative initiatives are underway to create a functional and safe bicycle transportation network in Oklahoma City. These initiatives include efforts to add new trails, fill in gaps in the existing trails network, locate bike lanes in the downtown area, and use bike lanes to connect surrounding neighborhoods to the downtown area. Project 180, MAPS 3, the 2007 GO Bond, and the Watch for Me OKC safety campaign are the initiatives that are working to these ends. Map 2.2 shows the locations of these initiatives.

### Project 180

The primary goal of Project 180 has been to improve the pedestrian experience of downtown Oklahoma City; however, another great benefit of this endeavor has been improvements made to bicycle infrastructure in downtown. Bike lanes, some with highly visible green paint, now adorn several streets in the Central Business District and Arts District, including N. Walker Ave. between City Hall and the Civic Center. This type of high-visibility facility does more than make bicycling easier in downtown, it also increases awareness of cycling to drivers who may not have ever driven on streets with bike lanes. Beyond the installation of these on-street facilities, Project 180 is responsible for dozens of bicycle racks throughout the project area. All of these improvements have enabled a new beginning for urban cycling in Oklahoma City.

### MAPS 3

Funding from the MAPS 3 sales tax has had a major positive impact on Oklahoma City. From the new whitewater rafting facility, to the convention center, and the streetcar, MAPS 3 projects are transformative. In addition to these projects, MAPS 3 funded three new multi-use trails, each of which has a distinct character and purpose. The first trail to be completed was the West River Trail that connects the previously completed Oklahoma River trails to Lake Overholser. This trail connection now allows users to travel from Bricktown to Lake Hefner with minimal interaction with automobiles. The second MAPS 3 trail has been named the "Will Rogers Trail"; an urban trail that primarily follows the I-44 corridor, connecting Lake Hefner, the State Fair Grounds, several parks, and dozens of neighborhoods. This is the first urban trail constructed since the S. Grand Boulevard Trail. The final MAPS 3 trail is the Lake Draper Trail, which will circle Lake Draper, providing a much needed trail opportunity in southeast Oklahoma City.

### 2007 General Obiligation Bond

The last general obligation bond election included several projects that have had strong implications for cycling in Oklahoma City. Two trails and two bicycle/pedestrian bridges were funded. This includes key connections necessary to fill in gaps in the existing trails network. These connections include the Deep Fork Creek Trail, which will connect the Katy Trail to the Grand Boulevard Trail in the City of Nichols Hills. The other funded trail will connect the existing river trails to the Eagle Lake trail, which will substantially increase the distance that trails users can travel along the Oklahoma River. Two bicycle and pedestrian crossings have been funded: one to cross NW Expressway at NW Wilshire Blvd., and one to cross the Oklahoma River south of downtown. These crossings will provide much improved safety for cyclists and pedestrians who have had to mix with automobile traffic to cross these barriers in the past.

### Watch for Me OKC

A main component of Watch for Me OKC is the construction of demonstration corridors with protected bike lanes, non-protected bike lanes, and sharrows. Intersection improvements include bike boxes and signage. The first phase of demonstration corridors is planned for NW 4th St., N. Shartel Ave., and N. Walker Ave., and the second will extend these downtown routes into surrounding neighborhoods to the north, west, south, and east, connecting residents to major employment centers. The purpose of the demonstration corridors is to implement state-of-the-practice bicycle facilities in Oklahoma City and demonstrate how to retrofit roadways with excess capacity into livable streets. These facilities will help educate motorists and cyclists as to how interactions between them can be improved with sufficient facilitation.

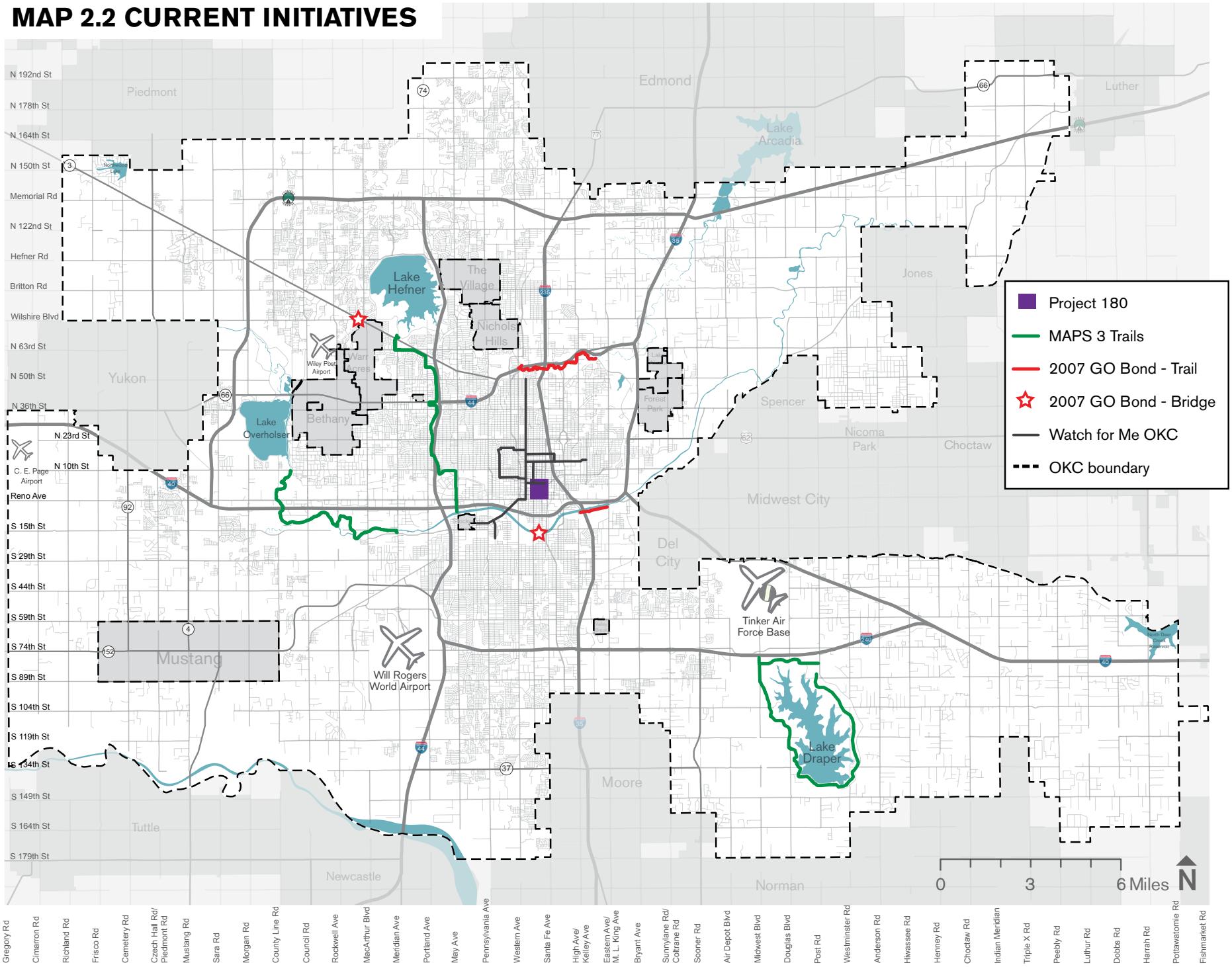
### Better Streets, Safer City

In 2017 Oklahoma City residents approved a package of capital improvements that consists of a general obligation bond, which contains 13 propositions, dedicating the majority of funds to transportation improvements, as well as a one-cent sales tax dedicated to streets and active transportation infrastructure. Substantial funds are allocated to on-street bicycle facilities, separated trails, bike-ped bridges, as well as sidewalks. In particular, the sales tax portion of the Better Streets, Safer City package dedicates a 0.3% sales tax for active transportation projects over a 27-month time period.

### Transportation Alternatives Program (TAP)

Federal funds for active transportation projects are made available cyclically. In the most recent round of TAP project selections the City of Oklahoma City received funding for nine projects, totalling $3.85M. The planning conducted for bikewalk**okc** positioned the City to capitalize on available funds. These projects include improvements to the Grand Blvd. loop to close gaps between trails, sidewalk and on-street bicycle improvements, as well as funding for bicycle and pedestrian bridges.

# MAP 2.2 CURRENT INITIATIVES



# Bicycle and Trail Plan

The bicycle plan consists of several approaches to long-range capital improvement planning that will lead to a complete, connected, and coherent network of bicycle facilities that meet the transportation and recreation needs of the residents of Oklahoma City. These approaches are individually organized into "Component Plans", each of which is described in the following sections. Map 2.3 is an overview map of these component plans.

## GRAND BOULEVARD LOOP

The Grand Boulevard bicycle and pedestrian loop that wraps around the central city is nearly complete. Sections of this loop need to be completed or enhanced so that cyclists have a seamless path that encompasses the city. A facility of this length is a rare asset for a city to have, and should be celebrated for what it provides, as well as what it could mean for future growth of the city. Completion of the loop could leverage investment already made along major portions of the alignment and spark development/redevelopment opportunities. In addition, completion of this loop could create a nationally-recognized facility comparable to the Beltline project in Atlanta, GA.

**Plan Overview:** Pages 28-29

## CROSSTOWN CONNECTIONS

Oklahoma City has an extremely large land area, currently only traversable from edge to edge by automobile. The main focus of this component plan is to provide safe bicycle facilities that traverses the city north, south, east, and west. This project provides the opportunity to create recognizable bicycle "spines" in the city that people know and understand.

**Plan Overview:** Pages 30-31

## NEIGHBORHOOD GREENWAYS

In areas of the city where there is insufficient capacity on existing roadways to convert space toward bicycle infrastructure, and especially in those areas where connectivity between neighborhoods is sparse, and traffic is concentrated almost exclusively along major arterials, it is necessary to find alternative alignments to accommodate safe travel by cyclists. Where there are vegetative or riparian corridors there are opportunities for greenway trails. This component plan identifies preferred locations for these facilities, ensuring that each is connected to the citywide bicycle and trails network.

**Plan Overview:** Pages 32-33

## REGIONAL RECREATION TRAILS

Multi-use trails have regional significance, as they are typically several miles long and often tie into surrounding cities' bicycle and trail networks. These regional trails are designed for long-distance cycling and jogging and provide benefits to multiple areas of the city. Recently built or funded regional trails include the West River Trail, Katy Trail, and Will Rogers Trail.

**Plan Overview:** Pages 34-35

## BICYCLE AND PEDESTRIAN BRIDGES

One of the primary limiting factors to cycling as a transportation option in Oklahoma City is the inability to cross major barriers such as interstates, bodies of water, railroads, and major arterial streets. In some cases there is no way to re-design a street to safely accommodate all modes without degrading one or more modes in the process. In these cases it becomes necessary to find another way to get across a barrier. This component plan addresses this condition by identifying those locations where there is no safe alternative to the construction of a bicycle and pedestrian bridge. These bridges also present an opportunity to create iconic structures across our interstates that sends a message about the importance of walking and cycling to this community.

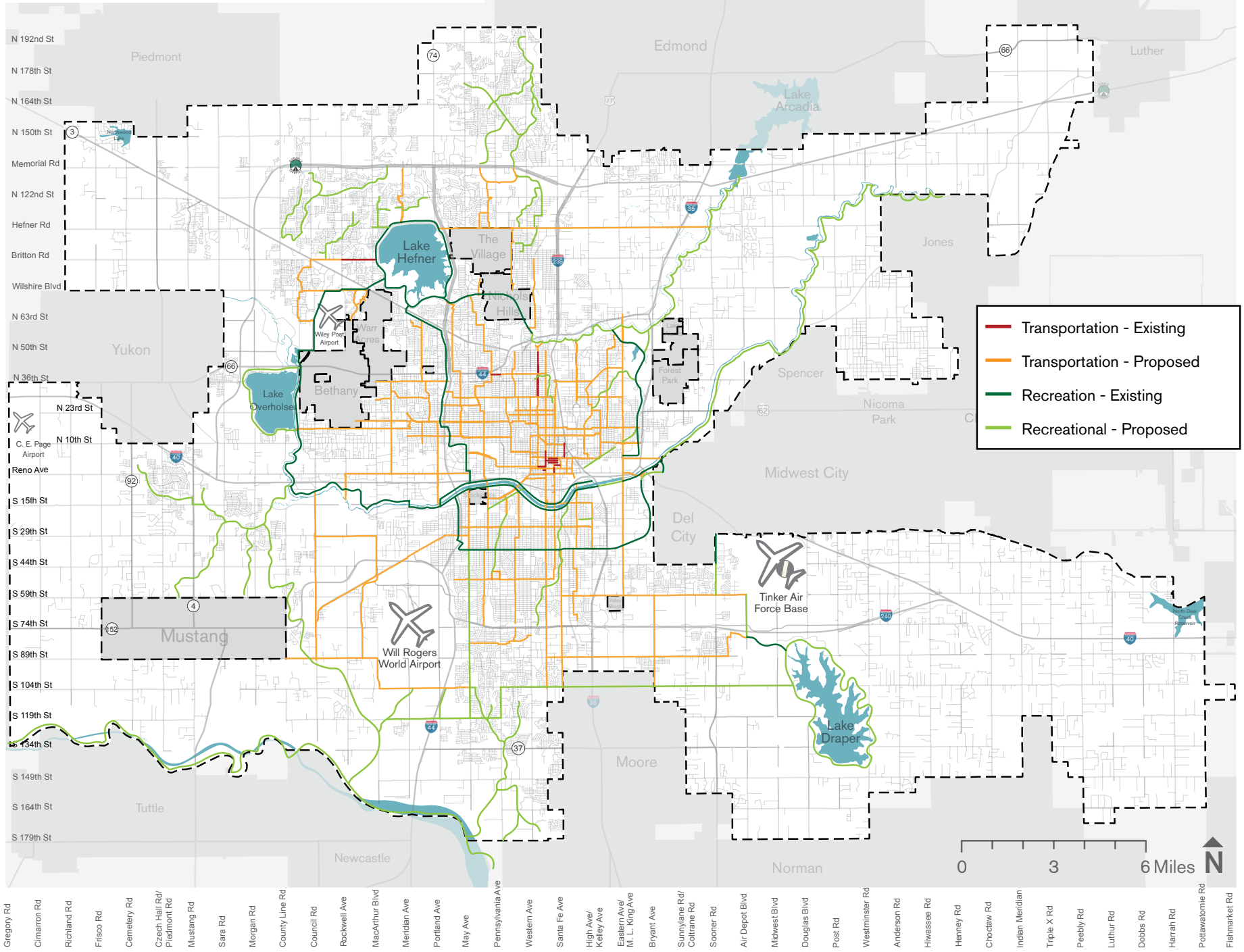
**Plan Overview:** Pages 36-37

## CITYWIDE BICYCLE NETWORK

While the preceding component plans will have far-reaching implications for walking and cycling in Oklahoma City, there is still a need to ensure that there is a well-connected and safe network of bicycle facilities throughout the city. This is essential in ensuring that there is an equitable distribution of access for all residents who may want or need to use a bicycle to accomplish their personal goals, whether that is focused on health and wellness or economic mobility.

**Plan Overview:** Pages 38-43

# MAP 2.3 BICYCLE NETWORK PLAN



# COMPONENT PLANS: Grand Boulevard Loop

CONNECTS:

**66,000 Residents**

TO:

**35 Parks**
**17 Schools**
**170 Transit Stops**

## MAJOR DESTINATIONS

The completion of the Grand Boulevard Loop connects multiple destinations. These destinations include the following:

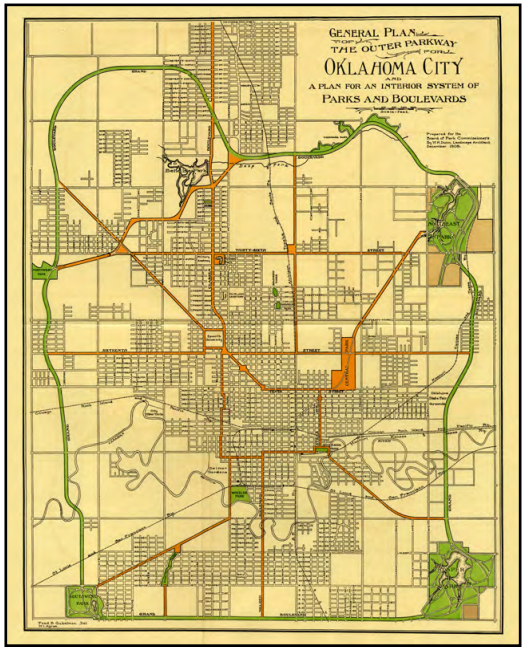
- Will Rogers Park
- Lake Hefner
- Oklahoma River
- State Fair Park
- Woodson Park
- Trosper Park
- Lincoln Park

## HOW DO WE BUILD THIS?

The completion of the Grand Blvd Loop requires the constuction of several smaller but significant subprojects. The list of subprojects is below and reflected in Map 2.4.

