



WALK BIKE ROLL RUN

MOVE 
FORT SMITH

City of Fort Smith
Active Transportation Master Plan
June 2024

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Executive Summary



Active transportation—walking, cycling, and other human-powered modes—plays a pivotal role in shaping the character and vibrancy of cities by promoting physical and social well-being, reducing traffic congestion, and creating a cleaner environment. The Move Fort Smith Plan is a collaborative effort between community stakeholders, city officials, urban planners, and residents. It is a roadmap towards a more accessible, equitable, and livable Fort Smith, one where streets are safe and inviting for people of all ages and abilities to walk, bike, roll, and run. This plan includes comprehensive strategies to enhance Fort Smith’s pedestrian and bicycling infrastructure, promote active transportation as a viable mode of travel, and seamlessly integrate active transportation infrastructure into the city’s fabric. From expanding multi-use trails to implementing protected bike lanes and pedestrian-friendly streetscapes, the Move Fort Smith Plan envisions a future where active transportation is not just an alternative, but a preferred choice for getting around town. The Move Fort Smith Plan is more than just a set of recommendations. It’s a commitment to building a healthier, more connected Fort Smith for generations to come. It’s about fostering a culture of movement and inclusivity where everyone can enjoy the benefits of active living. The success of this plan depends on the collective effort and dedication of the entire community. Together, we can create a city where walking and cycling are not just ways to get around but integral features of a vibrant and sustainable way of life.

How to use the Move Fort Smith Plan: This plan was developed to serve as a roadmap to assist the city and community stakeholders in creating safe, comfortable, and connected active transportation infrastructure and fostering a welcoming, encouraging, and inclusive culture for active transportation users. It includes recommendations for proposed network additions/improvements, programs to enhance the culture of biking and walking, and guidelines to inform the project design process. The recommendations in this plan are not intended to be rules. Rather, they are intended to serve as tools to guide the city's efforts.

The planning process employed a multi-faceted approach to developing these recommendations, including the following aspects.

A. Public engagement

- Online survey with over 900 respondents
- Six community input sessions
- Three pop-up community events
- Project steering committee made up of residents representing diverse institutions and companies
- Informal meetings with individual residents
- Six focus group meetings



B. Data analysis

- Socio-economic data (median household income, equity need, diversity index)
- Non-motorist crash data (utilizing Arkansas Crash Analytics Tool)
- Average Annual Daily Traffic (AADT) counts for the City of Fort Smith

C. Previous planning documents review

- Review of state, regional, and local plans

D. Existing conditions review

- In-field review

E. Proposed network mapping and prioritization

- In-field review
- Development and visualization of proposed routes
- Prioritization of proposed projects is based on factors such as school-aged children living in poverty, access to parks and open space, project readiness, and proximity to schools, employment centers, and transit stops

F. Engagement with city staff and various departments

- Meeting with department heads
- Streets & Engineering Department meetings
- Presentation to the Parks Commission
- Plan updates provided at the MPO Technical Committee meetings

This plan and associated documents are intended to be a living document that can and should be updated over many years as the city continues to grow and thrive.



Photo Courtesy of 64.6 Downtown



01

Project Overview

Project Purpose and Principles

Project Purpose

Prioritize active transportation to empower people of all ages and abilities with the choice and opportunity to move freely and safely throughout our community.

Guiding Principles

These guiding principles were developed in collaboration with the project steering committee and helped to focus and prioritize the planning process.



SAFETY

The focus of the proposed active transportation network is to create a system designed for users of all ages and abilities. Increasing the real and felt safety of users helps to promote and expand usage of the network.



INCLUSIVE DESIGN

The active transportation network will be designed to facilitate usage by a wide range of users with a particular focus on the most vulnerable.



EQUITABLE CONNECTIVITY

Connecting residents to essential city destinations is key to increasing equity in the network. Safe and comfortable access to schools, neighborhoods, medical facilities, and parks helps reduce transportation-related stress and promotes an active, healthy lifestyle.



COMMUNITY

Communities that embrace activity and movement are stronger, more resilient, and have higher reported levels of quality of life. The network is developed with a focus on creating physical connections that will help build and improve the community.



PEOPLE-FIRST DESIGN

Many of our cities have been designed to encourage a single mode of transportation: cars. Move Fort Smith's purpose is to design human-powered mobility as a viable and realistic alternative to motor vehicles.



Project Schedule



June - August
2023

- Biweekly Progress Meetings
- Steering Committee Meeting #1
- NWA Study Tours (2) - Workshops focused on learning from the successes that have occurred in Northwest Arkansas
- Focus Group Meetings (6)



September -
December
2023

- Biweekly Progress Meetings
- Active Transportation Training Session
- Steering Committee Meeting #2
- Public Input Sessions #1 - 4
- Online Community Survey
- Project Website Launch
- Review of Existing Plans and Previous Planning Work
- Network Inventory and Mapping



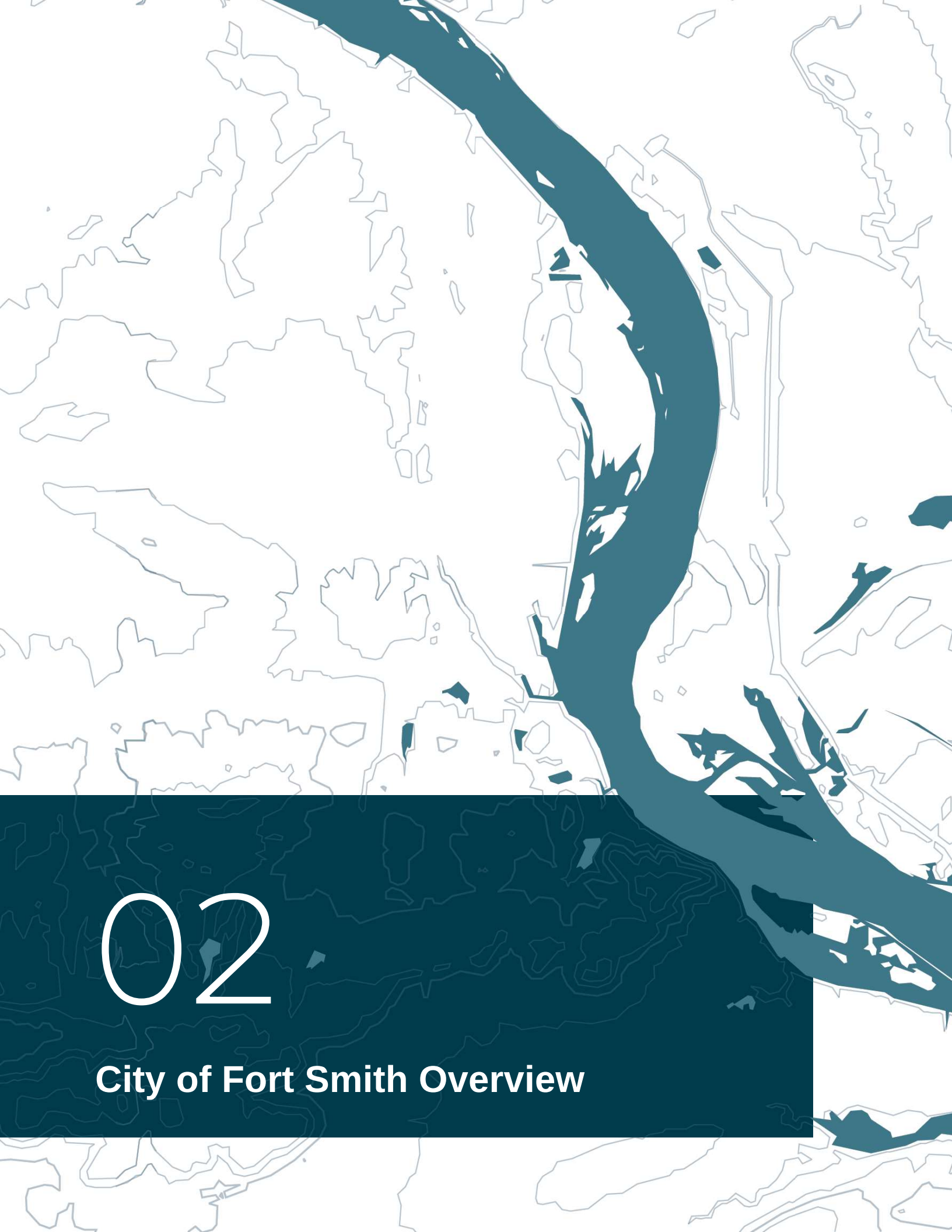
January -
March 2024

- Biweekly Progress Meetings
- Steering Committee Meeting #3
- Design Guidelines
- Equity Framework
- Network Inventory and Mapping



April - June
2024

- Biweekly Progress Meetings
- Steering Committee Meeting #4
- Public Input Sessions #5 & #6
- Public Outreach at Community Events
- Network Inventory and Mapping
- Policies and Programs - Recommendations and Prioritization
- Bicycle and Pedestrian Network - Recommendations, Prioritization and Phasing, and Catalytic Projects



02

City of Fort Smith Overview



Fort Smith, AR
Population: 89,992

2022 Census Bureau Data

Project Location: City of Fort Smith, Arkansas

Established in 1817 as a military post on the Arkansas-Oklahoma border and the shores of the Arkansas River, the City of Fort Smith is now the third-largest city in Arkansas. Over 11,000 companies choose to do business in Fort Smith, and many are headquartered in the city, such as OK Foods (Bachoco USA) and ArcBest. Fort Smith enables citizens and visitors a glimpse into the United States' Western heritage with its many museums, including the United States Marshals Museum and the Fort Smith National Historic Site. Several exceptional education institutions, such as the University of Arkansas at Fort Smith and Arkansas Colleges of Health Education, are located in the city. The city is also home to more than 20 recreational parks that enable citizens to enjoy the beautiful outdoors.

Fort Smith Today (2024)



Strong institutions and a thriving business community: Fort Smith has many world-class institutions and companies dedicated to improving the local community, state, and nation. From the University of Arkansas at Fort Smith to ArcBest, OK Foods (Bachoco, USA), Mercy, Baptist Health, Rheem, ARCOM, Arkansas College of Osteopathic Medicine/Arkansas College of Health Education, and the Fort Chaffee Redevelopment Authority, these institutions are committed to positively impacting the Fort Smith community.

Impactful programming: Fort Smith continues to focus efforts to improve the lives and health of its residents through active transportation. A few notable investments and programs:

- The city hired a full-time **mobility director** in 2022 who, alongside the community, implements programs to improve active transportation culture and infrastructure.
- The **All Kids Bike** program has been launched in several local schools, helping to equip elementary-aged children with the skills and confidence to safely and confidently ride a bike.
- The grassroots **Bikes at the Bakery** event focuses on bringing together the city's biking community and individuals new to biking to connect and ride.
- The **National Interscholastic Cycling Association (NICA)** program provides a fun and inclusive environment where students can join a team and compete in mountain bike races.
- The city has invested in a bike share program called **Ride 4 Smilies**, strategically placing bikes throughout the city. This program includes geared cruiser bikes as well as electric assist bikes.

These initiatives are helping to offer connection and strengthen the active transportation culture.





Investments in active transportation

infrastructure: Fort Smith has planned, funded, and constructed numerous active transportation projects, including on-street mixed traffic routes, signed bike routes, and shared-use paved paths.

- The **Riverfront Trail** helps connect residents and visitors to downtown and the United States Marshalls Museum and allows users to ride in nature alongside the Arkansas River.
- In the Chaffee Crossing area, the **Fort Chaffee Redevelopment Authority (FCRA)** has developed a collaborative funding partnership, which has helped the city realize miles of high-quality, shared-use paved paths.
- The **Parks Department** has prioritized funding of essential projects such as the **Maybranch Trail** which, upon completion, will provide a key active transportation spine through the heart of the city. Additionally, the Parks Department maintains an array of essential walking trails within its park system, providing residents with opportunities to stay active and healthy.
- The **Blue Lion Bikeway** created a connection between downtown Fort Smith and the University of Arkansas Fort Smith (UAFS).

An engaged and growing community of bike riders:

The Friends of Recreational Trails (FORT) group is an organized local group that supports biking-related initiatives and coordinates various rides and events.



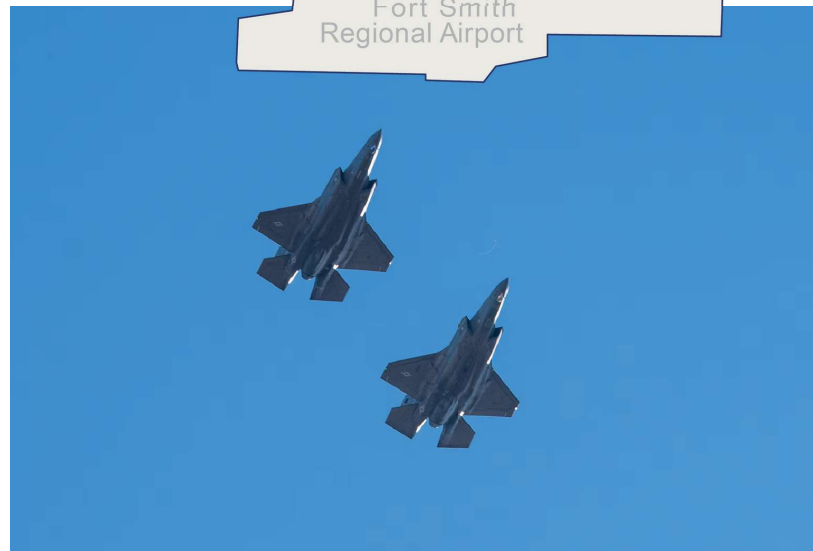


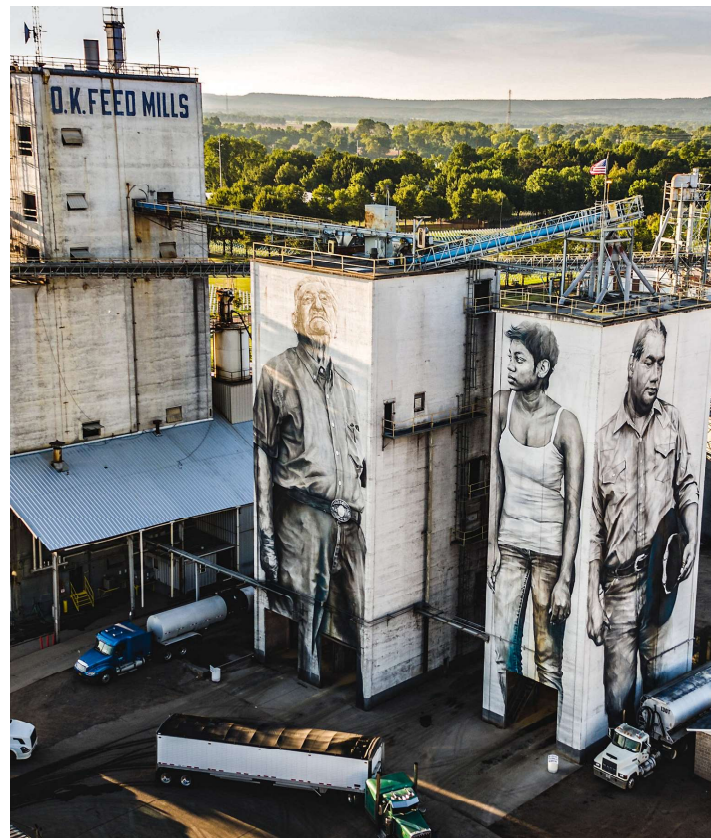
Investments to improve the safety of vulnerable road users (VRU): In recent years, the City of Fort Smith has implemented projects and policies to increase the safety of all road users, especially for VRUs.

- **Safe Fort Smith Comprehensive Safety Action Plan (2023-2024):** In 2023, the city received a grant to develop an action plan to improve safety for all road users. This planning process has included extensive public engagement and is nearing completion at the time of writing.
- **Active Transportation Plan (2023-2024):** This planning process is a testament to the city's commitment to developing safe, comfortable, and connected infrastructure and a welcoming, inclusive, and encouraging culture for active transportation users.
- **Installation of pedestrian crossings:** In 2022, the city took action to improve safety along a key corridor by implementing safety countermeasures along Grand Avenue, including rectangular rapid flashing beacons (RRFB) and pedestrian refuge/median islands.

188th Air National Guard Base - F35 Training Center:

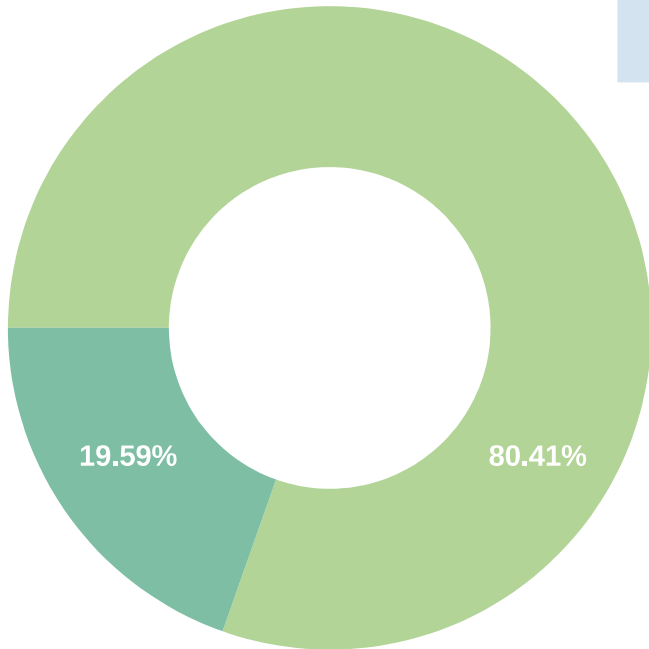
The 188th Air National Guard Base, also home to the Fort Smith Regional Airport, was recently selected by the United States Air Force to be the home of a new pilot training center for the F35. The training center will bring pilots from around the world to Fort Smith to train and hone their skills on the F35. The selection and location in Fort Smith is expected to have a significant economic impact on the city, region, and state.





Demographics

Ethnicity in Fort Smith, AR 2020 Census Data

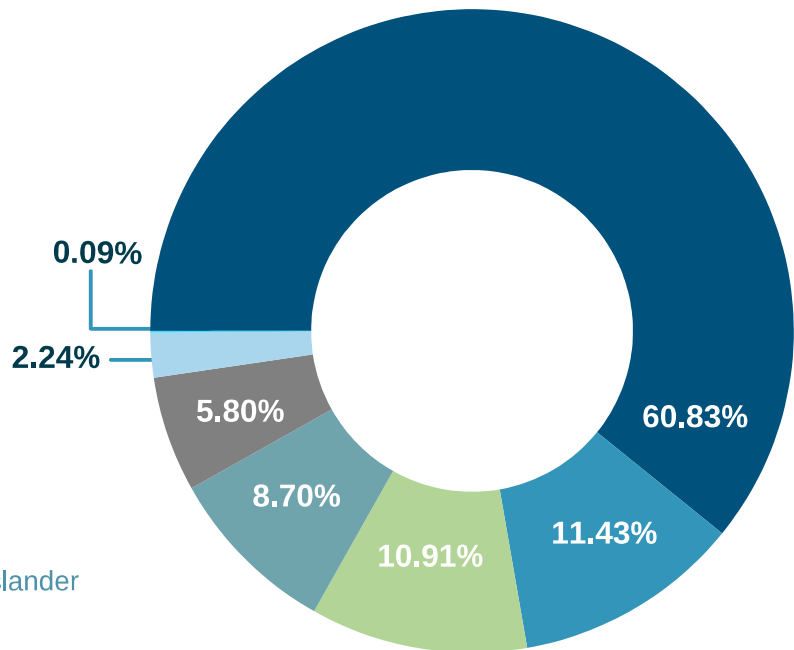


- Not Hispanic or Latino
- Hispanic or Latino

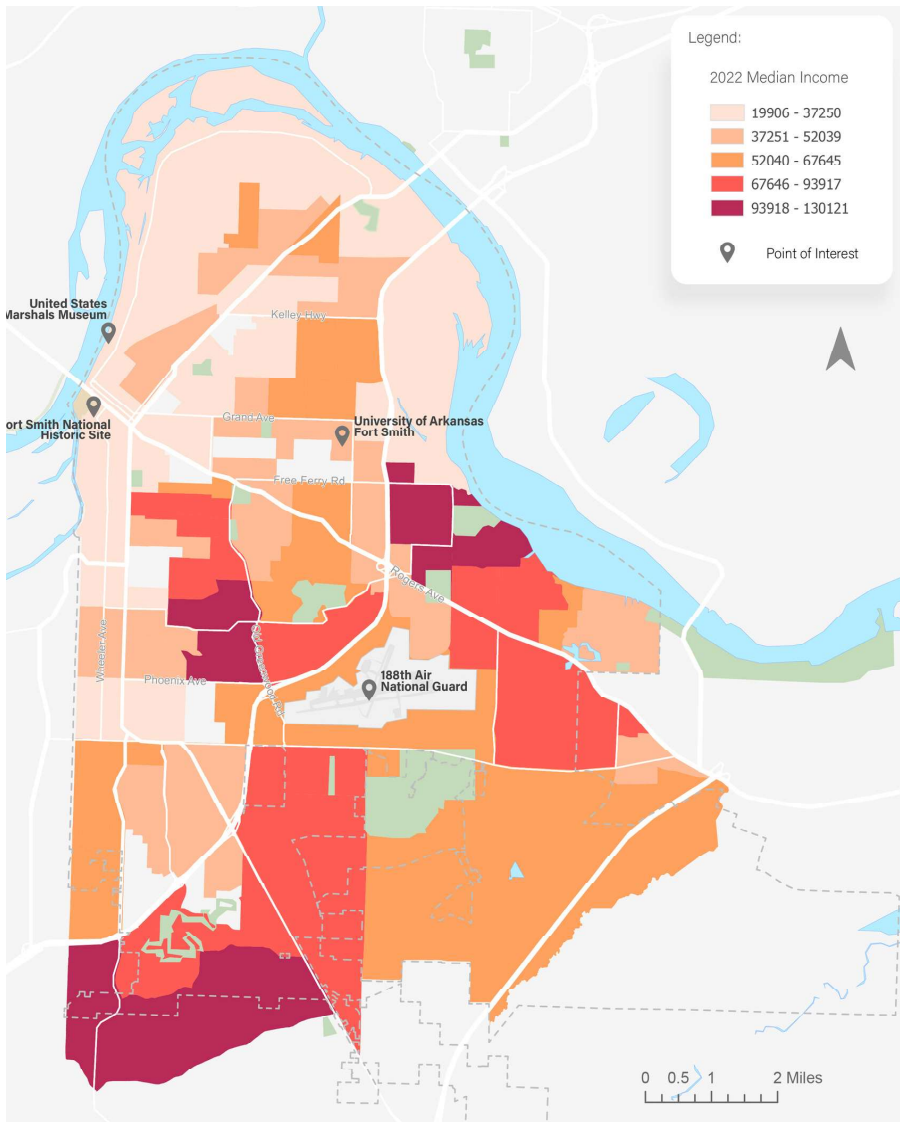
According to the 2020 Census, **19.59%** of the total population in Fort Smith identifies as Hispanic or Latino versus the Arkansas State average of **8.52%**.

Race in Fort Smith, AR 2020 Census Data

- White
- Two or More Races
- Other Race
- Black or African American
- Asian
- American Indian & Alaska Native
- Native Hawaiian & Other Pacific Islander



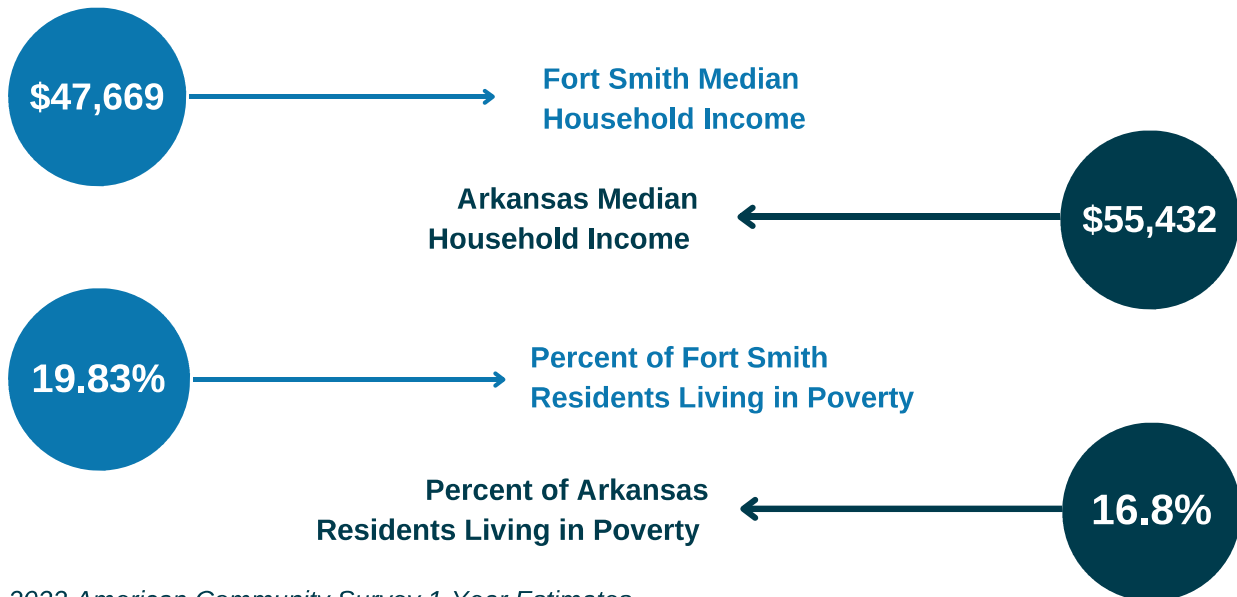
Median Household Income (2022)



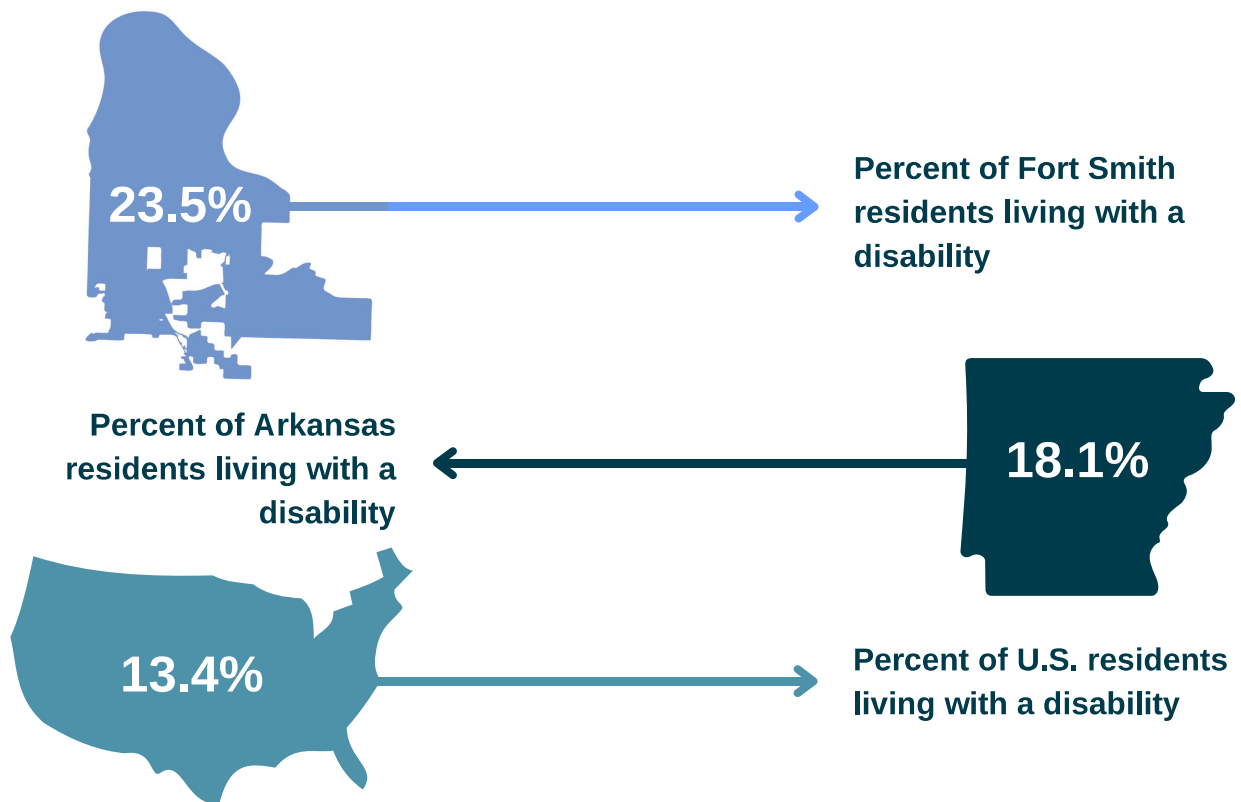
The Census Bureau defines poverty as an individual with an annual income at or below \$15,852 or a family of four with an annual income at or below \$31,428.

- 19.83% of Fort Smith residents live below the federal poverty level, higher than the state average of 16.8%.
- Higher-income levels tend to be concentrated south of Grand Avenue.

Fort Smith has five census tracts with poverty levels in excess of 30% (1, 4, 5.01, 8, and 12.02). One of these tracts has a poverty level of 43.3% (1).

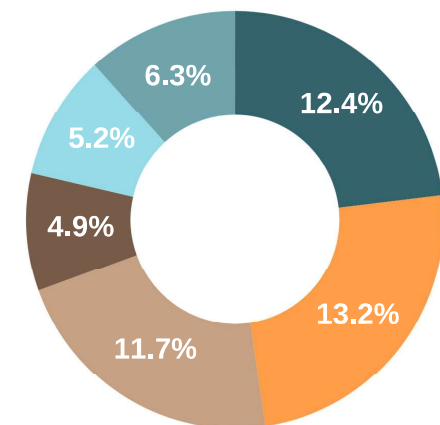


2022 American Community Survey 1-Year Estimates



Types of Disabilities for all Residents Living with Disabilities in Fort Smith

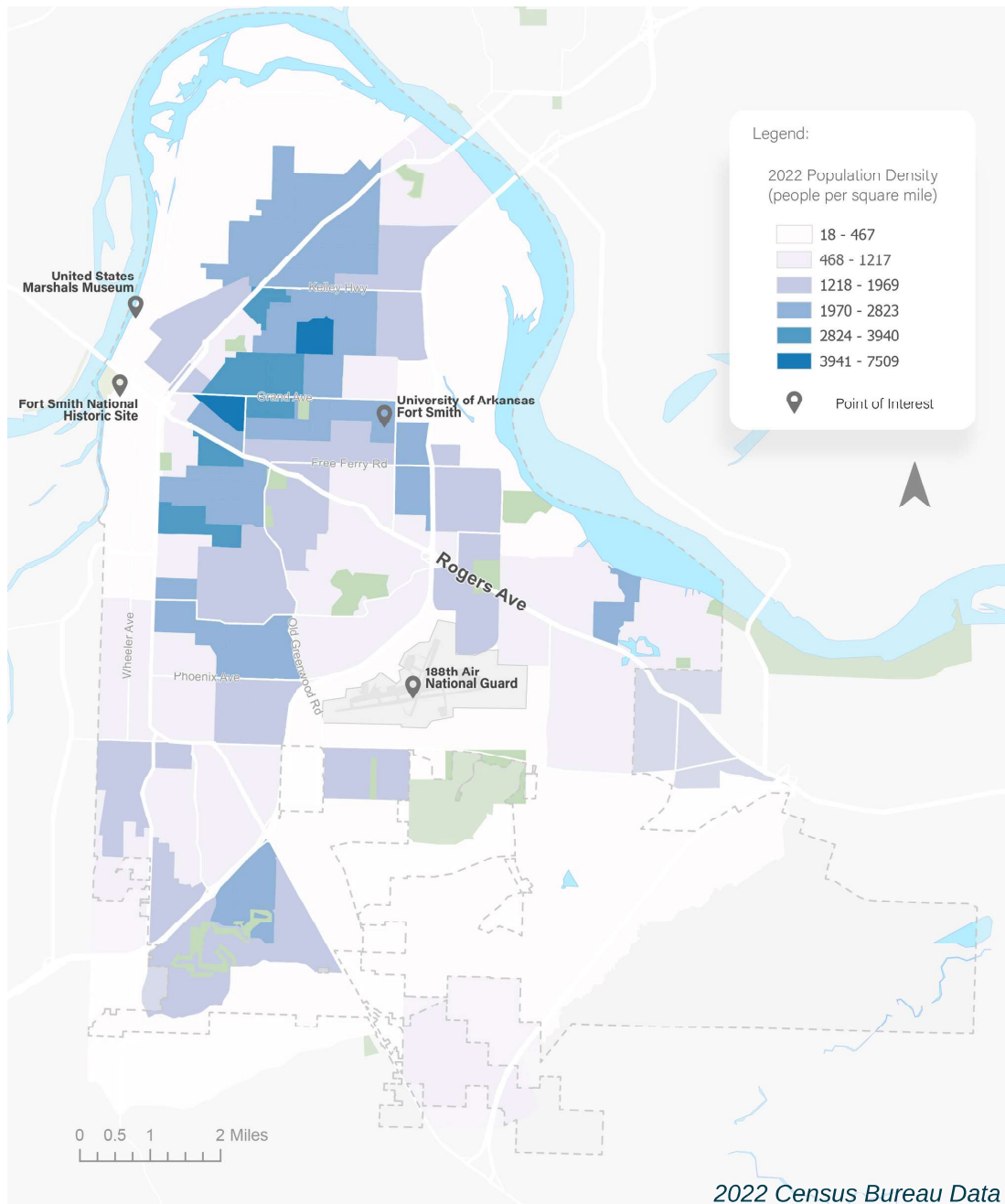
According to the 2022 American Community Survey data (1-year estimates), approximately 23.5% of the residents of Fort Smith are living with some sort of disability. People living with disabilities have unique needs and challenges in navigating the city. Residents living with disabilities in Fort Smith are nearly twice the percentage of U.S. citizens living with disabilities. The types of disabilities Fort Smith residents are living with are shown in the chart. **Fort Smith has seven census tracts with disability rates at 25% or higher (2,4,6,7,8,10.1,12.02). Two of these census tracts exceed 30% disability rates (2,8).**



- Ambulatory Difficulty
- Self-Care Difficulty
- Vision Difficulty
- Hearing Difficulty
- Independent Living Difficulty
- Cognitive Difficulty

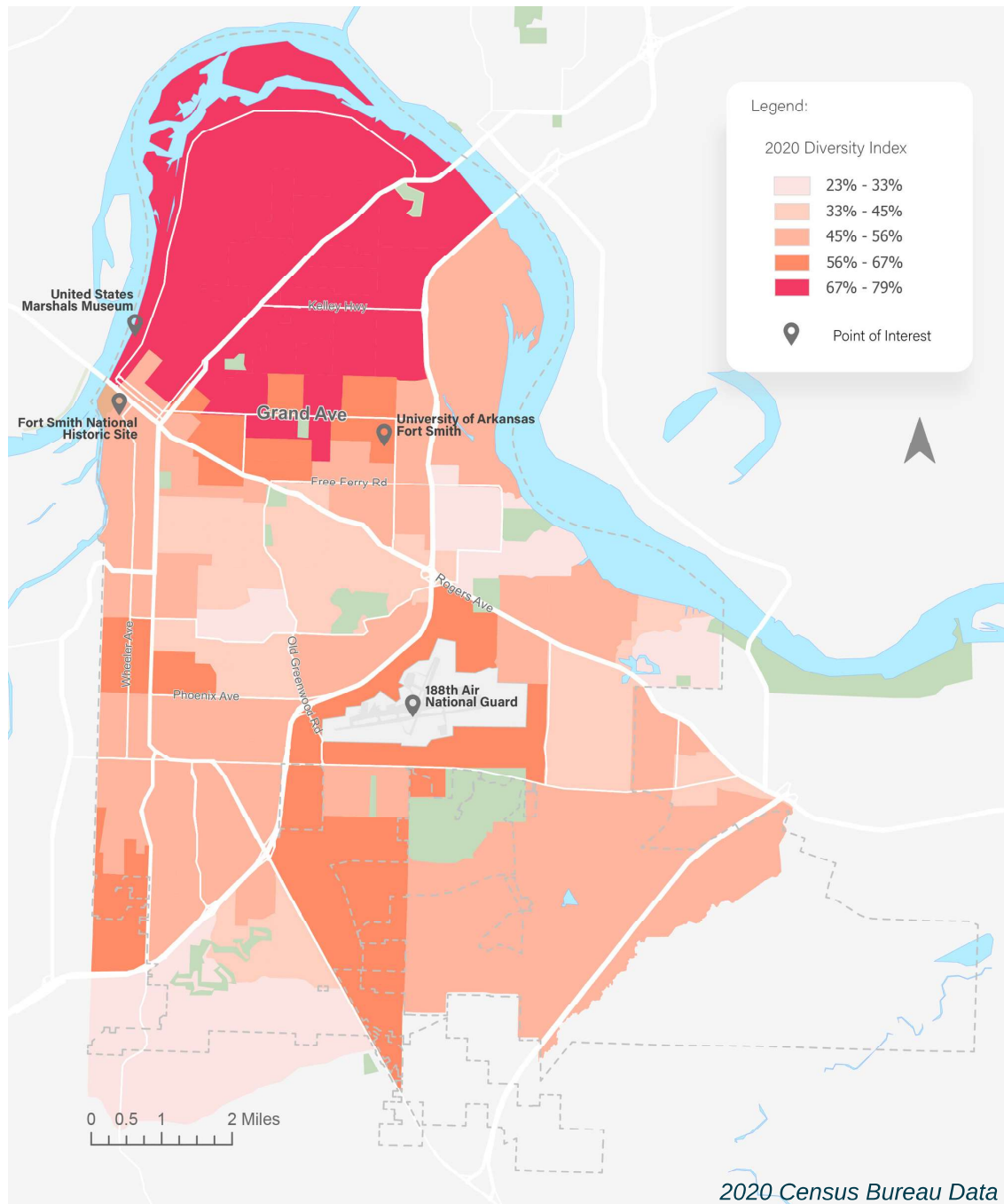
2022 American Community Survey 1-Year Estimates

Population Density (2022)



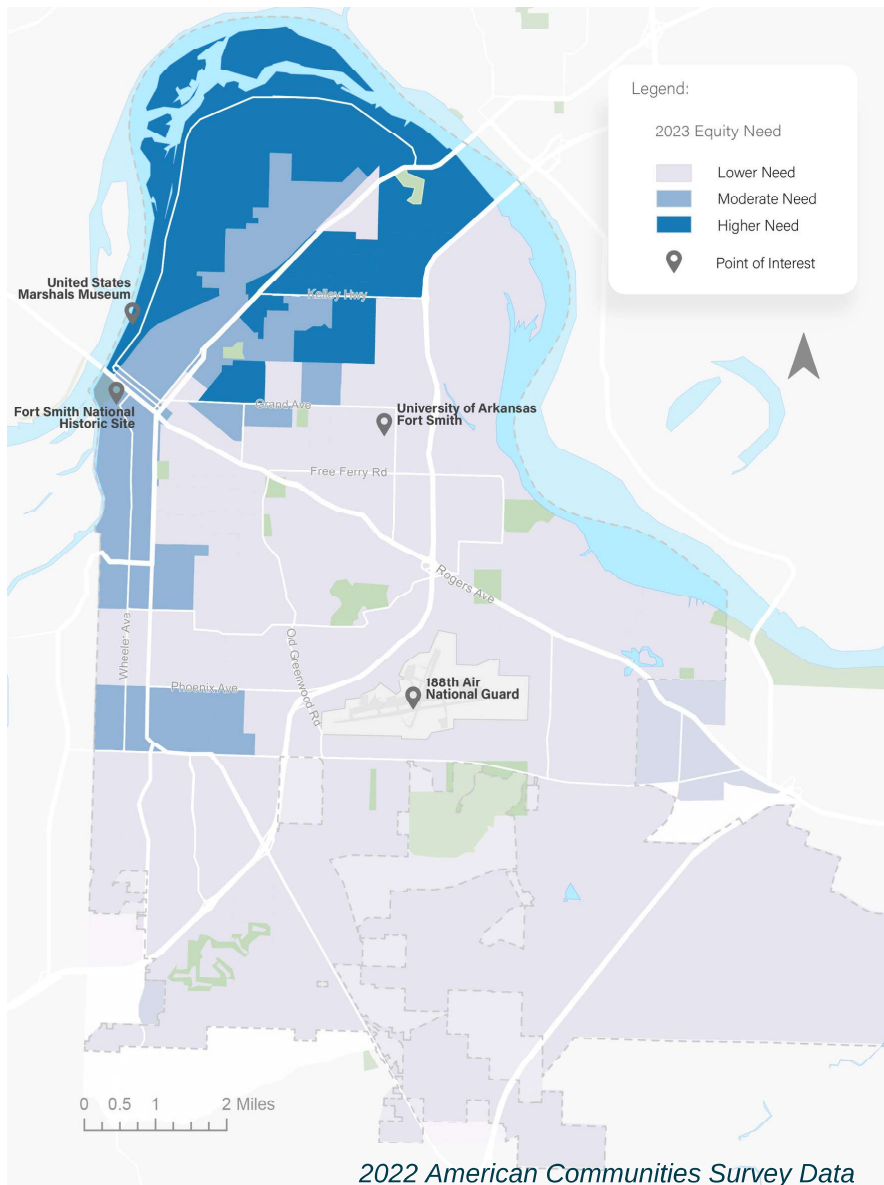
The area with the highest population density in Fort Smith is north of Rogers Avenue in the historic neighborhoods. As the city grew and expanded south, the population density decreased. Higher density allows citizens to live within an appropriate walking and biking distance from key destinations. The more a city develops without intentional, connected, and dense design, the more citizens are forced to be dependent on personal motor vehicles to access critical amenities. Creating safe and comfortable connections between dense areas in the city allows the largest amount of citizens the freedom to avail themselves of active modes of transportation.