1. Deep Fork Trail
2. Bridge over Oklahoma River
3. Bridge over I-35
4. Existing S. Grand Blvd Trail Improvements
5. Amenitize the trail with water fountains, restrooms, trees, and more.

Concept rendering of Grand Boulevard Loop.




Historic Map of Grand Boulevard and central OKC.

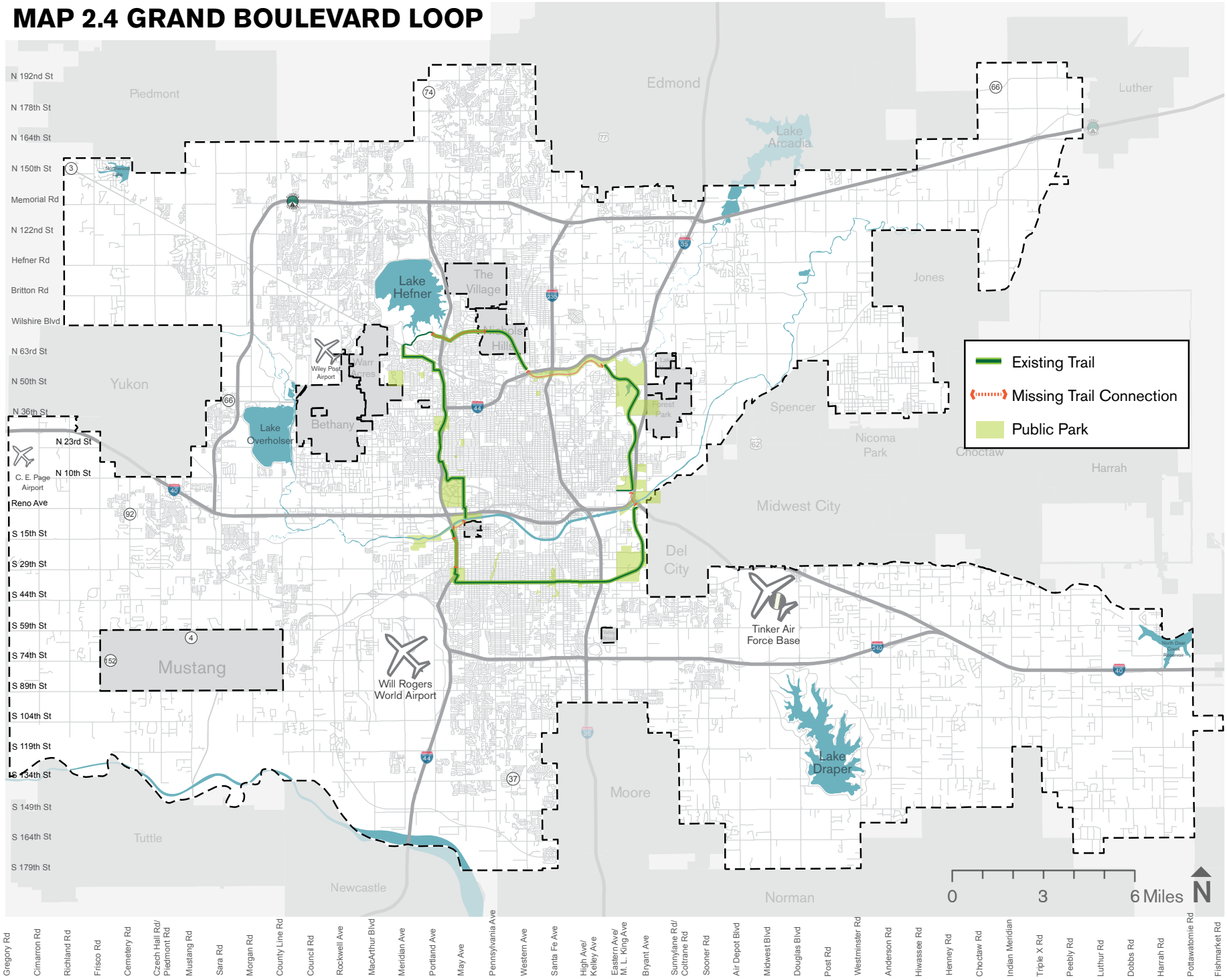
## DESCRIPTION

Completing the Grand Boulevard Loop will result in a seamless beltline of trails around central Oklahoma City. This trail will enhance residents' quality of life by connecting neighborhoods to other parts of the city. Additionally, this asset will make it easy for residents to choose an active lifestyle.

The original 1910 plan for Grand Blvd was to serve as a beltline for the city and connect several regional parks. When the interstate highway system was constructed, much of the Grand Boulevard alignment was utilized. While improving automobile-based transportation, this was detrimental to other modes. The proposed completion of the Grand Blvd Loop will restore the alignment to its original intent by connecting people to recreational opportunities.

The completion of this project will give about 66,000 residents easy access to a world-class recreational and commuter facility. Additionally, the project connects 28 neighborhood parks, 7 regional parks, and 17 schools. From a broader transportation perspective, this project is impactful by connecting to 170 bus stops. The completion and enhancement of the trail could be a tourist attraction that enhances the experience visitors have when visiting the community. This project bears similarities to the ongoing intiative in Atlanta, GA - the Beltline - which set out to create an active transportation corridor around Atlanta to spur affordable housing and other development.

# MAP 2.4 GRAND BOULEVARD LOOP



# COMPONENT PLANS: Crosstown Connections

CONNECTS:

**110,000 Residents**

TO:

**57 Parks**
**39 Schools**
**457 Transit Stops**

## DESTINATIONS

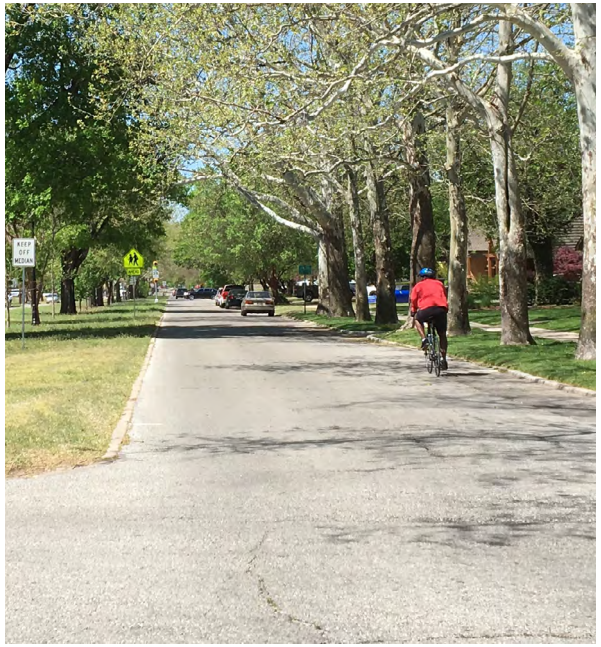
The construction of crosstown connections provides access to multiple destinations across the city. These destinations include the following and more:

- Downtown
- Asian District
- Capitol Hill District
- Lake Overholser
- Grand Boulevard Loop
- Deep Fork Creek
- Katy Trail

## HOW DO WE BUILD THIS?

This project will require the construction or improvement of safe bicycle facilities north, south, east, and west across major barriers. There are several potential alignments in each direction that may be appropriate based on other factors. This flexibility will allow for the strongest possible product that, in concert with the completion of the Grand Boulevard Loop, will form the skeleton of the greater bicycle network in Oklahoma City.

Concept rendering of Crosstown Connections.



View of cyclist on NW 19th St.

## DESCRIPTION

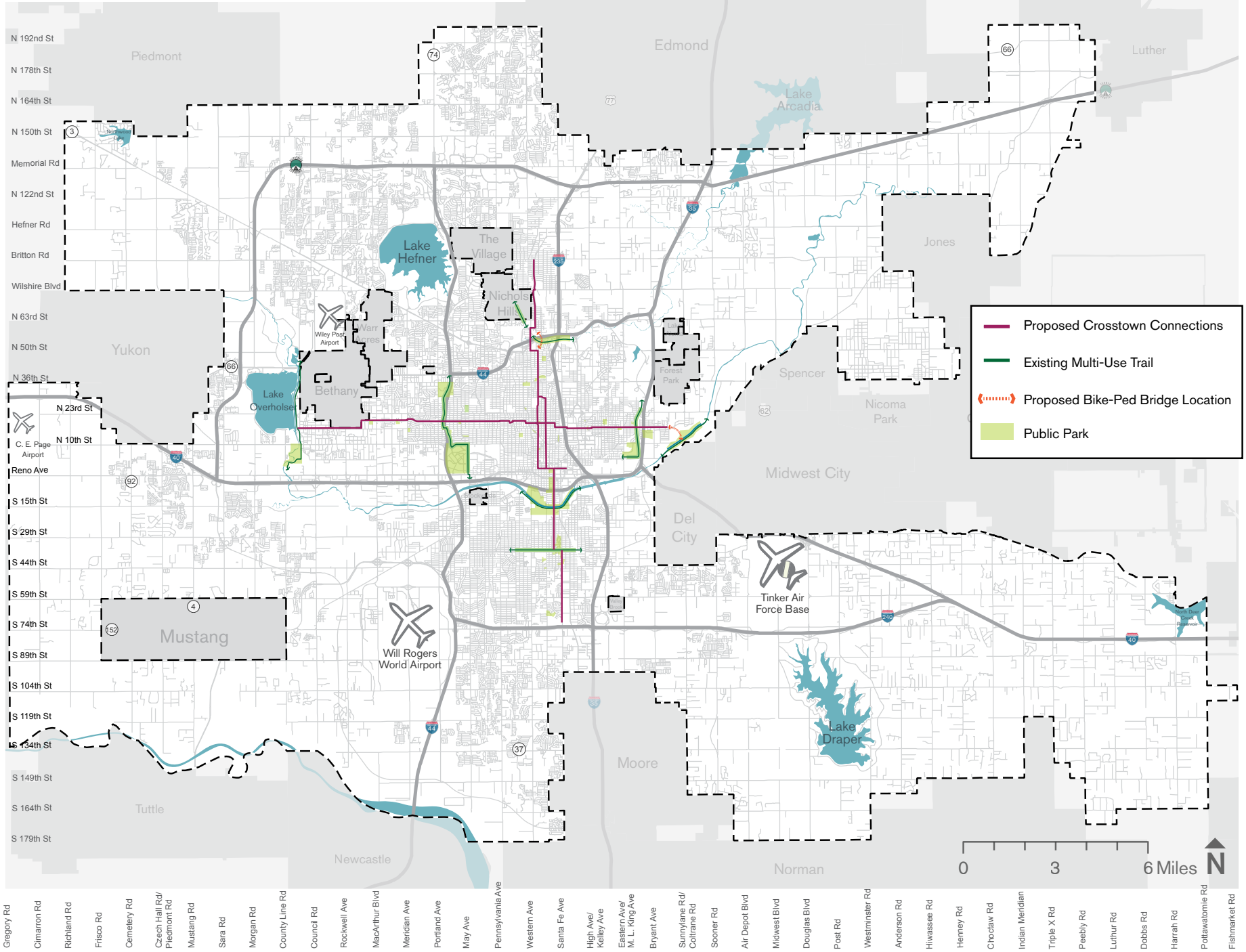
This component plan calls for specific improvements on existing roads across the city to create two perpendicular crosstown corridors for cycling. The goal of these corridors is to connect people to a variety of daily or weekly destinations. Facility design along these corridors will be to the highest feasible safety level to ensure that riders of all types are comfortable using bicycling for transportation. Being able to choose to cycle to a park, school, shop, restaurant, coffee shop, church or regional recreation area will respond to the public input received from countless residents of Oklahoma City.

One leg of this project runs from north to south, and the other runs east to west through the most dense neighborhoods in Oklahoma City. Additionally, these corridors pass through some of the most visited commercial districts.

The north-south crosstown connection runs from the historic main street of Britton Town in the north to I-240 in the south. The corridor follows stretches of far north N. Classen Blvd., N. Shartel Ave. and S. Robinson Ave., and S. Santa Fe Ave. Presently, most of these two connections are cyclable and/or designated as bike routes. This project aims to improve the corridors by adding designated bicycle lanes and implementing traffic calming elements to draw more riders of all confidence levels.

The east-west crosstown connection runs from Lake Overholser Park in the west and follows NW 16th St. to NW 19th St. to NW 18th St. and back to NW 16th St. as it works its way east. This corridor provides an important alignment for recreation and transportation and is adjacent to thousands of households.

# MAP 2.5 CROSSTOWN CONNECTIONS



# COMPONENT PLANS:
## Neighborhood Greenways

CONNECTS:

**92,000 Residents**

TO:

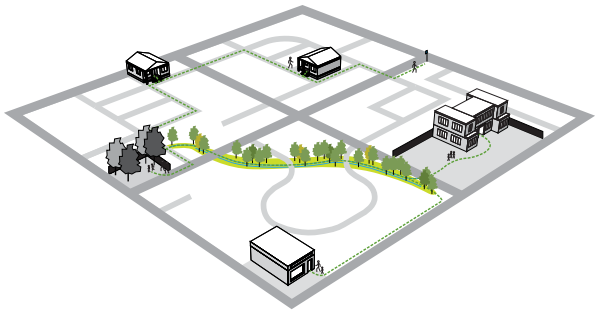
**50 Miles of Greenway Trail**
**24 Parks**
**15 Schools**

### DESTINATIONS

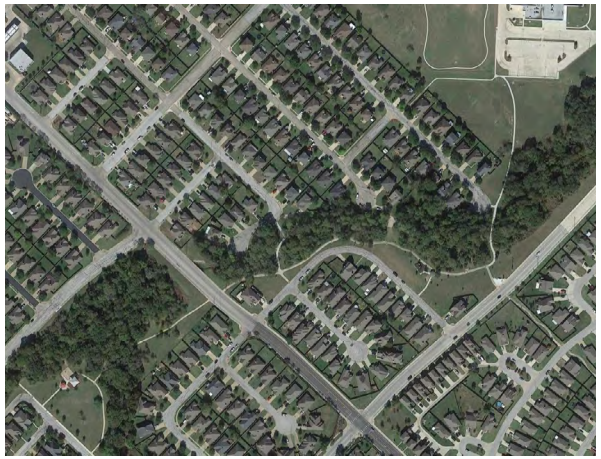
The construction of neighborhood greenway trails provides access to schools, parks, regional trails, and commerical areas. These facilities provide an active transportation option to residents in suburban locations. Map 2.6 provides the proposed neighborhood greenways.

### HOW DO WE BUILD THIS?

The construction of Neighborhood Greenways will require trail construction during the development of new neighborhoods. Additionally, floodplains and other greenways through existing neighborhoods can be utilized by the neighborhood greenway network.



Below: Neighborhood trail connection concepts.



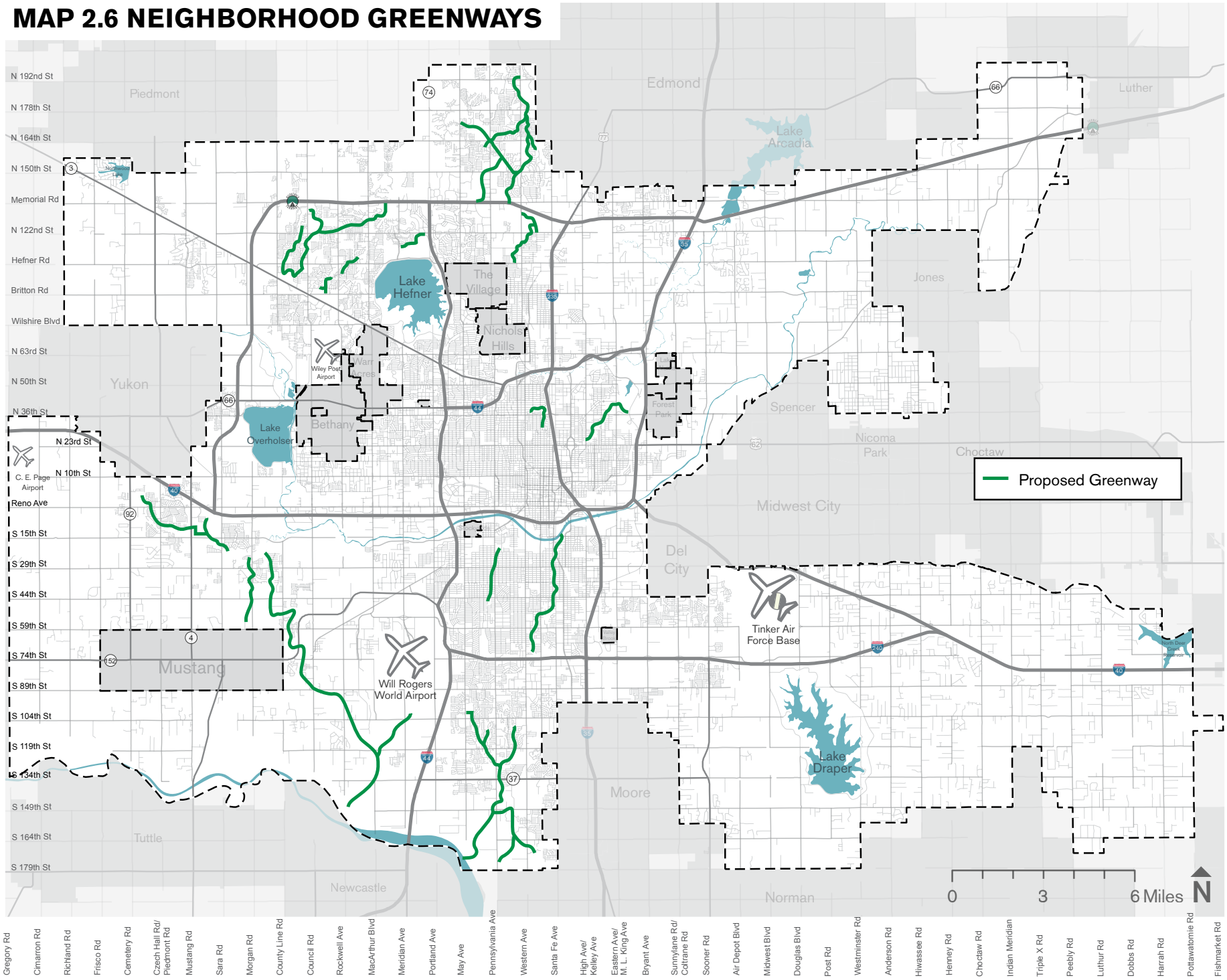
Above: Example neighborhood greenway connecting a neighborhood, park, and school.

### DESCRIPTION

This component plan proposes a network of neighborhood greenways to provide off-street bicycle or pedestrian paths from residential areas to schools, parks, libraries, and commercial areas. Many of these greenways could utilize undevelopable floodplains, drainage channels, or other easements. A large portion of Oklahoma City's residential development is suburban in style with neighborhood access taken directly off of a major or minor arterial. This makes accessing the nearest school, park, or commercial area by any mode other than an automobile potentially difficult or dangerous. The Neighborhood Greenways component plan can be applied to existing neighborhoods, where retrofitting would be required, as well as within future subdivisions, where the greenways can be designed into the project in the beginning of the planning process as an acceptable form of open space.

What differentiates the neighborhood greenways from other multi-use trails is both the design standards and intended purpose. Where non-greenway multi-use trails are 10' to 12' in width with a wide clear zone that facilitates high-speed cycling, the concept for neighborhood greenways differs. The design standards call for a facility that is 8' in width with a narrower clear zone; this is intended to control cycling speeds so that the facility is safe for residents of all ages to access. Additionally, the narrower clear zone will make the greenways feel more incorporated into the natural features that surround it. See page 48 for more information about how these facilities should be designed.

# MAP 2.6 NEIGHBORHOOD GREENWAYS



# COMPONENT PLANS:
## Regional Recreation Trails

CONNECTS:

**280,000 Residents**

TO:

**6 Cities**
**4 Lakes**
**182 Miles of Trail**
80 Existing / 102 Proposed

### DESTINATIONS

Many of the smaller municipalities in the metro area, as well as many major recreational assets, create natural endpoints along Oklahoma City's recreational trail network. Some of these include:

- Mustang, Edmond, Moore, Del City, Spencer, Jones, Yukon
- Lake Stanley Draper
- Lake Overholser
- Lake Arcadia

### HOW DO WE BUILD THIS?

The construction of Regional Recreation Trails builds off of the existing trail network. The trails identified to complete this project include the following:

- Adventure Trail
- Scissortail Trail
- S. May Ave. Trail
- Wildhorse Trail
- 104 Trail
- Lake Overholser Trail

Recreational trails offer a chance to escape to nature.

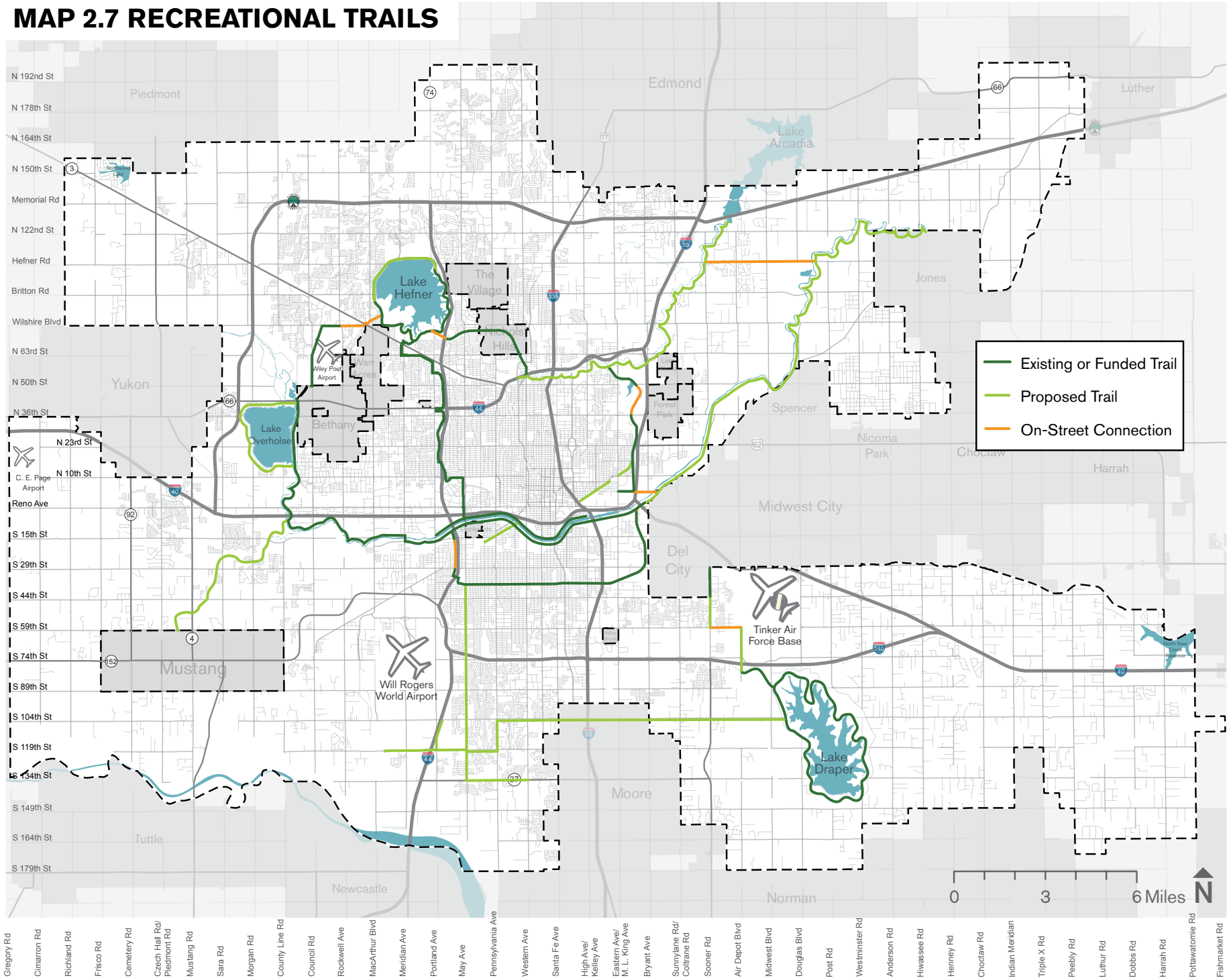
Picture of the Katy Trail at dusk.

### DESCRIPTION

Multi-Use trails have been a popular attraction over the last 20 years in Oklahoma City. Trails constructed since 1997 have created a strong foundation for moving forward into the next phase of recreational and transportation trails. This plan proposes the addition of 102 miles of multi-use trails to the current trail network. These trails include connection to the neighboring communities of Edmond, Moore, Mustang, Yukon, Spencer, Jones, and Del City. Multi-use trails will provide safe facilities along streets such as S. May Ave. and S. 104th St. These are locations with limited bicycling opportunities; however, they serve as important connections to the overall bicycle and trail network.

- The Adventure Trail connects the Katy Trail to Lake Arcadia, where the City of Edmond is constructing a lake trail.
- The Scissortail Trail is an extension of the Oklahoma River Trail. Cyclists can ride northeast and connect to another bicycle facility on E. Hefner Rd.
- The S. May Ave. Trail connects the Will Rogers Trail near the Oklahoma State Fairgrounds south along May Ave. to the Oklahoma City Community College and thousands of residents that live along the corridor.
- The Wild Horse Trail connects the West River Trail to Mustang.
- The 104 Trail connects Earlywine Park to Lake Stanley Draper along SW. and SE 104th St.

# MAP 2.7 RECREATIONAL TRAILS



# COMPONENT PLANS: Bike/Pedestrian Bridges

BARRIERS CROSSED:

**Oklahoma River**
**Deep Fork Creek**
**I-240**
**I-44**
**I-35**
**Northwest Expressway**

## DESTINATIONS

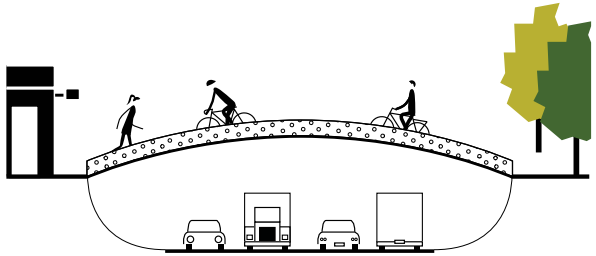
The construction of bicycle and pedestrian bridges connects multiple destinations across physical barriers. These destinations include the following:

- Grand Blvd Loop Completion
- Wheeler Park to Downtown
- Hefner-Overholser Trail to Lake Hefner
- Southern neighborhoods to north of I-240

## HOW DO WE BUILD THIS?

This project proposes six bicycle and pedestrian bridge projects. The list below conincides with Map 2.8 for approximate bridge location:

1. Oklahoma River Bridge (Wheeler)
2. Oklahoma River Bridge (S. Robinson Ave.)
3. Oklahoma River and I-35 Bridges
4. Interstate 240 Bridge
5. Northwest Expressway
6. Interstate 44 Bridge



Concept Rendering of Bicycle and Pedestrian Bridge Locations

Skydance Bridge across I-40

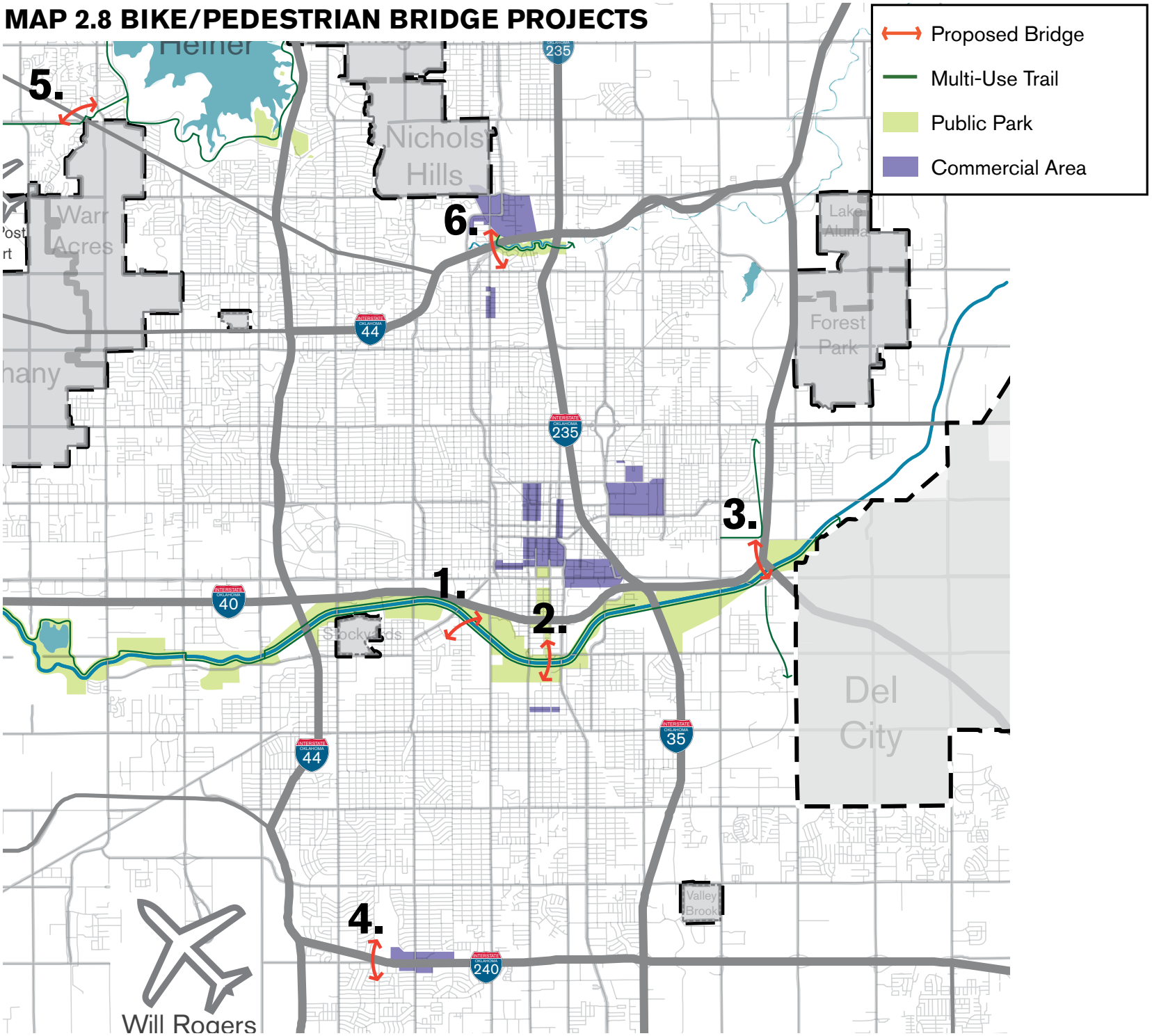
## DESCRIPTION

Sometimes parks, shops, and schools are inaccessible to residents because of physical barriers such as streams, roads, or highways. A bridge can create the shortest connection between where people live and where they would like to go, as well as be a safer connection than having to use and arterial road bridge. Additionally, a bridge can be iconic and memorable for people traveling through a place by automobile. These types of impressions are what people communicate to one other and thus generates interest and tourism.

Surveys and analysis conducted for this plan identified several barriers as problematic for the active transportation network. This component plan proposes safe, convenient, comfortable, and attractive crossings of these barriers. The following list provides a description of proposed bridges:

- Oklahoma River and I-35 (#1, 2, 3): Three bridge projects are proposed to cross the Oklahoma River at crucial locations. One is intended to connect the Wheeler District to downtown by repurposing an existing rail bridge. Another bridge project will redesign the S. Robinson Ave. bridge to accommodate cyclists. Two bridges are needed to connect the east end of the S. Grand Blvd. Trail to the Katy Trail across the Oklahoma River and I-35.
- I-240 (#4): The design of intersections with I-240 are a barrier for bicyclists and pedestrians. A bridge near S. Villa Ave. will help facilitate the movement of people and bicyclists across the interstate.
- Northwest Expressway (#5): This project will connect trail across Northwest Expressway to provide safe access to an from Lake Hefner.
- I-44 (#6): A bridge is needed to traverse Deep Fork Creek to close a gap in the Grand Boulevard Loop.