Diversity Index (2020)



The diversity index map indicates the percent chance that two randomly chosen individuals from a population would be from different racial groups: Black or African American, Native American, White, Asian, Native Hawaiian, and Other. The diversity index of the State of Arkansas in 2020 was 49.8%, according to the United States Census Bureau. The City of Fort Smith has higher concentrations of diversity than the state average, particularly in the northern portion of the city. For the block groups north of Grand Avenue, the average diversity index as of 2020 was 73%.

Equity Need & ATI (2022)



Demographic data at the block group scale was obtained from the five-year 2022 American Communities Survey (ACS) by the U.S. Census Bureau (USCB). The block group scale was chosen so that poverty data could be accounted for. Select socioeconomic characteristics evaluated in the index included poverty rate, percentage of ethnic minorities, and the proportion of active transportation infrastructure (ATI) to motor vehicle infrastructure. ATI included paved trails and bike lanes delineated using aerial imagery after a review of the open street map and the City of Fort Smith Parks & Recreation website. From this review, no bike lanes were found to currently exist. Higher index values correspond to higher rates of poverty, higher proportions of minority residents, and/or lower ratios of ATI to roads. Equity index values were classified based on natural breaks (using the Jenks method) and are described as “Lower Need”, “Moderate Need”, and “Higher Need”.

The older historic neighborhoods in the northwest area of Fort Smith are identified as requiring higher needs for connectivity. The city’s recent sidewalk improvement projects, which include North O Street and Spradling Avenue, are a great accomplishment in this area. However, dedicated bicycle facilities are absent in these neighborhoods, which contrasts with the growing ATI network in Chaffee Crossing. While the 6-mile-long Greg Smith River Trail is located in northern Fort Smith, it connects very few residences and amenities and primarily provides opportunities for recreation rather than transportation. The proposed ATI has mainly leveraged the grid-based plat of historic Fort Smith by proposing on-street bicycle facilities, alleyway improvements, and several shared-use paved trail connections.

A detailed Equity Memo, including recommendations, can be found in Appendix D.

The Role of Equity in Active Transportation



Income

The income level of an individual and/or a family strongly correlates to the number of available transportation options. Given the estimated annual cost of car ownership, which is \$12,000, many families depend on public transportation and active forms of transportation to travel to work and school, access amenities, and maintain their quality of life. Fort Smith residents with higher incomes likely have more transportation choices available to complete these same tasks. By developing active transportation choices that are safe and connected to essential destinations, Fort Smith can begin to address inequities in their transportation system and help many lower-income individuals and families connect to the community in new ways.



People Living with Disabilities

The rate of Fort Smith residents living with disabilities is nearly twice the national average (23.5% in Fort Smith and 13.3% nationally). The difficulties that people living with disabilities face can be visual, auditory, ambulatory, and cognitive. Some of these difficulties can create a barrier to being able to drive a vehicle, therefore limiting their options to access essential services, destinations, and amenities. Given this statistic, it is imperative that additional emphasis be placed on creating safe, comfortable, and connected active transportation options.



Historically Marginalized Communities

Fort Smith has a diverse population representing various nationalities, ethnicities, and races. Diversity is one of the special aspects of Fort Smith, it strengthens the community and helps make it unique and distinct. While this diversity strengthens Fort Smith's culture, many minority residents lag behind the majority population in economic indicators such as median household income, poverty rate, and critical health indicators. Many diverse residents depend on public transportation and active forms of transportation to access places of employment, medical facilities, amenities, and destinations.

Addressing Equity

Infrastructure

Developing safe, comfortable, and connected infrastructure is essential to improving the lives of individuals and families with limited transportation options. The Move Fort Smith Plan prioritizes two factors when developing recommendations for infrastructure—school walkability zones and school-aged children living in poverty. These factors were weighted highest in the prioritization process. The school walkability factor considered the number of schools and their proximity to the proposed active transportation infrastructure. The goal was to help alleviate many families' concerns in getting children to and from school. Additionally, the number of school-aged children living in poverty by census tract was weighted highly as lower-income families have fewer transportation options available. Three focus areas were identified that provide additional insight into neighborhoods of higher need. These focus areas are as follows:

- Tilles Elementary/Darby Middle School Neighborhood
- Albert Pike and Armour Neighborhood
- Midland and Division East Neighborhood

Outreach and Education

Move Fort Smith recommends holding regular and inclusive community engagement sessions during the planning and design phases of new infrastructure projects to gather input from diverse populations and underrepresented groups identified in the Infrastructure Equity Analysis.

It is also recommended that the city develop and deliver educational programs focused on the benefits of active transportation and how to use the active transportation infrastructure safely through educational materials and workshops in various languages. Facilitating outreach and educational programs in identified focus areas can help equip and empower more residents with information and resources to utilize the active transportation network as it is built out.

Focused Programming

Move Fort Smith recommends the development and launch of city-wide safety campaigns focused on sharing the road, respecting pedestrians and cyclists, and promoting the use of helmets and reflective gear.

Move Fort Smith recommends the development of a process for continuous feedback and adjustment of the plan based on community input and changing needs. It will be critical to ensure the plan remains flexible and responsive, adapting strategies to achieve better equity outcomes over time.

A detailed Equity Memo, including recommendations, can be found in Appendix D.

Active Transportation in Fort Smith Today



Walking

Fort Smith has a vast number of existing sidewalks within commercial and residential areas. These existing sidewalks allow users who choose to stay within their neighborhood or the dense downtown area the ability to walk without encountering significant connectivity issues. However, some neighborhoods have isolated sidewalk networks. Connectivity gaps created by these isolated networks with no central spine make it difficult for users to travel between neighborhoods and to destinations that are outside of the downtown boundary. See *the “Existing and Proposed Sidewalks” map on page 60.*



Rolling

For users with wheelchairs, mobility scooters, or other mobility enhancers, the limited width of existing sidewalks and separated greenway networks pose a major impediment to engaging in active transportation. Some individuals who fall under this category may be at greater risk of being struck by motorists when crossing streets between sidewalks. At present, missing sidewalks and connectivity issues disproportionately burden people living with disabilities as they navigate the city. Imperfections in traveling surfaces diminish the perceived and real safety and overall experience for many of these users.



Biking

For a few confident riders, biking alongside vehicles on busy roads is an acceptable risk. However, riding with vehicular traffic is daunting and dangerous for most others, including young, newer, and or lower-confidence individuals. For most people on bikes, greenways or protected bike lanes are preferable for their increased safety and comfort. In Fort Smith, the existing greenways allow for users to recreate in natural spaces but lack important connections, such as a north-to-south central spine. Beginning downtown near Garrison Avenue and south of Grand Avenue, existing shared-use routes serve as connections to UAFS and the Ronnie Udouj Walking Trail for people on bikes who are willing to use sharrow-marked streets. Existing mountain bike trails provide further opportunities for recreation in Fort Smith, but dedicated transportation infrastructure for bikes is limited or nonexistent.



Culture

Fort Smith is primed to strike a balance between vehicular and active transportation while increasing safety and equity for vulnerable road users. 873 individuals (97%) of the 900+ survey participants said that they support improving bicycle riding conditions in the city whether or not they ride.

Commuting in Fort Smith

Means of Transportation to Work

**2022 American Community Survey 5-Year Estimates*

*** 2022 American Community Survey 1 year Estimates*

Means of Transportation to Work	*Percent of Mode Share (Fort Smith)	**Percent of Mode Share (AR)	**Percent of Mode Share (USA)
Drove alone	81.07%	79.8%	71.78%
Carpooled	10.19%	8.3%	8.79%
Public transit	0.22%	0.3%	2.28%
Taxi, motorcycle or other means	1.99%	1.2%	1.53%
Bicycle	0.16%	0.10%	0.49%
Walked	1.88%	1.5%	2.76%
Worked from home	4.49%	8.8%	14.39%

According to the 2022 American Community Survey (5-year estimate & 1-year estimates), as seen in the table at left, the majority of Fort Smith commuters travel by car alone to work. It is encouraging that the percentage of commuters who choose to drive alone is lower than the state average.

Additionally, a higher percentage of Fort Smith residents choose to carpool to work than the state estimate.

When considering active forms of transportation in Fort Smith, commuters walk or bike to work slightly more often than the state average, which is lower than the U.S. average.

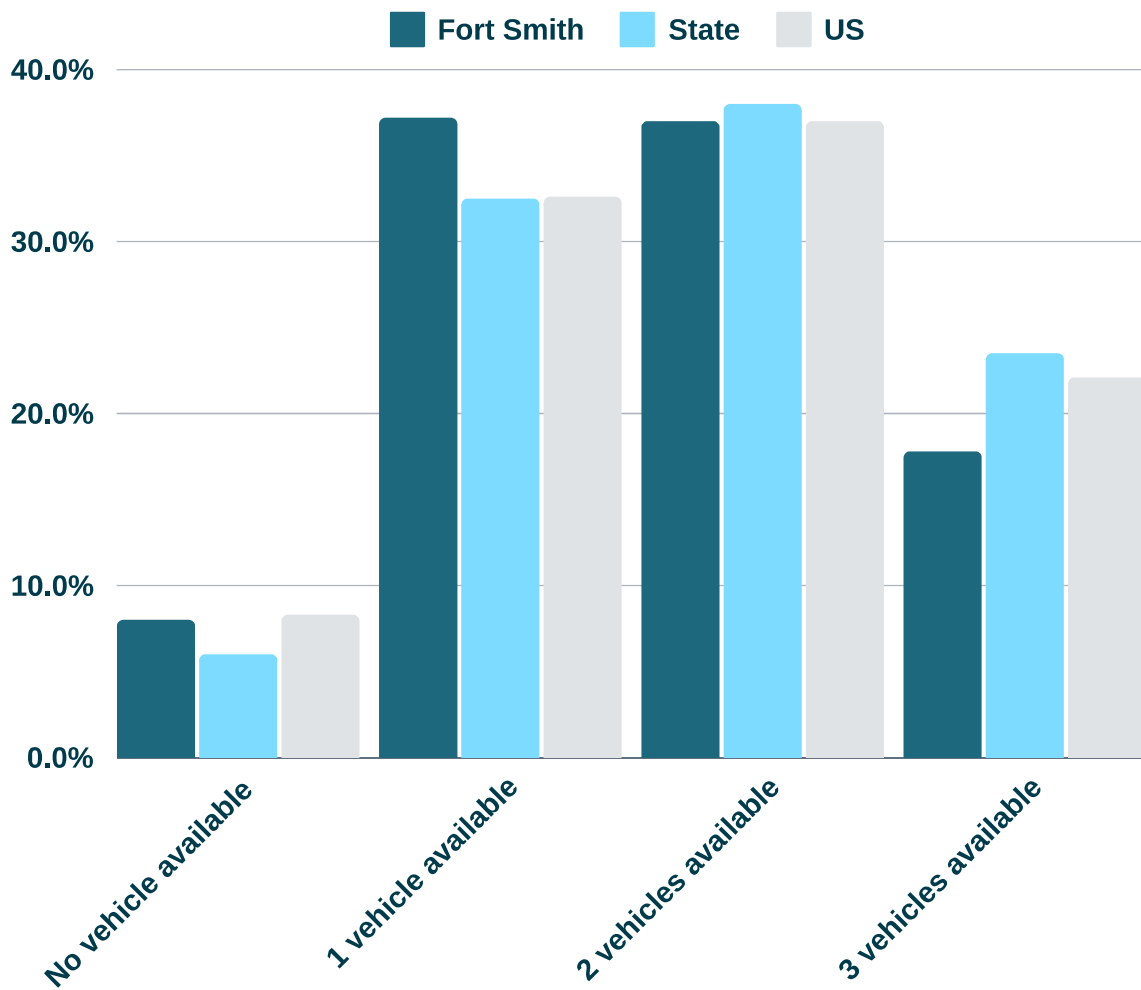


Vehicle Ownership

Fort Smith residents own an average of two cars per household. The percentage of occupied housing units in Fort Smith that do not have the availability of a vehicle is 8%, higher than the state average of 6%. According to the American Automobile Association (AAA), the average annual cost of vehicle ownership in the United States in 2023 was approximately \$12,000. Owning, maintaining, and insuring a vehicle can be a burden for many households, particularly those with lower median household incomes.

City of Fort Smith Vehicles Available

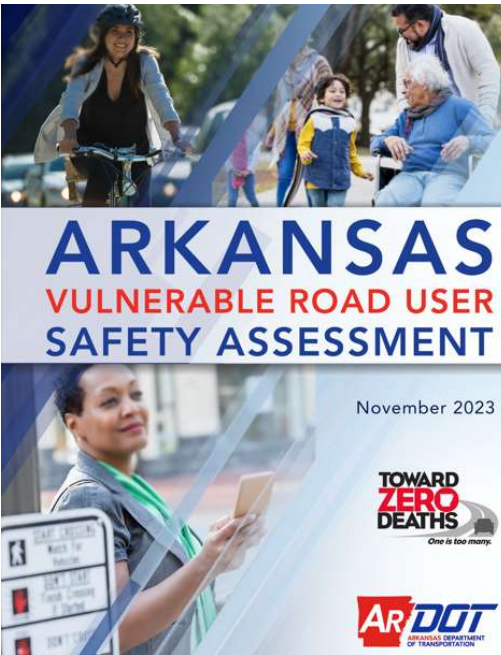
2022 American Community Survey 5-Year Estimate
(Occupied Housing Units and Vehicles Available)



Vulnerable Road Users

A vulnerable road user, or VRU, may include people walking, biking, or rolling. Active transportation planning focuses on designing networks that can move vulnerable road users safely and efficiently.

In November 2023, The Arkansas Department of Transportation (ARDOT) published the “Arkansas Vulnerable Road User Safety Assessment” to determine the safety performance of all public roads in the State of Arkansas with respect to vulnerable road users.



2022 Arkansas Strategic Highway Safety Plan, ARDOT

ARDOT has adopted the Safe System Approach (SSA) as part of the 2022-2027 Strategic Highway Safety Plan (SHSP) to be the guiding paradigm for increasing road safety on public roadways in Arkansas. The SSA is a holistic approach that aligns with the USDOT’s National Roadway Safety Strategy of working towards a future with zero fatalities and far fewer serious injuries.

Once the final high-risk corridors were established, the results were shared with stakeholders. This step involved collaborative discussion and feedback to confirm the identified high-risk corridors. By conducting the review and input from local agencies, the assessment process is a set of corridors that reflect high-risk areas for VRUs.

3.3.2 Identified High-Risk Corridors

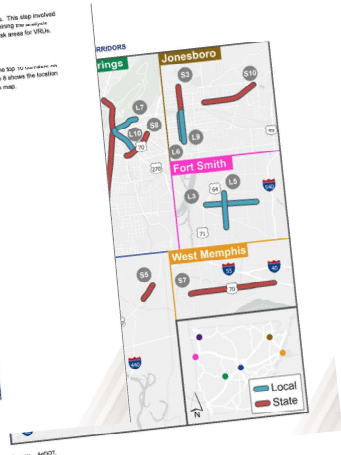
The identified high-risk corridors are summarized in Table 5 and Table 6. Table 5 shows the top 10 corridors on State-owned roads. Table 6 shows the top 10 corridors on locally-owned roads, and Figure 4 shows the location of the corridors within the State. The ID in the tables corresponds to the gray boxes on the map.

TABLE 5 IDENTIFIED STATE-OWNED HIGH-RISK CORRIDORS

ID	NAME	MPO AREA
01	Highway 376 (Deshler Rd)	Memphis
02	US-70 (Miller Ave)	Memphis
03	Highway 141 (N Main St)	N.A.R.T.P.C.
04	Highway 7 (Central Ave)	Tulsa/MPO
05	LA 617 (P. White St)	Memphis
06	US-70 (Blossard Rd)	Memphis
07	US-70 (Blossard Ave)	West Memphis MPO
08	US-70 Business (Grand Ave)	Memphis
09	Highway 267 (Pine Ave)	Memphis
10	Highway 93 (E Johnson Ave)	N.A.R.T.P.C.

TABLE 6 IDENTIFIED LOCALLY-OWNED HIGH-RISK CORRIDORS

ID	NAME	MPO AREA
L1	Main St	Memphis
L2	Central Ave	Memphis
L3	Grand Ave	Franklin MPO
L4	N. Lowell St	Memphis
L5	N. Greenwood Ave	Franklin MPO
L6	Spring St	N.A.R.T.P.C.
L7	Spring St	Franklin MPO
L8	Spring St	Franklin MPO
L9	Spring St	Franklin MPO
L10	Spring St	Franklin MPO



The “Arkansas Vulnerable Road User Safety Assessment” analysis focused on identifying both state-owned and locally-owned high-risk corridors for vulnerable road users. The assessment identified Fort Smith as having two of the state's ten highest-risk locally owned corridors:

- Grand Avenue
- North Greenwood Avenue

Non-Motorist Crashes

City of Fort Smith (2018 - 2022)

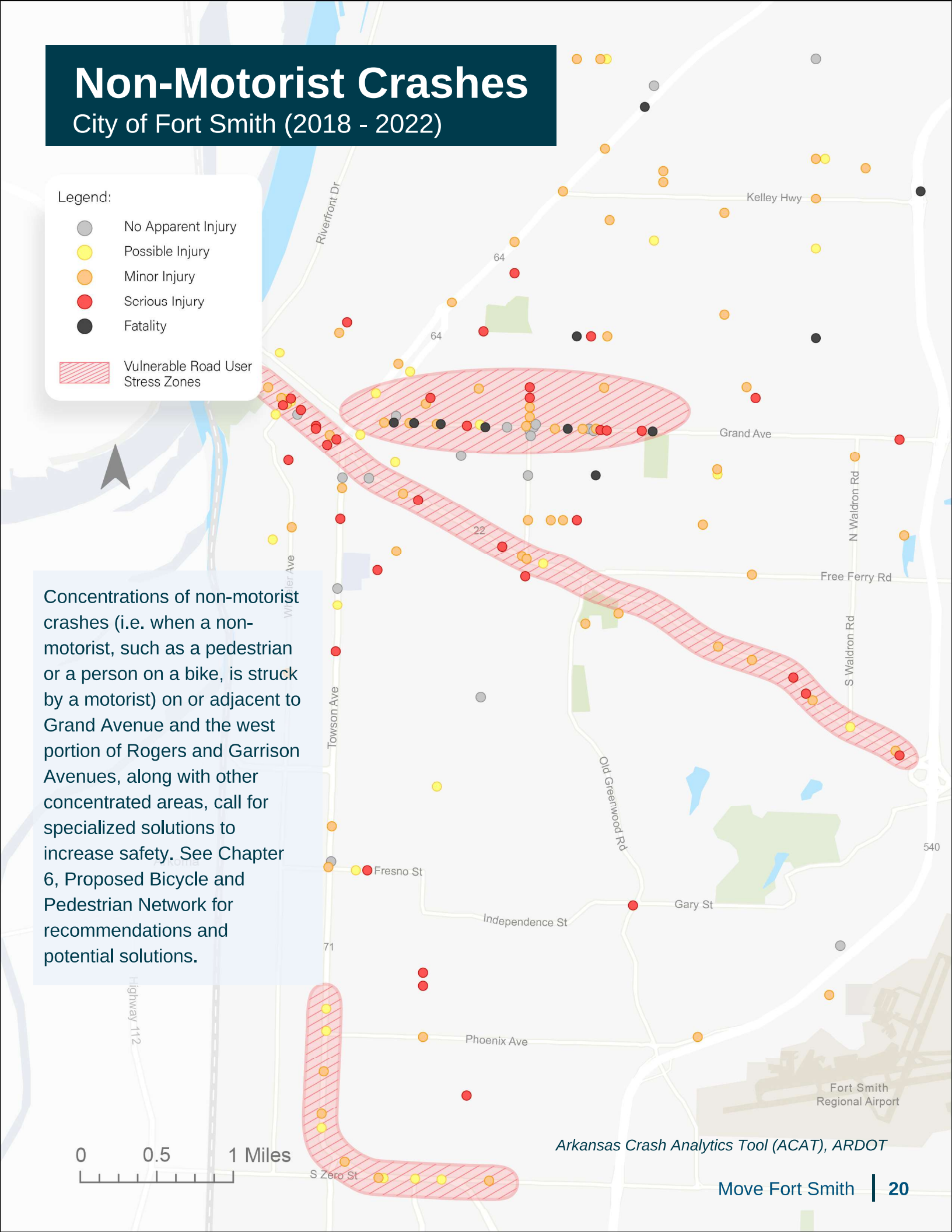
Legend:

- No Apparent Injury
- Possible Injury
- Minor Injury
- Serious Injury
- Fatality
- ▨ Vulnerable Road User Stress Zones

Concentrations of non-motorist crashes (i.e. when a non-motorist, such as a pedestrian or a person on a bike, is struck by a motorist) on or adjacent to Grand Avenue and the west portion of Rogers and Garrison Avenues, along with other concentrated areas, call for specialized solutions to increase safety. See Chapter 6, Proposed Bicycle and Pedestrian Network for recommendations and potential solutions.

0 0.5 1 Miles

Arkansas Crash Analytics Tool (ACAT), ARDOT



Vulnerable Road Users Crash Data

2018

2022

From 2018 to 2022, Fort Smith recorded 206 non-motorist crashes. Of those 206 non-motorist victims, 90 sustained minor injuries, 47 sustained serious injuries, and 11 died.

During that time, a non-motorist in Fort Smith was nearly 20 times more likely to lose their life in a crash than a motorist involved in a crash.

Arkansas Crash Analytics Tool (ACAT), ARDOT

Active transportation users in Fort Smith face safety issues that can be addressed through a multifaceted approach. In the 2023 Arkansas Vulnerable Road User Safety Assessment, ARDOT developed recommended countermeasures to address vulnerable road user safety. The following strategies are a summation of recommendations:

Strategy 1: Continue to improve statewide infrastructure and design to protect vulnerable road users.

Strategy 2: Continue implementing countermeasures, programs, and policies to protect vulnerable road users.

Potential Countermeasures:

A. Remove or Manage Conflicts

- Separate users in space
 - Bicycle lanes
 - Protected bike lanes
 - Road diets
 - Medians & pedestrian refuge islands

206 people struck by vehicles



126

during lit conditions



78

during dark conditions



142 pedestrians struck



49 people on bikes struck



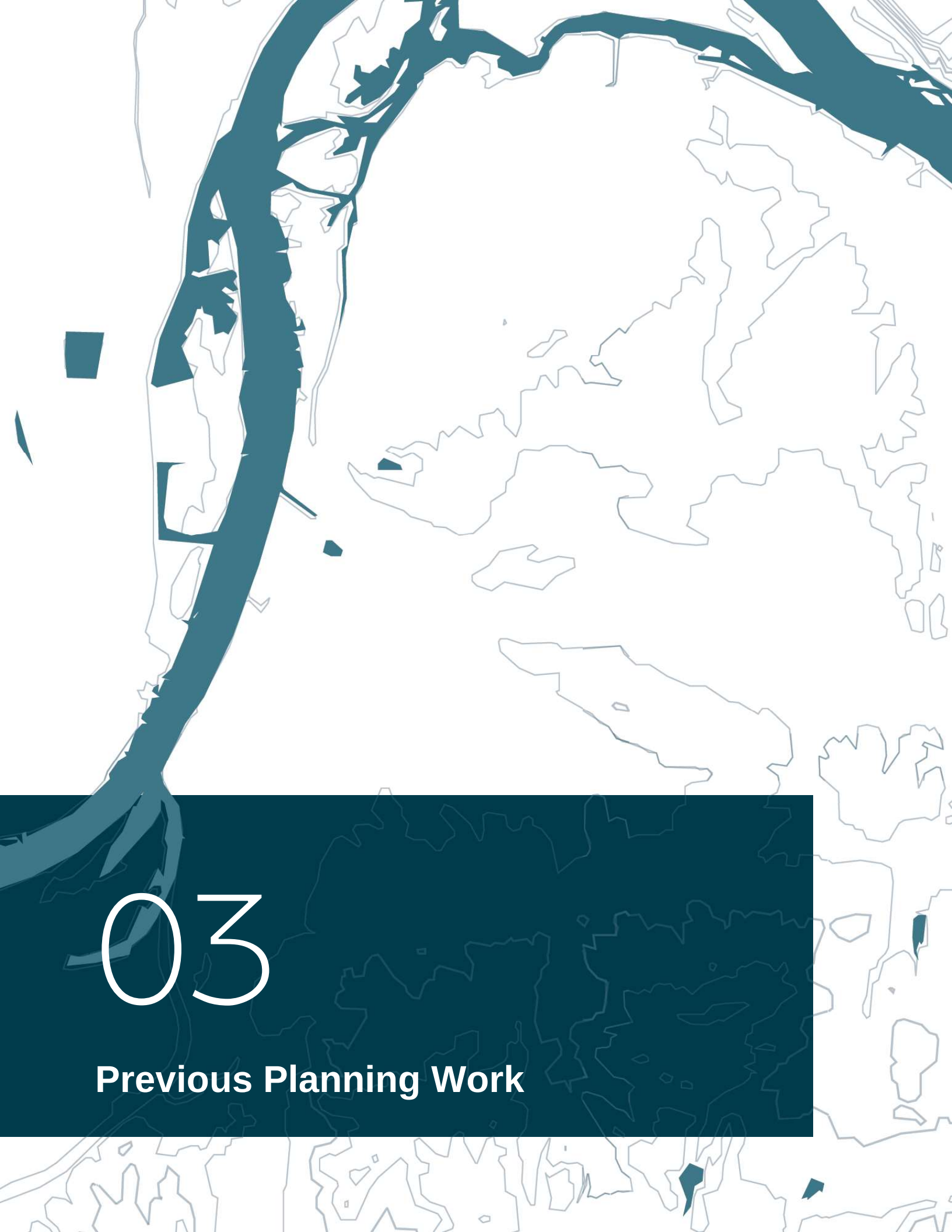
4 wheelchair users struck

90 Minor Injury

47 Serious Injury

11 Fatal Injury

- Separate users in time
 - Leading pedestrian interval
 - Pedestrian hybrid beacons
- B. Reduce Vehicle Speeds
 - Implement physical features to slow traffic
 - Medians
 - Pedestrian refuge islands
 - Road diets
 - Self-enforcing roads
 - Speed tables
- C. Increase Attentiveness and Awareness
 - Increase the visibility of VRUs
 - Lighting
 - Advance or in-street warning signage
 - Pavement markings
 - Geometric design elements that enhance crosswalk visibility
 - RRFBs
 - Leading pedestrian intervals



03

Previous Planning Work

Existing & Previous Planning Overview

Throughout the years, Fort Smith has crafted various plans addressing a wide range of issues and focus areas.

Bicycle and pedestrian-focused plans:

Fort Smith Trails and Greenways Master Plan (2004)

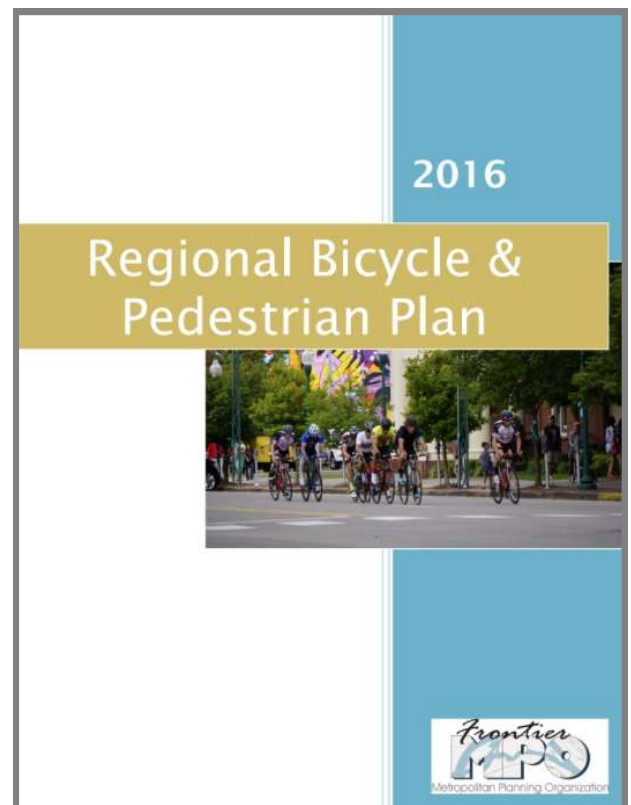
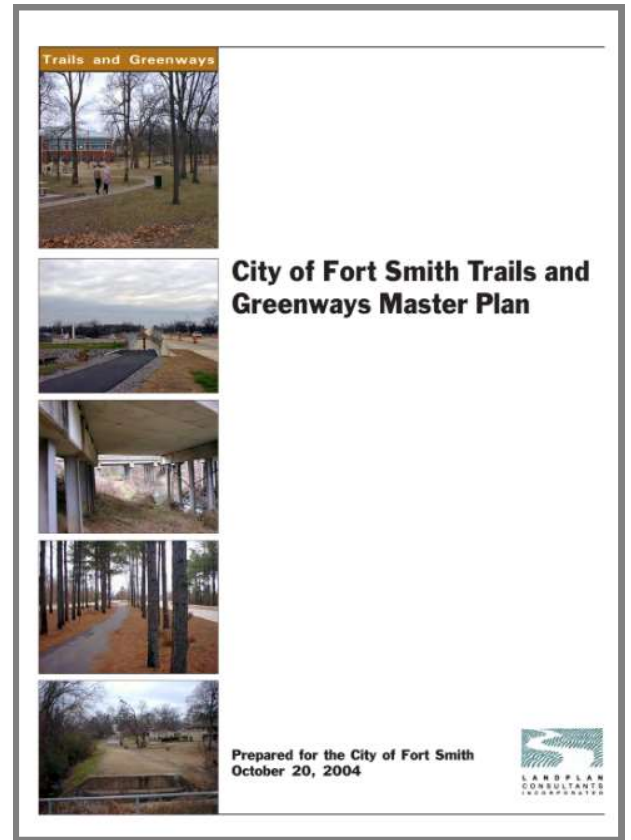
The Fort Smith Trails and Greenways Master Plan paves the way to fulfilling the Fort Smith Comprehensive Plan policy to “develop greenways and trails that connect the city.” This master plan recommends improving community access to outdoor resources by identifying and preserving greenway corridors and building a network of off-road, multi-purpose paved trails. The plan involved extensive public engagement and ultimately developed an 87.59-mile network of off-road multi-purpose trails throughout Fort Smith.

Frontier Metropolitan Planning Organization (MPO) Regional Bicycle and Pedestrian Plan (2016)

This plan creates an integrated network of bicycle and pedestrian routes to serve the Frontier Metropolitan Planning Organization (MPO) area. While the scope of this plan focused on the region as a whole, the City of Fort Smith received a considerable focus given its size and regional influence.

The goals for this plan:

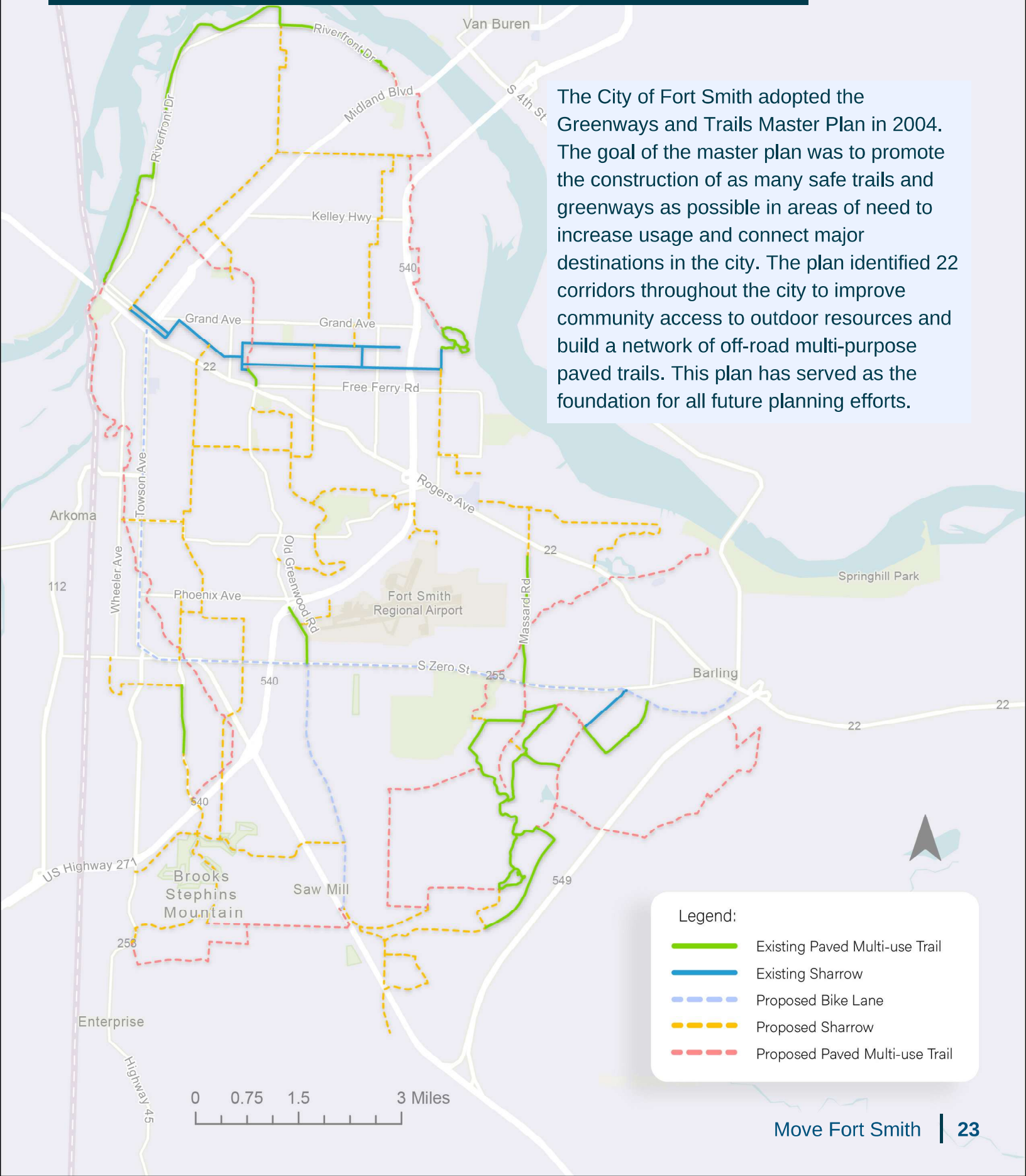
- Connect communities
- Connect points of interest
- Connect to the natural environment
- Support the local economy



Trails & Greenways Master Plan

Adopted in 2004; Revised in 2020

The City of Fort Smith adopted the Greenways and Trails Master Plan in 2004. The goal of the master plan was to promote the construction of as many safe trails and greenways as possible in areas of need to increase usage and connect major destinations in the city. The plan identified 22 corridors throughout the city to improve community access to outdoor resources and build a network of off-road multi-purpose paved trails. This plan has served as the foundation for all future planning efforts.



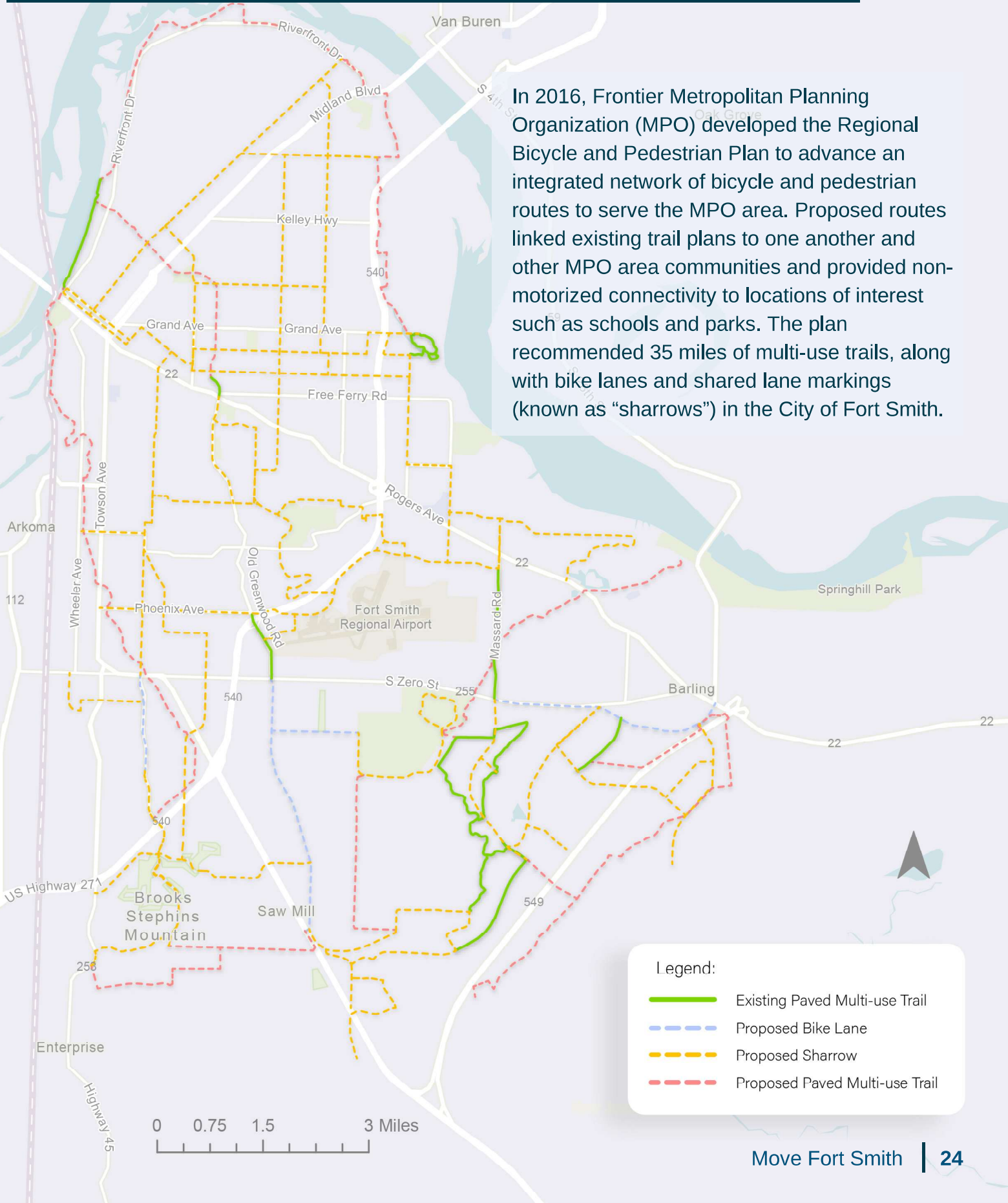
Legend:

- Existing Paved Multi-use Trail
- Existing Sharrow
- Proposed Bike Lane
- Proposed Sharrow
- Proposed Paved Multi-use Trail

Regional Bicycle & Pedestrian Plan

Adopted in 2016

In 2016, Frontier Metropolitan Planning Organization (MPO) developed the Regional Bicycle and Pedestrian Plan to advance an integrated network of bicycle and pedestrian routes to serve the MPO area. Proposed routes linked existing trail plans to one another and other MPO area communities and provided non-motorized connectivity to locations of interest such as schools and parks. The plan recommended 35 miles of multi-use trails, along with bike lanes and shared lane markings (known as “sharrows”) in the City of Fort Smith.