## MAP 2.8 BIKE/PEDESTRIAN BRIDGE PROJECTS



# COMPONENT PLANS: Citywide Bicycle Network

## CONNECTS:

495,000 Residents

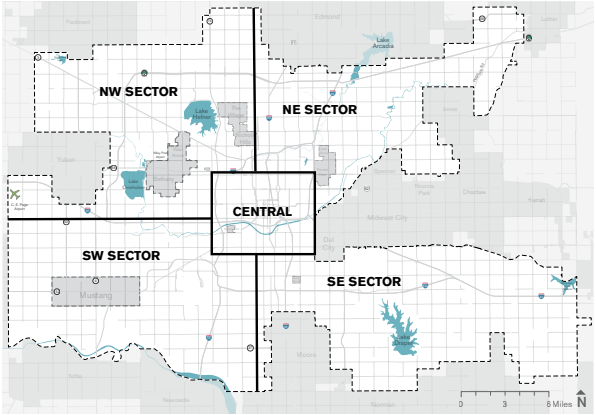
## TO:

Schools
Parks
Libraries
Transit Stops

## HOW DO WE BUILD THIS?

The completion of the City Wide Bicycle Network requires the constuction of several bicycle facilities. The full network of bicycle facilities includes the following:

1. 150 Miles of Multi-Use Trails and Neighborhood Greenways
2. 82 Miles of Protected Bicycle Lanes
3. 38 Miles of Bicycle Lanes
4. 107 Miles of Bicycle Routes




Map 2.9 Sector Map Guide

## DESCRIPTION

In addition to the projects discussed in previous pages, bikewalk**okc** plans a citywide bicycle network building off of the existing bicycle and trail network. The citywide network consists of all of the projects previously discussed, and additional facilities necessary for a robust, complete network of bicycle facilities. The goal of a citywide network is to create a safe, comfortable, and connected series of bicycle facilities that accommodates riders of all skill levels. A description of each facility type is provided on pages 44-47.

The citywide network was identified through extensive outreach and surveying conducted as part of the planning process. Additionally, a series of analyses helped identify roads that are safe and conducive to cycling. These analyses include the following:

- Bicycle Level of Traffic Stress (pg 52)
- Lane Reduction (pg 54)
- Collisions Analysis (pg 56)

The proposed bicycle network is the long-range plan for implementation as funding allows. The network map should be updated each year to reflect any new bicycle facilities constructed. As the City continues to grow and develop, additional roadways not included in the bicycle network may generate bicycle demand, and can be evaluated and added as part of the annual plan update. The bicycle network is divided in to five maps.

Map 2.10 serves as a guide for maps 2.11 - 2.15, which provide citywide facility details.

## ON-STREET BICYCLE FACILITY TIERS

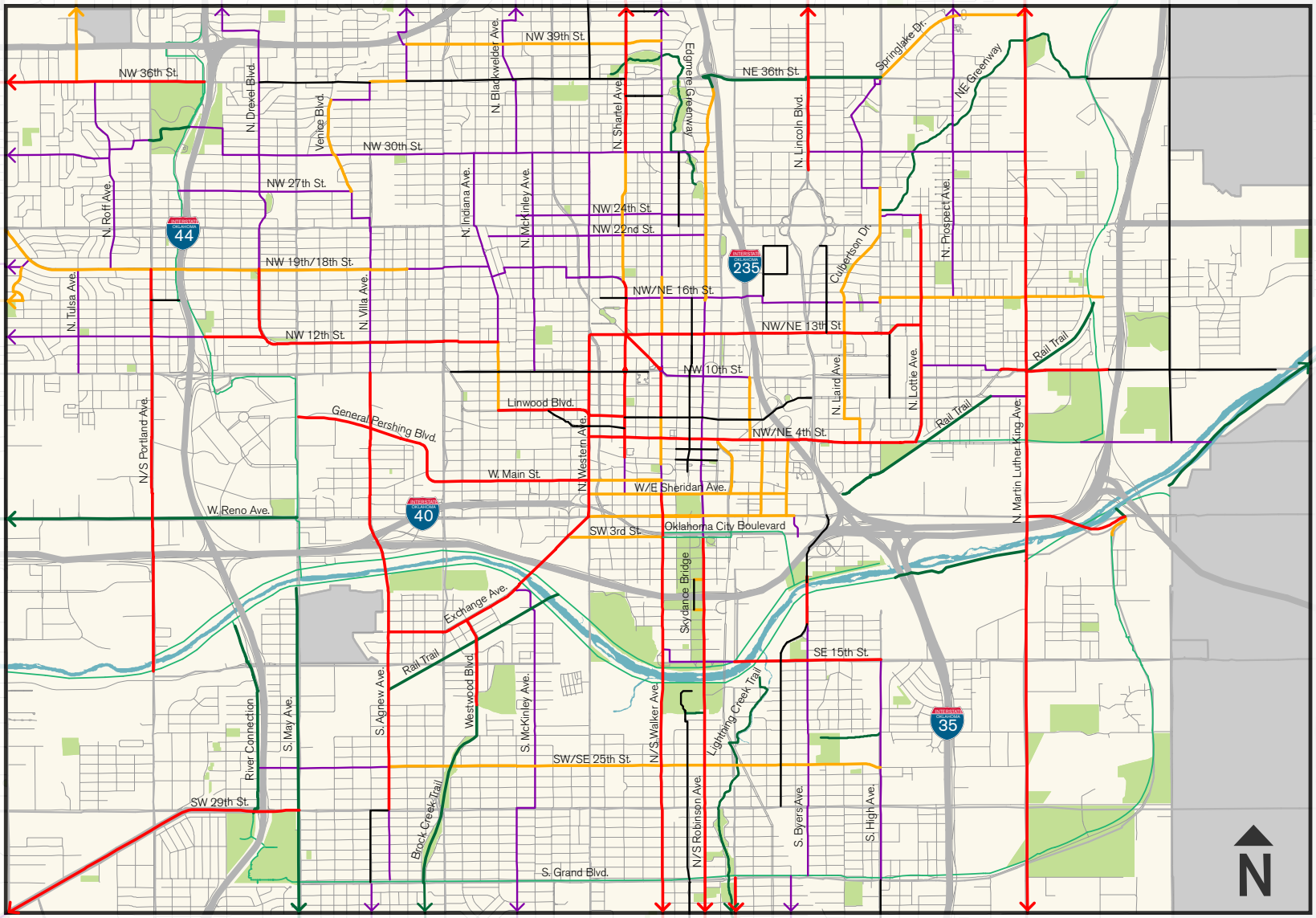
The following maps identify appropriate on-street bicycle facility types and alignments. The proposed facilities are organized using a tier system which offers a complete, cost-effective bicycle network that maximizes safety for all types of cyclists. Proposed facility types and alignments may change based on further site investigation, design constraints, and final engineering.

**Tier 1:** This classification represents the highest level of safety consideration for on-street cyclists. This classification is shown where automobile traffic and/or speeds are relatively high, but where on-street facilities are still desirable. The preferred facility type for this classification is a protected bicycle lane (see pg. 44 for description) with the option to elevate the facility to a separated multi-use trail in case of complications in design and engineering. On a given Tier 1 alignment, where curb-to-curb width narrows, a portion of the facility could be constructed as a standard bicycle lane, or if absolutely necessary, as a sharrowed bike route if traffic speeds and counts are low. These alternative facilities should be used only on limited sections of an alignment with severe constraints, such as limited right-of-way or unusual traffic circumstances.

**Tier 2:** This classification recommends a moderate level of bicycle infrastructure with a minimum standard of a traditional bicycle lane. Where safety risks are higher on any given Tier 2 alignment, it is appropriate to upgrade the facility to a protected bicycle lane. Physical constraints may necessitate use of sharrowed bike routes where traffic speeds and counts are low.

**Tier 3:** This classification is reserved for streets that are too narrow to accommodate a bicycle lane or protected bicycle lane. These are traditionally referred to as bicycle routes, which come with all of the conditions and design considerations described on page 45 of this chapter. Where street width permits, these may be upgraded to a bicycle lane, or, if funding allows, to a protected bicycle lane.

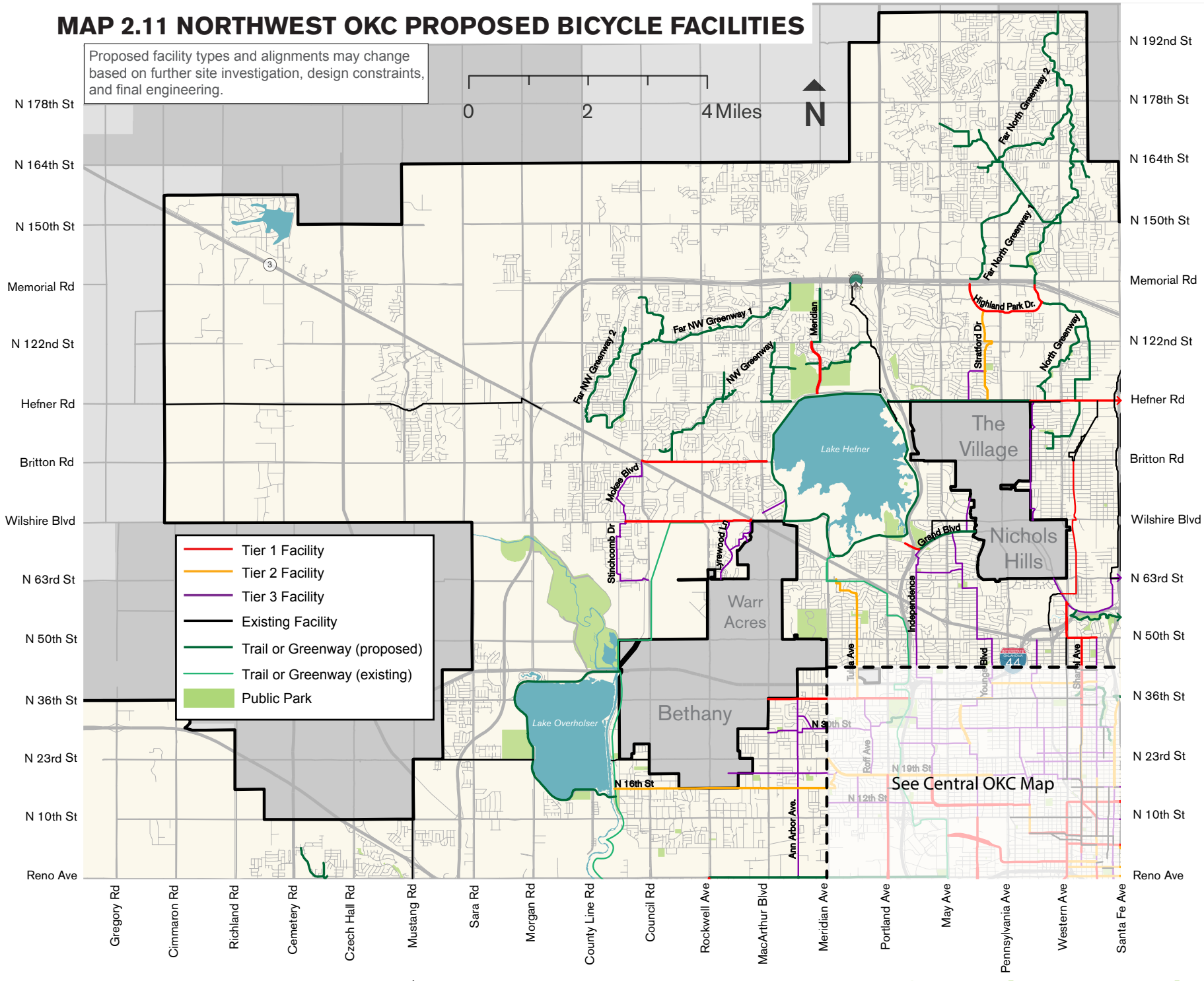
# MAP 2.10 CENTRAL OKC PROPOSED BICYCLE FACILITIES



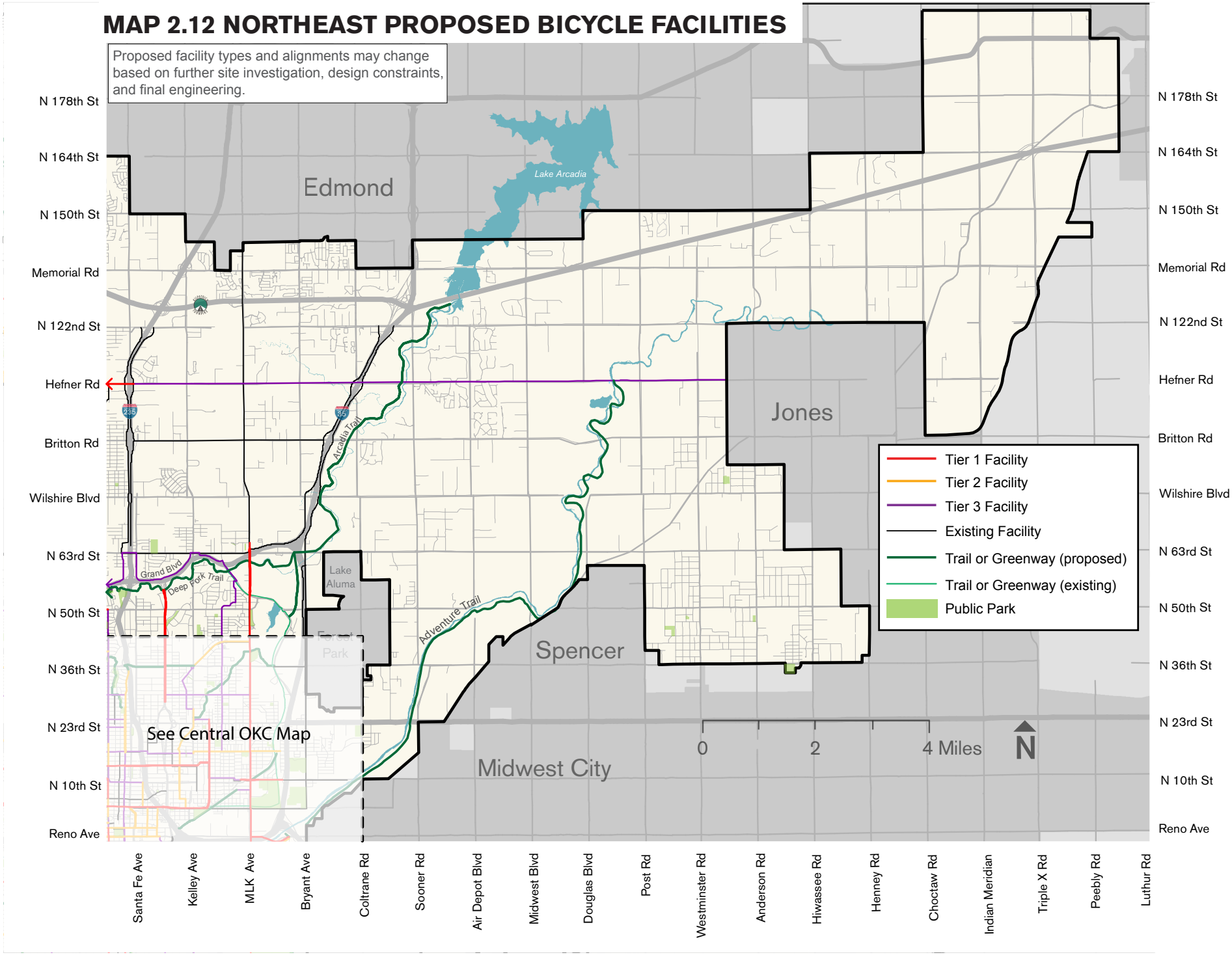

Proposed facility types and alignments may change based on further site investigation, design constraints, and final engineering.

Tier 1 Facility
Tier 2 Facility
Tier 3 Facility
Multi-Use Trail or Greenway (proposed)
Multi-Use Trail or Greenway (existing)
Existing Facility
Public Park

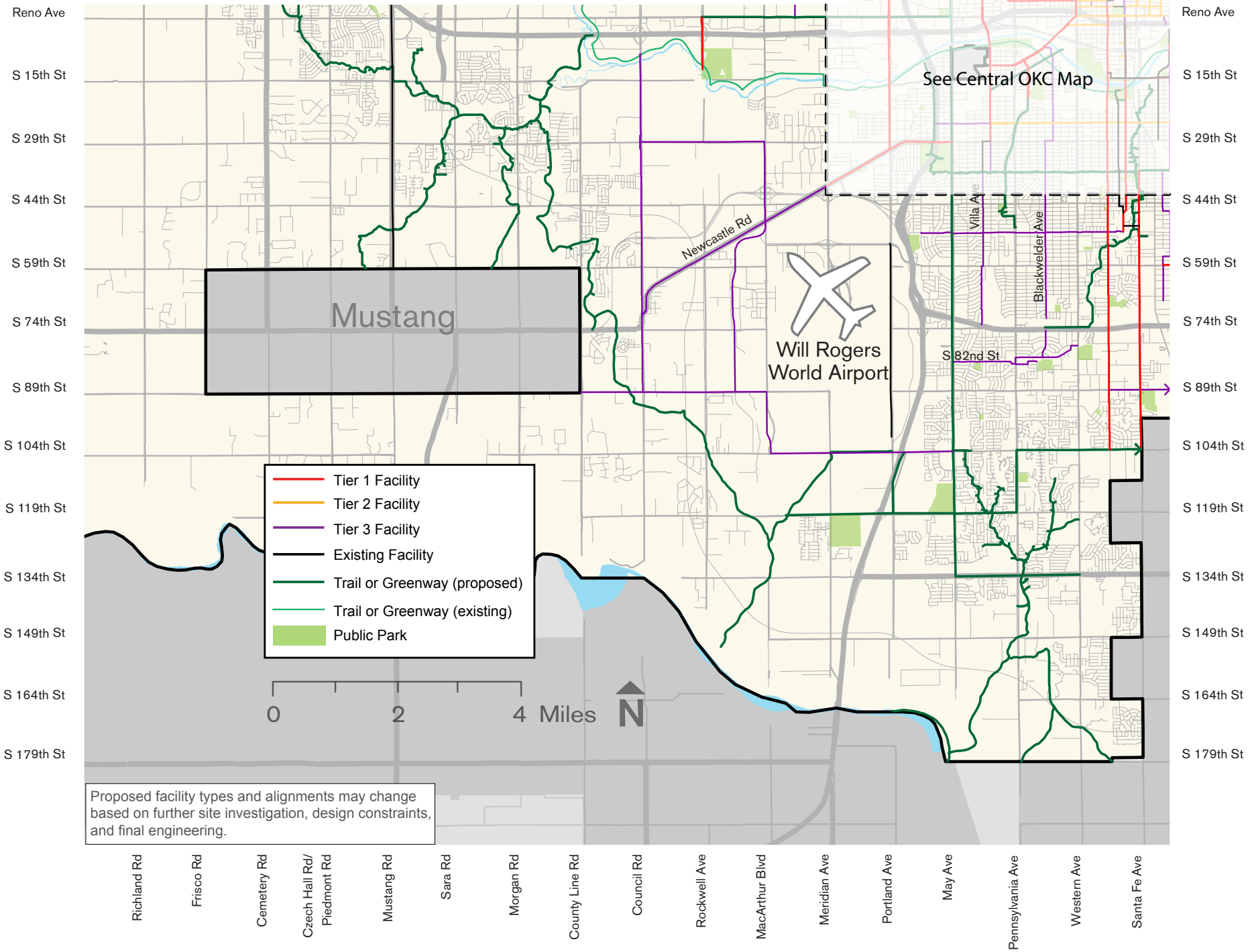
# MAP 2.11 NORTHWEST OKC PROPOSED BICYCLE FACILITIES



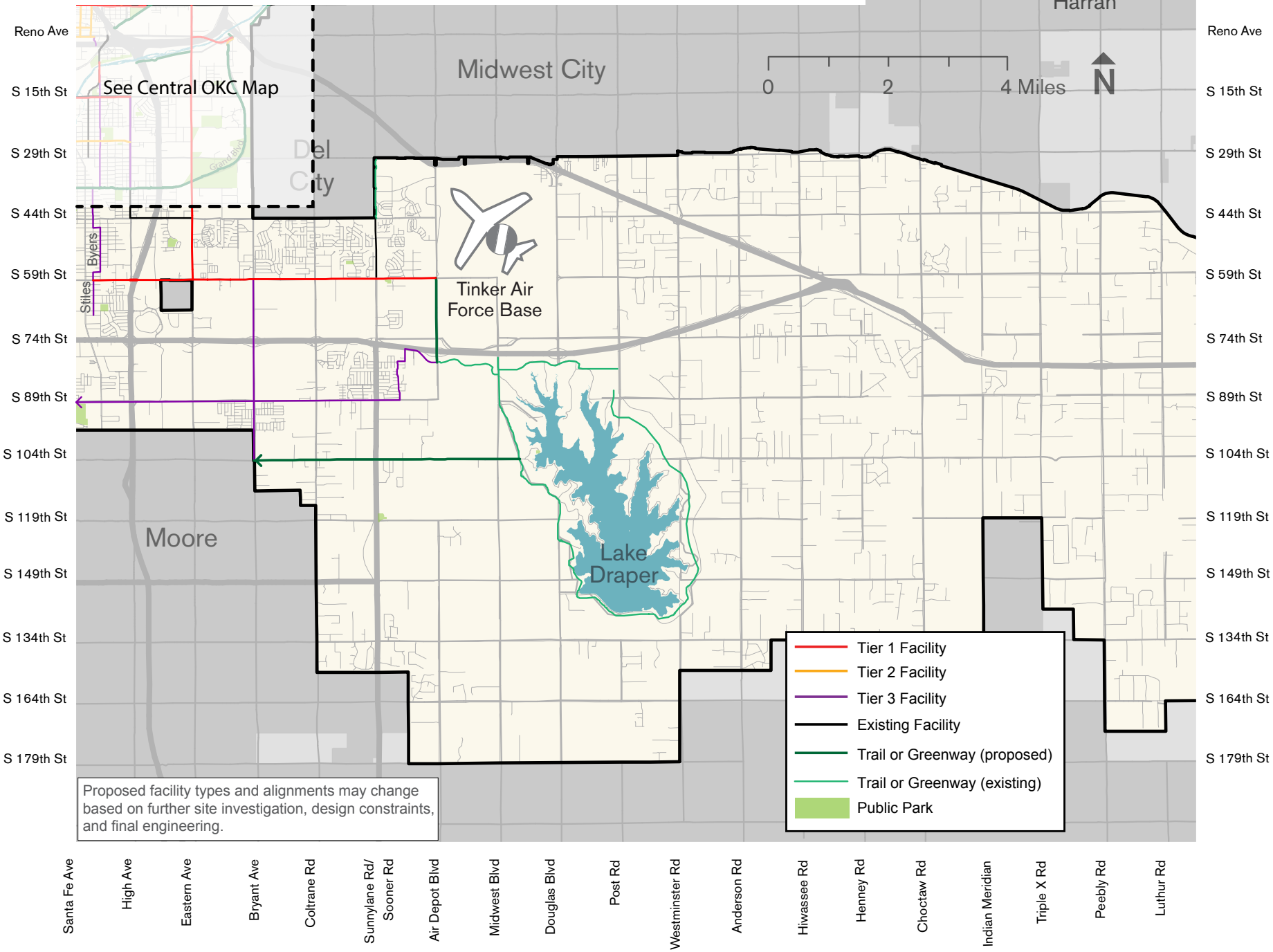
# MAP 2.12 NORTHEAST PROPOSED BICYCLE FACILITIES



# MAP 2.13 SOUTHWEST OKC PROPOSED BICYCLE FACILITIES



# MAP 2.14 SOUTHEAST OKC PROPOSED BICYCLE FACILITIES



# On-Street Bicycle Facility Types

## BICYCLE LANE / PROTECTED BICYCLE LANE

This facility type allocates a portion of the right-of-way exclusively for cycling, thereby separating cyclists and motorists into individualized spaces. The intent is to allow cyclists to safely use streets that often have higher speeds than those on designated bike routes. Because of the effectiveness of separating cycling from motorist lanes, fewer rules are required to make bike lanes an effective strategy. Ideal design guidelines for bicycle lanes and protected bicycle lanes include the following:

**Bike lanes should allocate a minimum of 4' of seamless pavement.**

Bicycle lanes should be wide enough to facilitate safe movements of cyclists. Bicycle lane width range should be 4 to 8 feet wide with a preferred width of at least 6 feet. Cyclists avoid riding near seams in the pavement by shifting closer to automobile traffic, effectively narrowing bicycle lanes. Therefore, seams should be minimized or eliminated where possible to ensure well-functioning bicycle facilities.

**Vertical delineation should be utilized where greater protection from automobiles is necessary.**

Where protected bicycle lanes are recommended on streets with high volume and high speeds, vertical delineators should be installed to separate the bike lane from traffic. This helps ensure that automobiles do not drive in bike lanes, and increases cyclists' feelings of safety. Protected bicycle lanes have been shown to provide a more comfortable experience for cyclists who have the least experience and confidence sharing the road with automobiles. Vertical delineators should be placed in a buffer area width between 6 inches and 2 feet.

**Bicycle facilities should accommodate left-hand turning motions.**

Left-hand turning motions are often difficult and a source of anxiety for cyclists. There are several ways to accommodate left-hand turns, such as bicycle boxes or two-phase turn boxes. These types of approaches provide clarity to cyclists and motorists on multi-modal interactions at intersections. Additionally, bicycle-specific traffic lights at key intersections could ensure safer movements, but at a higher capital cost.

**Conflict areas between automobiles and cyclists should be clearly marked.**

Bicycle facilities and automobile facilities coexist, and thereby create potential conflicts where they intersect. Clearly marking these areas with green paint or other approaches to indicate the mixing of modes increases awareness for motorists and cyclists, leading to a safer bicycle facility. See Figure 2.2 for an example of green paint in a conflict zone.

**Bicycle lanes should be located along the curb line, and on the passenger side of on-street parking.**

Bicycle facilities located on the driver side of on-street parking create a greater risk of "dooring" for cyclists. Additionally, conflicts may occur when vehicles that are parking on street have to cross the bicycle lane to park. Moving the bicycle lane to the curb and on-street parking beyond the bike lane keeps motorists from driving through the bicycle lane. This makes it safer to cycle next to parked cars, and reduces the risk of dooring.

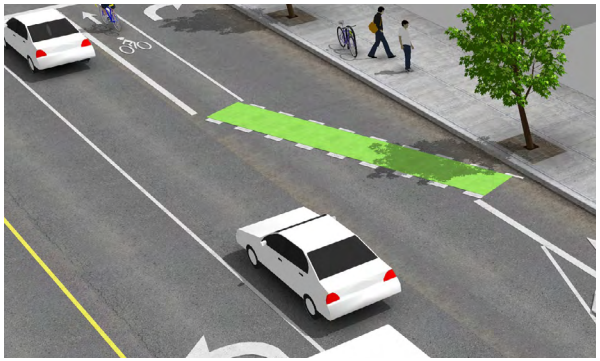


Figure 2.2 Conflict Zone Paint

Top: Example of a protected bicycle lane.

Bottom: A new bicycle lane on W. Sheridan Ave.

Left: Example of green conflict paint located where automobiles and cyclists cross paths.

For more information, please reference the following sections of the NACTO (National Association of City Transportation Officials) Urban Bikeway Design Guide:
Bike Lanes: Conventional Bike Lanes; Buffered Bike Lanes
Cycle Tracks: One-Way Protected Cycle Tracks

## BICYCLE ROUTE

Bicycle routes indicate that cyclists and drivers must share the same lane, rather than having a dedicated portion of the road for cyclists. These facilities offer the lowest amount of protection to cyclists in their interactions with automobiles. The following design guidelines ensure that the facility is useful and safe for both cyclists and motorists:

**Bike routes are appropriate on two-lane streets with a speed limit of 25 MPH or less.**

In order for cyclists to be able to integrate into automobile traffic safely, a low speed limit is required. This allows the cyclists the opportunity to keep up with traffic, and allows drivers to not be concerned about a sharp reduction in speed when driving behind cyclists. A slower speed decreases the risk of collisions, increases the awareness of drivers to the existence and legitimacy of cyclists, and reduces the risk of severe injuries in the event of a collision. Multi-lane streets are typically higher speed corridors for automobiles. Therefore, keeping bike routes on two-lane streets (center-turn lane acceptable) will ensure that cyclists are not put at risk.

**Center lines on bike routes should be legally crossable.**

The intent of a bicycle route is for motorists and cyclists to use the same facility, where both modes of transportation are viewed as equal vehicles on the road. However, cyclists often travel at a speeds lower than drivers who follow them, and drivers will pass cyclists on the left. In order to make this maneuver legal, bike routes should not be located on streets with a double-yellow centerline. This makes neighborhood streets ideal for bicycle routes.

**Bike routes should connect to higher intensity bicycle facilities.**

Bicycle routes are appropriate when there is not sufficient right-of-way to accommodate a separated bicycle facility. Bicycle routes should not stand alone, but rather should connect neighborhoods to bicycle facilities that offer a greater level of protection from automobiles.

**Traffic calming should be used to reduce design speed.**

Drivers tend to drive at a speed which feels appropriate and safe, which is sometimes higher than the posted speed limit. In cases where the actual traffic speed is significantly higher than the posted speed limit, traffic calming measures should be utilized to help reduce automobile speeds to a safe level for bike riders.

**Sharrows should be high-visibility.**

The public outreach process of this plan revealed that many drivers do not notice sharrows when driving on bicycle routes. Therefore, to improve driver awareness and cyclist safety, sharrows should be designed to be high visibility through techniques such as green paint backing, reflectors, or dashed outlines.

**Sharrows should be painted in the middle of the lane.**

Since cyclists are allowed to use the full lane on a designated bicycle route, sharrows should be placed in the middle of the lane, rather than on the right-hand side of the lane. This will ensure that cyclists and drivers know that the full lane is available to the cyclists, and sharrows will not be obscured by on-street parking.

**Sharrows should be spaced frequently.**

In order to improve cyclist and driver awareness that a street is a designated bicycle route, sharrows should be spaced so they are highly visible to road users. At a minimum, three sharrows should be located per block: one at each end and one in the middle. A good rule of thumb is to space sharrows 80 to 100 feet apart.

**"Bike May Use Full Lane" signage should be used.**

Drivers and cyclists have expressed confusion about the "Share the Road" signage; therefore, the more direct "Bike May Use Full Lane" sign is preferred.

**Bike routes on non-local roads should have shoulders.**

Bike routes on non-local streets are an exception to the two-lane/25 MPH speed limit rule discussed above, because these roads will likely have higher speed limits. These routes should have paved shoulders so cyclists and motorists can safely pass each other.

Top: Example of a bicycle route in Oklahoma City.

Bottom: Green-backed sharrows in Florida.

For more information, please reference the following sections of the NACTO (National Association of City Transportation Officials) Urban Bikeway Design Guide: Bikeway Signing & Marking: Shared Lane Markings; Bike Route Wayfinding Signage and Markings System

# Bicycle Intersection Types

## TYPE 1 - PASS-THROUGH

An intersection application aimed at guiding cyclists through an intersection rather than facilitating a turn onto an intersecting street is called a Pass-Through Intersection. This type of intersection treatment encourages cyclists to continue straight. This treatment is recommended when the intersecting street is high volume and typically high speed, and doesn't have a bicycle facility present. This discourages cyclists from turning onto a street that is less appropriate for on-street cycling and also communicates to automobiles that cyclists may be present. Figure 2.3 below illustrates a possible pass-through intersection. The design of an intersection and the amount of paint used will vary based on field conditions.