- Legend:
- Existing Paved Multi-use Trail
 - Proposed Bike Lane
 - Proposed Sharrows
 - Proposed Paved Multi-use Trail

Existing & Previous Planning Overview

Walkability Action Institute Frontier Team Action Plan (2020)

This plan brought together key stakeholders in the community to develop an action plan to improve walkability within the city. Stakeholders included Frontier MPO, 64.6 Downtown, Arkansas Colleges for Health Education, Western Arkansas Planning & Development District (WAPDD), The City of Fort Smith, The City of Van Buren, Arkansas Department of Transportation (ARDOT), Crawford County, First Presbyterian Church, and State Physical Activity & Nutrition for Arkansas (SPAN).

City of Fort Smith Vision Zero Policy Statement (2023)

In 2023, the city expressed its commitment to eliminating fatal crashes through the adoption of the Vision Zero policy statement.

Other state or local bicycle and pedestrian plans:

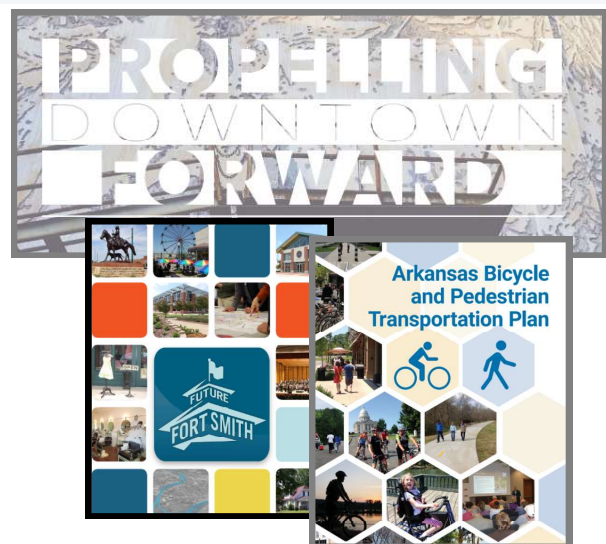
Arkansas Bicycle and Pedestrian Transportation Plan (2017)

This planning process developed the following goals: 1) Realize the economic benefits of bicycle and pedestrian-friendly communities and bicycle-related tourism and recreation. 2) Develop a statewide Bicycle and Pedestrian Network that supports a) on-road bicycling for recreation and transportation, b) pedestrian access and safety within municipalities and unincorporated rural communities, c) development of shared use paths with regional and/or statewide significance, and d) access to mountain bicycling venues.





























3) Conduct research and analysis leading to the implementation of specific strategies for achieving zero pedestrian and bicyclist deaths from crashes with motor vehicles by 2025 and reducing injury crashes by 50 percent (over 2010-2014 levels).

Other regional and/or city plans with bicycle and pedestrian-related goals, policies, programs, or recommendations:

- Propelling Downtown Forward (2014)
- Future Fort Smith Comprehensive Plan (2014)
- City of Fort Smith Minimum Street Standards (2020)
- Frontier MPO Regional Transportation Plan (2022)
- Western Arkansas Safety Action Plan (2023)
- Frontier MPO Complete Streets Policy and Guidance (2019)
- Safe Fort Smith Comprehensive Safety Action Plan (2024)
- City of Van Buren Bike and Pedestrian Plan (2019)
- City of Greenwood Bike and Pedestrian Plan (2020)



Plan Review

PLAN	YEAR	JURISDICTION	SPECIFIC RECOMMENDATIONS FOR BICYCLE INFRASTRUCTURE	SPECIFIC RECOMMENDATIONS FOR PEDESTRIAN INFRASTRUCTURE	EMPHASIS ON REDUCING NON-MOTORIST CRASHES	REDUCING VEHICLE SPEEDS	SPECIFIES BUDGET FOR ACTIVE TRANSPORTATION INFRASTRUCTURE
City of Fort Smith Trails and Greenways Master Plan	2004	Fort Smith				✓	
Future Fort Smith Comprehensive Plan	2014	Fort Smith				✓	
Frontier MPO Regional Bicycle and Pedestrian Plan	2016	Metropolitan Area				✓	
Arkansas Bicycle and Pedestrian Transportation Plan	2017	Arkansas				✓	
Propelling Downtown Forward Plan	2017	Downtown Fort Smith				✓	
Walkability Action Institute Frontier Team Action Plan (TAP)	2020	Metropolitan Area				✓	
Transportation & Health Planning Framework - Rogers Avenue Corridor	2021	Rogers Avenue Corridor				✓	
Together: Frontier Metropolitan 2045 Transportation Plan	2022	Metropolitan Area				✓	
Safe Fort Smith Comprehensive Safety Action Plan	2024	Fort Smith				✓	

Successful Implementation

Developing goals and objectives that target specific areas can be helpful for the city in prioritizing when, where, and what to fund. The following are key recommendations for where the city can target its efforts as well as potential ways to measure and track the efficacy of its efforts.

A Reduce Non-motorist Crashes

An opportunity exists for the City of Fort Smith to systematically address non-motorist crashes through planning, design, and dedicated funding. The city has taken strides to reduce non-motorist crashes through the following recent efforts:

- Safe Fort Smith Comprehensive Safety Action Plan (2024)
- Active Transportation Plan (2024)
- Vision Zero Policy Statement (2023)
- Quick action solutions such as adding RRFBs on Grand Avenue

Next Steps:

- Raise awareness of existing crash data and make that data more accessible through public platforms such as the city website
- Establish a campaign to inform the public of stress zones and ways that the city aims to improve safety in those areas

Success Metrics:

- Overall reduction in non-motorist crashes (year over year)
- Reduction in crashes within stress zones (year over year)
- Miles of new trails, sidewalks, and shared-use routes
- Improved police reporting and forms related to crashes
- Trips taken by foot or by bike

Peer Community Case Study: Hoboken, NJ

The City of Hoboken adopted the Vision Zero Action Plan in 2021. Since the implementation of related improvements, the city has seen a decline in traffic-related injuries. From 2022-2023, there was an 18% reduction in crashes resulting in injuries and a 62% reduction in serious injuries. The city has made significant infrastructure upgrades to protect road users, especially vulnerable populations, including:

- Multi-way stops added to 14 intersections, including 6 identified as high crash intersections
- 418 delineators installed to improve intersection visibility through daylighting at 31% of intersections
- 61 crosswalks restriped with high visibility, long-lasting markings
- 27 curb ramps upgraded to improve ADA accessibility
- 1 raised crosswalk installed to improve pedestrian visibility and slow vehicle speeds
- 15 MPH school zone speed limit designation added to 67 blocks in school zones
- 6 curb extensions installed to reduce crossing distances, improve intersection visibility, and slow vehicle turning speeds

hobokennj.gov

B

Allocate Budget for Active Transportation Infrastructure

Having a plan and a vision for active transportation is essential. However, the allocation of dedicated funding for the planning, design, construction, and maintenance of infrastructure is key to successful implementation. Dedicated funding for active transportation is a tangible way to show the city's commitment to these important modes of transportation.

Next Steps:

- Analyze historic spending on active transportation infrastructure
- Start small, prioritize projects, and build upon early success

Success Metrics:

- Dedicated per capita spending on active transportation
- Additional miles of active transportation infrastructure
- Increases in active modes of commuting

Peer Community Case Study: Fayetteville, AR

Many years ago, the City of Fayetteville passed a sales tax, a portion of which helps to fund the planning, construction, and maintenance of the city's network. Approximately \$1,500,000 annually is dedicated to this purpose and funds a full-time trail crew whose efforts are focused on building and maintaining their trail system.

Fayetteville's Active Transportation Plan outlines a network of sidewalks, trails, and bicycle facilities to provide walkers, people on bikes, and other users with clear pathways and connections to important destinations, just as streets and roads do for motorized vehicles. When the plan was adopted, 63% of Fayetteville residents lived within 1/2 mile of a shared-use paved trail. By 2040, this number is projected to increase to 97%.



Photo Courtesy of 64.6 Downtown



Pass Vulnerable Road User Ordinances & Policies

By focusing on the safety and well-being of vulnerable road users (VRU), such ordinances create a more balanced and equitable transportation system, ultimately benefiting the entire community.

Next Steps:

- Consider adopting a vulnerable road user ordinance that expresses the city's commitment to protecting vulnerable road users
- Consider adding language to the City Code of Ordinances to include additional language and descriptions of VRUs

Success Metrics:

- Reduction in vulnerable road user-related crashes, serious injuries, and fatalities
- Increased economic development in areas where interventions are implemented

Peer Community Case Study: Austin, TX

In 2009, Austin developed and passed a series of ordinances focused on increasing the safety of vulnerable road users:

Safe Passing Ordinance:

- Austin has a safe passing ordinance that requires motorists to maintain a safe distance (three feet for passenger cars or light trucks, six feet for commercial vehicles) when passing cyclists and other vulnerable road users.

Shared Micromobility Regulations:

- The city has regulations governing the operation of electric scooters and other shared micro-mobility devices to ensure safety for riders and pedestrians.



D

Increase Commuter Mode Share for Walking & Biking

Developing an active transportation network, including safe, comfortable, and connected infrastructure, is one part of the equation. Coordinating programs and planning to encourage the use of this plan will help citizens navigate the city and access more destinations and amenities. According to the 2022 American Community Survey (5-year estimates), the percentage of commuters who walk to work in Fort Smith was 1.88% and those who biked to work was 0.16%. The way people work and get to work has changed significantly over the last decade. Remote work has become a viable option for many workers, and it grew in part due to the COVID-19 pandemic. Some cities that realized growth in the number of people walking and biking to work in years past have also seen those numbers decline on the census data in recent years. This is partly due to more people working from home rather than commuting to work. While there have been increases in the number of people working from home, the increases within the state and the City of Fort Smith have been far less than at the national level. The trends and characteristics of commuting have and will continue to change. However, an opportunity exists to provide options for Fort Smith residents to walk, bike, and roll to work and other destinations.

Next Steps:

- Develop a detailed plan including specific goals to achieve an increase in mode share
- Coordinate and work with local businesses to track increases in pedestrian and bicycle traffic as a result of the aforementioned plan

Success Metrics:

- Annual increases in the number of people walking and biking in Fort Smith as reflected by the American Community Survey
- Increases in bicycle and pedestrian traffic to local businesses



E

Measuring Network Usage

At present, the City of Fort Smith does not track bicycle and pedestrian usage. An opportunity exists to formally track usage over time to determine needs and opportunities for new infrastructure.

Next Steps:

- Develop a protocol and system for measuring active transportation usage in the city through equipment such as bicycle and trail counters
- Develop and distribute a report detailing the usage of the Ride 4 Smilies program
- Conduct counts beginning with areas within school zones

Success Metrics:

- Development of timestamped baseline data of usage data within designated areas/zones
- Timestamped data sets showing usage over defined intervals
- Miles of new infrastructure resulting from usage data in high-use zones/areas



Peer Community Case Study: NW Arkansas

The Walton Family Foundation has supported the development of an expansive trail network in the foundation's home region of Northwest Arkansas. To understand how many people are using the trails and assess the impact of these investments, the foundation has periodically monitored the levels of cycling and pedestrian activity on the region's trail network. A team of researchers at San Diego State University's Active Transportation Research Center conducted trail use monitoring studies in 2015 and 2017, and the 2019 study was the third in the series.

- To measure cycling and pedestrian activity levels, the research team used automatic counting devices placed at various sites along the trail network. Each location included a combination of pneumatic tubes laid across the trail and PYRO-boxes affixed to trees or poles alongside the trail. Together, these devices were able to distinguish cyclists from pedestrians, determine which direction they were traveling, and collect data on a 24-hour, continuous basis. Data for this study was collected between May and July of 2019.
- User counts were captured at a total of 54 locations that were evenly distributed geographically across the network and comprised a representative sample of locations in terms of population, employment density, and income levels of residents in the immediate surrounding area.



Create an Active Transportation Advisory Committee

An opportunity exists to formalize an advisory committee/board (ATAC) that will serve to assist and support the city's efforts in building out the active transportation network over many years.

Next Steps:

- Develop clear roles, responsibilities, and scope for this committee
- Seek representation of diverse communities on the ATAC
- Once approved, solicit applications from city residents to serve on this committee

Success Metrics:

- Programs implemented
- Increased representation from the community
- Development of an active transportation policy for the City of Fort Smith



Peer Community Case Study: Fayetteville, AR

The City of Fayetteville, AR developed an Active Transportation Advisory Committee (ATAC) in 2001. The committee may make recommendations to the Transportation Committee on active transportation projects and issues that have been referred to them by the Administration or Transportation Committee, including but not limited to:

- Yearly trail, sidewalk, and paving overlay construction program plans. The review of overlay plans will be focused on the incorporation of active transportation facilities.
- Five-year trail construction prioritization plan.
- Major sidewalk projects, trails, and other projects where major changes to existing street cross-sections are planned. The review will be at the preliminary stage and will include typical cross-sections and preliminary horizontal and vertical alignments. Neither the Transportation Committee nor the Administration need to delay projects or wait for this advisory committee's recommendations.
- Changes, additions, or deletions to the Active Transportation Plan and the Sidewalk Master Plans.



Calm Traffic in Neighborhoods

Some neighborhoods in Fort Smith would benefit from slowing traffic, reducing speeds, and curtailing cut-through traffic. Developing a clear policy, standards, and process for how neighborhoods can request traffic calming measures would benefit many neighborhoods.

Next Steps:

- Research best practices for this type of program. Develop standards, protocols, and a process by which residents can contact the city and request interventions.

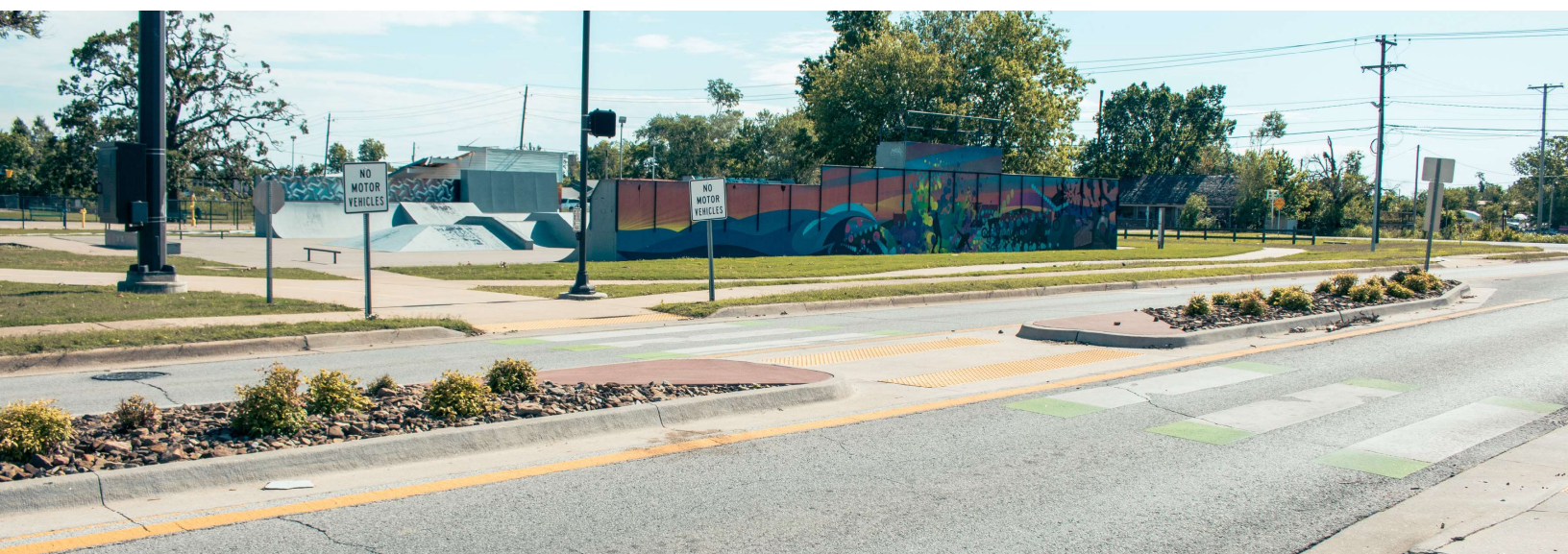
Success Metrics:

- Increased number of traffic calming projects implemented over time
- Increased number of annual requests for interventions
- Decreased average speed of vehicles

Peer Community Case Study: Lawrence, KS

The Lawrence, KS Neighborhood Traffic Management Program uses a comprehensive approach to address unsafe driving on the city's neighborhood streets, including the following strategies:

- Speed limit reductions on neighborhood streets
- Community outreach and media campaign
- Traffic law enforcement and education
- Temporary engineering solutions
- Evaluation of each approach



H

Increase Trail and Greenway Placemaking

Fort Smith has a growing network of trails and greenways, especially in the Chaffee Crossing area. An opportunity exists to develop a plan to increase amenities and placemaking elements along trails and greenways to create destinations that attract users. Amenities can include benches, water fountains, trailside art, pocket parks, and destination signs.

Next Steps:

- Develop a plan, including a budget, for where elements will be located, as well as cost and types of amenities to include.

Success Metrics:

- Increased number of placemaking elements placed along trails
- Increased usage along sections of trail where amenities are placed

Peer Community Case Study: Springdale, AR

In 2023, the City of Springdale undertook a plan to revitalize and realign a section of the Razorback Regional Greenway as it enters Downtown Springdale. The plan includes landscaping, seating, and a destination/monument sign signifying “Mile 16” of the Greenway.



Policy Recommendations

The project team reviewed Fort Smith's Unified Development Ordinance (UDO) with an emphasis on researching ordinances and language that concern active transportation users. Below are the most relevant recommended policy changes suggested by language in the UDO.

CITY OF FORT SMITH UNIFIED DEVELOPMENT ORDINANCE REVIEW		
PLAN	LANGUAGE SPECIFIC TO ACTIVE TRANSPORTATION	RECOMMENDATIONS
27-500 Subdivision Design and Improvement Standards: 27-501-2 :	C. To implement the Master Street Plan, Bikeway, and Trails Plan;	Consider adding active transportation planning (Access, connectivity, and safety) as an integral part of the subdivision design and approval process. <u>See example from City of Austin, TX UDO.</u>
27-500 Subdivision Design and Improvement Standards: 27-503-4 Streets, Alleys and Easements	B. Street Classification. All streets shall conform to the City's Master Street Plan and Bikeway Plan (including the bikeway plan map).	This is a good example of linking the Bikeway plan to new streets, alleys, and easements.
27-500 Subdivision Design and Improvement Standards: 27-503-8 Engineering Design Standards	Street design shall conform to the criteria established in the Standard Specifications, Master Street Plan, Bikeway Plan, Trails and Greenways Plan, and Street Standards.	This is a good example of linking the Bikeway plan to design and improvement standards.
27-500 Subdivision Design and Improvement Standards: 27-503-9 Bicycle Facilities	Bikeways shall be consistent with the Bikeway Plan.	This is a good example of linking the Bikeway plan to design and improvement standards.
27-500 Subdivision Design and Improvement Standards: 27-503-10 Cul-de-sacs and Dead End Streets D. Pedestrian Connection	Code specifies how and when developments, including cul-de-sacs, are required to build a pedestrian connection.	Consider adding more specificity on pedestrian connectivity and access: See Examples from A. Raleigh, NC UDO B. Austin, TX UDO

CITY OF FORT SMITH UNIFIED DEVELOPMENT ORDINANCE REVIEW CONTINUED

PLAN	LANGUAGE SPECIFIC TO ACTIVE TRANSPORTATION	RECOMMENDATIONS
27-500 Subdivision Design and Improvement Standards: 27-503-13 Pedestrian Easements	A cross-block easement shall be provided for any street exceeding 600 feet between intersections with other streets, as follows: A. An easement for utilities and pedestrians with a minimum width of 20 feet; or B. An easement is reserved for pedestrian passage with a minimum width of 10 feet.	This is a good example of accommodating for pedestrian access along city streets. The cross block pedestrian access easements can help to increase safety for pedestrians.
27-500 Subdivision Design and Improvement Standards: 27-503-19 Sidewalks	The code specifies where and when sidewalks are required and the process for avoiding sidewalk installation (Fee in lieu).	
27-500 Subdivision Design and Improvement Standards: 27-509 Trails and Greenways	27-509-1 Applicability: Subdivisions that include at least 100 lots shall include trails and/or bikeways that conform to the requirements of this section. 27-509-2 Trails Trails may be included as part of the Parks and Open Space required by Section 27- 508. Trail easements shall be a minimum of 20 feet in width. The construction and maintenance of trails shall conform to the City’s Trails and Greenways Master Plan. 27-509-3 Bikeways Bikeways shall be provided consistent with the Bikeway Plan.	Consider increasing the Right of way for a Shared-use paved path greenway easement to 30’ to accommodate placemaking amenities such as benches, water fountains, art, and such.
27-600-General Development Standards-27-601-3 Bicycle Parking Requirements	27-601-3 Bicycle Parking Requirements The following standards shall apply: A. Commercial Development. Commercial developments shall provide one (1) bicycle parking rack per 20 automobile parking spaces. B. Multifamily Development. Multifamily development shall provide one (1) bicycle rack per 20 dwelling units. C. Bicycle racks shall be secured to a hard surface.	Consider adding more specificity to the bike parking standards, including types, materials, parking location, and when and where covered bike parking is appropriate. Within commercial or multi-family developments, indoor bike parking may be substituted for external parking, particularly for residents, employees, and staff.
GENERAL OBSERVATIONS & RECOMMENDATIONS		
The UDO is inclusive of pedestrians and encourages pedestrian activity and pedestrian-friendly developments. In general, the UDO can strengthen and encourage active transportation use by adding greater specificity around the terms “Pedestrian-oriented” and “Pedestrian-Friendly” environments. The City of Raleigh, NC, and the City of Austin, TX, have solid examples of including this language in the UDO and all future developments.		
Currently, the UDO has a lower level of emphasis and inclusion of the word “Bicycle” and how to accommodate the unique needs of people riding bikes. The UDO specifies how many bicycle parking spaces are required for “Commercial” and “Multi-family” developments; however, additional emphasis on both pedestrian and bicycle circulation into and out of developments is recommended.		
Consider including “Active Transportation” when referring to various users, site layout, guidelines, and development standards.		
Consider adding language to the UDO stating that a developer may be required to construct a Shared-use paved path/Sidepath linkage or corridor or grant an easement for Shared-use paved paths/sidepaths shown in the Active Transportation plan. See the sample language as listed in the development code in Fayetteville, AR. Click HERE .		

CITY OF FORT SMITH-CODE OF ORDINANCES REVIEW	
PLAN	LANGUAGE SPECIFIC TO ACTIVE TRANSPORTATION
Article V-Bicycles Motorcycles Etc.	A. Specifies that no bicycle or pushcart may be operated on a sidewalk in the Central Business District. B. Specifies that riding on the handlebars of a bicycle is prohibited. C. Specifies that clinging to a moving vehicle is prohibited. D. Specifies that rollerskates, coasters, toy vehicles, or similar devices may not operate on a road, with the exception being on a "Play Street."
Chapter 18-Parks, Recreation, Etc.	Sec 16.63-The use of motorized vehicles including, but not limited, to cycles, scooters, or four-wheelers on any park area or on the trails system other than paved public traffic ways is expressly prohibited. The prohibition shall not apply to individuals restricted to the use of motorized wheelchairs, public work vehicles or emergency responders.
Chapter 24- Traffic	Definition of Bicycle: Bicycle means every device propelled by human power upon which any person may ride, having two tandem wheels, either of which is over 20 inches in diameter (and including any device generally recognized as a bicycle though equipped with two front or two rear wheels) Definition of motorcycle: The motor-driven cycle means every motorcycle, including every motor scooter, with a motor which produces, but does not exceed, five horsepower, and every bicycle with a motor attached.
Chapter 24- Traffic Sec. 24-8. - Use of bicycles or animals.	Every person riding a bicycle or an animal, or driving any animal drawing a vehicle upon a highway, shall have all the rights and all of the duties applicable to the driver of a vehicle, except those provisions of this subtitle which by their nature can have no applicability.
GENERAL RECOMMENDATIONS	
Consider developing a new chapter in the code of ordinances titled "Micro-Mobility Devices & Bicycles" or another similar title. The specificity of the language in these codes can help to better define the duties and responsibilities of micro-mobility devices and bicycles, where they may operate, and general rules and guidelines for their use. <u>See the example in the City of Austin, TX Code of Ordinances.</u>	
Consider adding language that provides more specificity related to electronically assisted bicycles (e-bikes). <u>See an example of model legislation developed by People for Bikes.</u> Specifically, certain types/classifications of e-bikes should be excluded from consideration as motorized vehicles.	
Consider adding greater specificity and definition of a Vulnerable Road User.	
Consider adding language specifying that no motorized vehicle may operate within a bicycle lane and or a shared-use paved path or side path except in specific situations and circumstances.	

SHARED-USE PAVED PATH & SIDEPATH POLICY RECOMMENDATIONS

Restrict the use of golf carts or comparable-sized vehicles on all shared-use paved paths (SUPP) side paths (SP).

Consider specifying the allowable uses of skates, skateboards, electrically powered scooters, bicycles, Segways, etc., as permissible uses on all paved city SUPPs and SPs only when their use does not create a safety hazard for pedestrians, wheelchairs, or human-powered bicycles.

Consider specifying that pedestrians, skaters, and joggers should walk, skate, or jog near the right side of the trail to accommodate faster runners, skaters, bicyclists, and traffic that passes on the left side of all SUPPs and SPs.

Consider specifying that persons skating, riding bicycles, Segways, skateboards, scooters, and runners shall give an audible warning before passing slower traffic on all SUPPs and SPs.

Consider establishing a dashed yellow center line as a boundary for two-directional travel on all SUPPs and SPs.

Consider establishing a speed limit of 15mph on all SUPPs and SPs depending on the presence of vehicles and other users of the facility.

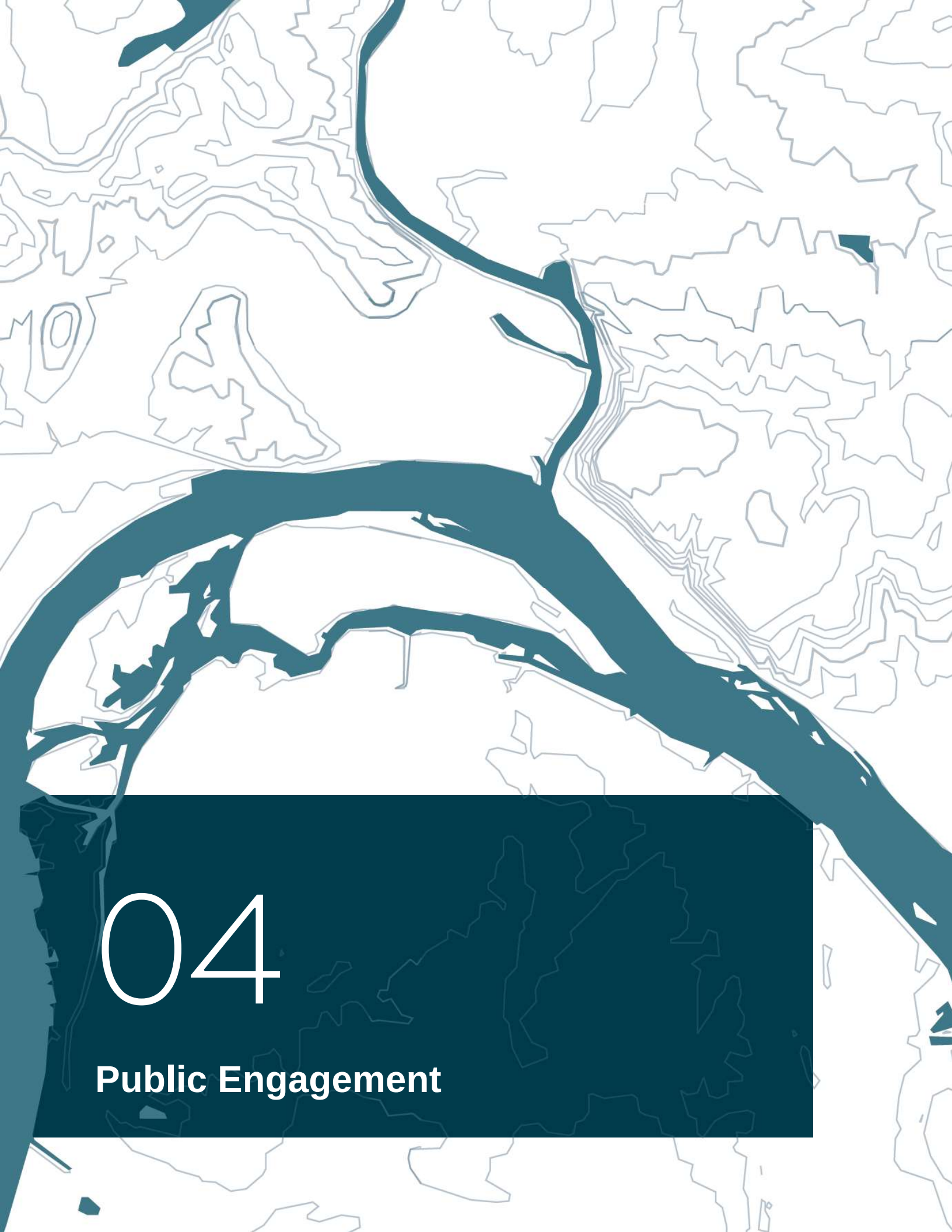
Establish etiquette for all modal travel on SUPPs and SPs that, if violated through reckless disregard for the safety of others, allows for the right of use of all trails suspended for up to one year

Consider specifying that electronic bikes and scooters may be ridden anywhere that conventional bikes are ridden and must follow the same rules of operation and use, provided that no electronic bikes and scooters shall be used in an unsafe manner or a manner that may cause harm.

Consider adding greater specificity to the definition of an electronic bike to match the AR state law. Develop a standard for the use of electronic bikes and where they can be operated and by whom.



Photo Courtesy of 64.6 Downtown



04

Public Engagement



Steering Committee

A project steering committee was created to offer incremental feedback on the planning process, serve to oversee progress, help address obstacles, and monitor progress toward key milestones.

August 2023

During the kickoff meeting in August 2023, the steering committee created a project purpose statement and guiding principles statement to guide the Move Fort Smith Plan.

November 2023

In the following meeting held in November 2023, the steering committee reviewed feedback that was received from the community at public input sessions and provided guidance on the initial network.

February 2024

In February 2024, the steering committee reviewed feedback that was received from the community at public input sessions and worked to identify the catalytic projects.

May 2024

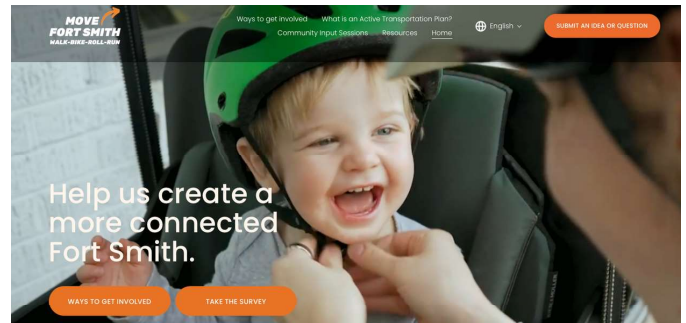
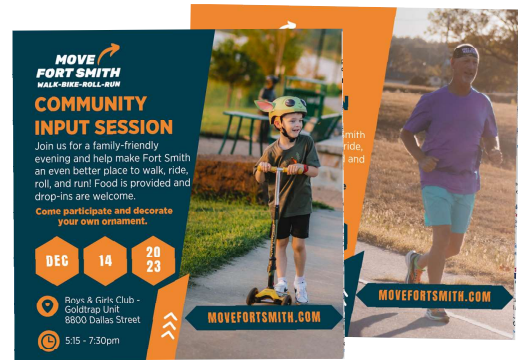
The final steering committee meeting in May 2024 helped sharpen the identified catalytic projects and the overall bike and pedestrian network.

Purpose Statement

“Prioritize active transportation to enable people of all ages and abilities the choice and opportunity to move freely and safely through our community.”

Project Website

As a part of the planning process, a project website was developed and administered that provided details on the definition of an active transportation plan, provided ways to get involved, and communicated key events throughout the project. The website (www.movefortsmith.com) was available in English, Spanish, and Vietnamese.



NWA Benchmarking Tour

At the beginning of the project, two separate peer community benchmarking tours were facilitated in Northwest Arkansas (NWA) in June 2023. The purpose of the tours was to benchmark the NWA region with a particular emphasis on highlighting the active transportation network. The sessions included an educational workshop as well as a tour of key projects in NWA both on a bike and on foot. Attendees of the study tours included the twelve members of the project steering committee.

Active Transportation Workshop

In October 2023, ten participants had the opportunity to attend the Active Transportation Workshop at The Blue Lion, which educated and trained the group about the benefits of bicycle and pedestrian-friendly infrastructure and culture. The participant group included some members of the Planning Commission, the Board of Directors, city staff, and public transit staff members.





Focus Groups

Six focus group meetings were held with key stakeholders and organizations working in Fort Smith to share the planning process, highlight key objectives, surface opportunities/challenges, and ensure coordination related to active transportation in Fort Smith.

The stakeholders helped bring to light the opportunities in Fort Smith to improve safety and connectivity downtown, around schools, and to neighboring communities. A reoccurring issue that was raised in the meetings was the need to improve and maintain the sidewalk system to enhance connectivity to essential destinations.

The meetings were held in August 2023 and included nineteen members representing:

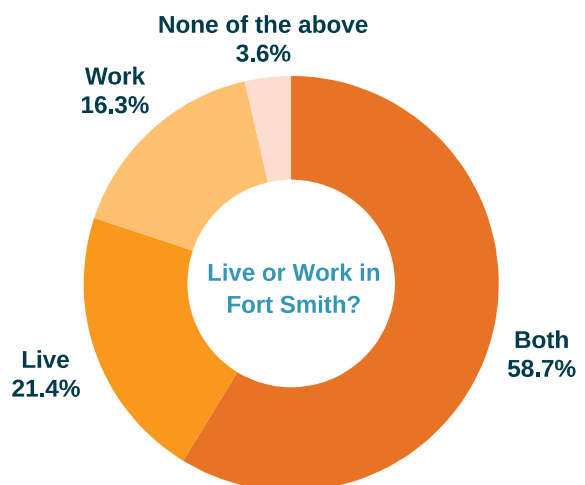
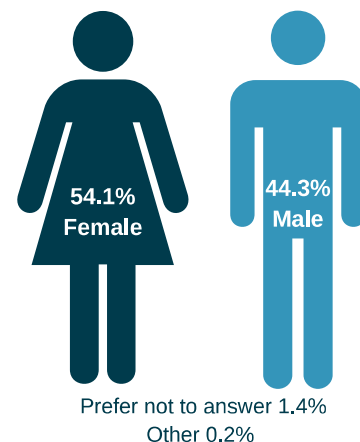
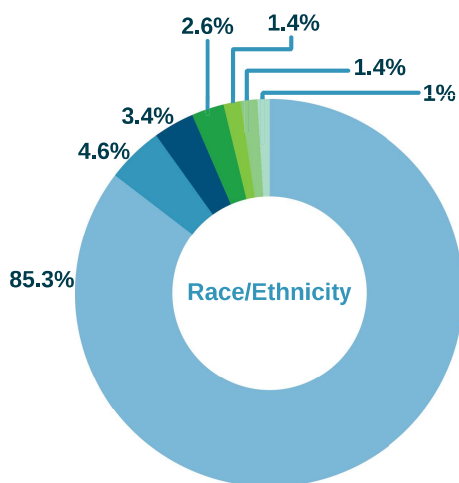
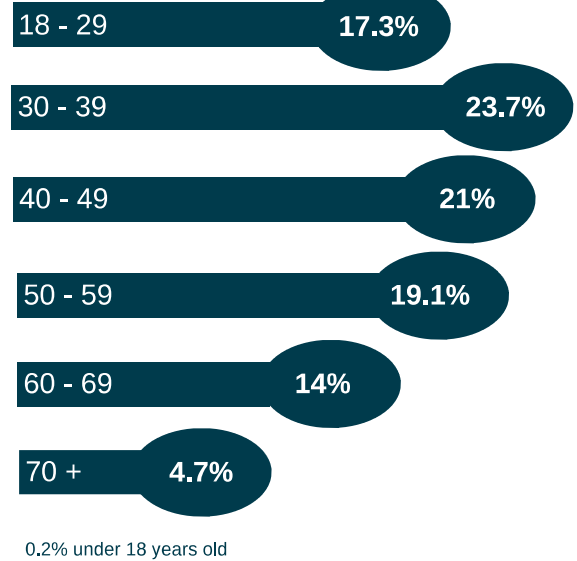
- Boys & Girls Club
- Clayton House
- Fort Smith First United Methodist Church
- Fort Chafee Redevelopment Authority
- Fort Smith Parks Commission
- 64.6 Downtown
- Future Fort Smith Committee
- River Valley Cycling Club
- Scott's Bike Shop
- City of Alma, AR
- Sebastian County Government
- City of Van Buren, AR
- City of Greenwood, AR
- Fort Smith Planning Department
- Fort Smith Streets & Traffic Control Department
- Fort Smith Transit
- Fort Smith Public Schools

Community Survey

An online project survey was made available in both Spanish and English for the public during the planning process. The survey was designed to gather community feedback on usage, preferences, challenges, and desires for active transportation in Fort Smith. In over a year-and-a-half period, the survey comprised 40 questions and received 903 responses from the community. The survey was originally made available between December 2022 and March 2023 and then closed until it was reintroduced in June 2023. Upon reopening, the survey was available through May of 2024. All respondents were asked to provide demographic information. Most respondents were between the ages of 30-39, female, white or caucasian, and live and work in Fort Smith.

See Appendix B for full details of the survey.

Age



Key Survey Insights

50.2% of respondents indicated that they did not feel safe or comfortable riding a bike in Fort Smith, listing the top factors that discourage biking and walking in Fort Smith as:

- 1 Lack of Connectivity
- 2 Unsure of Safe Routes
- 3 Deficient Maintenance of Existing Facilities

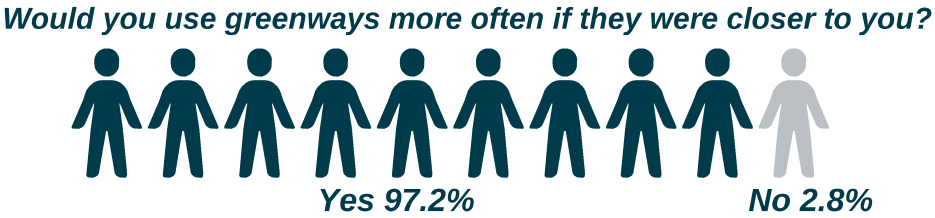
While a total of 58.7% of the respondents either do not ride, never ride, or ride a bicycle a few times a year in Fort Smith, 95.8% of respondents stated that they agreed with the statement ***“I support improving bicycling conditions within our community whether I ride or not.”***



57.1% of respondents stated that it was very important to them to improve the bicycle conditions in Fort Smith, and 76.7% of respondents stated that improving the walking conditions was very important to them, but the top barriers listed that impaired mobility on streets, roads, and sidewalks were:

- 1 Lack of Sidewalk Connectivity or Unpaved Gaps
- 2 Lack of Sidewalk Maintenance
- 3 Poor Lighting

97.2% of respondents indicated that they would use a greenway more often if it were closer to them, and 92.5% of respondents stated that they preferred greenways as their top bicycle facility choice (and were able to list up to three options). See Appendix B for full details of the survey.





Public Input Sessions

During the planning process, six in-person public input sessions were conducted to highlight the plan, educate participants, and gain valuable community feedback. The locations and times for the sessions were intentionally selected to ensure that a broad and diverse constituency could participate. The family-friendly sessions included light snacks, drinks, and activities to engage children and youth. **The Move Fort Smith planning process engaged with approximately 260-280 individuals through in-person public input sessions.**

October 2023

The initial sessions were held in October 2023. The first session was hosted at the Elm Grove Community Center at Martin Luther King Park on October 3, 2023. Approximately 20-25 participants interacted with maps throughout the evening and indicated the top places they would like to travel to on foot or bike. During the same evening, the project team engaged with approximately 125 citizens at a booth at The National Night Out. The participants were asked to list the top three places they'd like to walk or ride to, and the project team passed out cards that gave participants more information about the project survey.