## TYPE 2 - TURN-THROUGH

An intersection that provides less protection to cyclists than the "protected intersection" (see next page) is appropriate in areas where traffic volumes and speeds are less dangerous to cyclists. These facilities can be implemented in many ways, but the most important concepts should transcend context and be applied at all applicable intersections. Those concepts include:

- Left-hand turn motions for cyclists should be accommodated by the installation of bike boxes (see Figure 2.4), or two-phase turn boxes (also shown in Figure 2.4).
- Conflict areas should be demarcated with high-visibility applications to decrease the risk of collisions. Green paint, white paint, pictographic paint, and signage can draw the attention of drivers and cyclists to one another.

Above: Example bike box

Above: Example two-phase turn box
Below: Example pass-through intersection

Figure 2.3 Example pass-through intersection

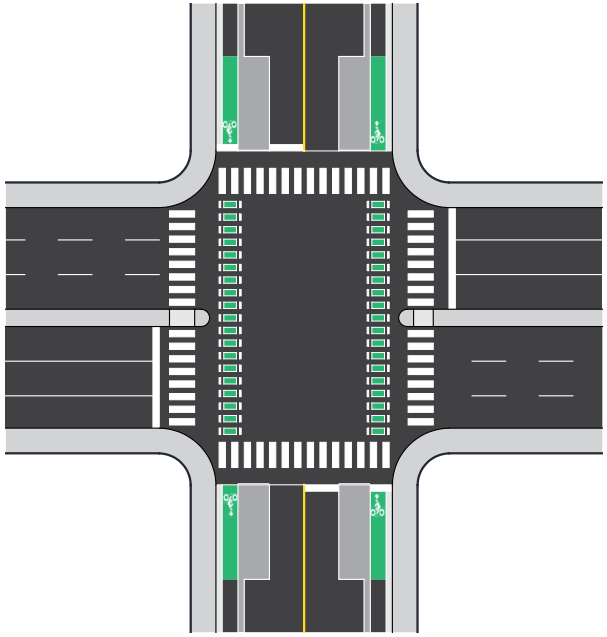
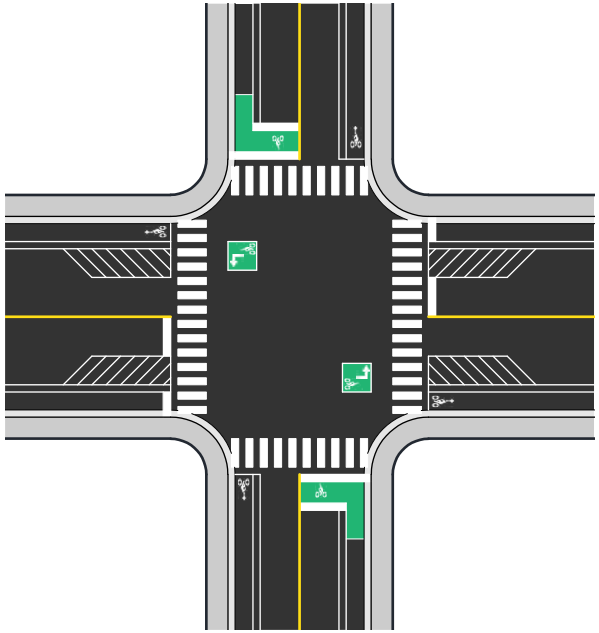


Figure 2.4 Example bike box & 2-phase turn box



## TYPE 3 - PROTECTED

In order to safely facilitate bicycle movements through an intersection, techniques that increase awareness between drivers, cyclists, and pedestrians are required. The level of needed protection is dependent on the volume and speed of traffic on the intersecting streets. The highest level of protection at intersections is needed when two protected bicycle lane facilities intersect perpendicularly. The appropriate approach is what is commonly known as a "protected intersection." Protected intersections are being implemented all across the United States after great success in Europe.

A protected intersection provides a dedicated portion of the intersection to cyclists and uses some form of vertical delineation whether bollards, planter boxes, or a curb line, to protect cyclists from turning motions. This type of intersection also allows cyclists to move further forward into the intersection, becoming more visible to drivers. This separation allows cyclists to make right-hand turns safely without needing to stop at the intersection if there are no conflicts with pedestrians (Figure 2.3). Pedestrians also benefit from a protected intersection design because it decreases the distance required to cross the street. Left-hand turns for cyclists are broken into two phases as shown Figures 2.4.

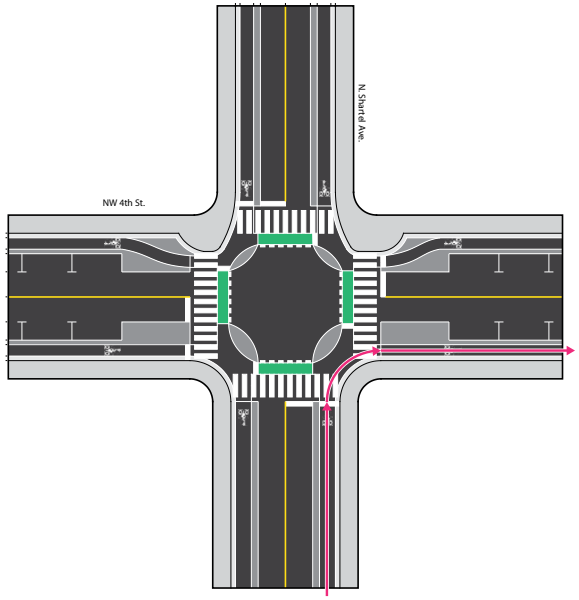



Figure 2.5 Red arrow demonstrates a right turn

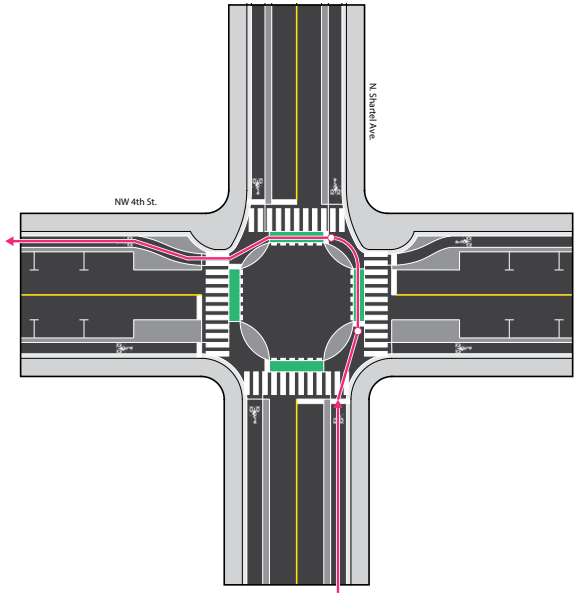
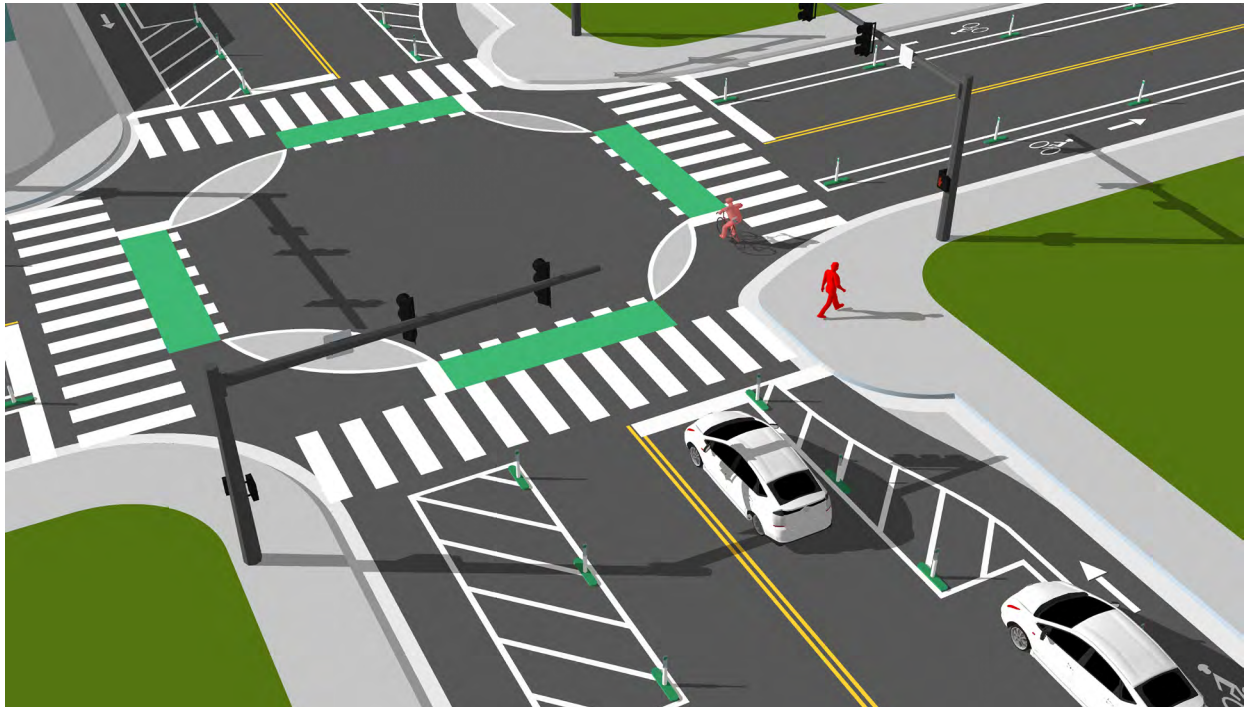


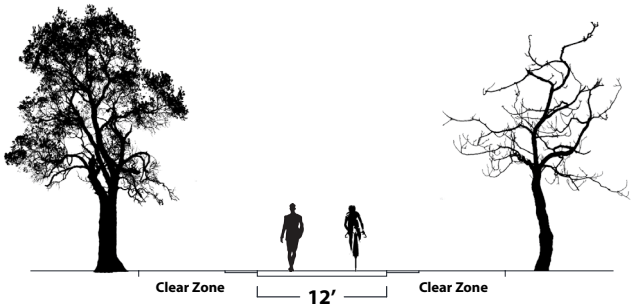

Figure 2.6 Red arrow demonstrates a two-phase left-hand turn



Above: Example protected intersection

# Trail Types

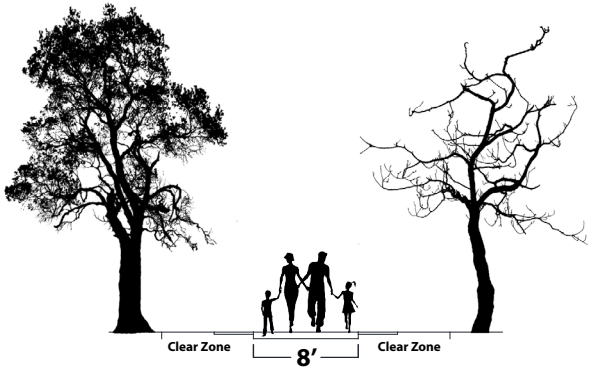
## MULTI-USE TRAIL




Multi-use trails serve multiple users, including cyclists, pedestrians, roller bladers, pedestrians with strollers, and more. The standard width for a multi-use trail is between 10' and 12' in order to accomodate multiple users and potentially high-speed cyclists in each direction. Because of the anticipated speeds, it is important to have a wide clear zone on both sides of the trail to minimize blind corners. Where potential conflicts exist between users, ettiquete signage can help to minimize any trouble.

If a multi-use trail has become popular enough that there are frequent conflicts between users, widening the trail, or providing separation between the pedestrians and bicyclists is appropriate. This second approach has been used to great success at the multi-use trails that surround Lake Hefner.

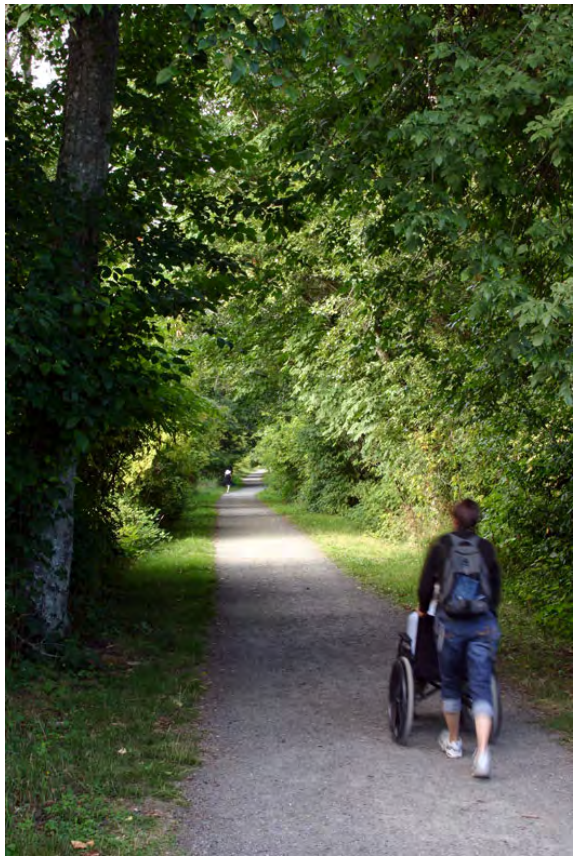
## NEIGHBORHOOD GREENWAY




Some trails are designed for a more relaxing encounter with the natural world. In this case, neighborhood greenways are intended to use riparian corridors and other natural areas to connect residents to schools, parks, and other destinations. A width of 8' is sufficient, as well as a narrower clear zone. Speed limitations on cyclists are appropriate to maintain a family-friendly experience. This will be aided by a more curvilinear pathway, which will limit the ability of a cyclist to reach high speeds.

# Trail Surfaces

Different trail surfaces serve different purposes and user groups. The vast majority of trails in Oklahoma City have been constructed with asphalt surfaces; however, other surface materials, such as concrete or crushed gravel, can also provide an accessible trail option. Where trails are intended to serve a more natural environment, it is often preferable to use a non-paved surface material (such as crushed gravel or wood). Each surface type has a different level of maintenance required, and any surface should be chosen with the feasibility of maintenance in mind. Below is an example of a crushed gravel trail that, because of the firmness and stability of the material, is considered ADA accessible. Firmness means the surface doesn't give way under foot, while stability means that the surface does not shift side-to-side or when turning.



# Trail Components

Certain components are necessary in order to plan a trail facility that accommodates different users of all age groups. These components, though commonly referred to as "amenities," are necessary to create successful facilities that everyone can enjoy. Trails may include a the following amenities:

- Seating and trash cans
- Water fountains
- Shade / trees
- Lighting
- Public restrooms
- Signage and maps
- Fix-it stations and bicycle parking

## SEATING AND TRASH CANS

A bench placed on a beautiful spot with an amazing view can change how people see their environment. Benches are places where hikers and cyclists can take a break, meet other people, and decide whether they want to continue onward or return home. A trash can or recycling bin next to the bench will keep the trail clean. Benches and trash cans should not be placed directly on the trail, but at least 10 feet away to avoid conflicts between people sitting and trail users. Benches should be oriented so that users have the best possible view when seated.

## WATER FOUNTAINS

Water fountains are a necessity along trails, especially since many trails are rather remote and trail users can become dehydrated easily. Water availability will make trails more pleasant, safe, and inviting to use. Fountains should not be placed at the end of a water line, since water is not moving and can become stale.

## SHADE / TREES

Trees are the most appealing way to provide shade, since they also improve the appearance of the trail. A well-placed tree or a well-designed shelter can make it more comfortable to use a bench. Trees should not be placed too close to the trail (distance depends on tree species) so that roots don't damage the asphalt, but they should be close enough to provide necessary shade, especially in the late afternoon when temperatures are the highest. Trees should also be placed in open areas as screening for unattractive views. Concentrate trees along south and west edges of trails to provide maximum shade.

## LIGHTING

Lighting along trails increases the number of viable hours for users, particularly in the winter when the sun sets earlier. Lighting should be consistent and functional, lining the entirety of a trail, so that there are no dark areas that will discourage riders. Lighting can be enhanced between neighborhoods and trails, so residents can safely make the journey to their closest trail.

## RESTROOMS

Restrooms make it possible for people to stay longer in an area, but they are expensive. The level of success of restroom amenities depends highly on placement. Frequently used and highly visible restrooms are safer and less subject to vandalism. Restrooms should be located at trail heads or where trails cross through parks.

## SIGNAGE AND MAPS

Signage and maps assist in wayfinding along the trails network. This trail component is necessary to provide information to visistors and new users of the facility. Signage can assist a user in planning a trip, or timing use of the facility. Signage is appropriately placed at mile markers, at junction points, or when the trail interacts with the street. Larger maps and information kiosks are necessary at trail heads and access points.