On October 4th, 2023, an additional community engagement session was held at Forefront Church in the Fianna Hills. Approximately 25-30 participants had the chance to interact with the maps listing the key connections that they'd like to see to improve bike and pedestrian connectivity.





December 2023

In December 2023, the third and fourth public engagement sessions were conducted. The sessions were held at the Goldtrap Boys and Girls Club on December 13, 2023, and at the Stephens Boys and Girls Club on December 14, 2023. The events were family-friendly at which Fort Smith citizens could provide feedback on the Active Transportation Plan. Participants had an opportunity each evening to mark up the current network map with their feedback and place stickers ranking the priority of destinations they'd like to walk and ride to. Approximately 60-70 residents participated in both of these events.

May & June 2024

The final public input sessions were held in the spring of 2024. A session was held at Creekmore Community Center on May 31, 2024, and at the Levitt AMP Music Series at Riverfront Park on June 13, 2024. At both sessions, the community had the chance to review the catalytic projects and add comments. The final input sessions provided the opportunity to engage the community for final feedback on the final draft of the network prior to the presentation to the city. Approximately 30 residents participated in both these events.





Community Events

Additional community feedback was gathered at various events in the spring of 2024.

- **Fort Smith Farmers Market - April 27, 2024**

Community members attending the Farmers Market had the chance to interface with the network maps and provide comments. Approximately 15-20 residents engaged in this event.

- **First Presbyterian Church Community Dinner - June 2, 2024**

Members of the community at First Presbyterian's community dinner had the opportunity to provide feedback on network maps and list priorities for biking and walking in Fort Smith. Approximately 150 people attended the dinner, of which approximately 40 engaged in the planning exercises.

- **Fort Chaffee Artisan Market - June 15, 2024**

Community members attending the Fort Chaffee Artisan Market had the chance to provide feedback on network maps and vote on their top priorities for walking and biking in Fort Smith. Approximately 25 residents engaged with the maps and prioritization exercises.





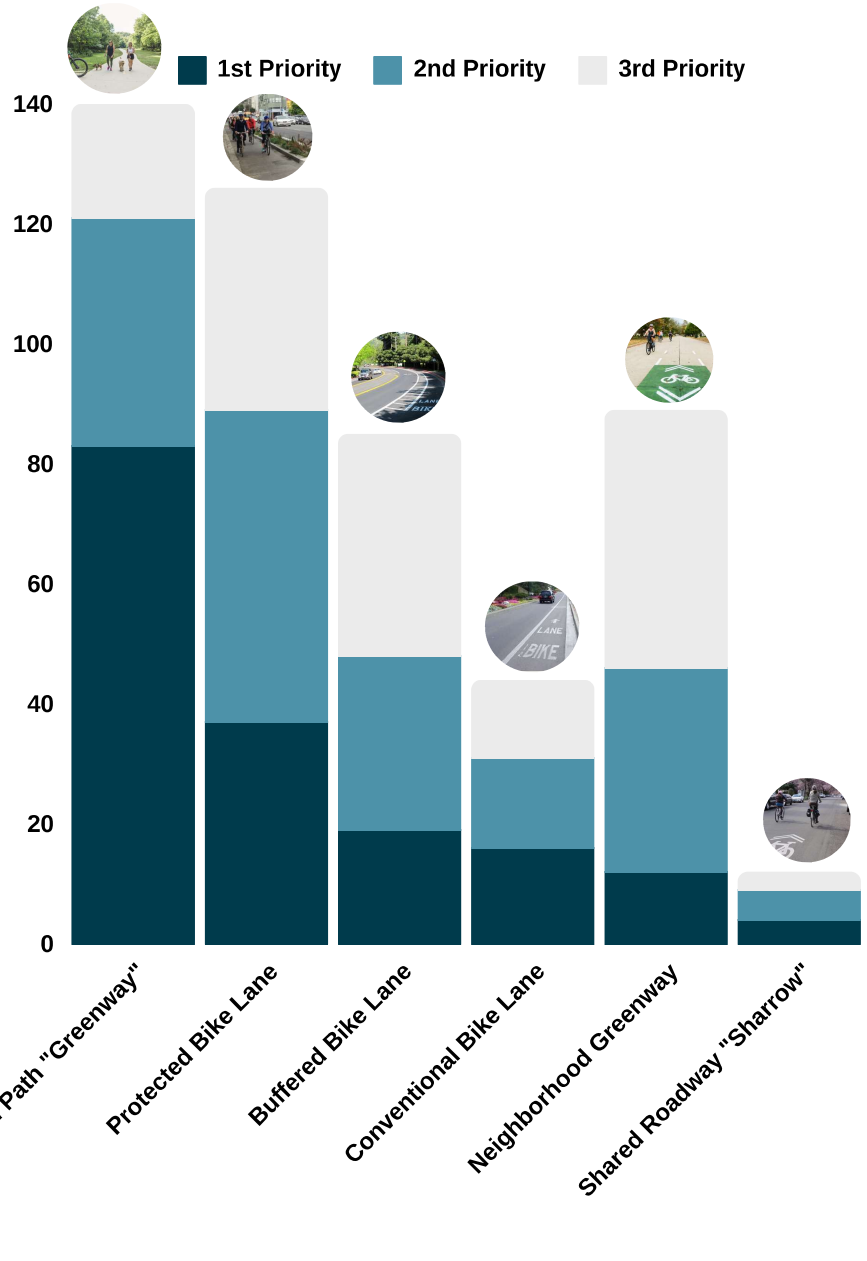
Key Public Insights

Types of Places to Ride, Walk, & Roll

Public Voting

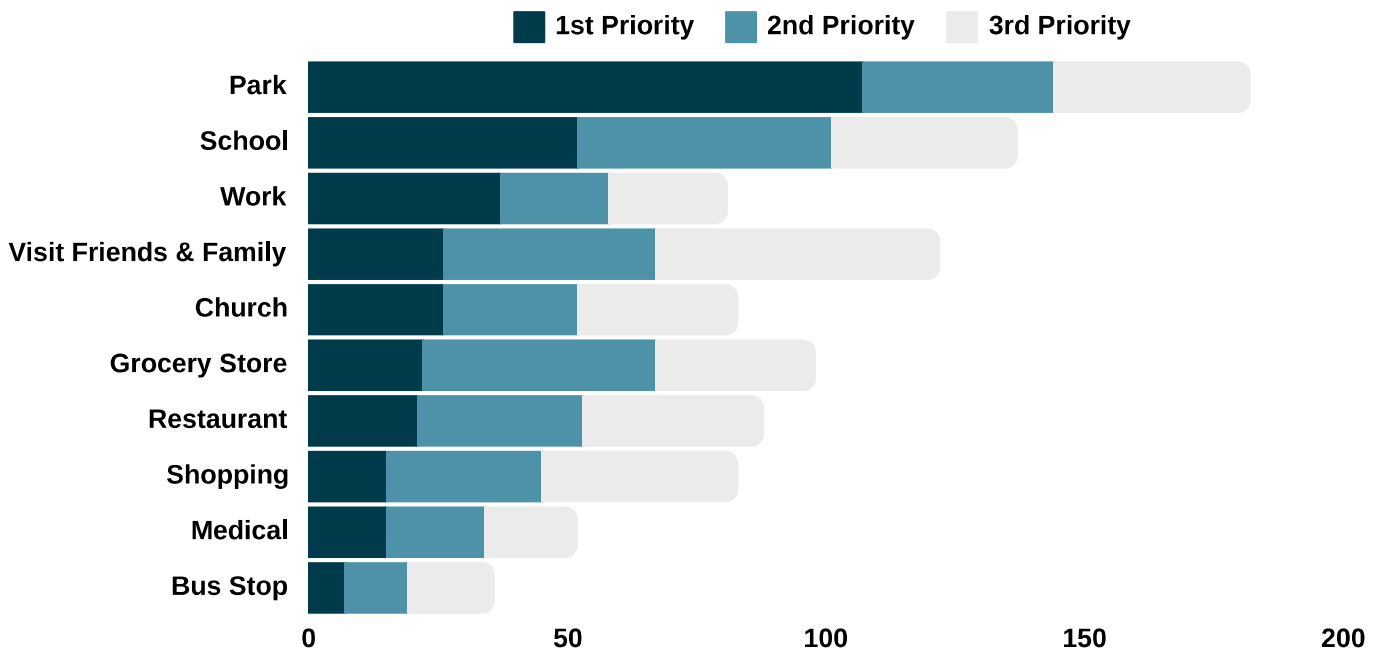
During input sessions, participants had the opportunity to vote for the top three types of places where they would like to ride, walk, and roll. Votes for the first and highest priority facilities were for shared-use paved paths (greenways) and protected bike lanes. The results from all public input sessions are indicated in the table.

See Appendix C for full details of responses from public Input sessions.



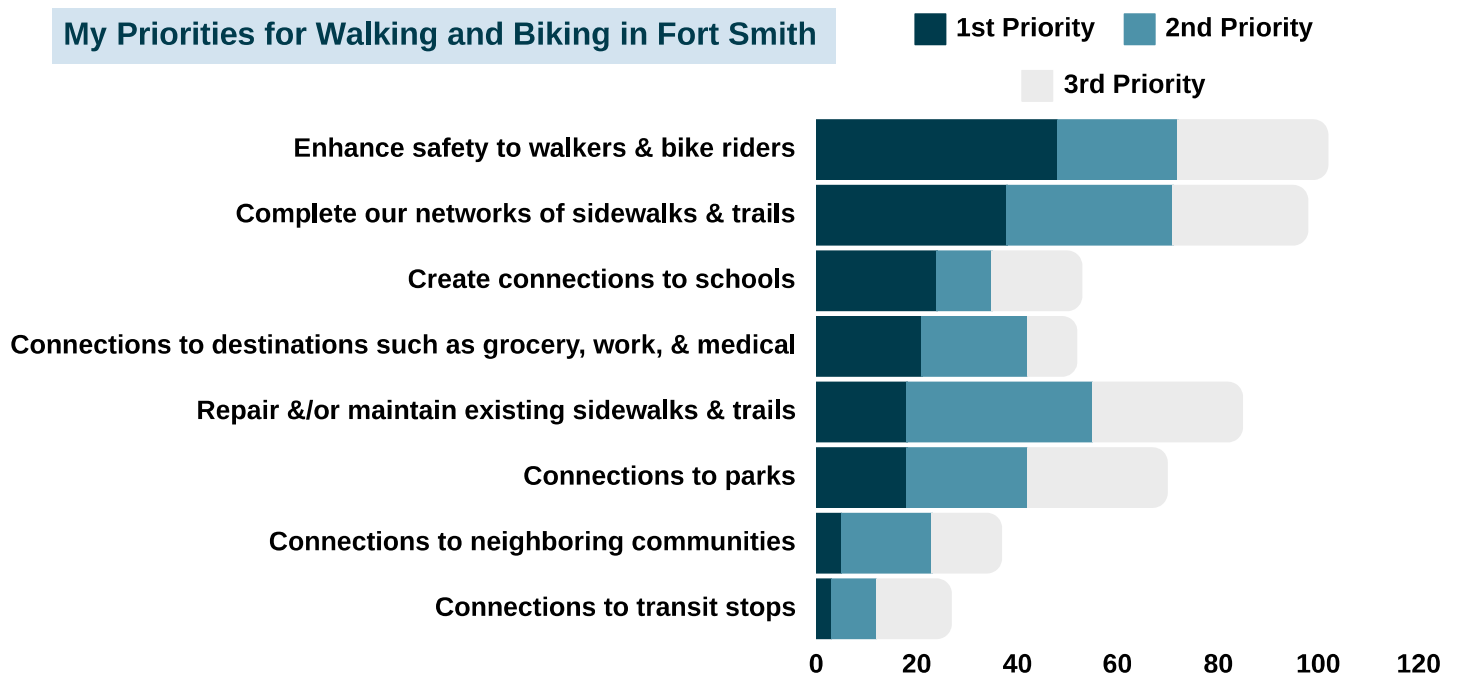
Public input session participants had the opportunity to rank the top three destinations where they would like to ride or walk. The community indicated that parks and schools were the highest priority destinations. The results from all public input sessions are indicated in the table below.

Places I'd Like to Ride and Walk



Participants also had the opportunity to vote for their top three priorities for walking and biking in Fort Smith. Votes for the first and highest priority were for enhancing the safety of walkers and bike riders, along with completing the network of sidewalks and trails. The results from all public input sessions are indicated in the table below.

My Priorities for Walking and Biking in Fort Smith





05

Network Inventory & Mapping

Existing Conditions

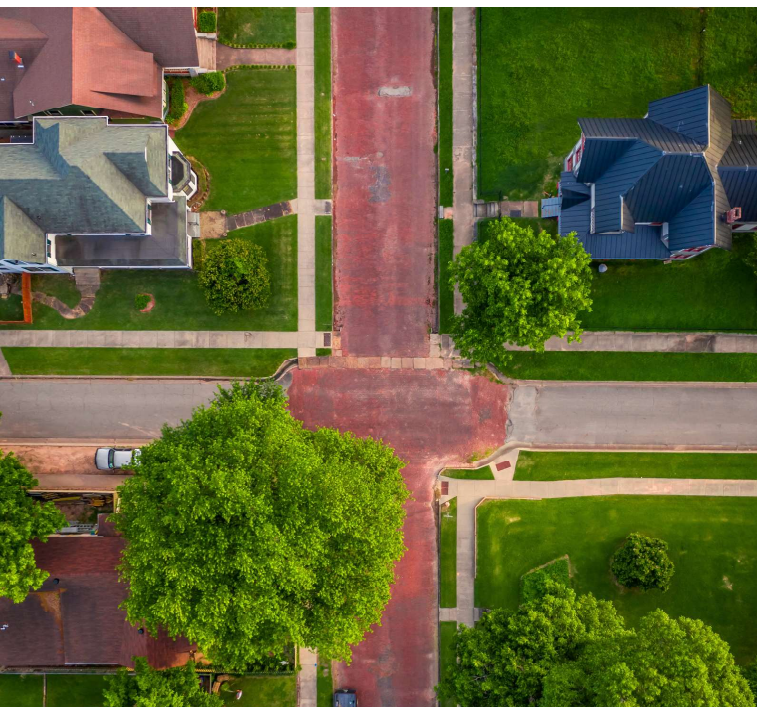


Shared-Use Paved Paths & Mountain Bike Trails

There is a total of 26 miles of shared-use paved paths and sidepaths present in Fort Smith today. The highest mileage shared-use paved paths include the Riverfront Trail and Fort Chaffee greenways. Several mountain bike/multi-use bike trails can be found at various locations such as Ben Geren Park, with a total of 24.7 miles in the city.

On-Street Bicycle Facilities

The City of Fort Smith has a total of 7.8 miles of on-street mixed traffic and signed bicycle routes. The Blue Lion Bikeway is a shared route with “sharrows” connecting the University of Arkansas Fort Smith to downtown.



Sidewalks

The City of Fort Smith has a vast sidewalk network with many dense regions.










Existing Network

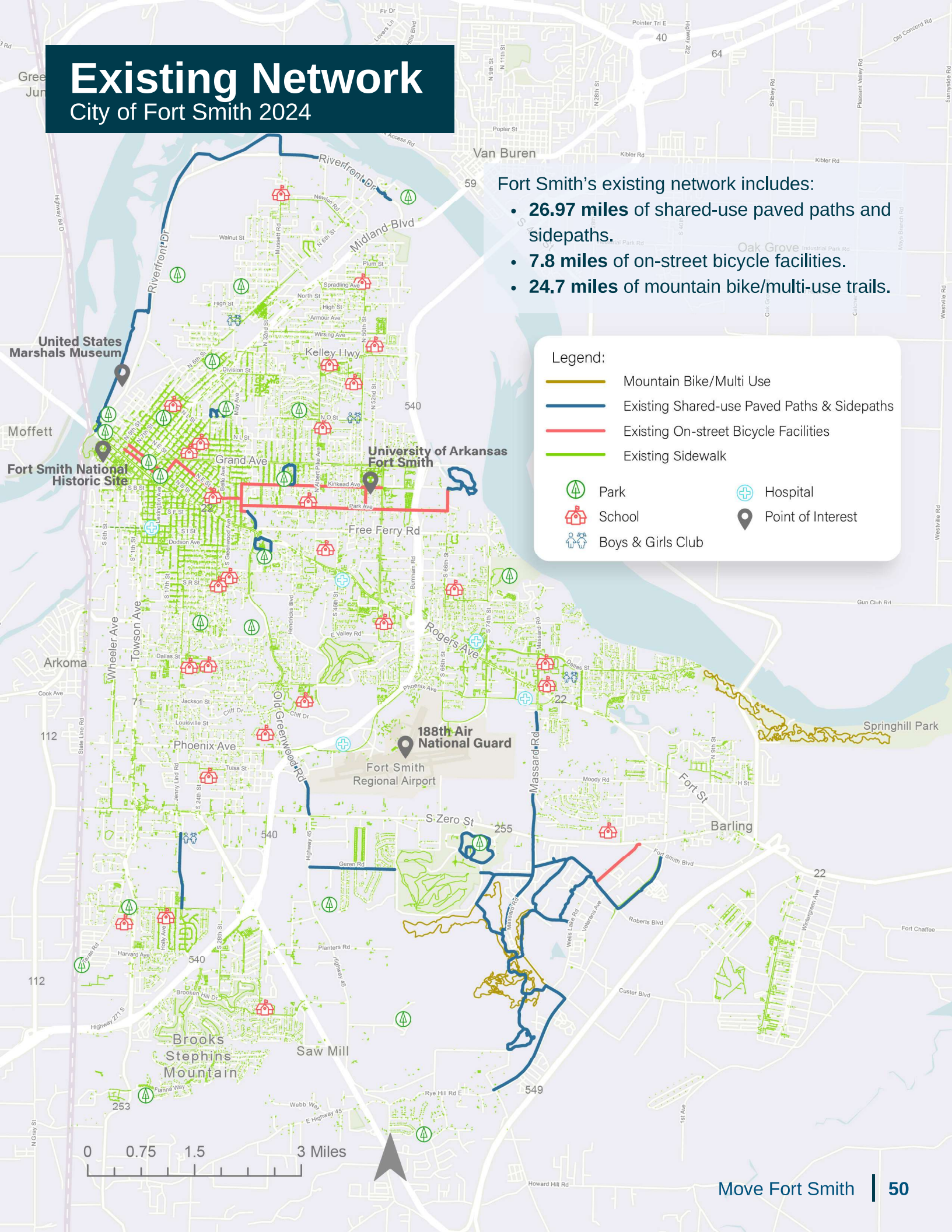
City of Fort Smith 2024

Fort Smith's existing network includes:

- 26.97 miles of shared-use paved paths and sidepaths.
- 7.8 miles of on-street bicycle facilities.
- 24.7 miles of mountain bike/multi-use trails.

Legend:

-  Mountain Bike/Multi Use
-  Existing Shared-use Paved Paths & Sidepaths
-  Existing On-street Bicycle Facilities
-  Existing Sidewalk
-  Park
-  School
-  Hospital
-  Point of Interest
-  Boys & Girls Club



Public Transit Routes

City of Fort Smith 2024

Legend:

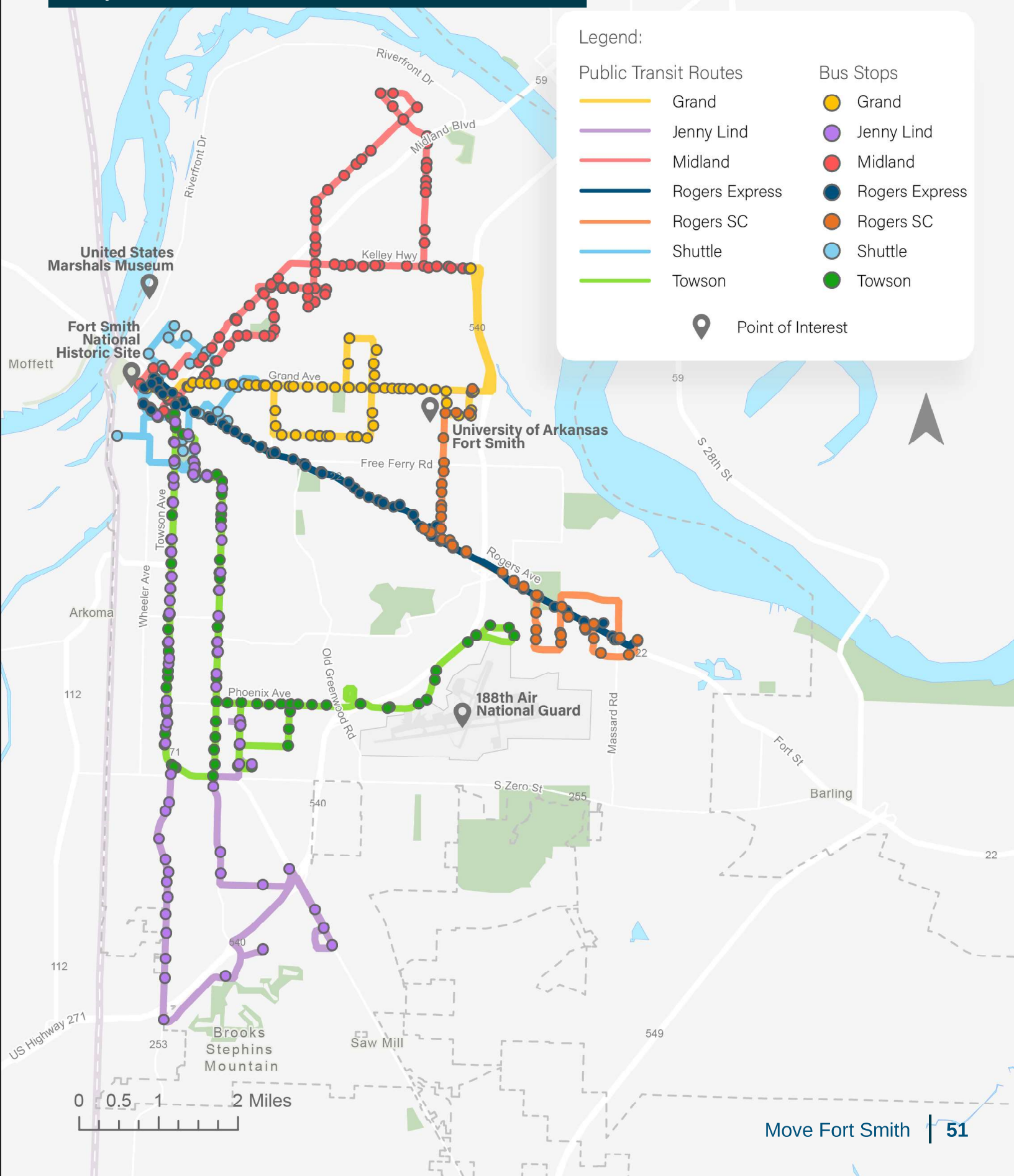
Public Transit Routes

- Grand
- Jenny Lind
- Midland
- Rogers Express
- Rogers SC
- Shuttle
- Towson

Bus Stops

- Grand
- Jenny Lind
- Midland
- Rogers Express
- Rogers SC
- Shuttle
- Towson

Point of Interest



Integrating the Public Transit System

The Fort Smith Transit (FST) Department strives to provide a safe, efficient, and affordable public transportation system to improve the quality of life for the citizens of Fort Smith, Arkansas. The transit system is a lifeline for many Fort Smith residents and provides over 80 miles of routes and 436 stops throughout the city. The buses are clean and efficient and help connect people to destinations across the city. The proposed active transportation network leveraged the existing transit routes and stops to extend the places residents reliant on the transit system and active forms of transportation can connect to. The proximity of proposed routes to existing transit stops was a criterion in prioritizing proposed routes in this plan.

Recommendations to Integrate Active Transportation and the Transit System:

1. The city's Transit and Mobility Departments can work closely to develop maps that indicate how users can walk or bike from neighborhoods to transit stops. These maps can be placed on the websites of each department.
2. The city can develop a joint marketing campaign to promote how residents can navigate the city via the transit system and active transportation network. This would present an opportunity to promote the transit system's inclusion of bike racks on all buses.
3. The city can consider identifying specific "AmBUSsadors" who use the transit system alongside a bike to connect to destinations across the city.



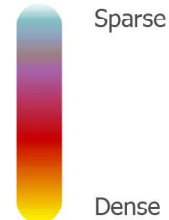
Density of Trip Generators

City of Fort Smith 2022

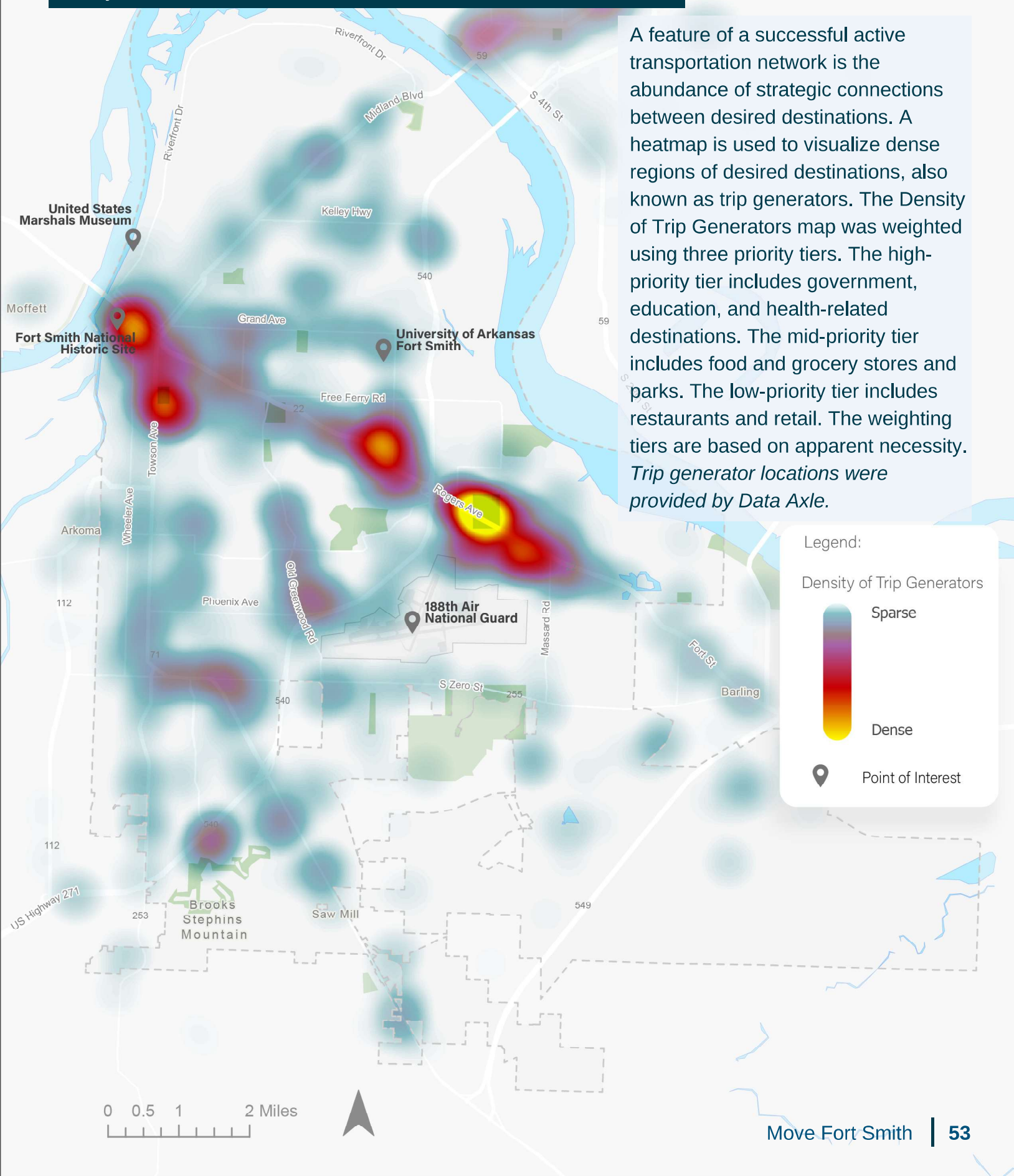
A feature of a successful active transportation network is the abundance of strategic connections between desired destinations. A heatmap is used to visualize dense regions of desired destinations, also known as trip generators. The Density of Trip Generators map was weighted using three priority tiers. The high-priority tier includes government, education, and health-related destinations. The mid-priority tier includes food and grocery stores and parks. The low-priority tier includes restaurants and retail. The weighting tiers are based on apparent necessity. *Trip generator locations were provided by Data Axle.*

Legend:

Density of Trip Generators



Point of Interest





06

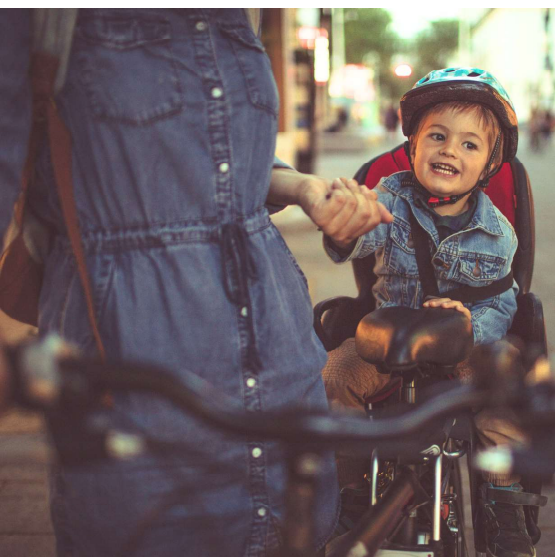
Proposed Bicycle & Pedestrian Network

A Useful and Successful Network



SAFE

Pedestrians, people on bikes, and anyone not utilizing a motorized vehicle are considered vulnerable road users. Vulnerable road users can be exposed to traffic and other variables that can leave them open to physical danger when moving about a city. The safety of vulnerable road users must be a primary goal of any active transportation plan. With safety as the primary goal, participation in riding bikes and walking can increase.



COMFORTABLE

Prioritizing the comfort of an active transportation system for users of all ages and abilities can help encourage additional usage and increase the equity of the system. Focusing on reducing points of conflict, creating separation between vulnerable users and vehicles, and reducing unnecessary transitions are ways to increase the comfort level for a diverse number of users.



CONNECTED

City residents require the ability to connect to useful destinations such as grocery stores, medical offices, schools, and parks. Developing a plan for infrastructure that ensures connectivity to these essential resources helps residents thrive and decrease dependence on vehicular travel.



Photo Courtesy of 64.6 Downtown

Proposed Facility Types

A successful active transportation network includes context-sensitive solutions for safety, comfort, and connectivity. To that end, the Move Fort Smith Plan has identified the following facility types to achieve the goals of this plan.

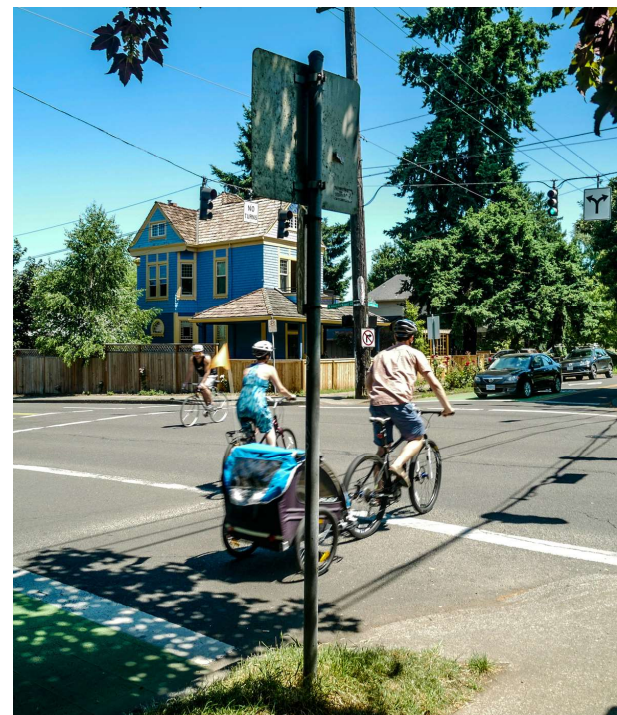
Shared-Use Paved Paths & Sidepaths

Shared-use paved paths (SUPP) and sidepaths (SP) are typically a minimum of 10 feet in width and are designed for walkers, runners, bike riders, and people who utilize mobility devices. SUPPs are often called the “Interstate” of active transportation systems. They are designed to move people quickly, safely, and efficiently. The main drawback of SUPPs is that they tend to have a higher cost than other types of facilities and often require acquiring rights of way or easements. Sidepaths are similar in design and function to a SUPP but differ in that SPs are constructed along roadways, where SUPPs are separate from a roadway.



Neighborhood Greenways/Bicycle Boulevards (Mixed Traffic)

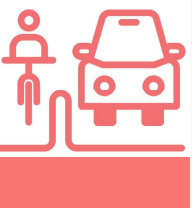
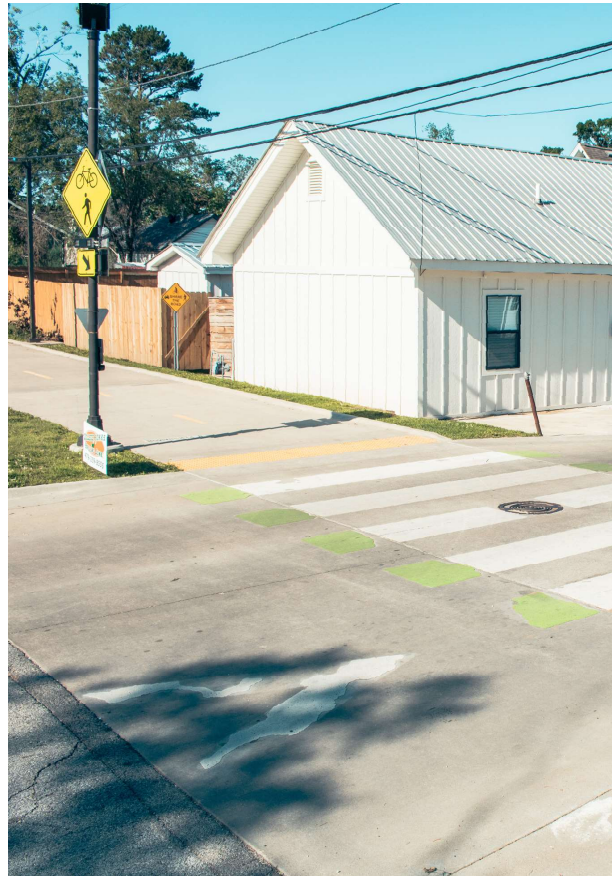
Many communities have an abundance of quiet residential streets that can serve a valuable role in building an active transportation system. These streets will have much less traffic, slower speeds, and often have an existing tree canopy, which adds to the experience. Typically, these streets can be utilized to accommodate bicycle users with the addition of signage and elements to calm traffic. These facilities tend to be a very affordable way to activate neighborhoods and get people moving. These facilities are appropriate where posted speeds are 25 MPH or less and an AADT of less than 3,000.





Revitalized Alleyways

Fort Smith has an abundance of existing alleyways, particularly in downtown and areas north of Grand Avenue. Many of these alleyways are underutilized, overgrown, and not regularly maintained. There is an opportunity to reimagine these alleyways and revitalize them to include shared-use routes that can be used for people on bikes, pedestrians, and vehicles. It is recommended that these alleyways be revitalized with new surfaces, either concrete or pavement, lighting, and signage. As each alleyway can frequently intersect city streets, RRFBs, crosswalk markings, and signage will need to be installed to ensure the safety of all users. Finally, it is recommended that the city develop an alleyway access plan to address the direction of vehicle traffic.



Separated/Protected Bike Lanes

Protected bike lanes, or cycle tracks as they are often called, are designed for people on bikes and mobility devices. A protected bike lane can either be a two-way (both directions on the same side of the road) or a one-way, with that being on one side of the road or on both sides. Separated bike lanes provide a 3-5 foot painted buffer and/or some sort of physical separation between users and vehicular traffic. This separation can be in the form of plastic pylons (bollards), planters, or even a curb or median. The protection helps create a much higher level of safety and can encourage people of all ages and abilities to utilize it. Protected bike lanes are being installed in cities nationwide and are an efficient and cost-effective way to right-size a roadway and provide use for active transportation users.



High Intensity Activated Crosswalk (HAWK)

At a HAWK crossing, drivers receive multiple cues to emphasize the potential presence of a pedestrian. These cues include a unique configuration of the HAWK beacon (two red lenses over a single yellow lens), high-visibility crosswalk markings (ladder-style markings as opposed to only two transverse white lines), a stop bar approximately 50 ft from the crosswalk, 8-inch solid lane lines between through travel lanes, signs that can be illuminated and read "CROSSWALK," and School Warning signs. When activated, the HAWK uses a red indication to inform drivers to stop, thereby creating a time period for pedestrians to cross the major roadway.



Rectangular Rapid Flashing Beacon (RRFB)

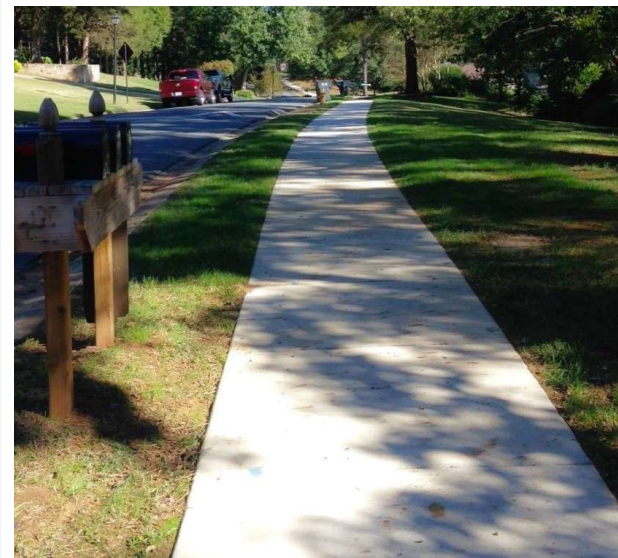
To enhance pedestrian conspicuity and increase driver awareness at uncontrolled, marked crosswalks, transportation agencies can install a pedestrian-actuated Rectangular Rapid Flashing Beacon (RRFB) to accompany a pedestrian warning sign. RRFBs have two rectangular-shaped yellow indications, each with a light-emitting diode (LED)-array-based light source. RRFBs flash with an alternating high frequency when activated to enhance the conspicuity of pedestrians at the crossing to drivers. RRFBs have been shown to reduce pedestrian crashes by up to 47%.

Research Report 841 Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments, NCHRP (2017)



Sidewalks

Sidewalks can vary in width, quality, and connectivity. The desired width of a sidewalk is 6 feet wide and the surfaces should be smooth and free from breaks and unnecessary transitions. Sidewalks are important in moving people around a city safely and efficiently. Sidewalks are typically reserved for people on foot or using mobility devices. It's a good idea to think through how and when bikes can use sidewalks, especially where no other safe options for bikes exist. Everyone desires to get to a store, home, or work without stepping in mud or walking in the street with vehicles.





Critical Connections

Linking key destinations is one of the most important considerations of a well-functioning transportation plan. These catalytic projects include the goal of providing alternative transportation options to destinations that community members travel to regularly. Each catalytic project map will indicate critical connections (key destinations) represented with the icons below.



Neighborhoods: We believe that every residence can serve as a trailhead when safe, comfortable, and connected active transportation infrastructure is accessible.



Schools: Creating safe routes to schools that facilitate an increase in students and families walking or biking to school is a key opportunity.



Transit Routes: The City of Fort Smith has a fantastic public transit system. Catalytic projects seek to leverage this existing system and allow users to go further by aligning the systems.



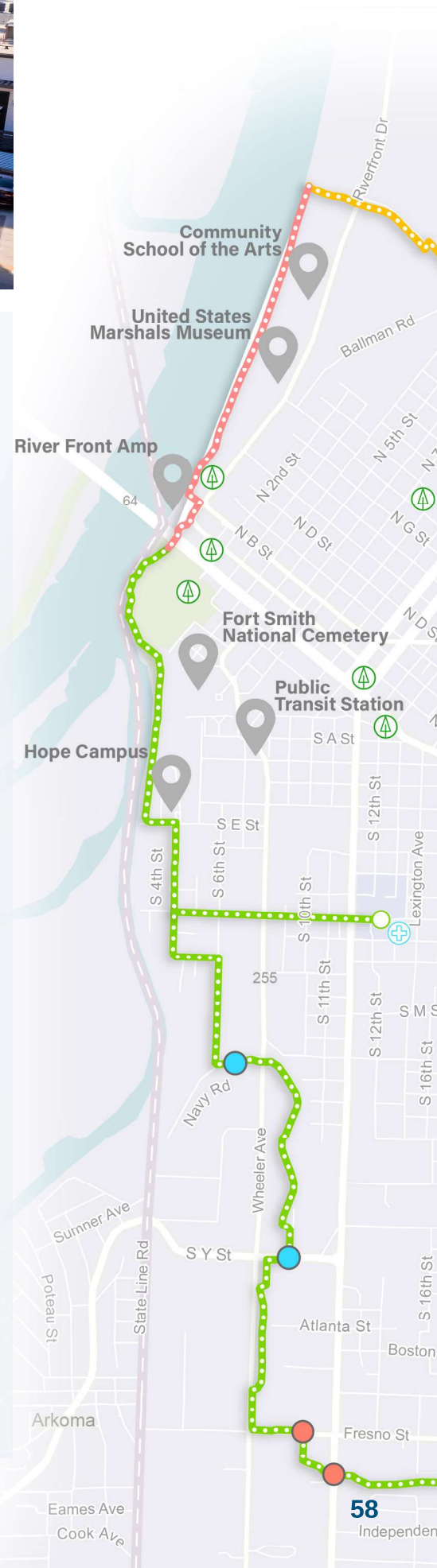
Parks and Green Spaces: Access to parks and open spaces can improve mental and physical health and are essential to quality of life.



Medical Centers: An active transportation network that prioritizes access to medical facilities helps reduce barriers for residents to accessing the care they need.



Shops, Grocery Stores, and Restaurants: Increasing access to healthy food, restaurants, and grocery stores helps residents get to where they want and need to go.

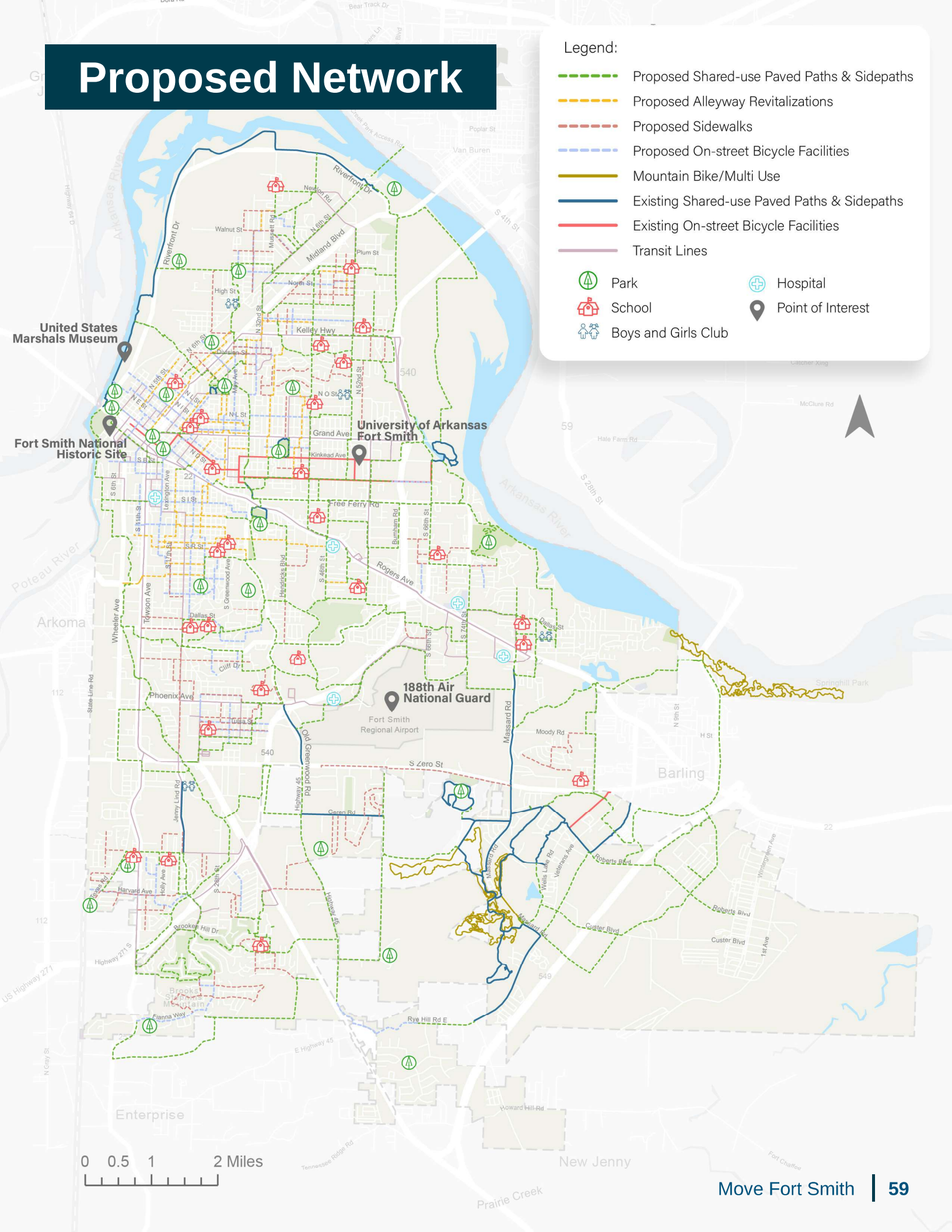


Proposed Network

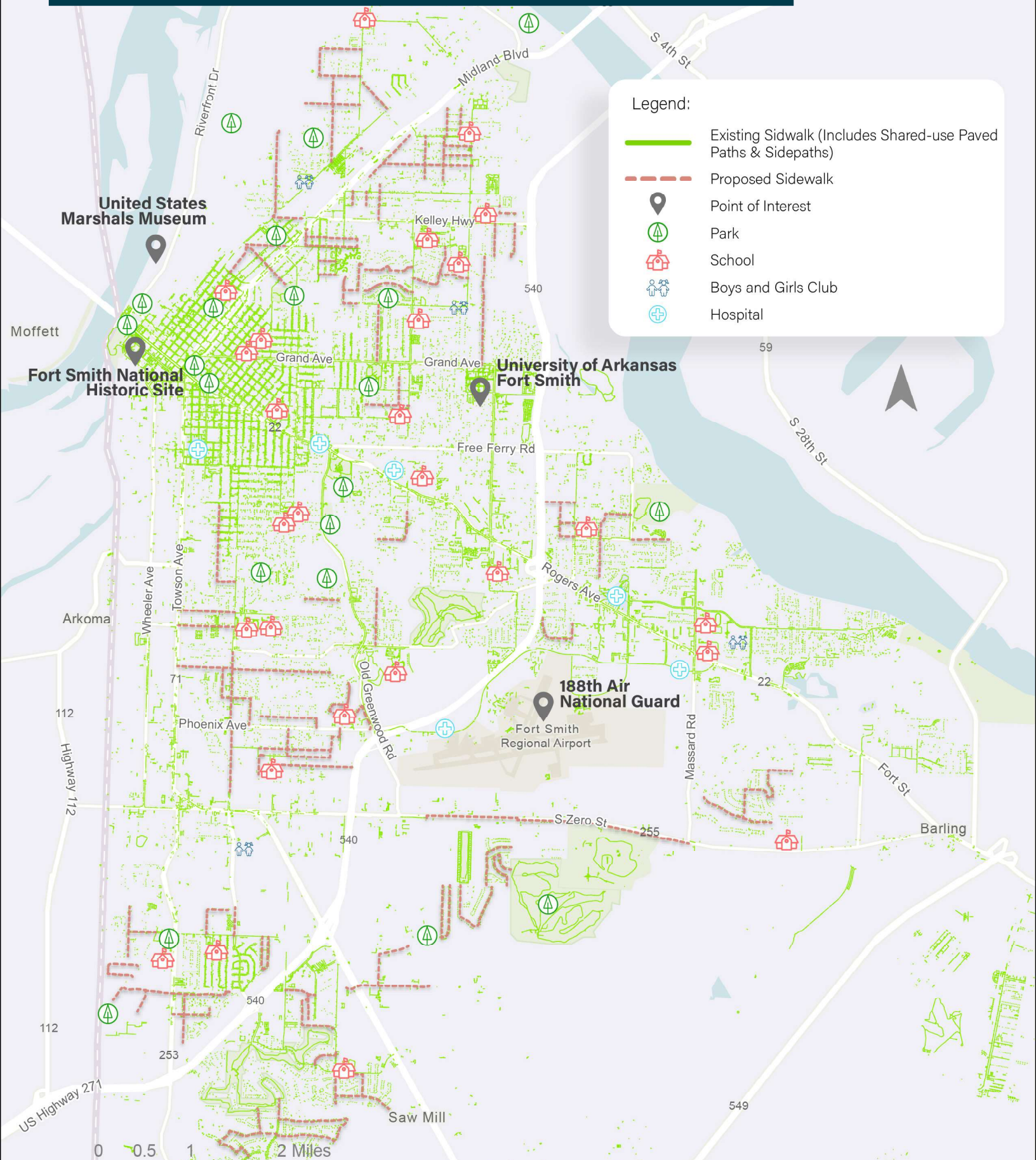
Legend:

- Proposed Shared-use Paved Paths & Sidepaths
- Proposed Alleyway Revitalizations
- Proposed Sidewalks
- Proposed On-street Bicycle Facilities
- Mountain Bike/Multi Use
- Existing Shared-use Paved Paths & Sidepaths
- Existing On-street Bicycle Facilities
- Transit Lines

- Park
- Hospital
- School
- Point of Interest
- Boys and Girls Club



Proposed & Existing Sidewalks



Legend:

- Existing Sidewalk (Includes Shared-use Paved Paths & Sidepaths)
- - - Proposed Sidewalk
- Point of Interest
- Park
- School
- Boys and Girls Club
- Hospital

United States Marshals Museum

Fort Smith National Historic Site

University of Arkansas Fort Smith

188th Air National Guard

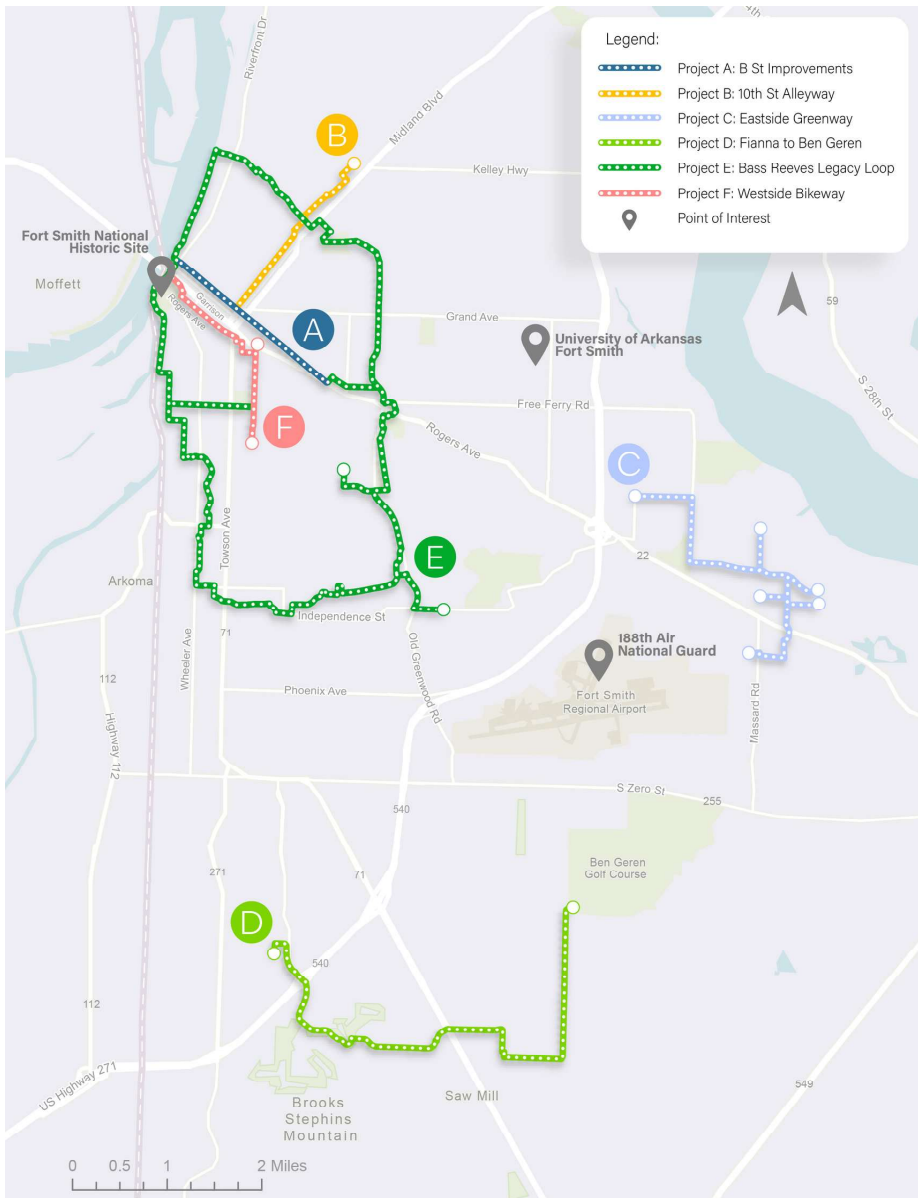
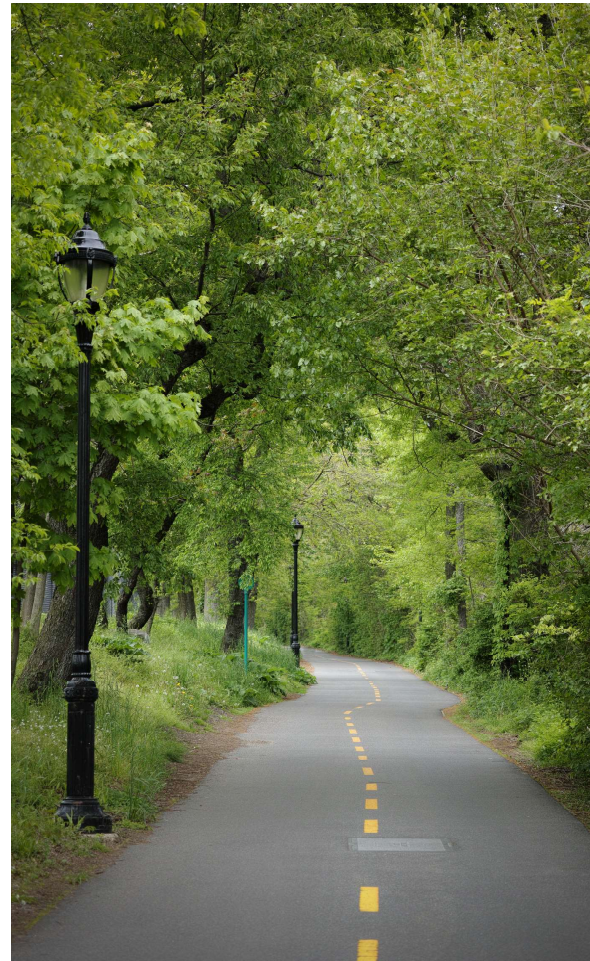
Fort Smith Regional Airport

Catalytic Projects

Catalytic projects are defined as projects that represent a high priority in that, upon completion, they can have the greatest potential impact on the community. Catalytic projects can serve as a rallying point for the community and generate excitement and momentum for further development. For this project, six catalytic projects have been studied. Factors such as geographic distribution, ease of implementation, project readiness, connectivity, safety, and connections to schools and parks were considered when identifying each project. Each catalytic project is reflected on the following pages and includes a short narrative, plan-level site map, and general considerations.



Photo Courtesy of 64.6 Downtown



B Street: Multi-Modal Safety Improvements

N 25th Street to Riverfront Drive

1.34 miles Estimated Cost: \$1,125,000-1,250,000

Catalyst Project A

Overview

The B Street corridor is currently a one-way street between 37' and 41 feet wide. The traffic counts along this corridor are conducive to a road reconfiguration, including a two-way protected bike lane on the North side of B Street. This corridor connects Downtown Fort Smith, Northside High School, and many established neighborhoods.

Opportunities

- Creating safe and comfortable bicycle connections between downtown, Northside High School, and neighborhoods
- Slower traffic speeds

Challenges

- Reducing existing on-street parking will require outreach and education.
- Changing the traffic flow and patterns on this corridor will require outreach and education.

Critical Connections



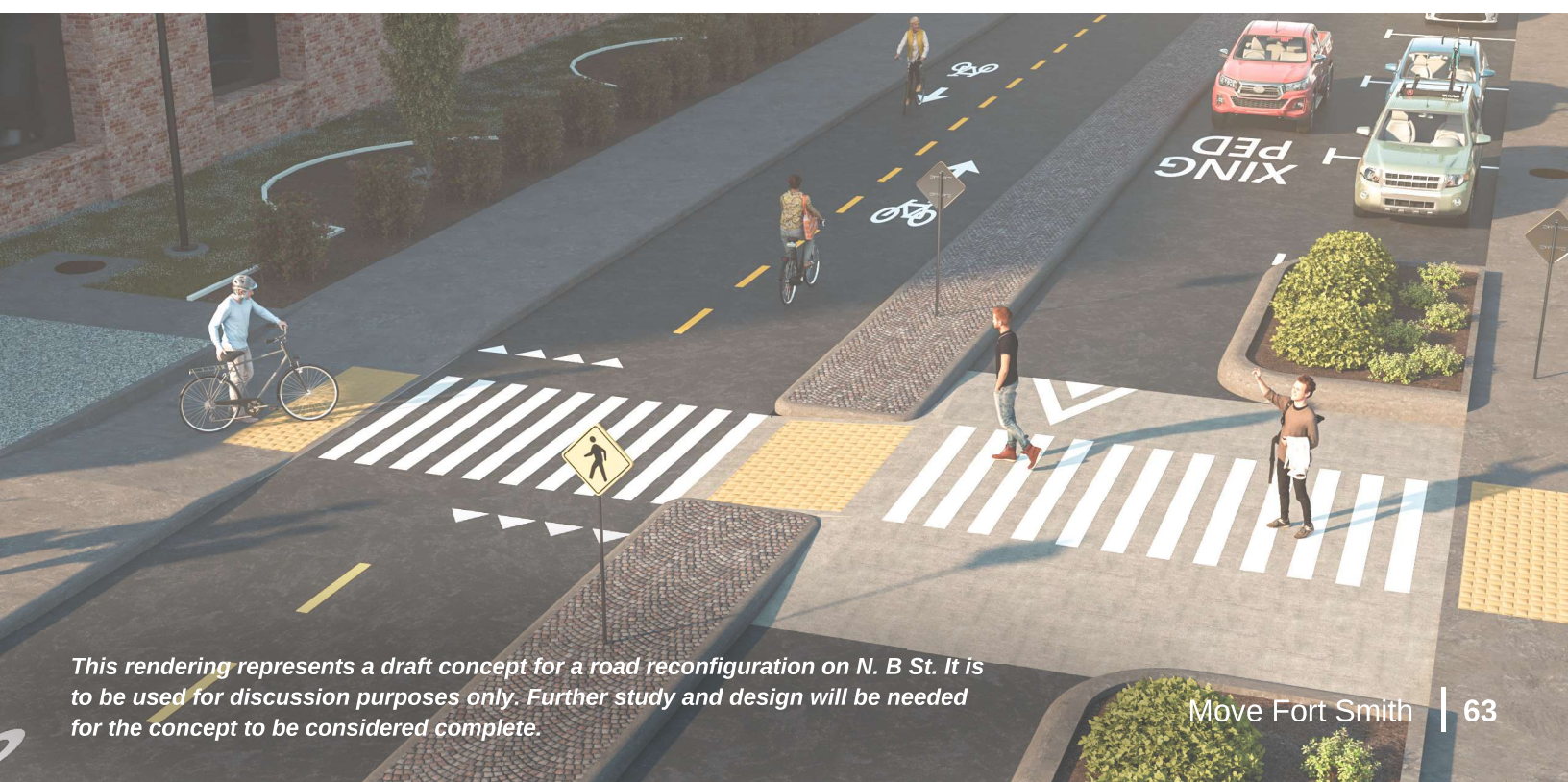


North B St | Multi-Modal Safety Improvements



This rendering represents a draft concept for a road reconfiguration on N. B St. It is to be used for discussion purposes only. Further study and design will be needed for the concept to be considered complete.

- Revitalization of North B Street
- Increasing access to Northside High School and Downtown Fort Smith
- Increasing safety for all modes of transportation, thereby contributing to meeting the goals of the city’s “Vision Zero” policy statement



This rendering represents a draft concept for a road reconfiguration on N. B St. It is to be used for discussion purposes only. Further study and design will be needed for the concept to be considered complete.

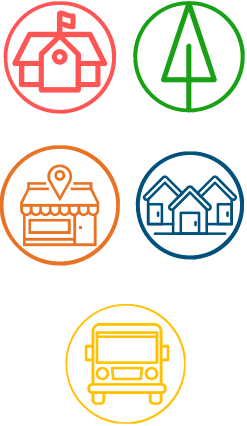
10th Street Alleyway

Catalyst Project B

Kelley Highway to North B Street

1.71 miles Estimated Cost: \$3,290,460-\$3,590,000

Critical Connections



Overview

Fort Smith has an extensive system of existing alleyways. Many of these alleys are currently underutilized and blighted. An opportunity exists to revitalize these alleys and develop shared-use corridors (vehicles, bikes, pedestrians) that will increase connectivity and accessibility for many residents.

Opportunities

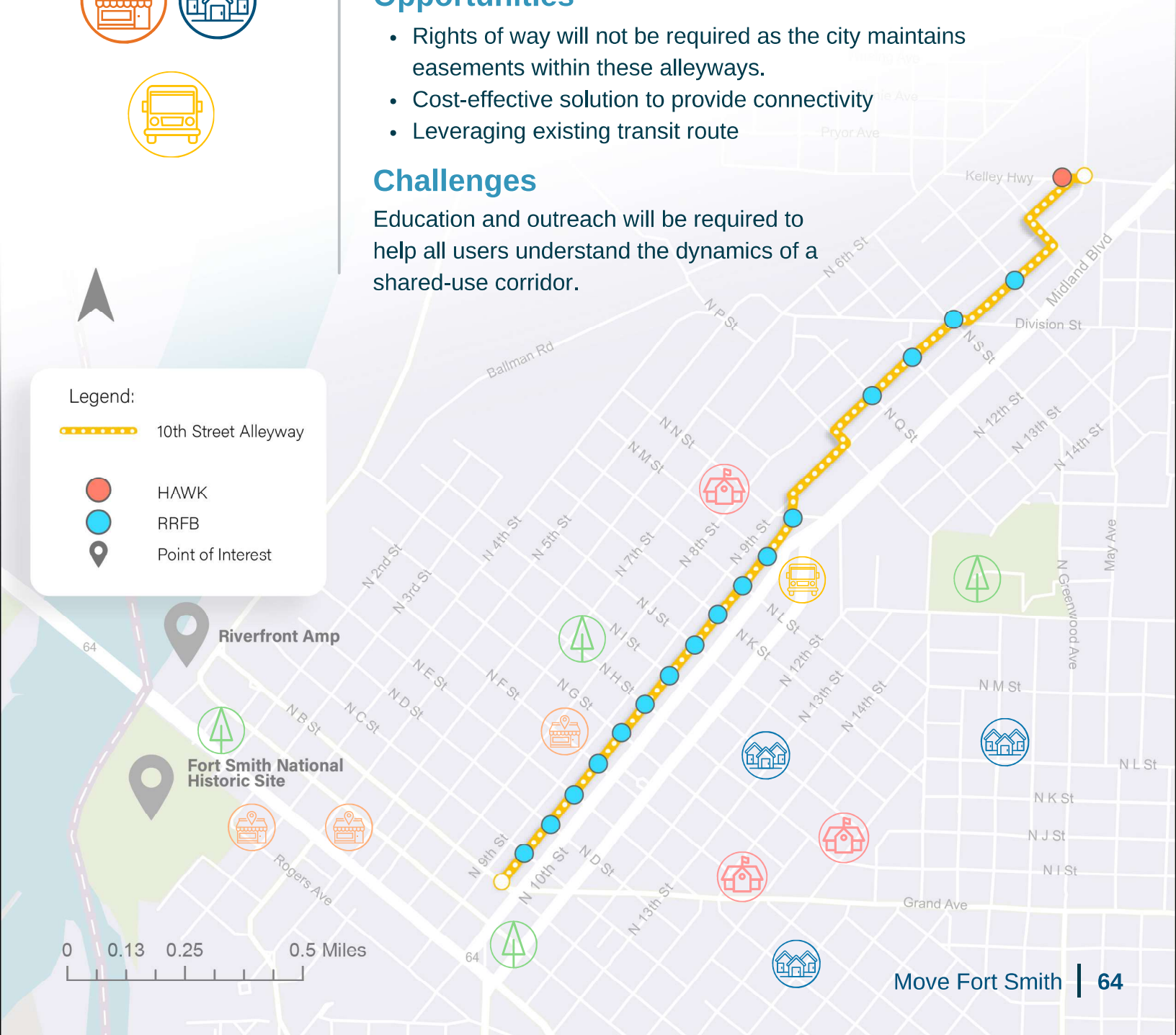
- Rights of way will not be required as the city maintains easements within these alleyways.
- Cost-effective solution to provide connectivity
- Leveraging existing transit route

Challenges

Education and outreach will be required to help all users understand the dynamics of a shared-use corridor.

Legend:

- 10th Street Alleyway
- HAWK
- RRFB
- Point of Interest

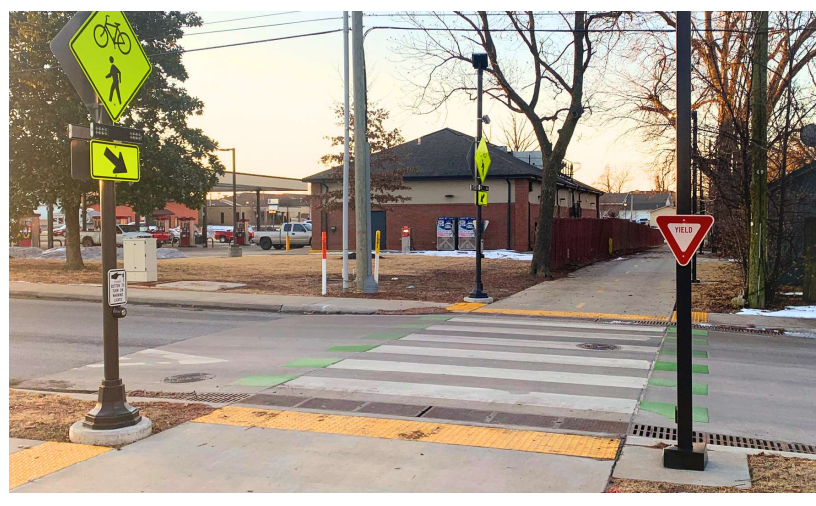
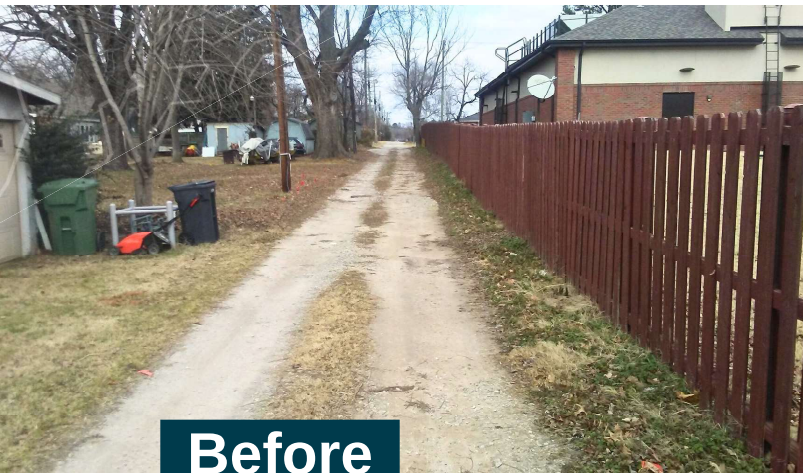


10th Street Alleyway | Kelley Highway to North B Street

Peer Community Case Study: Rogers, AR

In 2017, Rogers, AR, was working to complete a key shared-use paved path connection from the Razorback Regional Greenway to Downtown Rogers, called the Railyard Loop. The city studied the corridor and found few options to create a safe and comfortable connection along 2nd Street. Upon further study, the city developed a unique solution to an approximately 1-mile section of the Railyard Loop by revitalizing an existing alleyway. The city designated this as a mixed-traffic facility to prevent disrupting businesses and residences in the area, allowing vehicles to access businesses and residences along the alleyway. The city installed lighting, raised street crossings, and RRFBs to increase user safety. The vehicle volume is currently very low, and the new section of the Railyard Loop is widely used by people on foot and by bike. See below for before and after photos.

Railyard Loop



Eastside Greenway

Catalyst Project C

S 66th Street to Massard Road

4.27 miles Estimated Cost: \$3,278,476-\$3,578,000

Critical Connections



Overview

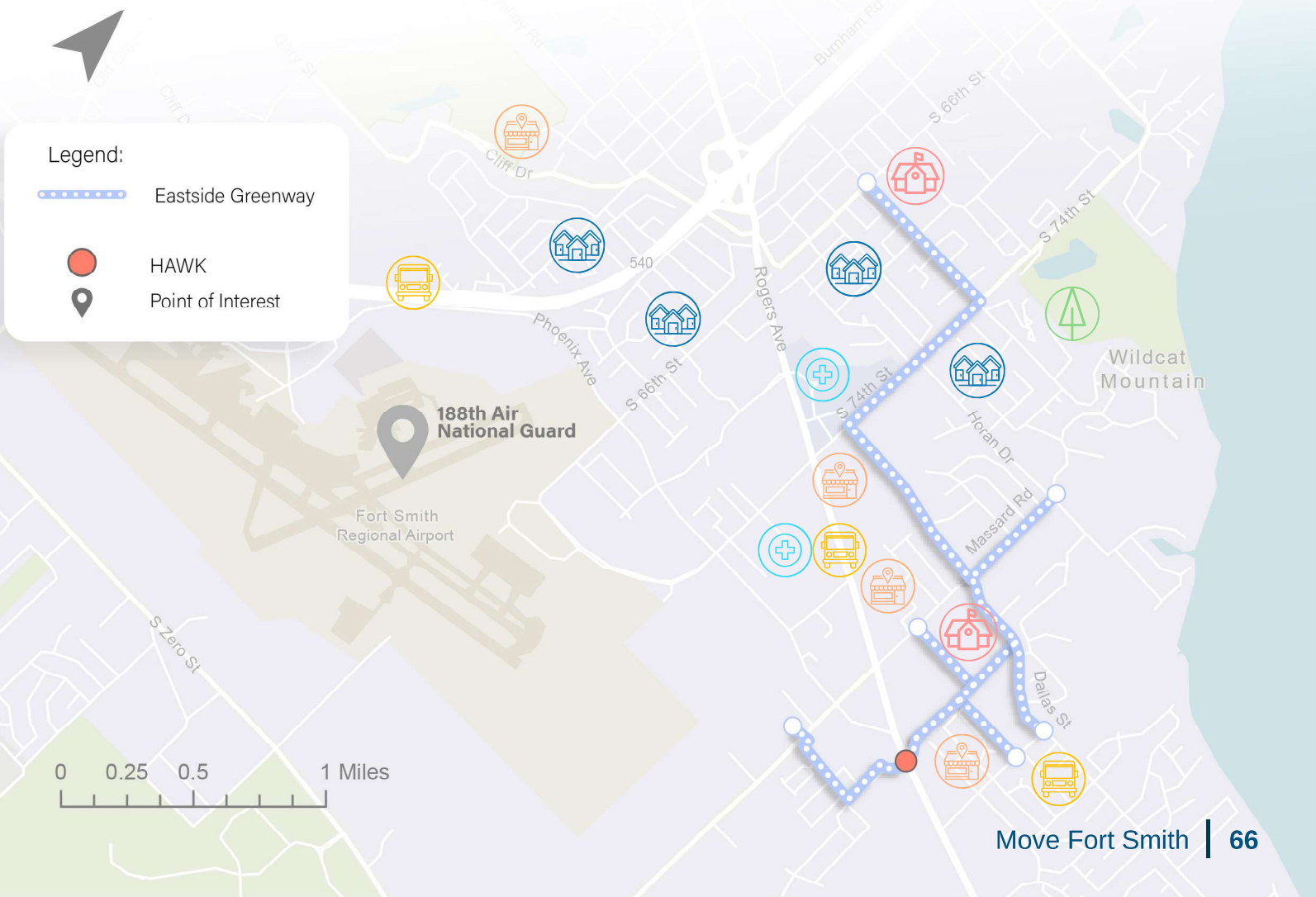
The East Side Greenway- Phase 1 is envisioned as a 10-foot wide shared-use paved path. Upon completion, this project will create safe and comfortable connections for a significant number of residents. Key connections and spurs are proposed to the Walmart Supercenter, schools, and neighborhoods.

Opportunities

- Safe and comfortable active transportation connections to schools, shopping, and retail
- Creates direct connections from multiple neighborhoods

Challenges

Constructing shared-use paved paths in this area will be costly.



Fianna to Ben Geren Park | Catalyst Project D

Jenny Lind Road/Brooken Hills/Burroughs/Commerce

3.47 miles Estimated Cost: \$3,135,142-\$3,435,000

Critical Connections



Legend:

Fianna to Ben Geren

HAWK

RRFB

Point of Interest

Overview

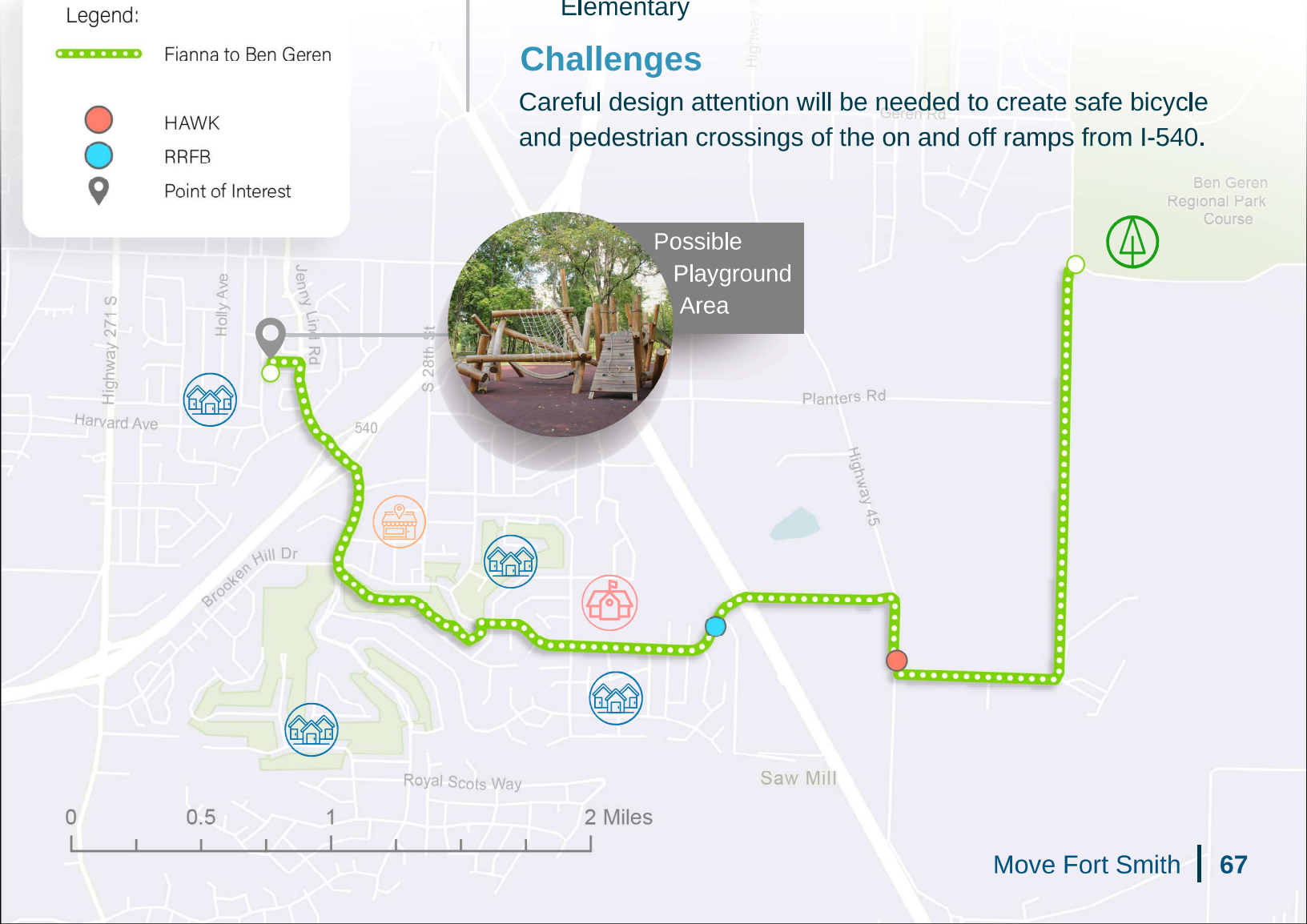
The Fianna Hills to Ben Geren Park connection is envisioned as a 10-foot wide shared-use paved path. The project will create a safe and comfortable active transportation corridor between established neighborhoods.

Opportunities

- Creates an active transportation corridor between established neighborhoods
- Creates access for many neighborhoods to navigate 1-540
- Safe and comfortable connection to Cooke Elementary

Challenges

Careful design attention will be needed to create safe bicycle and pedestrian crossings of the on and off ramps from I-540.



Westside Bikeway | Catalyst Project E

Lexington Avenue to B Street across Garrison Avenue

2.05 miles Estimated Cost: \$1,716,665-\$1,888,332

Critical Connections



Overview

The Westside Bikeway catalyst project envisions a corridor that embraces multimodal transportation and increased safety for all users. The inclusion of protected bike lanes along Lexington Avenue, as well as shared-use routes on B Street S and S. 10th Street, will create a safe and comfortable connection for pedestrians and bike riders.

Opportunities

- Increasing connectivity for active transportation users
- Beautification of the corridor
- Increases in safety for active transportation users.
- Leverages current planning and design work along Rogers Avenue, which includes a sidepath on the south side of the street.

Challenges

Changing traffic patterns along Lexington Avenue will require additional outreach and education.