## FIX-IT STATIONS AND BICYCLE PARKING

Cyclists need the ability to repair a flat and also to park their bicycle along the trail. Cyclists may be several miles from their origin or destination at any given time on a ride, and a flat tire can ruin the experience and leave a cyclist stranded. Fix-it stations are appropriate at each grouping of trail components.

Top: Example of a fix-it station.
Bottom: Example of grouping of amenities.

# Facility Type Selection

Choosing the correct facility for bicycle infrastructure depends on many different criteria. Consideration of the interaction with motor vehicles with regard to traffic volume and speed should determine the level of protection required for safe and comfortable cycling. Additionally, costs associated with the implementation of any proposed project are a major limiting factor. Therefore, cost efficiency is crucial. Taking advantage of existing roadway capacity and choosing improvements that are affordable ensures that the money that is available is spent in an efficient, effective, and responsibile way that improves cycling in Oklahoma City as much as possible.

## FACILITY SELECTION PROCESS

The following graphics illustrate the methodology for selecting an appropriate bicycle facility for a given road. Each facility type (bike route, bike lane, protected bike lane, shoulder, and multi-use trail) are explained on pages 46-49. These tables indicate the **minimum** standard for safety and comfort. Any facility that offers a higher level of security for cyclists is appropriate, but often cost prohibitive.

This approach expands upon the approach taken by the Association for Central Oklahoma Governements' (ACOG) standards for bicycle facility selection, which focuses on the stress level for cyclists. The ACOG standard determines the appropriate facility based on traffic volume and speed. This criteria is utilized to rank bicycle projects for federal funding elegibility; therefore, ensuring that Oklahoma City uses the same standard will lead to greater performance in the application for federal funds in the future.

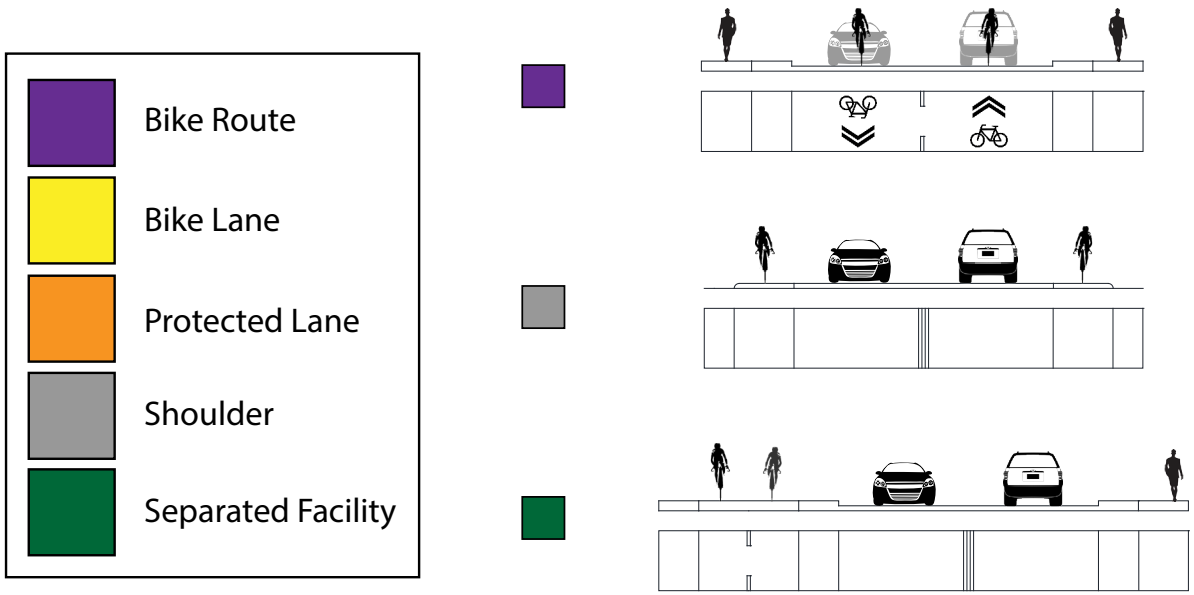
The bikewalk**okc** approach takes into account existing curb-to-curb width. Many of the streets in Oklahoma City do not have enough capacity to accomodate bike lanes without widening the street, which is cost prohibitive; therefore, the following graphics are broken into three categories based on available curb-to-curb width that could be converted to serve the needs of bicyclists.

## HOW TO SELECT A FACILITY

In order to choose an appropriate facility for a street, planners, engineers, project managers, and any other decision-makers involved in the process should first determine how much curb-to-curb width exists. This will point to one of the three adjacent tables. From there, determining the traffic volume and speed will lead to a facility type for that street. At this point it can be determined if the relative cost per mile for the facility is prohibitive, potentially leading decision-makers to consider alternative routes, or to seek additional funding.

### < 30' Curb to Curb

| SPEED \ VOLUME | < 2000 | 2000 - 10000 | > 10000 |
|---|---|---|---|
| < 30 mph | | | |
| 30-40 mph | | | |
| 40-50 mph | | | |
| > 50 mph | | | |

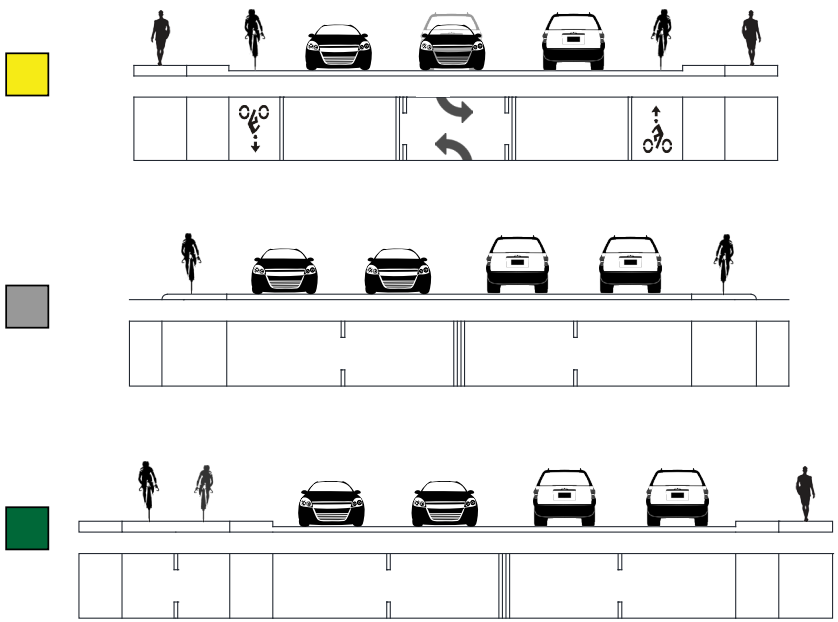


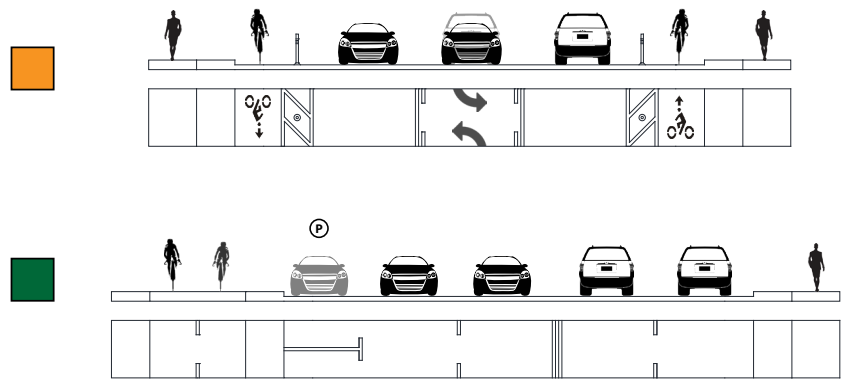
## 30′ < x < 45′ Curb to Curb

| SPEED \ VOLUME | < 2000 | 2000 - 10000 | > 10000 |
|---|---|---|---|
| < 30 mph | | | |
| 30-40 mph | | | |
| 40-50 mph | | | |
| > 50 mph | | | |

## > 45′ Curb to Curb

| SPEED \ VOLUME | < 2000 | 2000 - 10000 | > 10000 |
|---|---|---|---|
| < 30 mph | | | |
| 30-40 mph | | | |
| 40-50 mph | | | |
| > 50 mph | | | |





# Bicycle and Trail Analysis

## ROADWAY SUITABILITY

In order to analyze and understand bicycling conditions on every roadway in Oklahoma City, bikewalk**okc** uses a model that examines and scores every roadway segment. The score provides the existing cycling conditions along those segments. The following sections provide an explanation of each analysis, the results, and the meaningfulness of the results. This type of analysis is a good first step for identifying potential bicycle improvements, but as with all projects, must be followed up by a more extensive analysis for feasibility of construction.

### Bicycle Level of Traffic Stress (BLOTS)

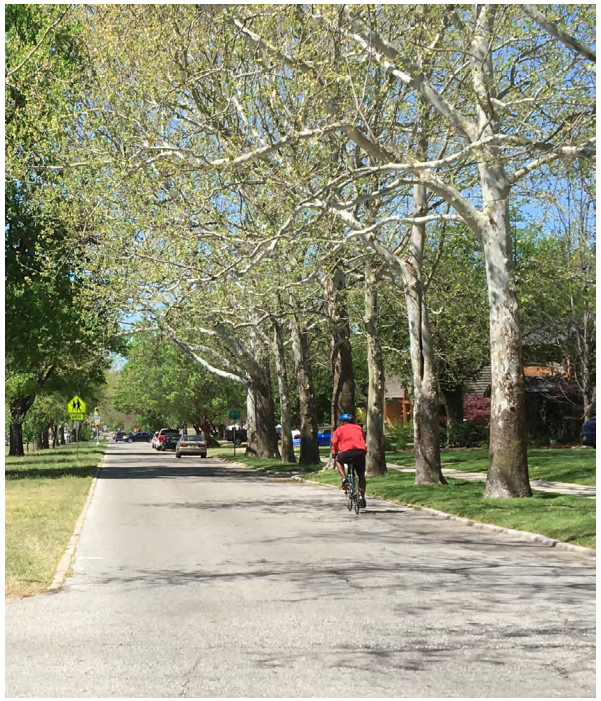
The BLOTS analysis reviews components of cyclists' safety and comfort and provides a score for every roadway. The initial analysis found roadways appropriate for cycling according to model inputs. The model takes into account four variables to produce a composite score for each roadway segment:

1. **Number of Lanes** - The number of vehicular travel lanes impacts safety, comfort, and the ability to turn left onto a connecting street. Roadways with two or fewer lanes received the highest score. The score decreases as the lanes increase, with four or greater lanes receiving the lowest score.
2. **Roadway Speed** - Speed impacts cyclists' safety and comfort. Roadway segments received scores based on speeds ranging from less than 25 MPH to above 45 MPH.
3. **Present Bicycle Facility** – A score was assigned to roadway segments that have an existing bicycle facility. The score is dependent on the type of facility and the level of safety offered. Trails are the safest and thus receive the highest score while bicycle routes receive the lowest score. If no facility was present, then no points were given.
4. **Traffic Volume** – Existing traffic volume affects cycling comfort and safety. The higher the traffic volume the lower the model results.

Map 2.16 shows BLOTS analysis for Oklahoma City. The map shows the streets as graduated colors from blue to red. Blue represents a road segment that has a low BLOTS score. A low BLOTS score means the segment is potentially safe and comfortable for cycling. A high score means the road segment is uncomfortable and potentially dangerous for cycling. Again, this is a first step for identifying candidate roadways for cycling corridors. Each candidate must be further analyzed and field verified before determining bicycle suitability.

An additional outcome of this analysis is the identification of barriers for cyclists that arise as a part of street design. Nearly all major arterials in the city limits pose difficulties for cyclists, illuminating a preferred approach to identifying cycling facility locations. A focus on safe crossings of major arterials and highways has been built into the plan. Similarly, avoiding major arterials, and selecting parallel streets with lower levels of traffic and speed, can largely accomplish the same goals of connectivity, while also reducing costs associated with designing and building bicycle facilities that offer an appropriate level of protection.

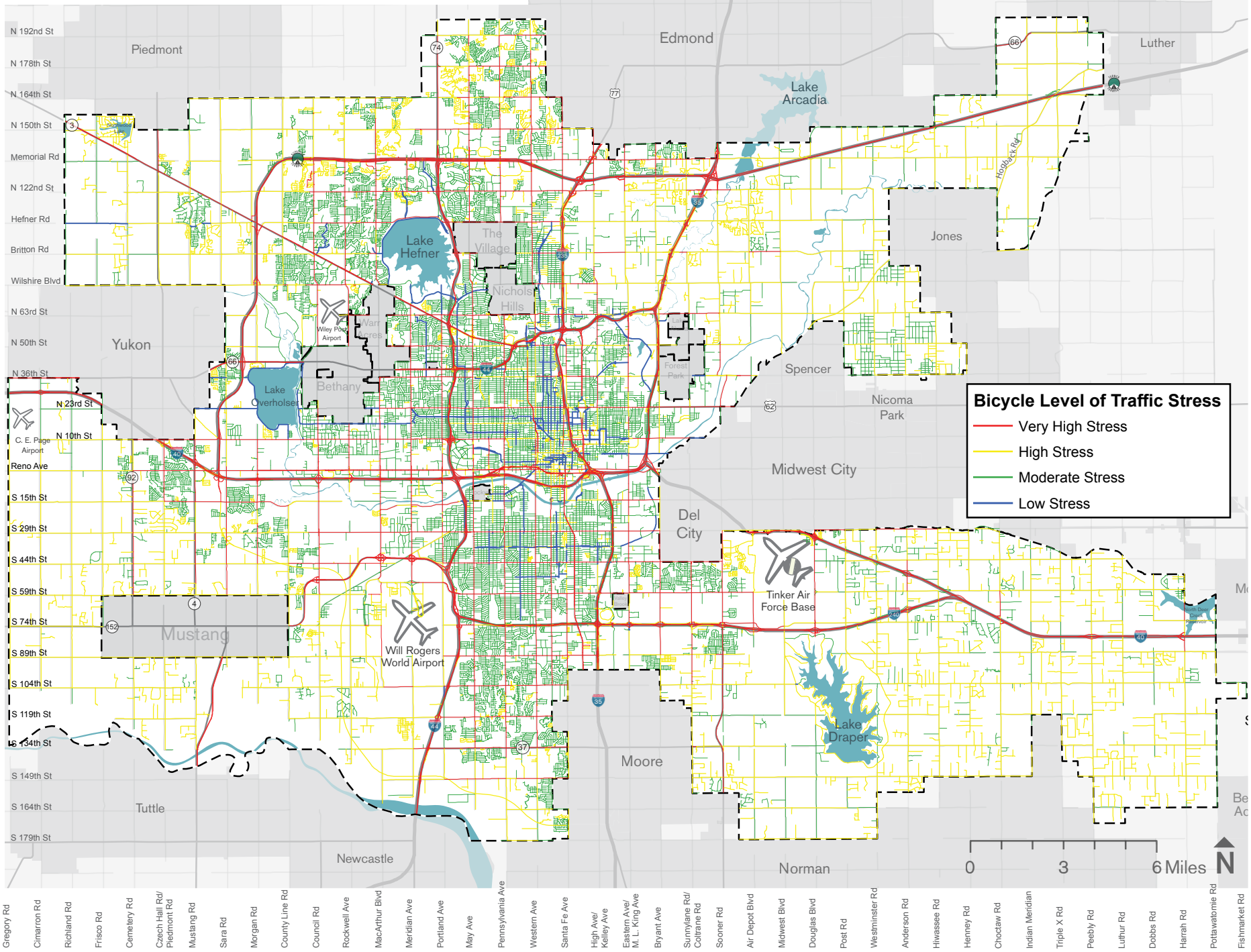
There is a higher concentration of streets that score well in the inner city, especially north of the Oklahoma River in and around downtown. Former streetcar routes, like N. Drexel Blvd. and NW 19th St. are well-suited to accomodate bicycling because of their low speeds, low traffic volumes, and the fact that they are currently bicycle routes with signage and sharrows. There are far fewer streets in suburban areas that are presently suitable for bicycling, indicating that improvements will need to be more substantial, and will likely be less cost effective.