Legend:

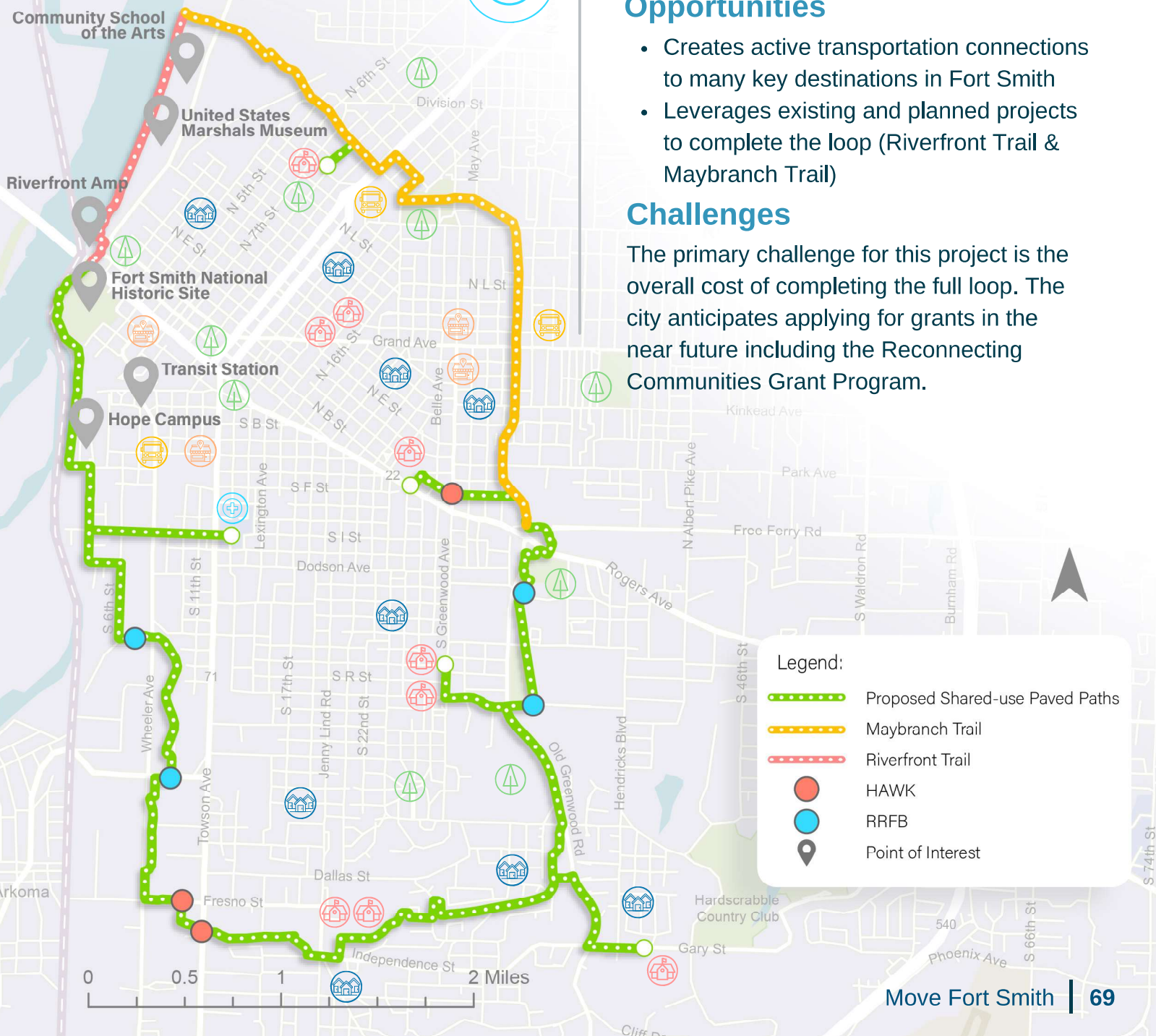
- Westside Bikeway
- Alternate Route
- Point of Interest

Bass Reeves Legacy Loop | Catalyst Project F

Connecting Key Destinations in the City

9.00 miles Estimated Cost: \$24,987,000

Critical Connections



Overview

The Bass Reeves Legacy Loop is envisioned as a 10' wide shared-use paved path. The identified route creates a safe and comfortable loop of the city, connecting many key destinations and attractions.

Opportunities

- Creates active transportation connections to many key destinations in Fort Smith
- Leverages existing and planned projects to complete the loop (Riverfront Trail & Maybranch Trail)

Challenges

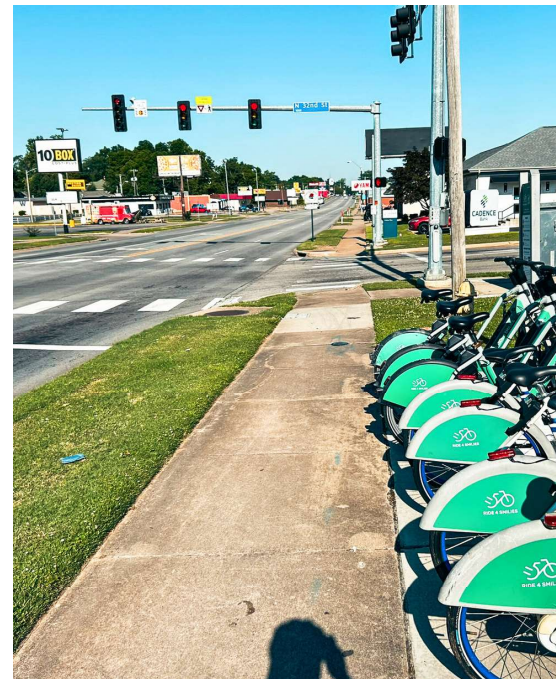
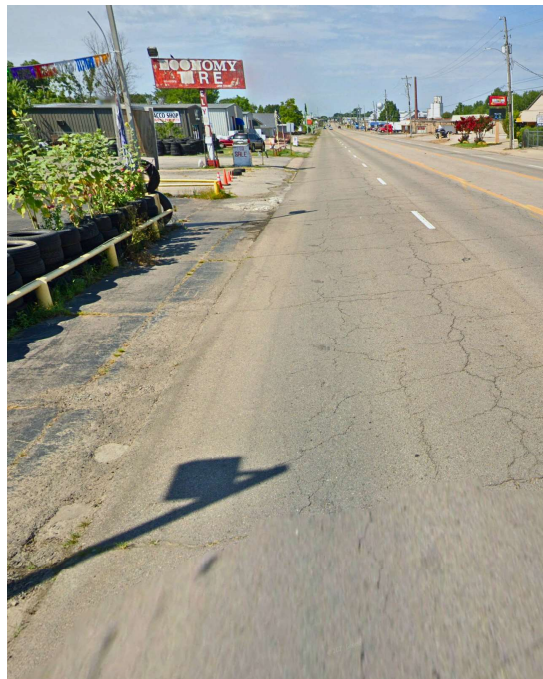
The primary challenge for this project is the overall cost of completing the full loop. The city anticipates applying for grants in the near future including the Reconnecting Communities Grant Program.

Corridors Recommended for Further Study

- Garrison Ave.
- Grand Ave.
- Towson Ave.
- Midland Blvd.



The strong transportation network in Fort Smith helps move freight and vehicles and is a vital part of keeping the economy moving forward. Several corridors within the city represent a high level of importance to the fabric and economy of Fort Smith. These corridors move high volumes of vehicular traffic and help connect people to jobs, schools, and various destinations across the city. Currently, these corridors are heavily focused on moving vehicles. While they may have pedestrian facilities, there is room to improve the safety and comfort of pedestrians and bike riders. An opportunity exists to engage in critical corridor studies to determine how, when, and where pedestrian safety can be improved and the feasibility of adding bicycle facilities. The following pages detail four corridors recommended for additional, critical study.



Garrison Avenue

Recommended for Critical Corridor Study

Connects Key Destinations in the City

.80 miles

Estimated Cost: TBD

Critical Connections

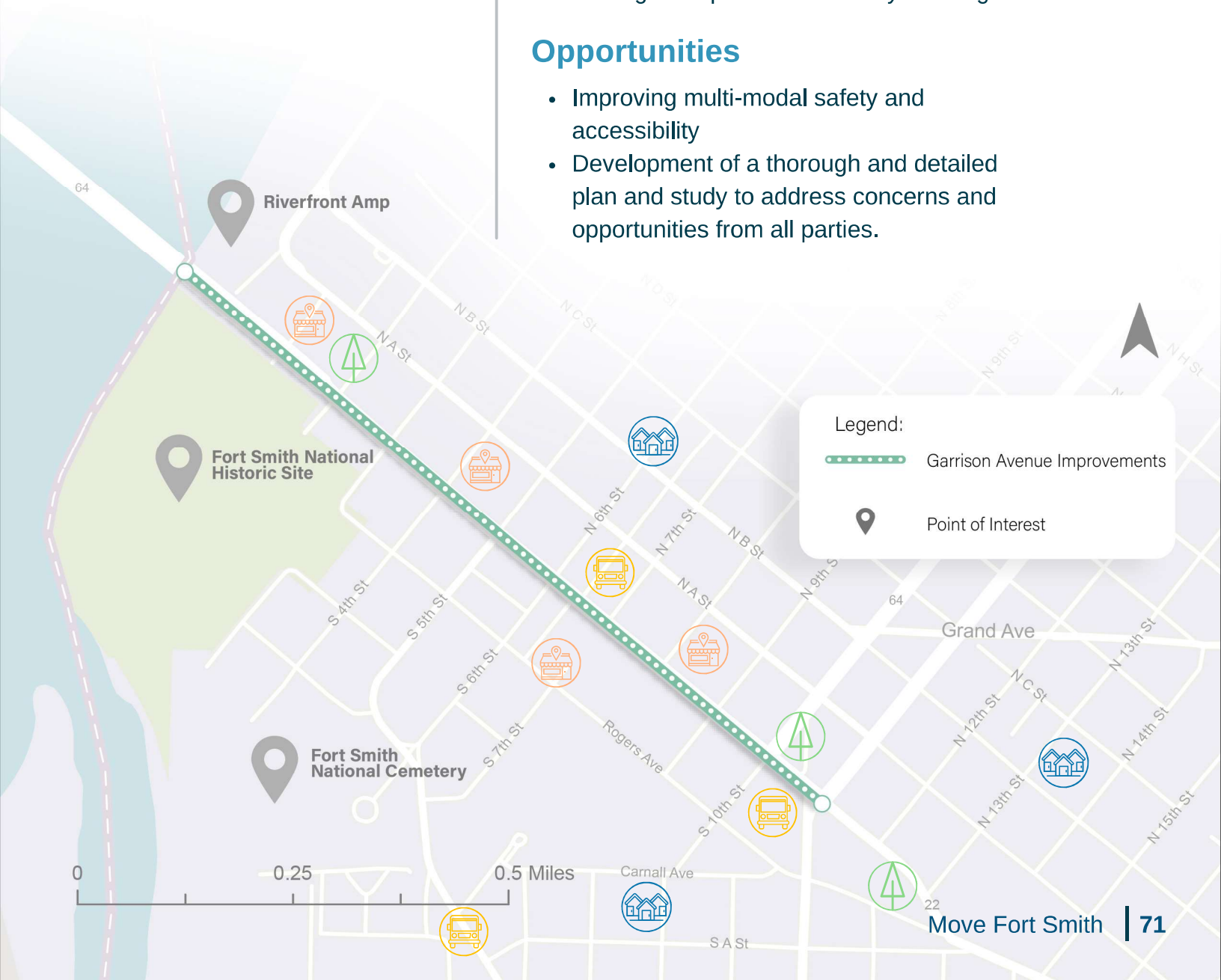


Overview

Garrison Avenue is an essential corridor for Fort Smith and the broader region and is considered the heart of Downtown Fort Smith. The corridor connects to the State of Oklahoma and is adjacent to many established and historic neighborhoods. Garrison is a state highway with high passenger and truck traffic (13,000-23,000 AADT). It has been the subject of many plans and studies that have sought to improve its safety and walkability while balancing its importance as a key trucking corridor.

Opportunities

- Improving multi-modal safety and accessibility
- Development of a thorough and detailed plan and study to address concerns and opportunities from all parties.



Grand Avenue | Recommended for Critical Corridor Study

Connects Key Destinations in the City

3.1 miles

Estimated Cost: TBD

Critical Connections



Overview

Grand Avenue is a five-lane major arterial with an approximate width of 60 feet. Grand is a heavily traveled, locally owned road with an AADT of 18,000 near the 540 interchanges, 15,000 AADT near Greenwood Avenue, and 7,500 near 16th Street. Grand Avenue serves a critical need in the community and is home to numerous essential commercial services such as restaurants, laundromats, pharmacies, and a grocery store. A middle school is located directly on Grand Avenue, and an elementary school is adjacent to the corridor. Grand has been identified as a Vulnerable Road User stress zone due to a high number of non-motorist crashes, suspected serious injuries, and fatalities from 2018-2022.

Opportunities

An opportunity exists to conduct a detailed and thorough corridor study and develop a plan that may recommend the following:

- Slowing vehicular speed
- Increasing connectivity for active transportation users
- Beautification of the corridor
- Increases in safety for active transportation users
- Leveraging existing transit route

Legend:

- Grand Avenue Improvements
- Existing RRFB
- Point of Interest



Towson Avenue

Recommended for Critical Corridor Study

Garrison Avenue to S Zero Street

3.7 miles

Estimated Cost: TBD

Overview

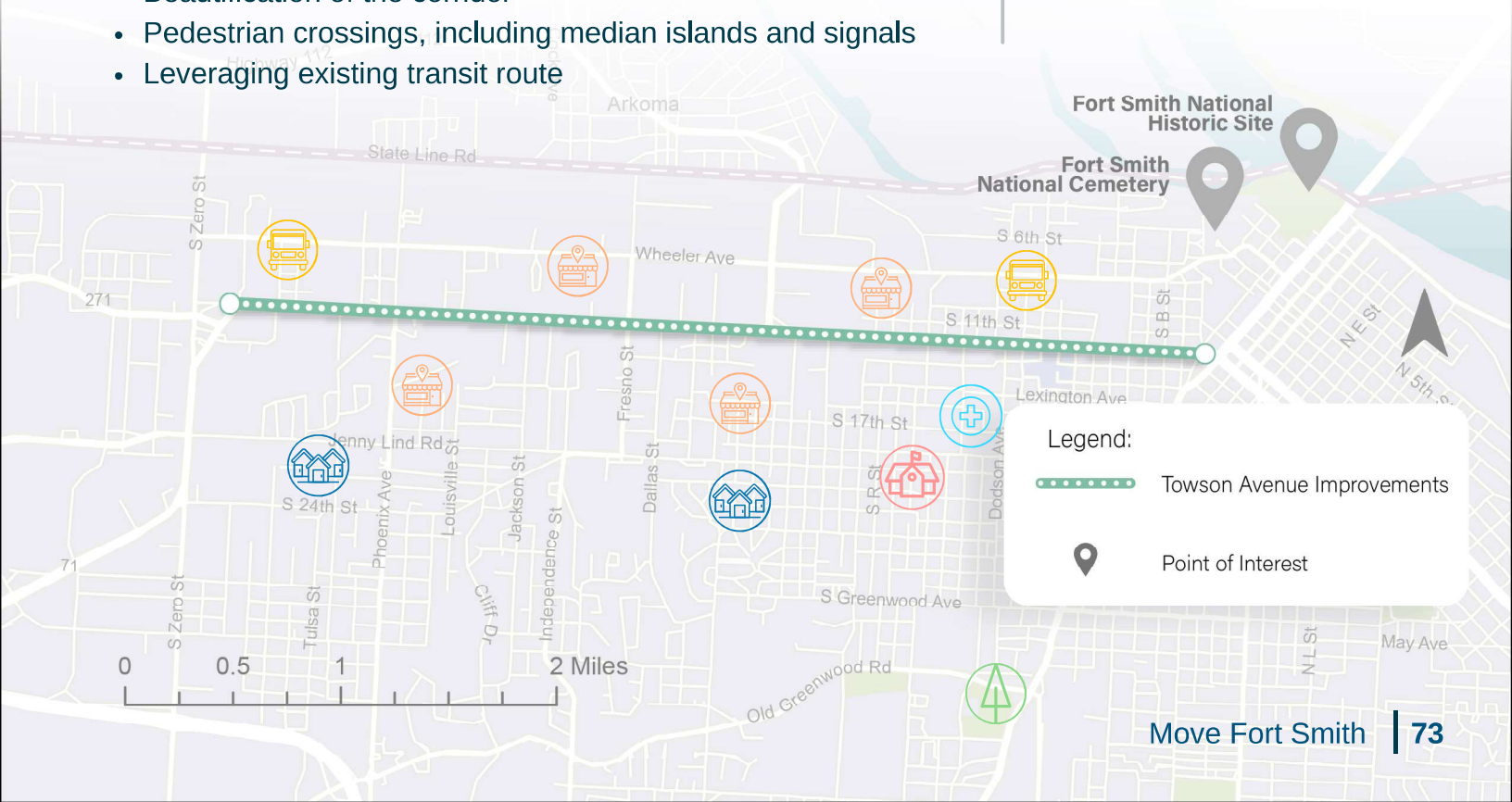
Towson Avenue is a four-lane major arterial with an approximate width of 60 feet. It is a heavily traveled, ARDOT-owned facility (Hwy 71 Business), with an AADT ranging between 15,000 near Downtown and 24,000 near Zero Street. Towson is an essential corridor for residents and visitors to Fort Smith as it provides access to many small and large businesses and a hospital and is a pivotal connection to many neighborhoods. ARDOT is currently underway with an overlay of Towson, including upgrades to the sidewalks and driveway access points along the corridor. The public transit route along Towson includes many stops to allow riders to access important amenities, businesses, and the hospital.

Opportunities

An opportunity exists to conduct a detailed and thorough corridor study and develop a plan that may recommend the following:

- Slowing vehicular speed
- Feasibility of including bicycle facilities
- Increasing connectivity and safety for active transportation users
- Beautification of the corridor
- Pedestrian crossings, including median islands and signals
- Leveraging existing transit route

Critical Connections



Midland Boulevard | Recommended for Critical Corridor Study

Riverfront Drive to Garrison Avenue

4.2 miles Estimated Cost: TBD

Overview

Midland Blvd. is a five-lane major arterial with a width ranging from 57'-72' at different locations. Midland is a heavily traveled, ARDOT-owned facility (Hwy 71 Business), with an AADT ranging between ~20,000 in the north and ~13,000 at the southern terminus. Like many other corridors listed, Midland is essential for residents and visitors to Fort Smith as it also provides access to many small and large businesses, a direct connection to the City of Van Buren, and a pivotal connection to many neighborhoods. It is recommended that the city coordinate with ongoing efforts related to the US Bicycle Route 51 and the Butterfield Stage Experience Bicycle Route, which could utilize Midland as a key section of those routes.

Opportunities

An opportunity exists to conduct a detailed and thorough corridor study and develop a plan that may recommend the following:

- Slowing vehicular speed
- Increasing connectivity and safety for active transportation users
- Beautification of the corridor
- Pedestrian crossings, including median islands and signals
- Leveraging existing transit route

Critical Connections



Legend:

- Midland Boulevard Improvements
- Point of Interest



Proposed Infrastructure Prioritization

All proposed catalytic projects, shared-use paved paths, on-street infrastructure, alleyways, and sidewalks have been prioritized based on several factors.

1 Access to Open Space and Parks

During public input sessions, the top desired destination residents listed that they would like to walk or bike to was a park(s). Creating safe connections to the city's parks will enhance the quality of life for all residents. The criteria for prioritization are as follows:

- 5 = Direct access to a park
- 4 = Within 1/8 mile
- 3 = Within 1/4 mile
- 2 = Within 1/2 mile
- 1 = Within 3/4 mile
- 0 = Over 1 mile of a park



2 School-Aged Children in Poverty

19.3% of Fort Smith residents live below the federal poverty level. While examining the data from the 2022 Census Bureau of school-aged children living in a household below the poverty line as a percentage of the total population per block group, the results were able to help identify the areas of Fort Smith in higher need of essential active transportation infrastructure. The criteria for prioritization are as follows:

- 5 = $\leq 21\%$ of school-aged children living in poverty
- 4 = $\leq 15\%$
- 3 = $\leq 10\%$
- 2 = $\leq 5\%$
- 1 = $\leq 1\%$
- 0 = No data available



3

School Walk Accessibility

Fort Smith Public Schools have Parent Transportation/Walk Zones that extend for a 2-mile radius around each school. In most cases, no bus services are provided within these zones. Therefore, it is critical that there are safe and connected routes for children to have the option of walking and biking to school. The criteria for prioritization are as follows:

- 5 = Multiple schools within 1/4 mile
- 4 = One school within 1/4 mile
- 3 = Multiple schools within 1/2 mile
- 2 = One school within 1/2 mile
- 1 = One school within 3/4 mile
- 0 = School greater than 1 mile



5

Connection to Transit Service

A connected transportation system is necessary to allow residents the opportunity to utilize the bus service, ride a bicycle, and/or walk to reach essential destinations. All Fort Smith Fixed Route Buses are equipped with bike racks, allowing residents to close out the final mile of their commute on a bicycle. The criteria for prioritization are as follows:

- 5 = Direct access to existing transit stop(s)
- 4 = Within 1/8 mile
- 3 = Within 1/4 mile
- 2 = Within 1/2 mile
- 1 = Within 3/4 mile
- 0 = Over 1 mile of existing transit stop(s)

4

Direct or Enhances Access to Employment Hubs/Centers

A top priority destination that residents at public input sessions indicated as a desired connection was the workplace. There are many large employers in the City of Fort Smith, and it is important to create safe and connected routes for employees to ride or walk to work. The criteria for prioritization are as follows:

- 5 = Direct access to identified employment hub(s)
- 4 = Within 1/8 mile
- 3 = Within 1/4 mile
- 2 = Within 1/2 mile
- 1 = Within 3/4 mile
- 0 = Over 1 mile to identified employment hub(s)

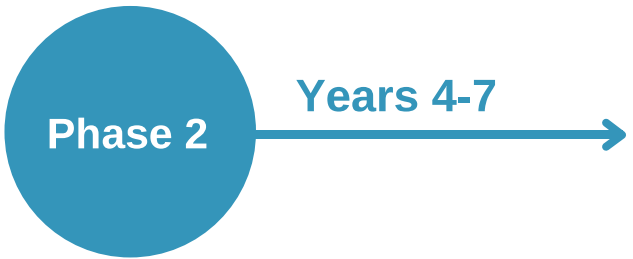


Phasing Plan

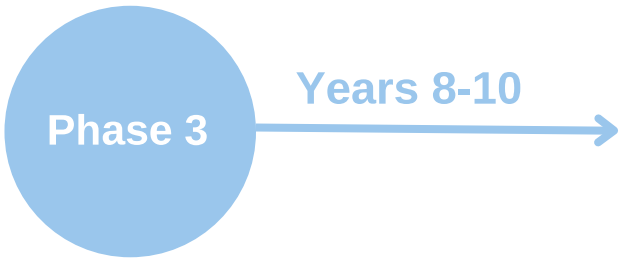
An active transportation network can take many years to complete due to many factors, such as funding and easements. The Move Fort Smith Plan includes a recommended ten-year phasing plan and approach that can inform the city's focus and help to prioritize which projects to pursue within certain timeframes. This phasing plan is intended to be a guideline and recommendation, and the city should feel free to pursue projects outside of the recommended phases as opportunities arise. Projects have been prioritized based on a ranking system outlined on page 74 and assigned a recommended timeframe to consider for implementation.



- **Beginning catalyst projects**
- **Beginning phase 1 projects**
 - **Completing connections and creating safe access to destinations such as schools are the recommended priorities for this phase**
- **Implementing programs**
- **Begin early planning for Phase 2 projects.**

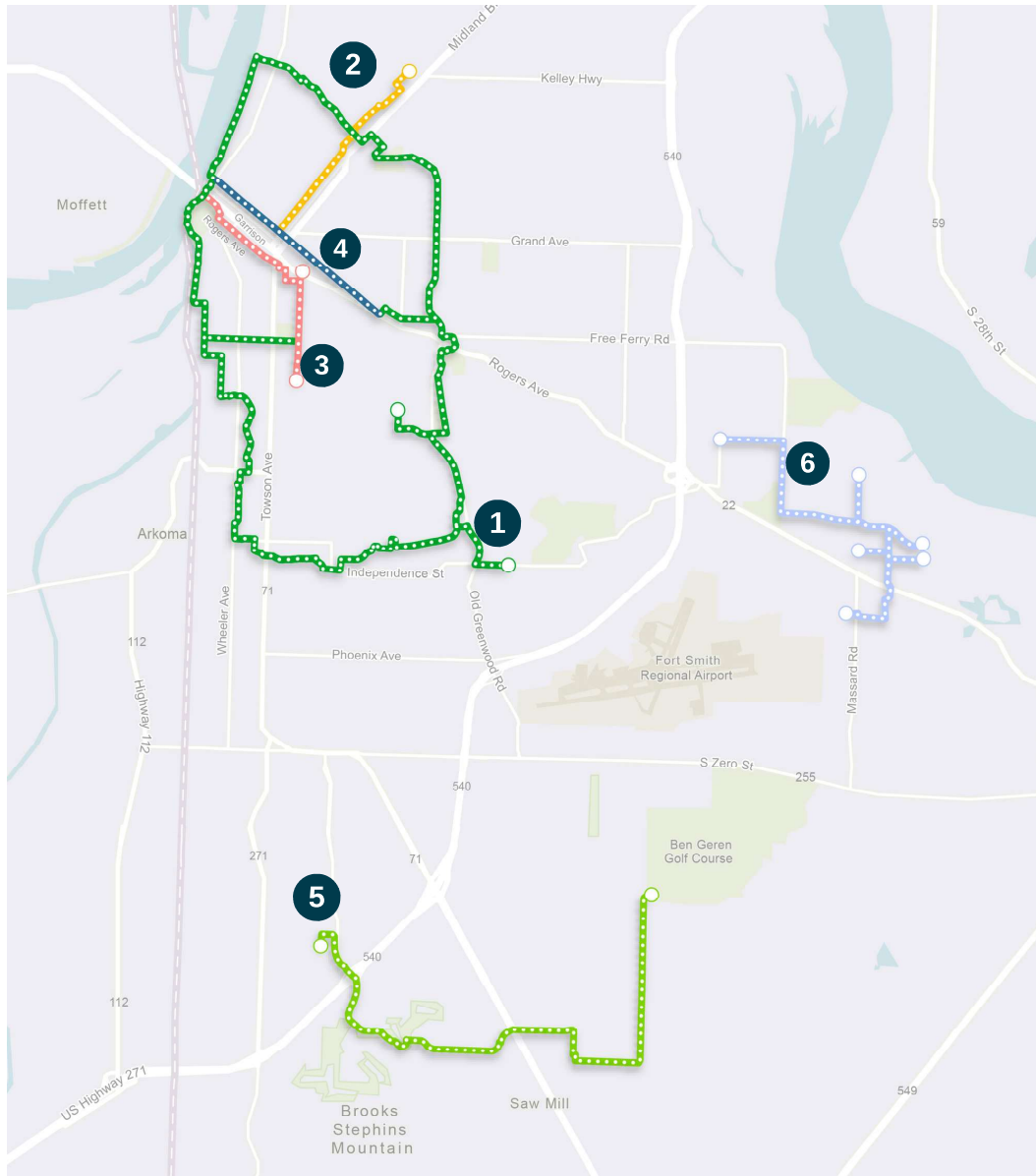


- **Beginning Phase 2 projects**
- **Measuring usage**
- **Tracking safety statistics**
- **Begin early planning for Phase 3 projects.**



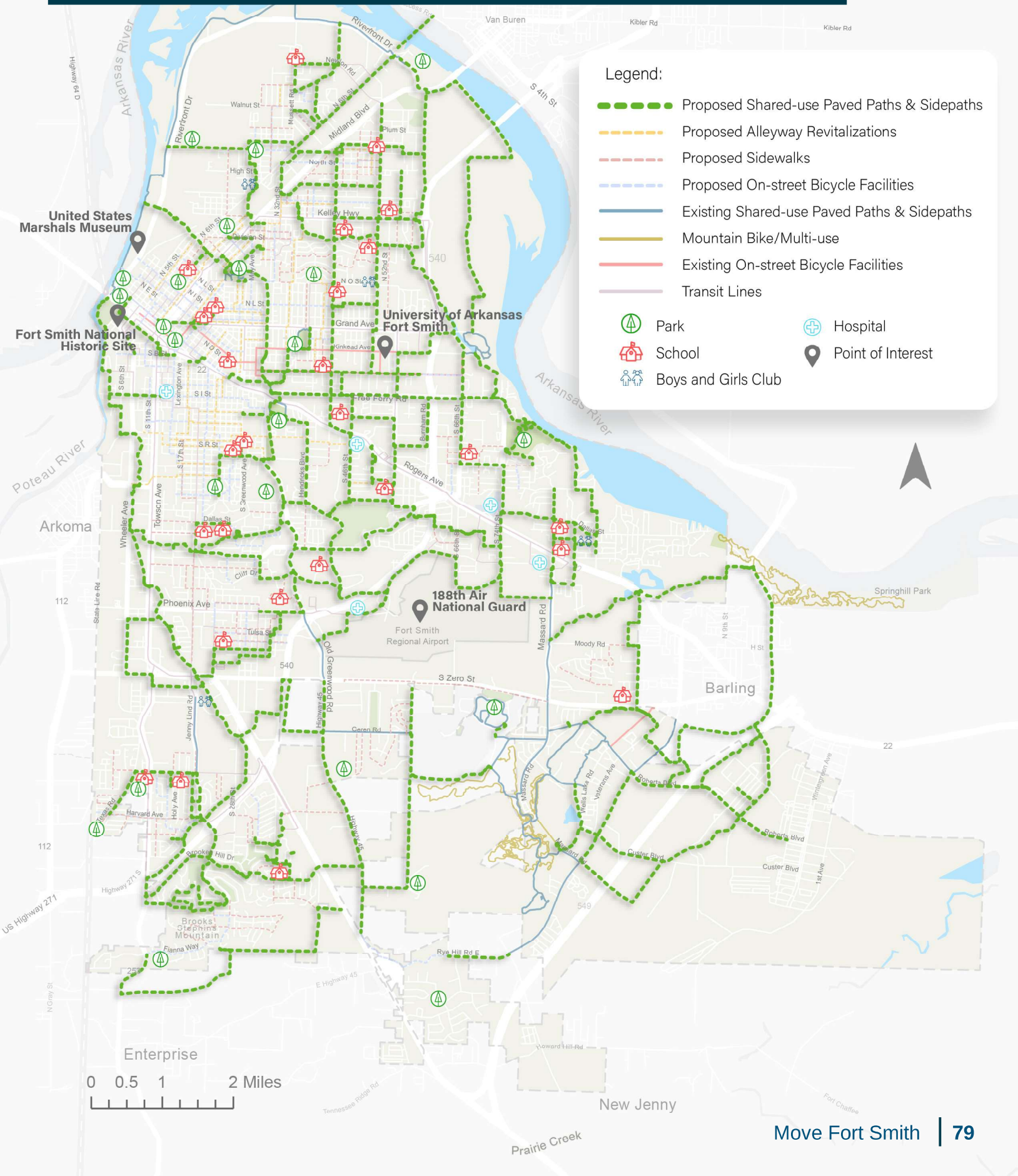
- **Beginning Phase 3 projects**
- **Completing the network and planning for growth**

Phase 1 Catalytic Projects

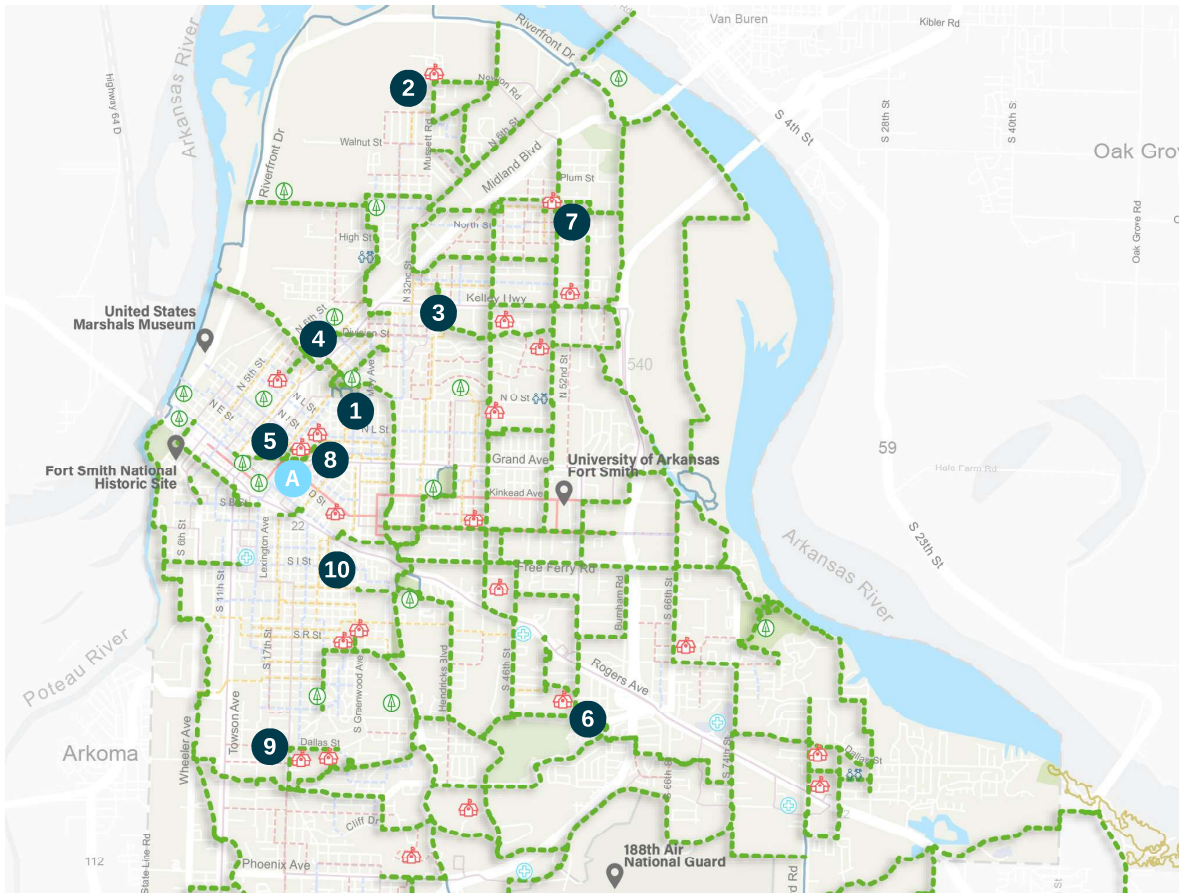


Project ID	Project Description	Planning Level Cost Estimate	Cost to Benefit Priority Score
1	Bass Reeves Legacy Loop <i>(including all spurs & connections)</i>	\$24,987,000	44
2	9th & 10th Street Alleyway	\$3,290,467	40
3	West Side Bikeway	\$1,716,665	38
4	B Street Safety Improvements	\$1,215,949	38
5	Brooken Hill to Ben Geren	\$3,135,421	34
6	Eastside Greenway <i>(including all spurs & connections)</i>	\$3,278,476	34

Proposed Shared-Use Paved Paths and Sidepaths



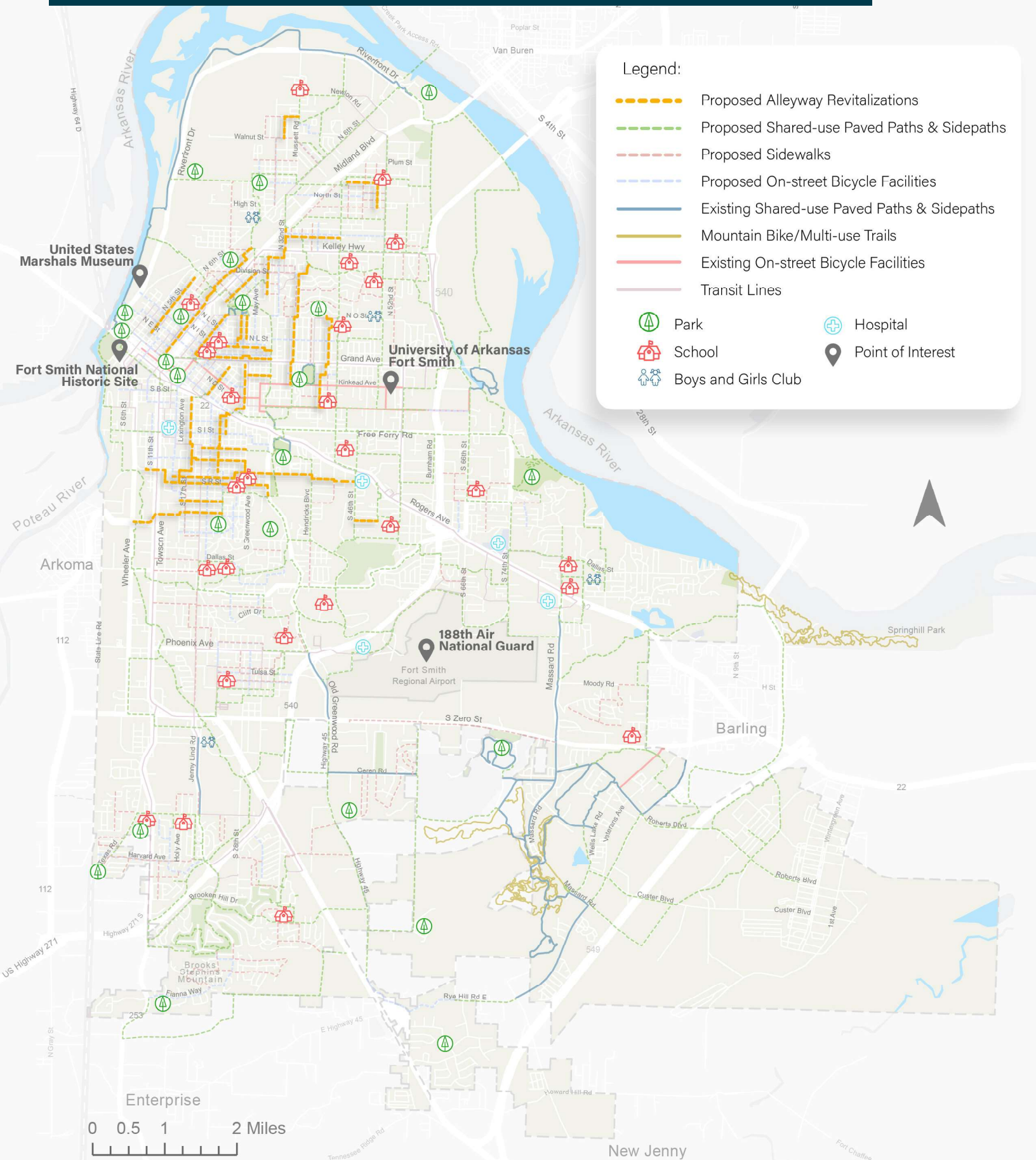
Phase 1 Shared-Use Paved Paths & Sidepaths



Project ID	Project Description	Planning Level Cost Estimate	Cost to Benefit Priority Score
1	Maybranch Route to N 21st St. Connector	\$225,467	130
2	Newlon Rd. Sidepath	\$496,914	126
3	Windsor Dr. Sidepath	\$1,944,180	120
4	Division St. Sidepath	\$310,044	108
5	Darby Middle to N E St.	\$186,448	105
A	Darby/Tilles Connection to Downtown and Neighborhoods	\$629,157	79
6	E Valley Rd. to Bonneville Elementary	\$304,296	104
7	Spradling Elementary to N 50th St.	\$122,541	102
8	Tilles Elementary to Alleyway Connector	\$235,591	100
9	Jenny Lind Sidepath	\$365,303	98
10	Dodson Ave. Sidepath	\$364,249	95

* Although Project A's Cost-to-Benefit Score is lower than that of the other projects in Phase 1, it is recommended that it be completed in tandem with Project #5, as it serves as a key connection. See Appendix A for details of phases 1-3 and beyond.