Top: Low-stress cycling environment.

Bottom: High-stress cycling environment.

# MAP 2.15 BICYCLE LEVEL OF STRESS



## Excess Roadway Capacity Analysis

Planners conducted a second analysis, called an Excess Roadway Capacity Analysis, to identify potential bicycle corridors. This analysis identifies roadways that have more lanes than needed to carry the current volume of daily traffic. These roadways are candidates for lane reconfiguration to a safer, multimodal facility that carries bicycles and pedestrians, and provides a turning lane for automobiles. bikewalk**okc** reviewed roadways with 4+ vehicular lanes and less than 16,000 daily vehicle trips.

Of particular note in the results of this analysis is the density of streets in the downtown area that have extra capacity. With cycling for transportation being a primarily urban activity, this extra capacity is ripe for conversion to bicycle facilities. These interventions will impact a greater number of residents due to the higher levels of residential density in the inner city.

While AADT is often used to evaluate when a road widening should occur, it is also valuable to look at peak hour traffic data to determine which streets have been designed around a specific time of day. Streets that are below the AADT threshold, and below the peak-hour threshold are prime candidates for retrofitting to accommodate bicycle infrastructure. As projects from this plan are funded and enter into engineering and design, this information will be vital in ensuring that the most efficient approach to the project is followed. Where there is substantial excess capacity, traffic studies should be less of a priority. The money that would be spent on those studies can be used to improve the facility further, fund a maintenance program, or support any other aspect of the project.

Figure 2.7 Basic Lane Reduction

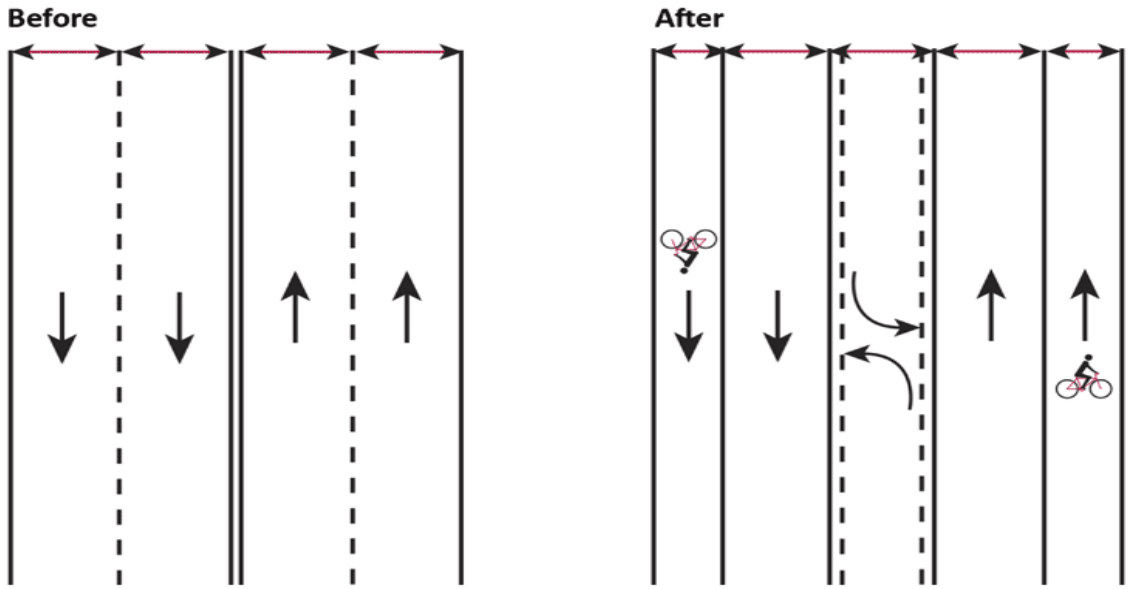
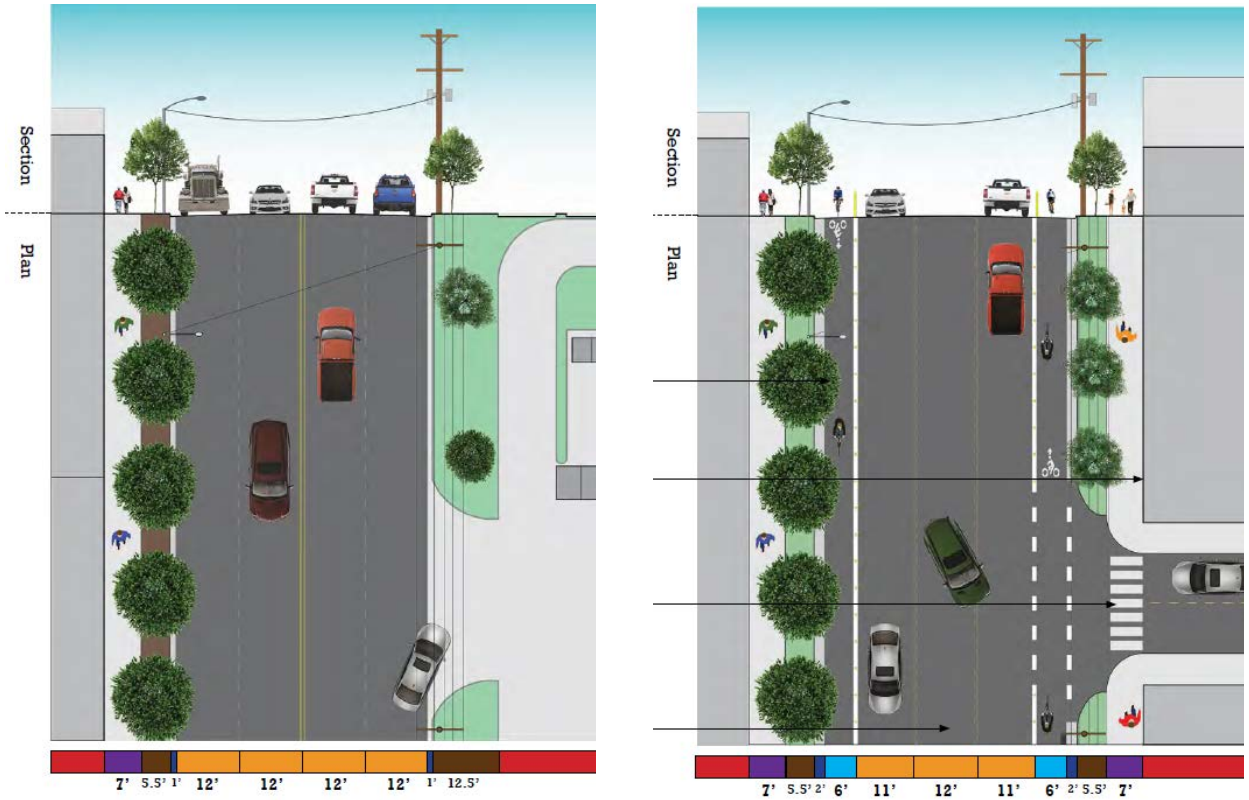



Figure 2.8 Lane Reduction Cross-Section



Above: N. Western Ave. between NW 23rd St. and NW 18th St. is currently under reconstruction reducing lanes, adding bicycle facilities, adding a median, and adding other pedestrian safety features such as lighting, curb ramps, and refuge islands.

## COLLISIONS ANALYSIS

The dangers of sharing the road with automobiles is one of the most common reasons given as to why people do not bicycle for transportation. Fortunately, there is high-quality data related to collisions in Oklahoma. The Safe-T collision database that is jointly managed by the Oklahoma Department of Transportation and the Oklahoma Highway Safety Office, which is a collection of data gathered in partnership with law enforcement offices from around the state, documents collisions between motorists and cyclists as far back as 2003. This history of data (13 years) allows for a better understanding of trends in our city, and gives us the opportunity to address specific problems related to the context of each collision. Whether the problem lies with infrastructure (or the lack thereof), insufficient lighting, unsafe crossings, or something else, this dataset can help to identify what needs to be improved.

790 cyclist collisions were reported between 2003 and 2015, 10 of which resulted in a fatality, and all of which occurred on a major arterial street. Nearly two-thirds of the 790 collisions occurred on streets with speed limits of 30 MPH or greater. Considering the small amount of dedicated bicycle facilities in the city, it can be assumed that the vast majority of these collisions occurred because of a lack of clarity between cyclists and motorists, whether along a road or at an intersection. This data is important to understand when developing the plan in order to ensure that the proposed bicycle network improvements and policies in bikewalk**okc** address safety concerns.

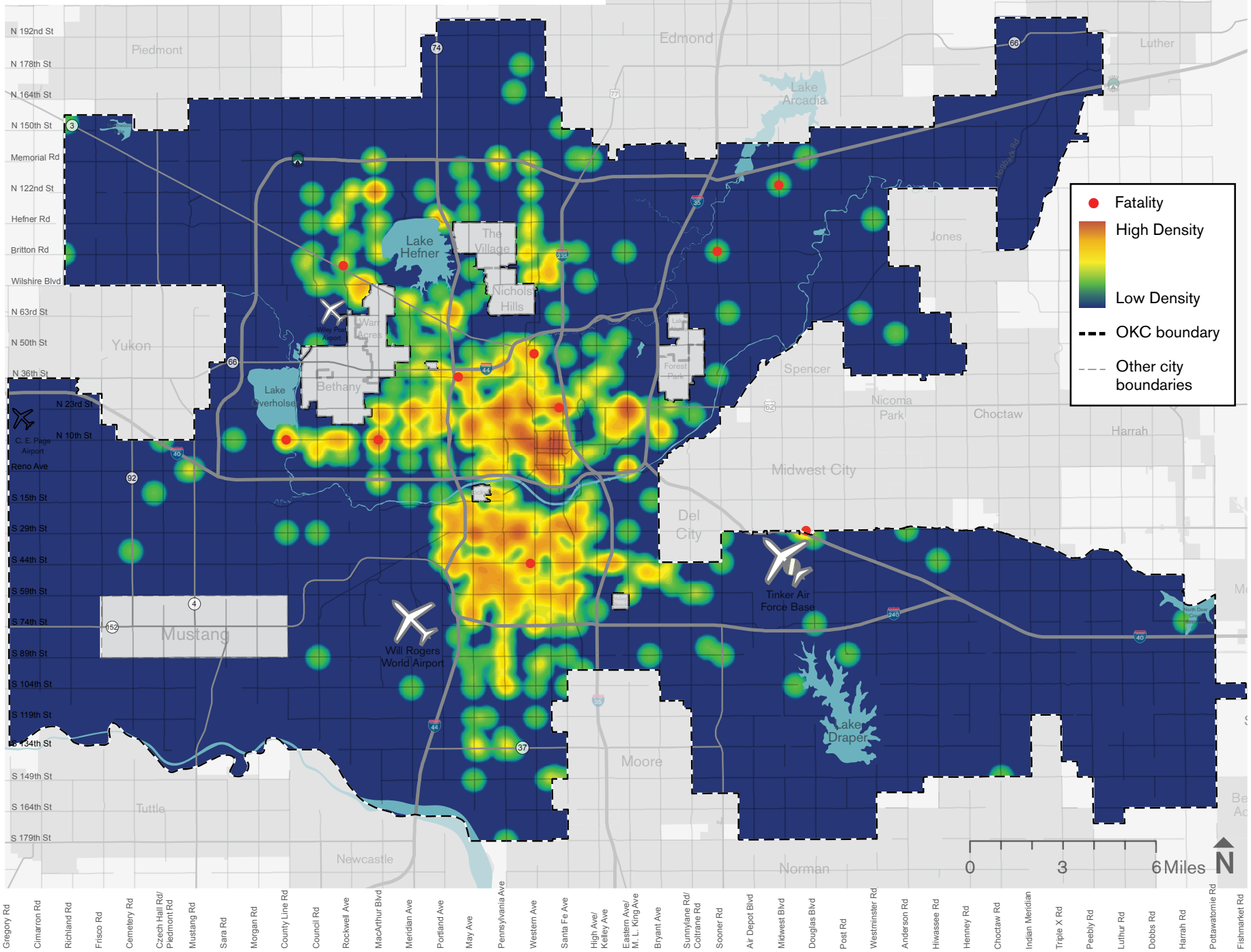
Table 2.3 shows when the bicycle-automobile collisions occurred in the last 13 years based on the month of the year and the time of day. January is the month with the fewest collisions on average, with 2.46 collisions, while September has the highest average number of 7.31. Collision rates are noticeably higher in the warmer months, particularly between May and October. This is most certainly due to the fact that cycling in the cold winter months can be very unpleasant, so fewer cyclists are on the streets. There is a noticeable trend of collisions occurring between the hours of 3:00pm and 7:00pm, which could be due to children or adults getting in a recreational bike ride after school or work, or potentially cyclists getting hit on their commute home. There is less of a trend of cyclists being hit after sunset, which is a significant issue with pedestrians. This could be due to the fact that cyclists are required by law to have lights on their bicycle to indicate to drivers that they are present.

Besides constructing dedicated infrastructure for cyclists, safety campaigns to educate drivers and cyclists alike about safe habits for sharing the road could be conducted during the summer months. Additionally, police enforcement of traffic safety laws in the afternoon hours on heavily trafficked streets can help to reduce the number and frequency of collisions between automobiles and cyclists. Key locations with multiple collisions for enforcement intervention include:

- NW 122nd St. and N MacArthur Blvd.
- NW 10th St. and County Line Rd.
- NW 10th St. and N MacArthur Blvd.
- NW 23rd St. and N Pennsylvania Ave.
- NW 23rd St. and N McKinley Ave.
- NW 17th St. and N May Ave.
- NW 7th St. and N Pennsylvania Ave.
- NW 6th St. and N Hudson Ave.
- E Reno Ave. and Martin Luther King Ave.
- SW 29th St. and S May Ave.

Table 2.3 - Bicycle Collisions by Month by Hour of the Day 2003-2015

- Time of Sunset

| | 0:00 | 1:00 | 2:00 | 3:00 | 4:00 | 5:00 | 6:00 | 7:00 | 8:00 | 9:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 | 23:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| January | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 3 | 2 | 0 | 1 | 4 | 1 | 1 | 4 | 2 | 4 | 2 | 0 | 2 | 1 | 0 |
| February | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 2 | 4 | 0 | 4 | 2 | 2 | 7 | 4 | 2 | 1 | 1 | 0 | 0 | 0 |
| March | 1 | 0 | 1 | 0 | 0 | 2 | 1 | 3 | 2 | 1 | 3 | 1 | 2 | 2 | 3 | 8 | 5 | 7 | 4 | 4 | 1 | 2 | 3 | 1 |
| April | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 1 | 2 | 2 | 7 | 4 | 13 | 4 | 6 | 7 | 5 | 4 | 4 | 3 | 2 |
| May | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 1 | 1 | 3 | 3 | 7 | 7 | 7 | 6 | 3 | 12 | 5 | 3 | 2 | 4 | 4 | 3 |
| June | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 1 | 5 | 3 | 2 | 7 | 9 | 4 | 4 | 4 | 13 | 6 | 5 | 4 | 4 | 3 |
| July | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 2 | 3 | 6 | 4 | 3 | 4 | 2 | 9 | 6 | 10 | 3 | 2 | 11 | 8 | 6 |
| August | 3 | 0 | 2 | 0 | 0 | 1 | 2 | 4 | 4 | 2 | 1 | 3 | 0 | 1 | 8 | 3 | 5 | 8 | 8 | 5 | 5 | 3 | 4 | 3 |
| September | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 1 | 8 | 5 | 5 | 2 | 2 | 4 | 6 | 5 | 10 | 8 | 11 | 7 | 7 | 5 | 2 | 1 |
| October | 1 | 0 | 1 | 0 | 1 | 2 | 1 | 4 | 3 | 2 | 5 | 5 | 2 | 2 | 3 | 6 | 12 | 9 | 5 | 11 | 4 | 5 | 3 | 3 |
| November | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 2 | 3 | 3 | 2 | 3 | 5 | 4 | 7 | 3 | 2 | 4 | 1 | 2 | 0 |
| December | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 | 6 | 1 | 3 | 3 | 4 | 3 | 4 | 2 | 0 | 2 | 2 | 0 |

# MAP 2.18 BICYCLE COLLISIONS (2003-2015)