Proposed Alleyway Revitalizations

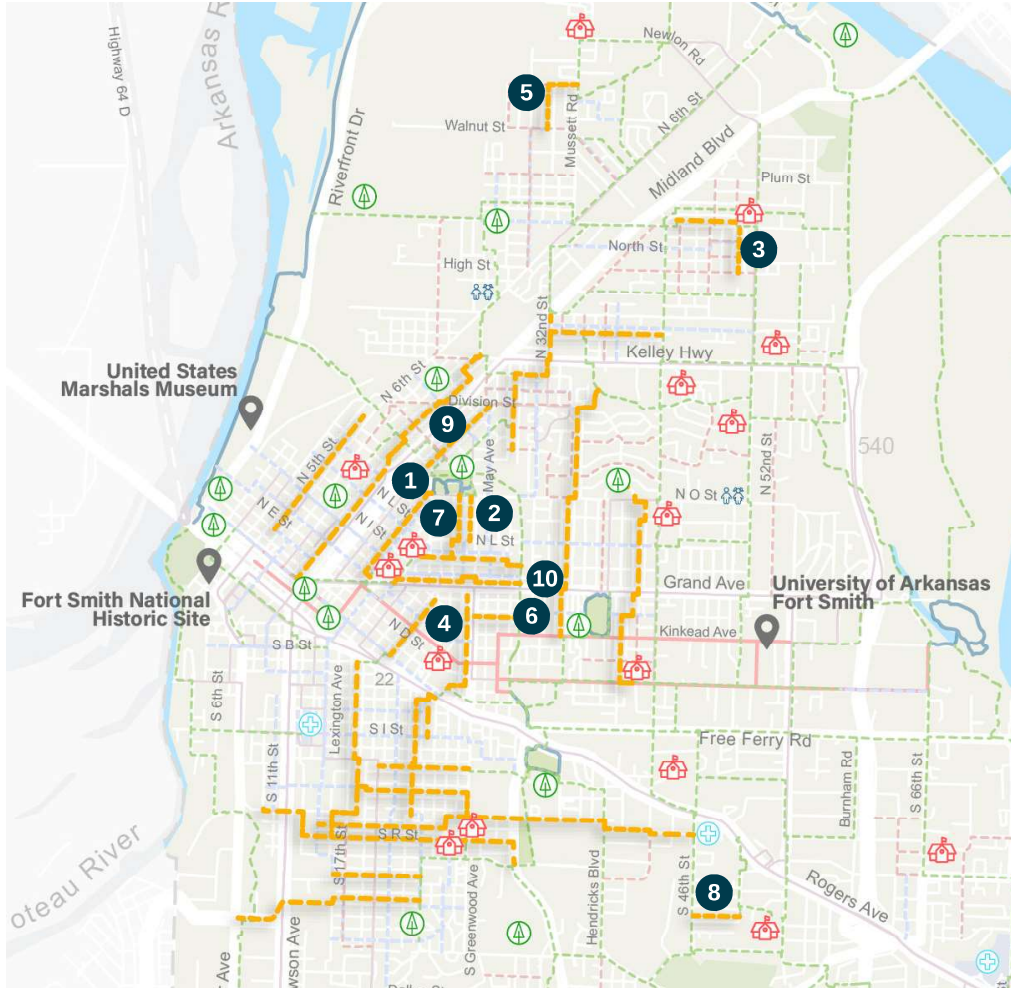


Legend:

- - - Proposed Alleyway Revitalizations
- - - Proposed Shared-use Paved Paths & Sidepaths
- - - Proposed Sidewalks
- - - Proposed On-street Bicycle Facilities
- Existing Shared-use Paved Paths & Sidepaths
- Mountain Bike/Multi-use Trails
- Existing On-street Bicycle Facilities
- Transit Lines
- 🌳 Park
- 🏥 Hospital
- 🏠 School
- 📍 Point of Interest
- 👦👧 Boys and Girls Club



Phase 1 Alleyway Revitalizations















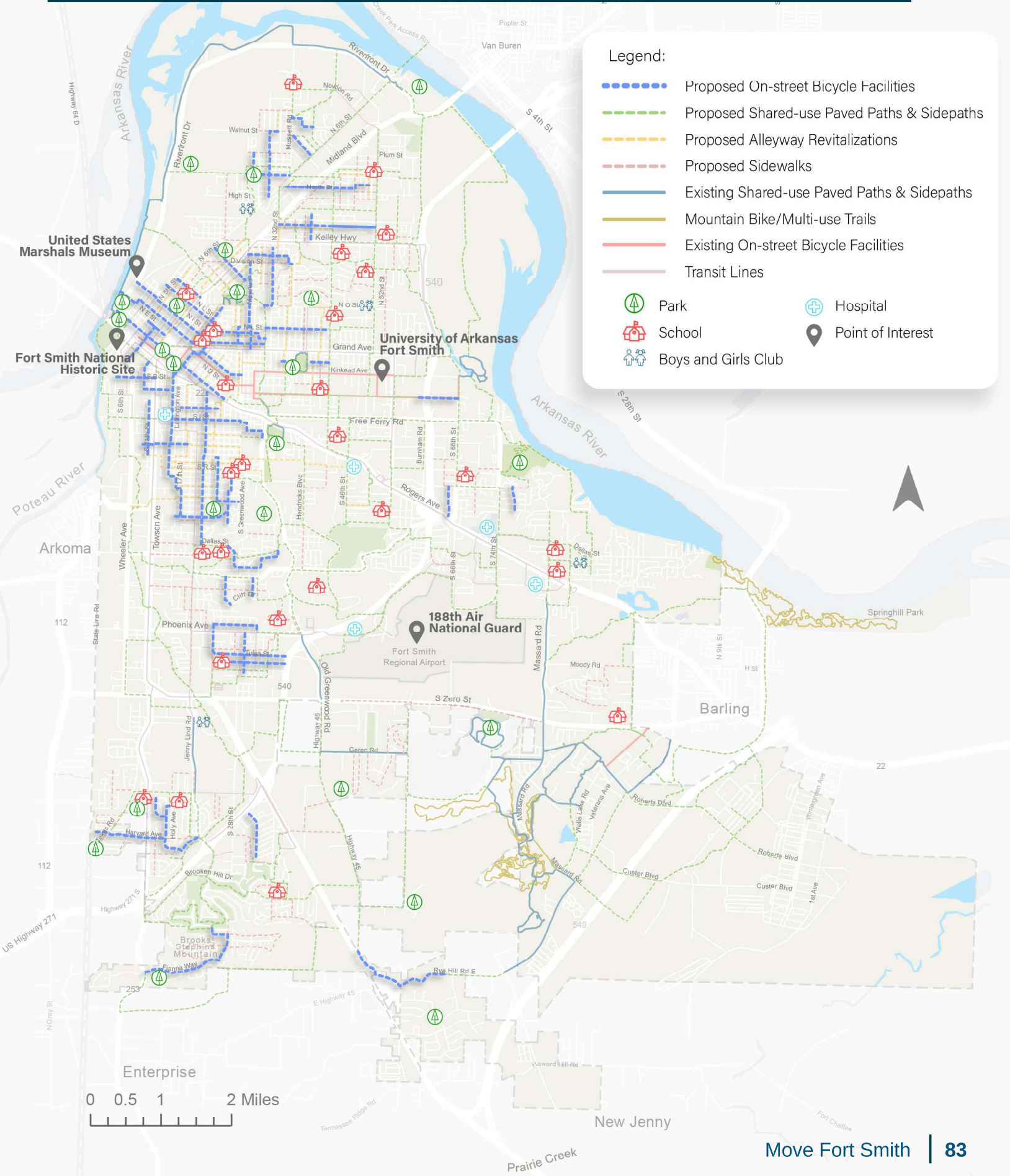
Project ID	Project Description	Planning Level Cost Estimate	Cost to Benefit Priority Score
1	N 13th St. & N 14th St.	\$1,192,580	162
2	Belle Ave. & N Greenwood Ave. North	\$472,207	133
3	N 48th St. & N 49th St.	\$470,015	107
4	N 19th St. & N 20th St.	\$749,246	105
5	Irene St. & N 32nd St.	\$774,830	90
6	Alabama Ave. & Hardie Ave.	\$476,959	77
7	N K St. to MLK Park	\$743,398	75
8	S V St. & S W St. East	\$488,654	68
9	N 12th St. & N 13th St.	\$903,481	56
10	Grand Ave. Adjacent Alleyway	\$1,469,618	51

See Appendix A for details of phases 1-3 and beyond.

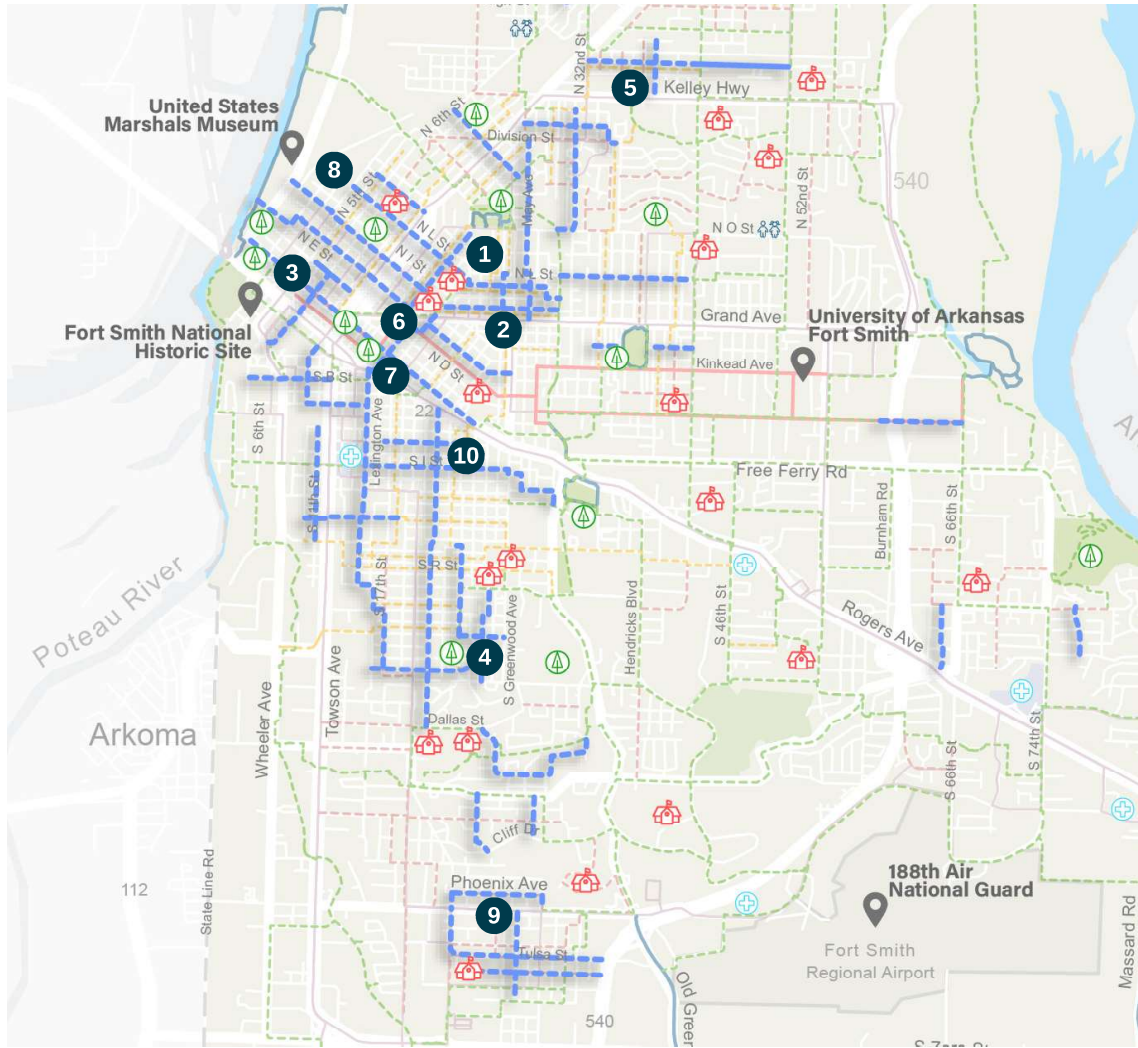
Proposed On-Street Bicycle Facilities

Legend:

-  Proposed On-street Bicycle Facilities
-  Proposed Shared-use Paved Paths & Sidepaths
-  Proposed Alleyway Revitalizations
-  Proposed Sidewalks
-  Existing Shared-use Paved Paths & Sidepaths
-  Mountain Bike/Multi-use Trails
-  Existing On-street Bicycle Facilities
-  Transit Lines
-  Park
-  Hospital
-  School
-  Point of Interest
-  Boys and Girls Club



Phase 1 On-Street Bicycle Facilities
















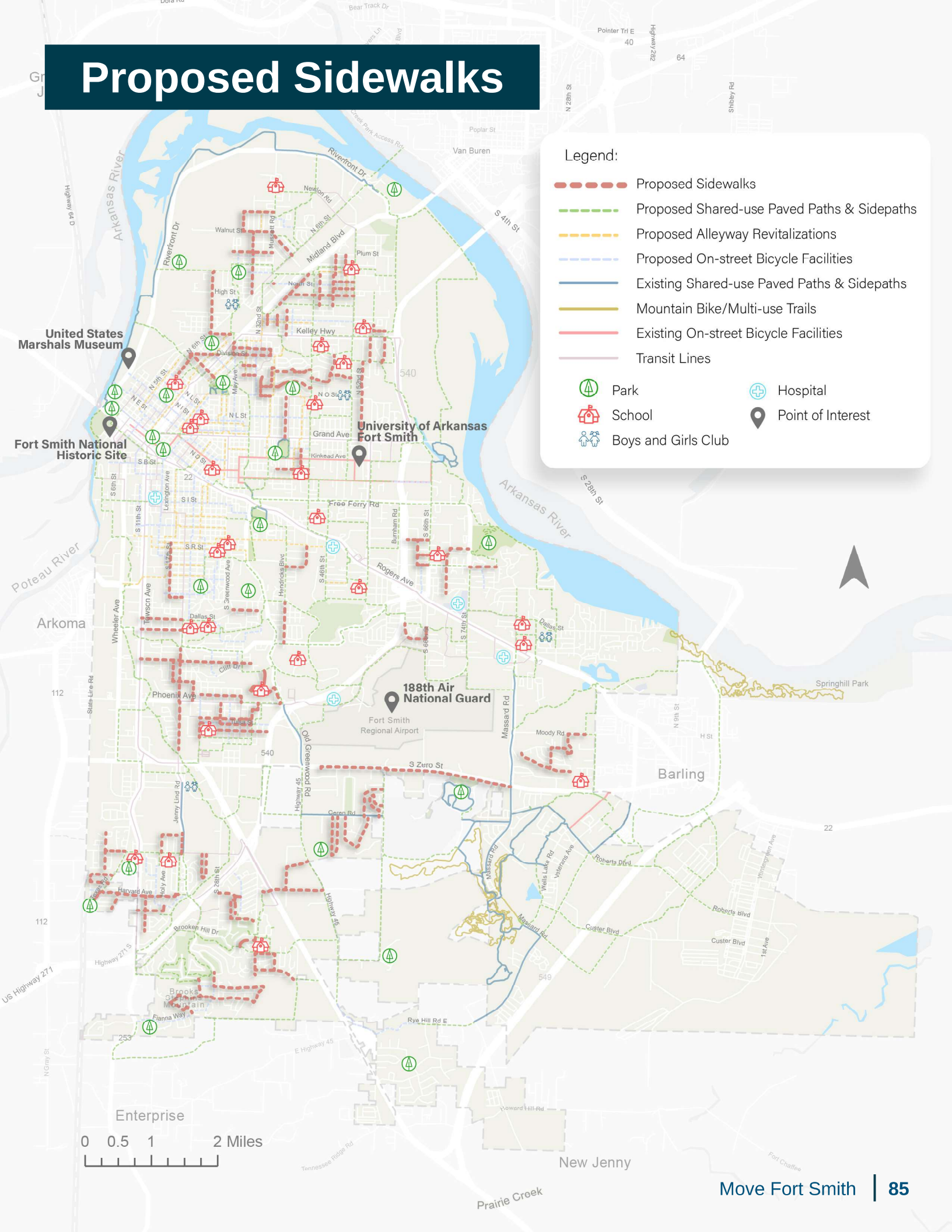
Project ID	Project Description	Planning Level Cost Estimate	Cost to Benefit Priority Score
1	N 14th St.	\$459,201	140
2	Belle Ave.	\$249,837	133
3	N 7th St. to D St. N	\$727,634	115
4	Vista Blvd./Shady Ln./S 25th St./Wolfe Ln.	\$634,437	115
5	N 38th St.	\$357,472	113
6	N E St. to N 16th St.	\$150,296	113
7	N 15th St.	\$413,040	110
8	N M St.	\$382,850	107
9	S 29th St.	\$553,054	100
10	G St. S	\$490,048	100

See Appendix A for details of phases 1-3 and beyond.

Proposed Sidewalks

Legend:

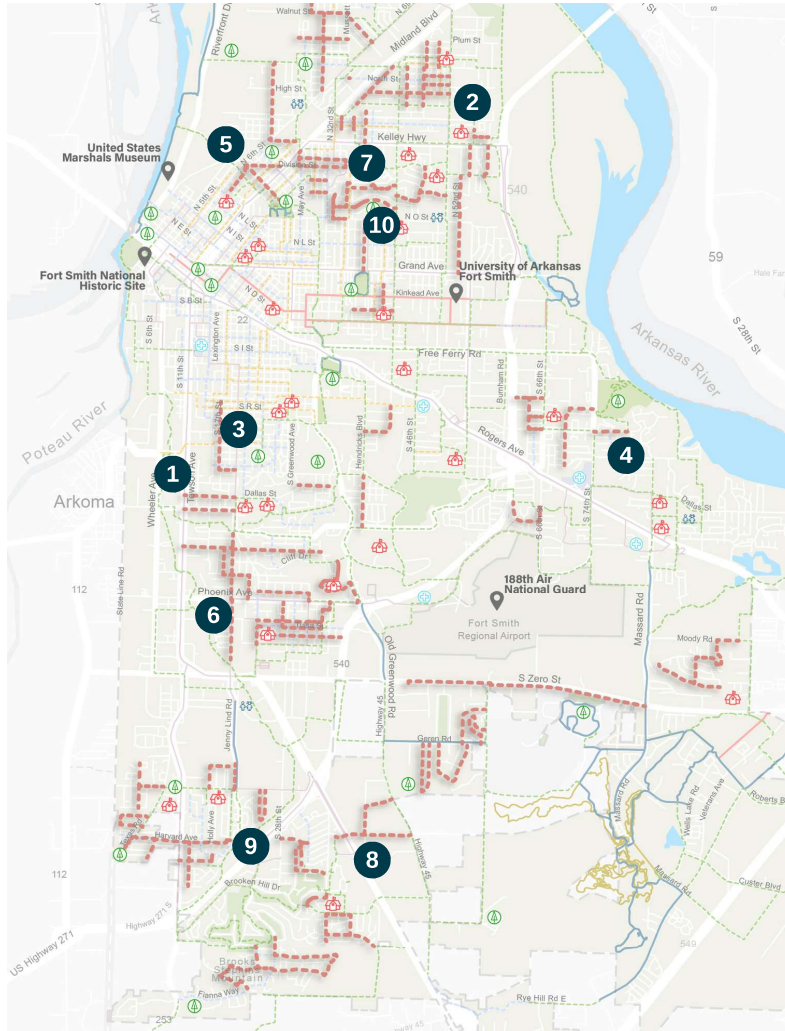
-  Proposed Sidewalks
 -  Proposed Shared-use Paved Paths & Sidepaths
 -  Proposed Alleyway Revitalizations
 -  Proposed On-street Bicycle Facilities
 -  Existing Shared-use Paved Paths & Sidepaths
 -  Mountain Bike/Multi-use Trails
 -  Existing On-street Bicycle Facilities
 -  Transit Lines
-
-  Park
 -  School
 -  Boys and Girls Club
 -  Hospital
 -  Point of Interest



Enterprise



Phase 1 Sidewalks



Project ID	Project Description	Planning Level Cost Estimate	Cost to Benefit Priority Score
1	Dallas St Sidewalk	\$238,468	128
2	High St Sidewalk	\$1,218,640	113
3	17th St to Jenny Lind Sidewalk	\$1,265,768	113
4	Euper Ln Sidewalk - East of S 74th St	\$157,100	108
5	Division St Sidewalk	\$530,337	105
6	Jenny Lind Sidewalk (Houston to Zero)	\$1,909,561	105
7	Warner St Sidewalk	\$401,568	103
8	Planters Rd Sidewalk	\$359,566	103
9	Harvard Ave Sidewalk	\$1,174,712	103
10	Chaffee Dr Sidewalk	\$225,467	97

See Appendix A for details of phases 1-3 and beyond.

Facility Maintenance

Shared-Use Paved Paths Maintenance

Currently, the parks department maintains all shared-use paved paths and sidepaths within the city. Maintenance includes mowing, tree and branch removal, debris removal, pavement markings, and signage, as well as replacing sections of the surface as needed. Sebastian County, in partnership with FCRA, maintains all but one shared-use paved path in the Chaffee Area. The shared-use paved paths are being maintained at a high level.

Facilities within Street Right of Ways

Currently, the city Streets Department maintains all bicycle and pedestrian facilities within the right of way of all city streets. This includes sidewalks and any on-street shared-use bicycle route. For sidewalks and sidepaths, mowing, as well as trash and debris removal, typically is the responsibility of the adjacent property owner; however, pavement markings, signage, and replacing and repairing surface sections are the city's responsibility. The maintenance of these facilities is being done at a high level.

Planning for Maintenance

As the active transportation network grows, it is recommended that the city develop a detailed operations and maintenance plan. All departments are operating at capacity with current projects and facilities, and adding additional facilities could be problematic without dedicated funding and extra staff to maintain new facilities at current levels.

For planning purposes, an annual budget of \$4,000-\$5,000 per mile should cover most ongoing maintenance needs related to a shared-use paved path. Sidepath maintenance is typically higher due to pavement marking maintenance at driveways and intersections. *See Appendix F for the Razorback Regional Greenway Operations and Maintenance Plan and a resolution passed by the City of Fayetteville.*



A stylized map of the United States is shown in the background, rendered in light gray outlines. A dark teal rectangular overlay covers the bottom portion of the page, containing the page number and title.

07

Policies & Programs

Community Level Benefits

Several community-level benefits will come with investing in a safe and connected active transportation infrastructure network like the Move Fort Smith Active Transportation Plan proposes. Through this plan, the City of Fort Smith stands to generate substantial community-level advantages, revolutionizing how individuals navigate and engage with their surroundings and community in Fort Smith.

By facilitating increased mobility for people on bikes and people on foot, this proposed infrastructure not only fosters public health through the promotion of physical activity and the reduction of chronic disease rates but also significantly enhances accessibility for all individuals regardless of their socioeconomic status, including those with disabilities.

Such infrastructure promotes fairness by ensuring that all community members have access to safe and convenient transportation options.

Furthermore, active transportation contributes to environmental sustainability by curbing greenhouse gas emissions and lessening reliance on fossil fuels. Quality of life is improved as neighborhoods become more habitable, with reduced traffic congestion and noise. At the same time, economic benefits are realized through amplified local commerce, higher property values, and the attraction of businesses and tourists seeking vibrant, walkable, and bike-friendly areas. These multifaceted benefits underscore the critical significance of prioritizing and investing in active transportation infrastructure for Fort Smith.



Public Health

Public health stands to improve through increased investment in an active transportation network. Encouraging more residents to walk and cycle as part of their daily routines helps combat sedentary lifestyles, which are linked to various chronic diseases such as obesity, diabetes, and cardiovascular issues. Regular physical activity, such as biking and walking, boosts overall fitness, strengthens the immune system, and improves mental health by reducing stress, anxiety, and depression. By integrating active transportation into everyday life, Fort Smith can promote a healthier, more vibrant population, reduce healthcare costs, and create a stronger, more resilient community. Additionally, enhanced mobility infrastructure reduces the risk of traffic-related accidents and fatalities, creating safer environments for all residents. Safe, well-designed bike lanes, crosswalks, and pedestrian paths encourage more people to choose active transportation, decreasing the number of cars on the road. This reduction in vehicular traffic leads to lower rates of air pollution and associated respiratory conditions such as asthma and bronchitis. Cleaner air contributes to a healthier environment, benefiting not just individuals but the community as a whole, especially vulnerable populations like children and the elderly. Improving active transportation options also fosters a sense of community and social cohesion in Fort Smith. Walkable and bike-friendly neighborhoods encourage social interactions, helping to build stronger relationships among residents.

These connections are essential for mental well-being, providing social support networks that can reduce feelings of isolation and loneliness. Furthermore, vibrant public spaces created through active transportation infrastructure attract community events and activities, further enhancing the social fabric and cultural vitality of Fort Smith. Through these multi-faceted public health benefits, improved mobility for cyclists and pedestrians can profoundly impact the quality of life in the city.

Accessibility

The Move Fort Smith Active Transportation Plan can improve the accessibility for people on bikes and on foot and greatly enhance accessibility at the community level. By developing a comprehensive network of bike lanes, pedestrian pathways, and safe crosswalks, the city can ensure that all residents, including those with disabilities, have equitable access to transportation. This infrastructure allows individuals who do not own a car or cannot drive due to age, financial constraints, or physical limitations to move freely and independently within the community. Greater accessibility fosters inclusivity, enabling everyone to participate fully in social, economic, and recreational activities.



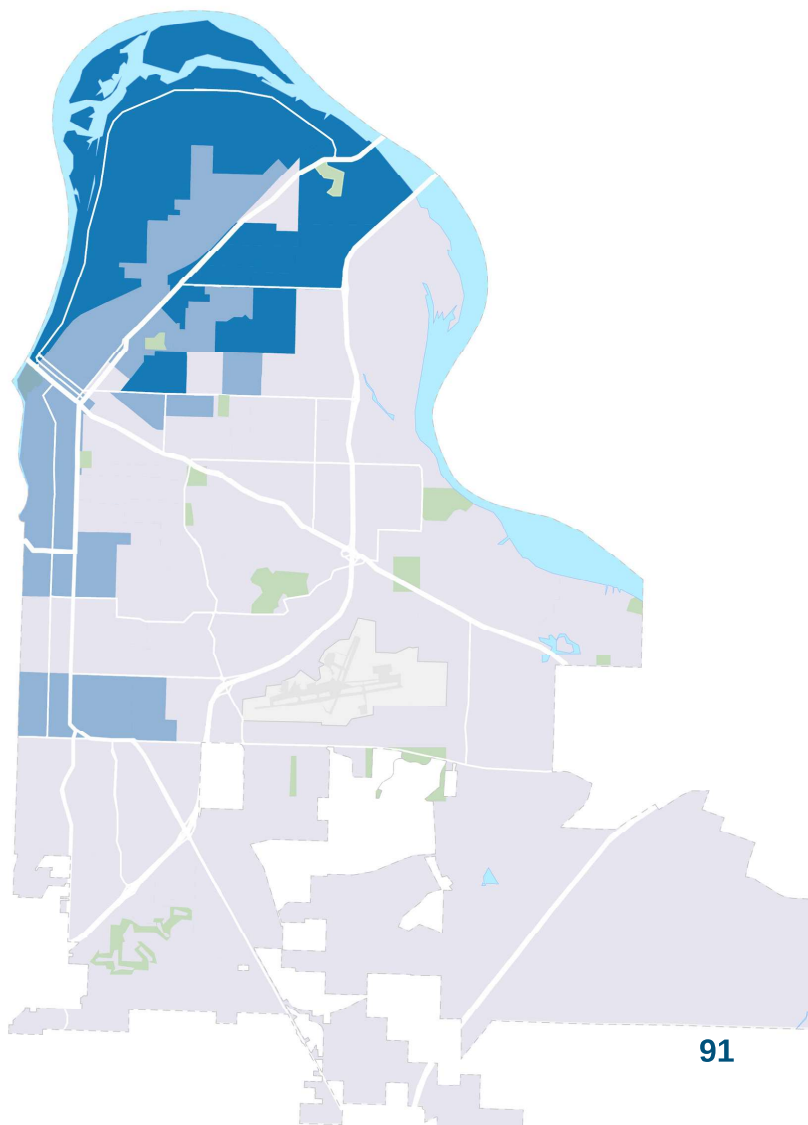
Moreover, accessible active transportation options can bridge the gap between different neighborhoods, connecting residents to essential services such as healthcare, education, and employment. By creating safe and convenient routes for cyclists and pedestrians, Fort Smith can reduce the barriers that often prevent people from reaching important destinations. This connectivity not only supports economic mobility by providing easier access to job opportunities but also ensures that all residents can benefit from the city's amenities and resources, regardless of their mode of transportation. Improved accessibility can thus enhance the overall quality of life, making Fort Smith a more livable and equitable city for everyone. Enhanced accessibility through active transportation also promotes social equity by addressing transportation disparities that disproportionately affect low-income and marginalized communities. Investing in bike-friendly and walkable infrastructure ensures these communities have safe and affordable transportation options, reducing their reliance on costly car ownership and public transit systems that may not adequately serve their needs. This investment helps level the playing field, giving all residents the ability to move around the city with ease. By prioritizing accessibility, Fort Smith can create a more just and equitable urban environment where everyone has the opportunity to thrive.



Equity

The Move Fort Smith Plan has the ability to improve equity at a community level by developing a robust network of bike lanes, sidewalks, and pedestrian paths, ensuring that all residents, regardless of their socioeconomic status, have equal access to safe and reliable transportation. This infrastructure is particularly beneficial for low-income families and individuals who may not afford a car, offering them a cost-effective alternative to move around the city. Enhanced mobility options empower these residents, giving them better access to employment, education, healthcare, and other essential services, thereby promoting economic mobility and reducing poverty. Furthermore, investing in active transportation infrastructure addresses long-standing transportation access disparities that disproportionately affect marginalized communities. Neighborhoods historically underserved by public transportation can benefit from safe biking and walking routes. These improvements can help bridge the gap between isolated communities and the broader city, fostering greater social integration and cohesion. By prioritizing equitable transportation solutions, Fort Smith can ensure that no community is left behind and all residents can benefit from the city's growth and development.

Improved mobility for people on bikes and on foot also promotes environmental justice, a key aspect of equity. Lower-income and minority communities often suffer more from environmental hazards like air pollution, partly due to their proximity to major roadways with high traffic volumes. By encouraging more people to walk or bike, Fort Smith can reduce car traffic and emissions, leading to cleaner air and healthier living conditions for all residents. This shift not only improves public health but also ensures that the benefits of a cleaner environment are equitably shared across the city. Through these initiatives, Fort Smith can create a more equitable, inclusive, and healthy community for everyone.



Environmental Sustainability

Improved mobility for people on bikes and on foot can significantly enhance environmental sustainability for the City of Fort Smith. By investing in a comprehensive network of bike lanes, pedestrian pathways, and greenways, the city can reduce its reliance on motor vehicles, which could substantially decrease greenhouse gas emissions. Fewer cars on the road mean lower carbon dioxide and other pollutants, contributing to cleaner air and a healthier environment. This shift is crucial in combating climate change and ensuring a sustainable future for Fort Smith, aligning with global efforts to reduce carbon footprints and protect the planet. Moreover, promoting active transportation options like biking and walking can help conserve natural resources. The production and maintenance of bicycles and pedestrian infrastructure require significantly less energy and materials than automobiles and roadways. This reduction in resource consumption lowers the environmental impact and encourages more sustainable use of city funds, as the costs associated with building and maintaining bike lanes and sidewalks are generally lower than those for roadways and parking facilities. By prioritizing sustainable infrastructure, Fort Smith can allocate resources more efficiently, benefiting the environment and the community. Enhanced mobility for cyclists and pedestrians also supports urban planning and development, prioritizing green spaces and ecological preservation. Creating safe and attractive routes for active transportation often involves integrating parks, trails, and other natural elements into the urban landscape.

These green spaces not only provide recreational opportunities and improve residents' quality of life but also serve as important habitats for local wildlife and contribute to biodiversity. Additionally, they help mitigate the urban heat island effect, reduce stormwater runoff, and improve overall environmental resilience. Through these sustainable urban planning practices, Fort Smith can create a healthier, more vibrant, and environmentally responsible community.

Quality of Life

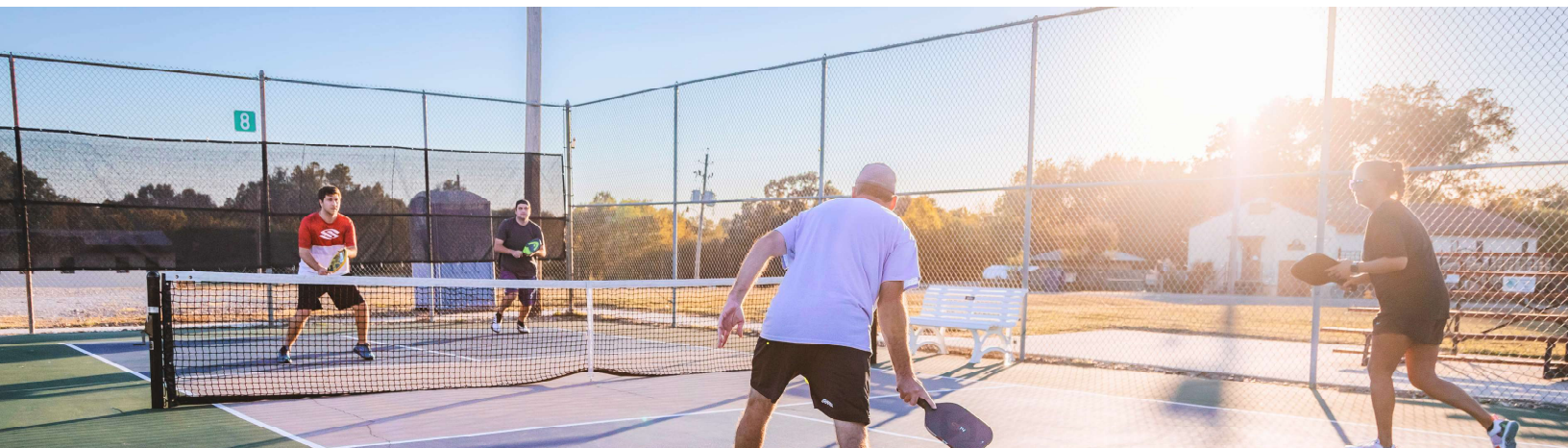
The quality of life for the residents of Fort Smith stands to increase through improved mobility. Developing a comprehensive network of bike lanes, sidewalks, and pedestrian paths ensures that residents have safe, convenient, and enjoyable options for their daily commutes and recreational activities. These improvements make it easier for people to incorporate physical activity into their routines, which can lead to better overall health and well-being. As a result, residents experience lower stress levels, improved mental health, and a stronger sense of community, all contributing to a higher quality of life.



Moreover, enhanced mobility infrastructure can reduce traffic congestion and improve road safety, benefiting all residents, whether they drive, bike, or walk. With fewer cars on the road, commute times decrease, and the risk of accidents is minimized, creating a safer environment for everyone. Additionally, quieter streets and reduced traffic noise contribute to a more peaceful and pleasant living environment. By making active transportation a viable and attractive option, Fort Smith can create more vibrant, livable neighborhoods where people feel safe and comfortable moving around on foot or by bike. Furthermore, promoting active transportation options fosters social interaction and community engagement. Walkable and bike-friendly neighborhoods encourage residents to spend more time outdoors, where they are more likely to encounter neighbors and participate in community activities. This increased social interaction helps build stronger community bonds and a sense of belonging, essential to a thriving, connected community. Additionally, attractive and accessible public spaces enhance the city's appeal, drawing more visitors and potentially boosting local businesses. By investing in active transportation, Fort Smith can create a more dynamic, inclusive, and enjoyable community for all its residents.

Economic Returns

Investing in comprehensive biking and walking infrastructure can stimulate local economies by attracting businesses and tourists seeking vibrant, active communities. Walkable and bike-friendly areas appeal to businesses, particularly retail and dining establishments, which often see increased foot traffic and sales. Additionally, tourists drawn to the city's attractive, accessible public spaces contribute to the local economy through spending on accommodations, food, and recreational activities. This boost in local commerce can create jobs and generate higher tax revenues for the city. Moreover, enhanced mobility infrastructure can lead to increased property values in neighborhoods that are well-connected and accessible. Studies have shown that properties in walkable and bike-friendly areas tend to have higher market values, as these amenities are highly desirable. Homebuyers and renters are often willing to pay a premium for the convenience and quality of life benefits of living in such areas. This increase in property values not only benefits individual homeowners but also strengthens the city's tax base, providing more resources for public services and further infrastructure improvements.



Improving mobility for cyclists and pedestrians also leads to cost savings for residents and the city. By providing safe and efficient alternatives to car travel, residents can reduce their transportation expenses, including fuel, maintenance, and parking costs. These savings can then be spent locally, further stimulating the economy. For the city, investing in bike lanes and pedestrian paths is generally more cost-effective than maintaining and expanding roadways for cars. Reduced traffic congestion and wear and tear on roads also mean lower maintenance costs over time. Overall, the economic returns from improved active transportation infrastructure can significantly enhance the financial health and sustainability of the City of Fort Smith.

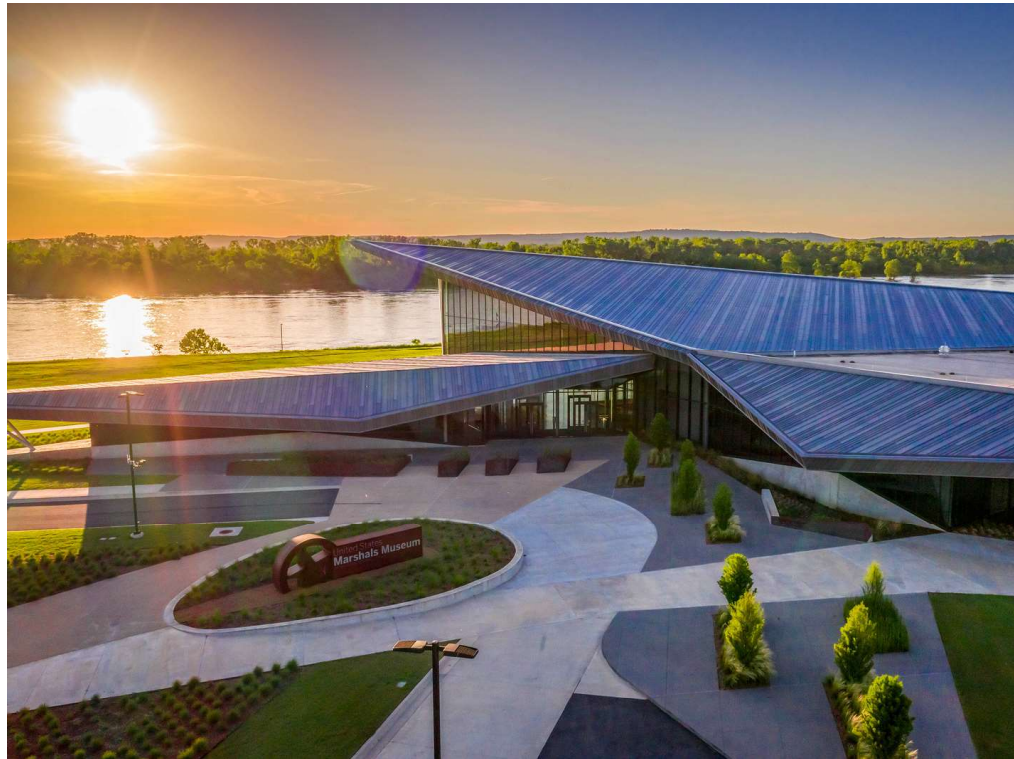


Photo Courtesy of 64.6 Downtown

Program Development

1 Education and Safety Programs Recommendations

Adult Learn to Ride Program

Recommendation:

Create and execute an Adult Learn to Ride Bike Program. This initiative, driven by volunteers and community members, aims to equip adults who have never ridden a bike or haven't done so in years with the necessary skills and confidence to ride safely. By fostering an environment of support and encouragement, particularly for marginalized community members, this program seeks to empower individuals to embrace biking as a mode of transportation and recreation.

Expected Outcomes:

The expected outcomes of implementing an Adult Learn to Ride Bike Program are the empowerment of participants through the acquisition of biking skills and increased confidence in riding bicycles. By providing instruction and support tailored to the needs of adult learners, the program aims to:

- Enable participants to overcome barriers to cycling, such as fear or lack of experience, thus expanding their transportation options and promoting physical activity.
- Foster a sense of community and social inclusion by bringing together volunteers and participants from diverse backgrounds to share knowledge and support each other's learning.
- Promote the health benefits of biking, including improved cardiovascular fitness, reduced stress, and enhanced mental well-being.

- Contribute to sustainable transportation goals by encouraging more adults to choose biking as a mode of transportation for short trips and commuting.
- Empower marginalized community members by providing access to resources and opportunities for skill development and social engagement.

Success Metrics:

Success is typically measured through the diversity of registered participants and the amount of participants.



2 Infrastructure Improvement Programs Recommendations

A. Expanded Bicycle Parking Policy

Recommendation:

Create, develop, and adopt a comprehensive bike parking policy. This policy should establish minimum requirements for developers, specifying locations for bike parking, design standards, security measures, accessibility, maintenance protocols, and incentives. By implementing this policy, the City can help to increase the safety of bike parking, increase convenience, and ensure the parking is well-maintained, encouraging more people to choose biking as a viable mode of transportation.

Expected Outcomes:

The implementation of a comprehensive bike parking policy is expected to yield several positive outcomes:

- **Increased Bike Usage:** By providing safe and accessible bike parking, more residents will be encouraged to use bicycles for commuting and leisure, reducing traffic congestion and promoting healthier lifestyles.
- **Enhanced Urban Design:** Standardized design and placement of bike parking will contribute to a more organized and aesthetically pleasing urban environment.

- **Improved Security:** Enhanced security measures will reduce bike theft and vandalism, increasing confidence for people on bikes using public spaces.
- **Accessibility and Inclusivity:** Thoughtful planning and design will ensure that bike parking is accessible to all community members, including those with disabilities.
- **Economic Benefits:** Businesses may see increased patronage from cyclists, and developers could benefit from incentives, fostering a bike-friendly economic environment.
- **Environmental Impact:** Encouraging biking over car usage will contribute to lower emissions and a reduction in the city's carbon footprint.
- **Maintenance and Sustainability:** Regular maintenance protocols will ensure the longevity and usability of bike parking facilities, promoting sustainable transportation infrastructure.

THE BASICS OF GOOD BIKE PARKING

U-locks can be locked to the frame, rack, and one wheel at the same time



At least two points of contact with the bike

Wheel troughs prevent bikes from slipping and tipping

B. Traffic Calming Measures Policy Program

Recommendation:

Create, develop, and adopt a program that enables neighborhoods to submit proposals for temporary and even permanent traffic calming measures on their streets. This structured process will include a formal approval procedure, ensuring community members have a voice in enhancing street safety and livability through effective traffic management solutions.

Expected Outcomes:

The implementation of a resident program for temporary traffic calming measures is expected to achieve several positive outcomes:

- **Enhanced Safety:** Reduced vehicle speeds and improved traffic management will lead to safer streets for pedestrians, cyclists, and motorists.
- **Community Engagement:** Residents will have an active role in shaping their neighborhoods, fostering a greater sense of community and shared responsibility for local traffic issues.
- **Improved Livability:** Calmer streets will enhance the quality of life in neighborhoods, making them more pleasant and attractive places to live.
- **Pilot Testing:** Temporary measures allow for the testing and evaluation of different traffic calming strategies before permanent installations, ensuring effective solutions.

- **Data-Driven Decisions:** Collecting data from temporary installations will inform future traffic planning and infrastructure projects, leading to more informed and effective long-term decisions.
- **Increased Walking and Biking:** Safer streets will encourage more walking and biking, contributing to healthier lifestyles and reduced vehicle emissions.
- **Responsive Governance:** A structured approval process ensures that traffic calming measures are implemented based on community needs and preferences, reflecting a responsive and adaptive approach to urban planning.

Success Metrics:

- **Reduction in Vehicle Speeds:** Measure the average reduction in vehicle speeds on streets where traffic calming measures are implemented.
- **Decrease in Traffic Incidents:** Track the number and severity of traffic accidents and incidents in neighborhoods with traffic calming measures.
- **Resident Satisfaction:** Conduct surveys to gauge resident satisfaction with the implemented traffic calming measures and the overall program process.

C. Complete Streets Policy

Recommendation:

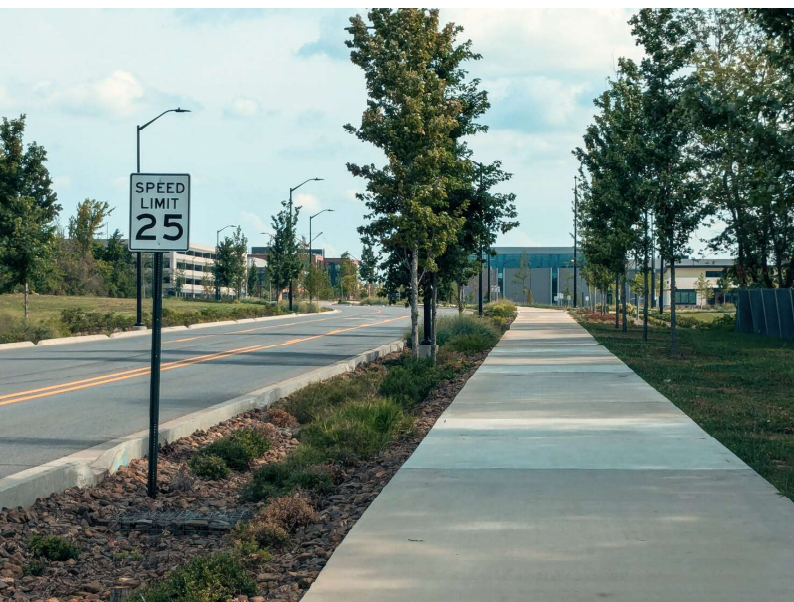
Create, develop, and implement a Complete Streets policy. This policy would ensure that all street users, regardless of age, ability, or mode of transportation, are accommodated safely and efficiently. Adopting such a policy aligns with the plan's broader goals of promoting active modes of transportation, such as walking, biking, and public transit, to improve overall community health, reduce traffic congestion, and enhance the quality of life for residents.

Expected Outcomes:

The expected outcome of adopting a Complete Streets policy as part of the Move Fort Smith Active Transportation Plan is a more inclusive, safe, and accessible transportation network. This policy would result in streets accommodating all users, including pedestrians, cyclists, motorists, and public transportation riders, regardless of age or ability. By prioritizing active transportation and ensuring that streets are designed with all users in mind, Fort Smith can expect to see an increase in walking and biking rates, improved safety for all users, reduced traffic congestion, and overall enhanced community health and well-being.

Success Metrics:

- **Mode Share:** Increase in the percentage of trips made by walking, biking, and public transportation.
- **Safety:** Reduction in the number of pedestrian and cyclist injuries and fatalities.
- **Accessibility:** Improvement in the connectivity and accessibility of the transportation network for all users.
- **Equity:** Reduction in transportation disparities among different demographic groups.
- **Usage:** Increase in the number of people using active modes of transportation.
- **Public Opinion:** Positive feedback from residents and stakeholders on implementing the Complete Streets policy.
- **Economic Impact:** Increase in property values, business activity, and economic development in areas with improved transportation infrastructure.
- **Health Impact:** Improvement in public health indicators, such as reduced rates of obesity and chronic diseases related to sedentary lifestyles.



D. Tactical Urbanism Policy

Recommendation:

Consider developing and adopting a Tactical Urbanism Policy, empowering communities to propose and implement temporary projects that enhance neighborhoods, encouraging innovation in urban design, activating underutilized spaces, fostering collaboration among stakeholders, and supporting economic development. The policy should include guidelines for project proposals, approval processes, liability considerations, and evaluation criteria while outlining the roles and responsibilities of stakeholders and providing resources for project implementation. Adopting this policy will leverage residents' creativity to transform public spaces, strengthen community bonds, and create a more vibrant and inclusive city.

Expected Outcomes:

- **Community Empowerment:** Residents and community groups will feel empowered to propose and implement projects that improve their neighborhoods, leading to a sense of ownership and pride in local spaces.
- **Innovation in Urban Design:** The policy will encourage the testing of new ideas and approaches to urban design, leading to more creative and effective solutions for improving public spaces.
- **Activation of Public Spaces:** Underutilized or neglected spaces will be activated, making them more vibrant and inviting for residents and visitors alike.
- **Collaboration and Partnership:** The policy will facilitate partnerships between the city government, local businesses, nonprofits, and residents, leading to collaborative efforts to improve the community.

- **Economic Development:** By creating opportunities for local businesses and entrepreneurs to showcase their products and services, the policy will support economic development in Fort Smith.
- **Improved Quality of Life:** Overall, the implementation of the Tactical Urbanism Policy is expected to lead to a higher quality of life for residents, with more attractive, functional, and engaging public spaces throughout the city.

Success Metrics:

- **Number of Projects Implemented:** Track the number of tactical urbanism projects completed each year to measure the level of community engagement and activity.
- **Community Participation:** Measure the level of community participation in project proposals, planning, and implementation to gauge the policy's effectiveness in empowering residents.
- **Impact on Public Spaces:** Assess the impact of projects on public spaces, such as increased foot traffic, use of amenities, and overall attractiveness.



3 Community Engagement & Promotion Programs Recommendations

A. Active Transportation Advisory Committee

Recommendation:

Establish an Active Transportation Advisory Committee (ATAC) in Fort Smith. This committee will serve as a dedicated body focused on promoting and advancing active transportation options, such as walking, cycling, and public transit, throughout the city. The ATAC should be composed of representatives from relevant city departments, local advocacy groups, schools, businesses, and community organizations, as well as individuals with expertise in active transportation planning and design. The committee should meet regularly and provide regular reports and recommendations to the city government. Key focus areas for the committee include but are not limited to the following.

- **Advising on Policy and Planning:** Providing input and recommendations to the city government on policies, programs, and infrastructure projects related to active transportation.
- **Community Engagement:** Engaging with residents, community groups, and stakeholders to raise awareness of active transportation benefits and gather input on local needs and priorities.
- **Infrastructure and Safety:** Reviewing and evaluating existing and proposed infrastructure projects to ensure they meet the needs of pedestrians, cyclists, and public transit users, focusing on safety and accessibility.
- **Education and Outreach:** Developing and implementing educational initiatives to promote safe and responsible active transportation practices among residents of all ages.

Monitoring the implementation and impact of active transportation initiatives and making recommendations for improvements based on data and feedback.

Expected Outcomes:

- **Improved Active Transportation Infrastructure:** The ATAC's recommendations will lead to the development of safe, accessible, and well-connected active transportation networks throughout the city, encouraging more residents to walk, bike, and use public transit.
- **Increased Active Transportation Usage:** By promoting the benefits of active transportation and addressing barriers to its use, the ATAC will encourage more residents to choose active modes of transportation for their daily trips.

- **Enhanced Safety:** The ATAC's focus on infrastructure and safety will result in improvements that reduce the risk of accidents and conflicts between different modes of transportation, making streets safer for everyone.
- **Healthier and More Active Community:** Increased active transportation usage will lead to a healthier and more active community, with residents enjoying the physical and mental health benefits of walking, biking, and using public transit.

- **Environmental Benefits:** A shift towards active transportation can reduce greenhouse gas emissions and air pollution, contributing to a cleaner and more sustainable environment.
- **Community Engagement and Empowerment:** The ATAC's efforts to engage with residents and stakeholders will empower the community to take an active role in shaping its transportation future, leading to more inclusive and equitable decision-making processes.
- **Economic Benefits:** Investing in active transportation infrastructure and programs can lead to economic benefits, such as increased property values, improved retail sales along active transportation routes, and reduced healthcare costs due to a healthier population.

Success Metrics:

Active Transportation Mode Share: Measure the percentage of trips made by walking, biking, or using public transit compared to driving alone to track the shift towards more sustainable modes of transportation.

Infrastructure Improvements: Track the number and quality of active transportation infrastructure projects, such as new bike lanes, pedestrian crossings, and transit stops, implemented as a result of the ATAC's recommendations.

Safety Improvements: Monitor changes in traffic-related injuries and fatalities involving pedestrians, cyclists, and public transit users to assess the impact of infrastructure improvements and safety initiatives.

- **Community Engagement:** Measure the level of community participation in ATAC meetings, events, and outreach activities to gauge the committee's effectiveness in engaging with residents and stakeholders.
- **Usage of Active Transportation Facilities:** Track the usage of active transportation facilities, such as bike lanes and pedestrian paths, to assess their effectiveness in encouraging active transportation.
- **Public Perception:** Conduct surveys or focus groups to assess public perception of active transportation in Fort Smith, including awareness, satisfaction, and perceived safety of walking, biking, and public transit options.
- **Environmental Impact:** Measure the reduction in greenhouse gas emissions and air pollution resulting from increased active transportation usage to assess the environmental benefits of ATAC's initiatives.
- **Equity and Accessibility:** Monitor the distribution of active transportation infrastructure and programs across different neighborhoods and demographic groups to ensure equitable access for all residents.



B. Bicycle Friendly Business Program

Recommendation:

The League of American Bicyclists is a national advocacy organization focused on creating safer roads, stronger communities, and a Bicycle Friendly America for everyone. Through the League's Bicycle Friendly America program, they provide a designation for bicycle friendliness to states, communities, businesses, and universities. The designations are platinum, gold, silver, and bronze and are based on specific criteria and the submission of an application. Specific to Fort Smith, an opportunity exists to work directly with local businesses to help increase their bicycle friendliness and apply for a bicycle-friendly business designation.

The city of Fayetteville, AR, has developed a Bicycle-friendly business boot camp program that provides workshops to help businesses learn how to gain the designation and assist in the application process. The City may also consider adding a community grant program that would help pay for all or a portion of a bike rack for neighborhoods or businesses that submit an application.

Expected Outcomes:

- Businesses can realize additional visitors to their establishments when they apply the principles outlined in the designation.
- Companies can impact employee health and activity levels by reducing barriers to active transportation to and from work.
- Increases in ridership to businesses and companies both for customers as well as employees.

Success Metrics:

- Number of businesses who apply for the designation
- Increases in the number of Bicycle friendly business designations in the city





08

Design Guidelines

Design Guidelines Overview

The Move Fort Smith design guidance is intended to provide public and private entities with the best practices gleaned from Arkansas and the broader nation. It also aims to establish design criteria for active transportation facilities throughout Fort Smith. Active transportation infrastructure can take various forms, including bicycle lanes, shared-use paths, sidewalks, trails, and greenways. The core objective of this guidance is to offer Fort Smith residents a transportation network that is safe, well-connected, accessible, comfortable, and convenient. To achieve this, the guidance emphasizes the importance of implementing quality designs that work in harmony with other plans, policies, and standards set by the City of Fort Smith. The document acknowledges that each active transportation project may have unique aspects, necessitating design adjustments or deviations from the standard guidelines. Therefore, it advocates for the application of context-sensitive solutions and professional engineering judgment in such cases. This design guidance establishes high expectations for the design and construction of active transportation infrastructure. Finally, these guidelines are not intended to be an exhaustive list of all design considerations and details, and guidance shall not be considered a legal standard. Designers and the city should always consult the manuals and guidance outlined in the publications listed herein when finalizing and applying designs for any project.

Design guidelines were developed using research and guidance provided by multiple state and national sources including, but not limited to, the Federal Highway Administration (FHWA), the Arkansas Department of Transportation (ARDOT), the Institute of Transportation Engineers (ITE), the American Association of State Highway and Transportation Officials (AASHTO), and the National Association of City Transportation Officials (NACTO). The collective work and publications developed by these respected entities are cited throughout the Move Fort Smith Design Guidance.

The following publications have been utilized in the development of these guidelines:

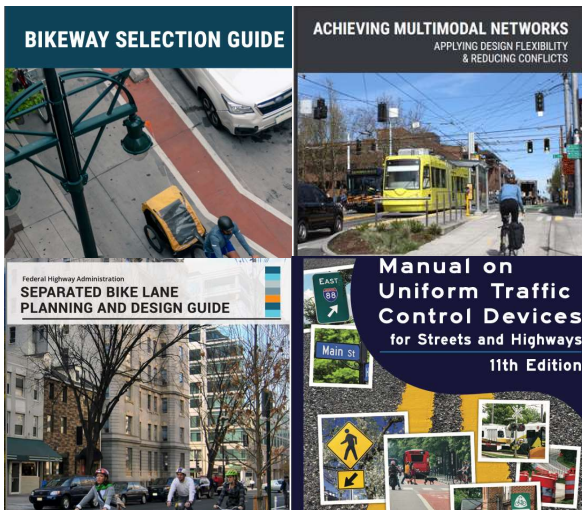
- FHWA-Small Town and Rural Multimodal Networks (2016)
- FHWA-Bikeway Selection Guide (2019)
- NACTO-Urban Bikeway Design Guide (2014)
- ITE-Traffic Calming ePrimer
- Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)- 11th edition (2023)
- AASHTO-Guide for the Development of Bicycle Facilities (2012)
- FHWA-Separated Bike Lane Planning and Design Guide (2015)
- ARDOT-Arkansas Vulnerable Road User Safety Assessment (2023)
- Minnesota Department of Transportation-Bicycle Facility Design Manual (2020)



Resources

Federal Highway Administration (FHWA)

- FHWA Bikeway Selection Guide (2019)
- Achieving Multi-Modal Networks (2016)
- Separated Bike Lane Planning and Design Guide (2015)
- Manual on Uniform Traffic Control Devices-11th Edition (2023)



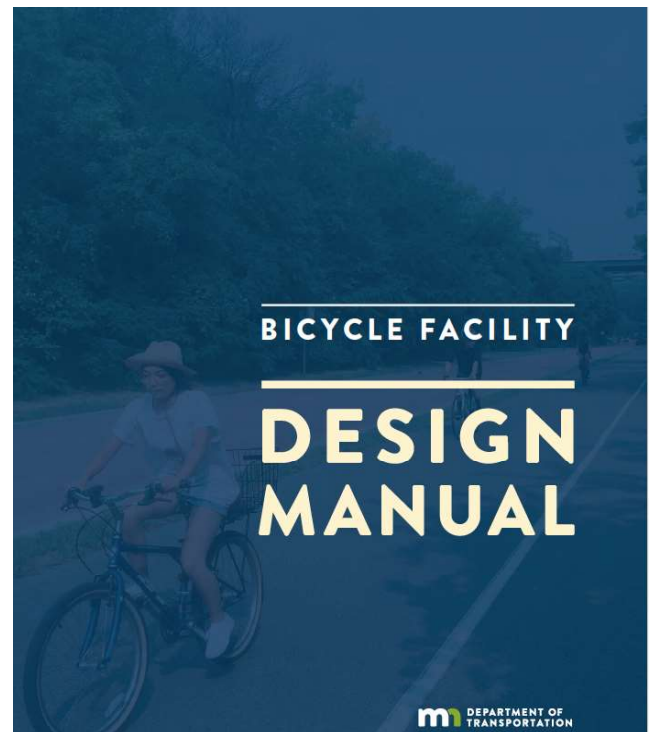
National Association of City Transportation Officials (NACTO)

- Urban Bikeway Design Guide (2014)
- Urban Street Design Guide (2013)
- Transit Street Design Guide (2016)



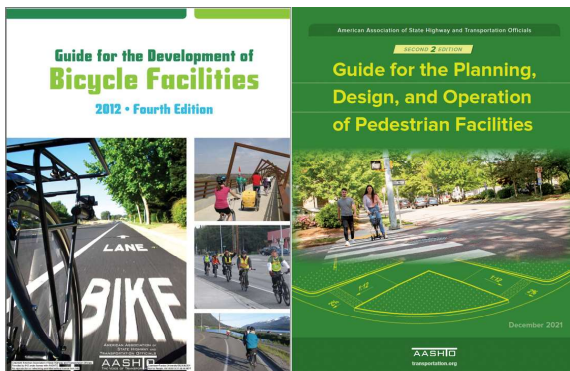
Minnesota Department of Transportation (MNDOT)

- Bicycle Facility Design Manual (2020)



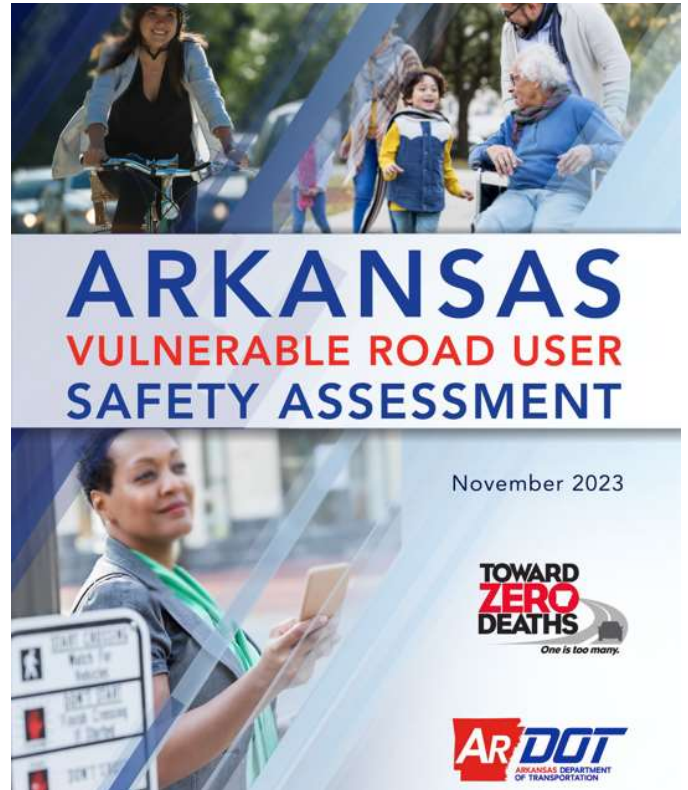
American Association of State Highway Transportation Officials (AASHTO)

- Guide for the Development of Bicycle Facilities (2012)
- Guide for the Planning, Design, and Operations of Pedestrian Facilities (2021)



Designing for Vulnerable Road Users

The Federal Highway Administration (FHWA) defines a vulnerable road user (VRU) as a nonmotorist with a fatality analysis reporting system (FARS) person attribute code for pedestrian, bicyclist, another cyclist, and person on personal conveyance or an injured person that is or is equivalent to a pedestrian or pedal cyclist as defined in the ANSI D16.1-2007 (See 23 U.S.C. 148(a)(15) and 23 CFR 490.205). A vulnerable road user may include people walking, biking, or rolling. Active transportation planning is focused on vulnerable road users and helping to plan networks that can move vulnerable road users safely and efficiently.



In November 2023, The Arkansas Department of Transportation (ARDOT) published the “[Arkansas Vulnerable Road User Safety Assessment](#)”. The purpose of the Vulnerable Road User Safety Assessment is to assess the safety performance of all public roads in the State of Arkansas with respect to vulnerable road users. Drawing on insights and recommendations from this assessment, ARDOT developed recommended strategies and countermeasures to address vulnerable road user safety. The following strategies are a summation of potential countermeasures to improve infrastructure and design to protect VRUs:

Strategy 1: Continue to improve statewide infrastructure and design to protect vulnerable road users.

Strategy 2: Continue implementing countermeasures, programs, and policies to protect vulnerable road users.

Potential Countermeasures Identified in the Arkansas VRU Safety Assessment:

Remove or Manage Conflicts:

- i. Separate users in space
 - Bicycle lanes
 - Protected bike lanes
 - Road diets
 - Medians & pedestrian refuge islands
 - Sidewalks and walkways
 - Shared-use paved paths
- ii. Separate users in time
 - Leading pedestrian interval
 - Pedestrian hybrid beacons



Reduce Vehicle Speeds:

- i. Implement physical features to slow traffic
 - Medians
 - Pedestrian refuge islands
 - Road diets
 - Self-enforcing roads
 - Speed tables

Increase Attentiveness and Awareness:

- i. Increase the visibility of VRUs
 - Lighting
 - Advance or in-street warning signage
 - Pavement markings
 - Geometric design elements that enhance crosswalk visibility
 - RRFBs
 - Leading pedestrian intervals

These recommendations, combined with the myriad of design and planning guidance outlined by national associations, including FHWA, underpin the recommended design guidelines.

INFRASTRUCTURE AND DESIGN 		
STRATEGY 1: Continue to improve statewide infrastructure and design to protect VRUs STRATEGY 2: Continue to implement countermeasures, programs, and policies to protect VRUs		
REMOVE OR MANAGE CONFLICTS	REDUCE VEHICLE SPEEDS	INCREASE ATTENTIVENESS AND AWARENESS
SEPARATE USERS IN SPACE <ul style="list-style-type: none"> • Bicycle lanes • Protected bike lanes and bike boxes • Medians and pedestrian refuge islands • Road diets • Sidewalks and walkways • Shared use paths 	IMPLEMENT PHYSICAL FEATURES TO SLOW TRAFFIC <ul style="list-style-type: none"> • Medians and pedestrian refuge islands • Road diets • Self-enforcing roads • Speed tables 	INCREASE VISIBILITY OF VRUs <ul style="list-style-type: none"> • Lighting • Advance or in-street warning signage • Pavement markings • Geometric design elements that enhance crosswalk visibility • Rectangular rapid flashing beacons (RRFB) • Leading pedestrian interval
SEPARATE USERS IN TIME <ul style="list-style-type: none"> • Leading pedestrian interval • Pedestrian hybrid beacons 		
EDUCATION AND ENFORCEMENT 		
STRATEGY 3: Educate on safety and awareness of laws regarding VRUs		

AR Vulnerable Road User Safety Assessment, ARDOT

Bicycle Design Needs

According to a national study conducted in 2015, statistically most of the U.S. population would like to bicycle for some trips but don't due to the stigma that biking on streets is unsafe or too stressful (See Figure 1). Typical categories of people's attitudes toward bicycling are often broken into four groups:

1. **No way, no how (37%)**
2. **Interested but concerned (51%)**
3. **Enthusied and confident (5%)**
4. **Strong and fearless (7%)**

The "No way, no how" group of respondents feel that bicyclists mixed with vehicular traffic are extremely unsafe and not worth the risk. The "Interested but concerned" respondents are most comfortable with less traffic and slower speeds.

The "Enthusied and confident" respondents are indifferent to sharing streets or being separated from vehicular traffic. The "Strong and fearless" respondents have no issues sharing space with vehicular traffic, regardless of traffic volume or speeds. As vehicular traffic volumes and speeds increase, bicyclists' confidence decreases. The planning process has identified various active transportation facility types focused on encouraging more people to ride bikes. When active transportation facilities do not feel safe or comfortable, newer or less confident riders will choose not to use them.

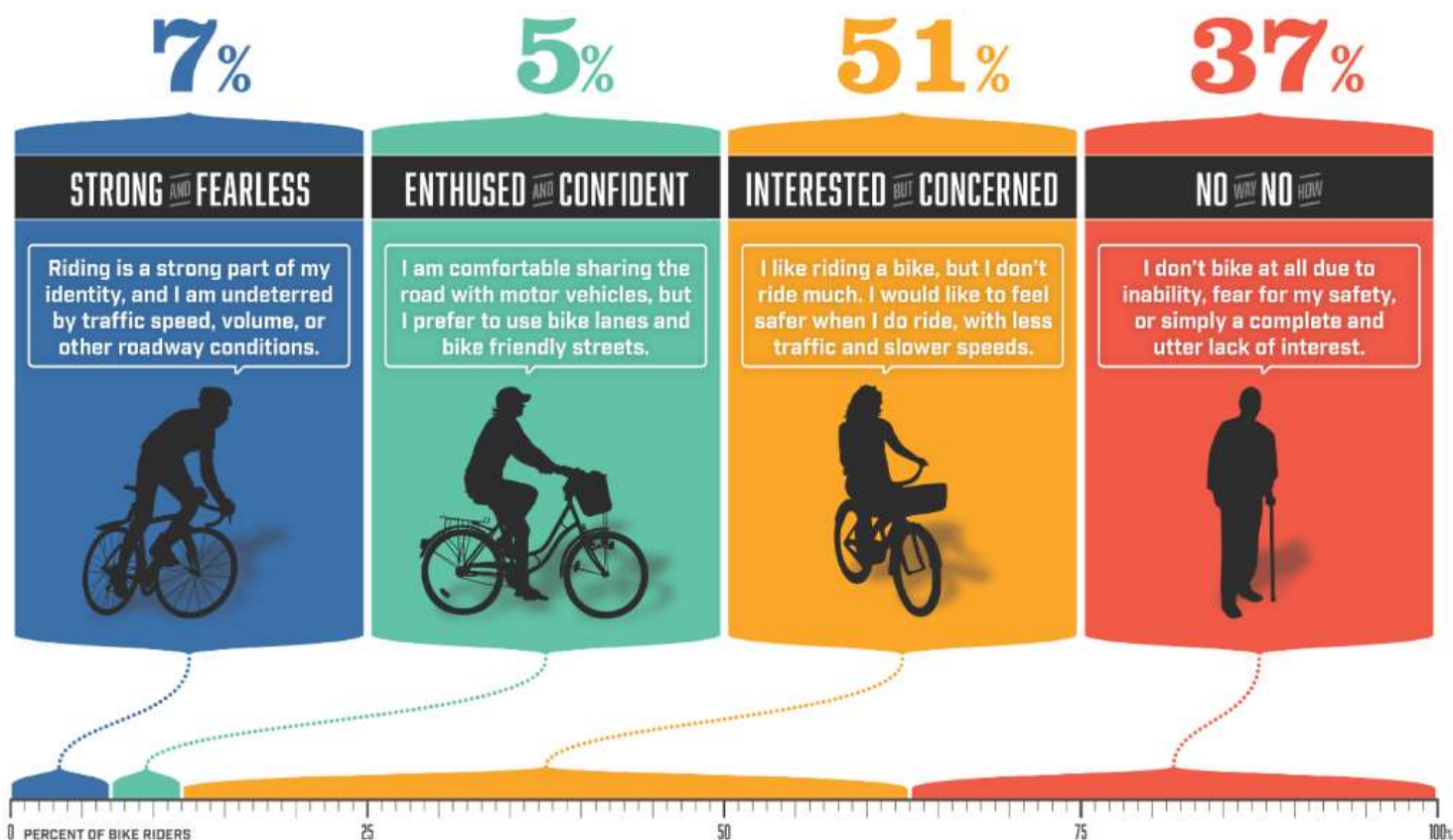


Figure 1

All Ages and Abilities Design Guidelines

Figure 2, developed by NACTO, provides guidance in choosing a bikeway design to facilitate an All Ages & Abilities bicycling environment based on a street's basic design and motor vehicle traffic conditions such as vehicle speed and volume. This chart should be applied as part of a flexible, results-oriented design process on each street, alongside robust analysis of local bicycling conditions as discussed in the remainder of this document. Users of this guidance should recognize that, in some cases, a bicycle facility may fall short of the All Ages & Abilities criteria, but still substantively reduce traffic stress. Jurisdictions should not use an inability to meet the All Ages & Abilities criteria to avoid implementing a bikeway. They should not prohibit the construction of facilities that do not meet the criteria.

Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed*	Target Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		Any	Any of the following: high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡	Protected Bicycle Lane
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	Shared Street
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	Bicycle Boulevard
≤ 25 mph	≤ 500 – 1,500	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane
	≤ 1,500 – 3,000			Buffered or Protected Bicycle Lane
	≤ 3,000 – 6,000			Protected Bicycle Lane
	Greater than 6,000			Protected Bicycle Lane
Greater than 26 mph†	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	Protected Bicycle Lane, or Reduce Speed
		Multiple lanes per direction		Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed
	Greater than 6,000	Any	Any	Protected Bicycle Lane
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		Any	High pedestrian volume	Bike Path with Separate Walkway or Protected Bicycle Lane
			Low pedestrian volume	Shared-Use Path or Protected Bicycle Lane

Figure 2

Facility Selection

FHWA has developed a bikeway selection guide to help better inform where and when a bicycle facility would be developed. See Figure 3.

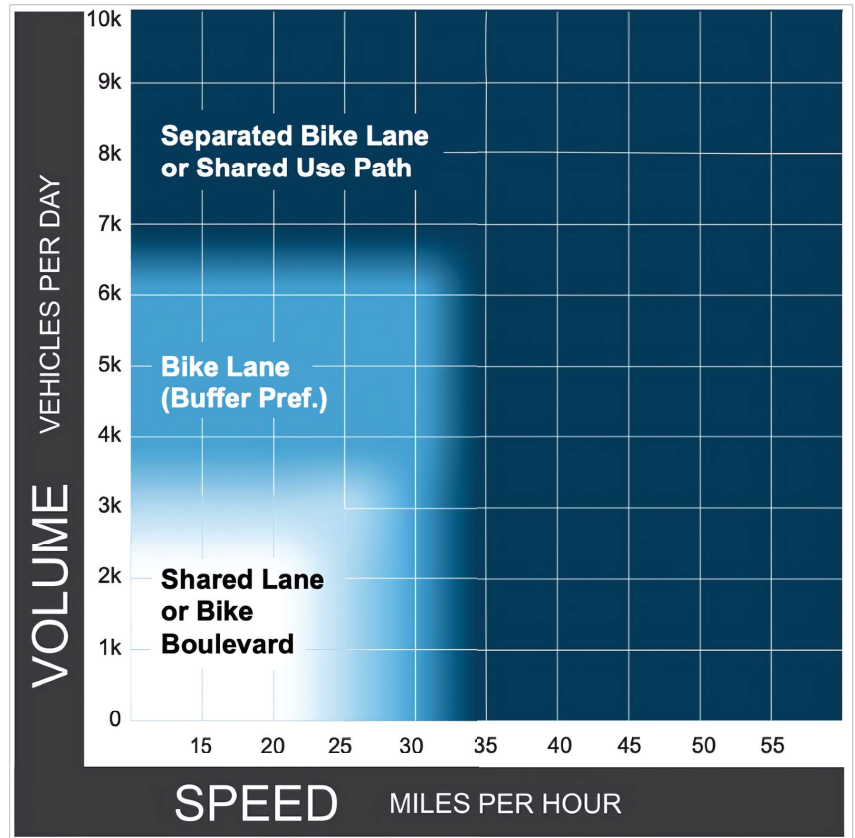


Figure 3

Standard Bicycle Rider Dimensions

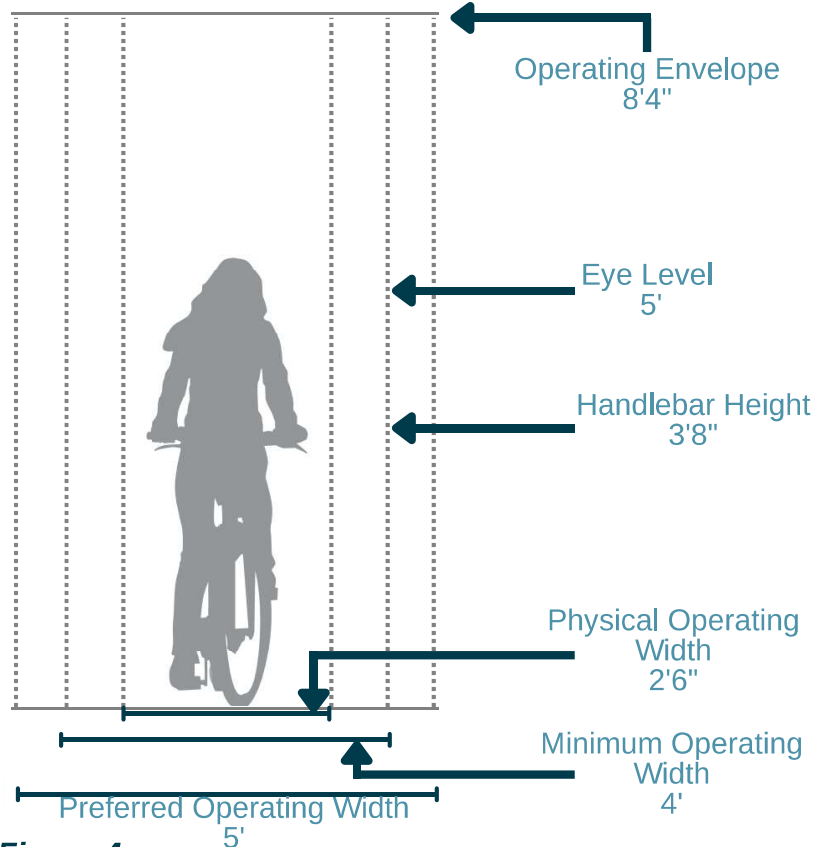


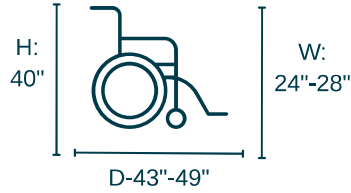
Figure 4

Devices Commonly Found on Shared-Use Paved Paths

Stroller



Wheelchair



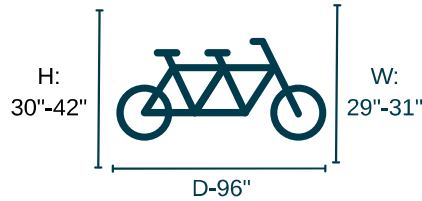
Electric Mobility Scooter



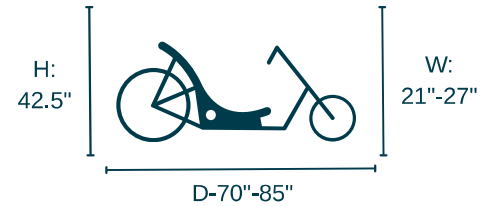
Typical Adult Bike



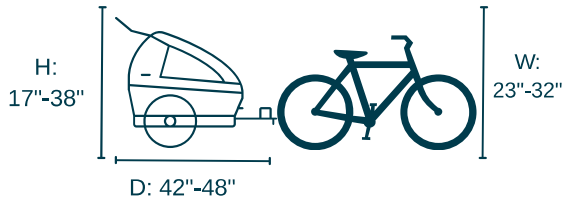
Adult "Tandem" Bike



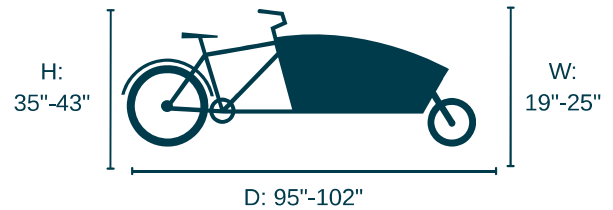
Adult Recumbent Bike



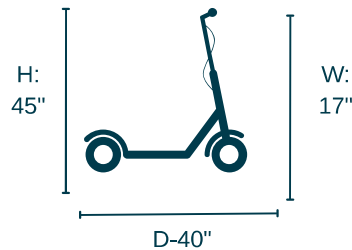
Adult Bike and Trailer



Cargo or "Box" Bike



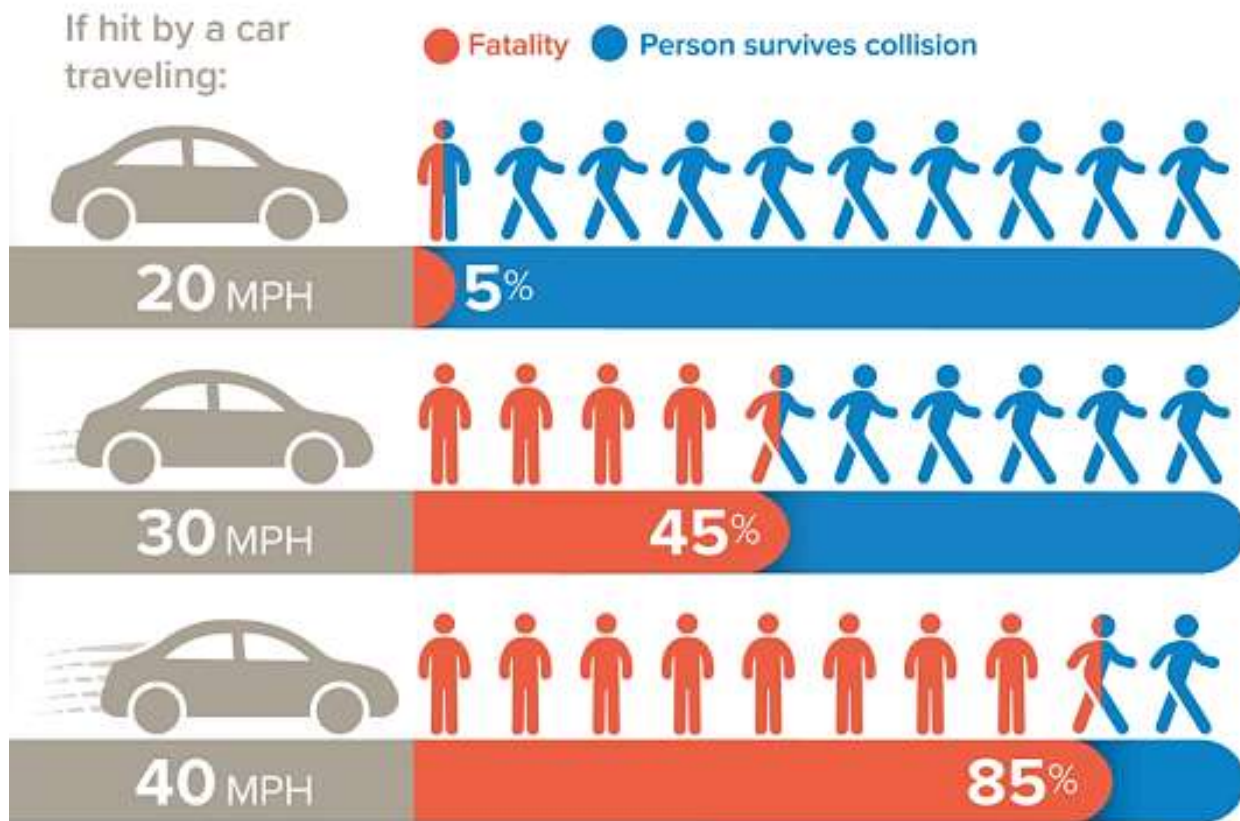
Electric Scooter



Pedestrian Design Needs

To increase usage and participation in active modes of transportation, the infrastructure must be safe, comfortable, and connected. Vehicular speeds are a major component in the comfort and safety of vulnerable users. Lower vehicle speeds create a less intimidating environment for pedestrians, especially if they are close to the vehicles or crossing the street, and they result in fewer fatal crashes, as shown in Figure 5 below.

In most cases, pedestrian infrastructure should be separated from vehicular infrastructure by some type of physical barrier that promotes a safe environment for all modes of transportation. All modes of transportation are required by law to be compliant with the guidelines from the Americans with Disability Act (ADA). On August 8, 2023, the Access Board published new guidelines under the ADA and Architectural Barriers Act (ABA) that address access to sidewalks, streets, crosswalks, curb ramps, pedestrian signals, on-street parking, and other components of public right-of-way. These guidelines also review shared-use paved paths, which are designed primarily for use by bike riders and pedestrians either for connectivity or recreation purposes. The new guidelines describe these new spaces as pedestrian access routes (PAR).



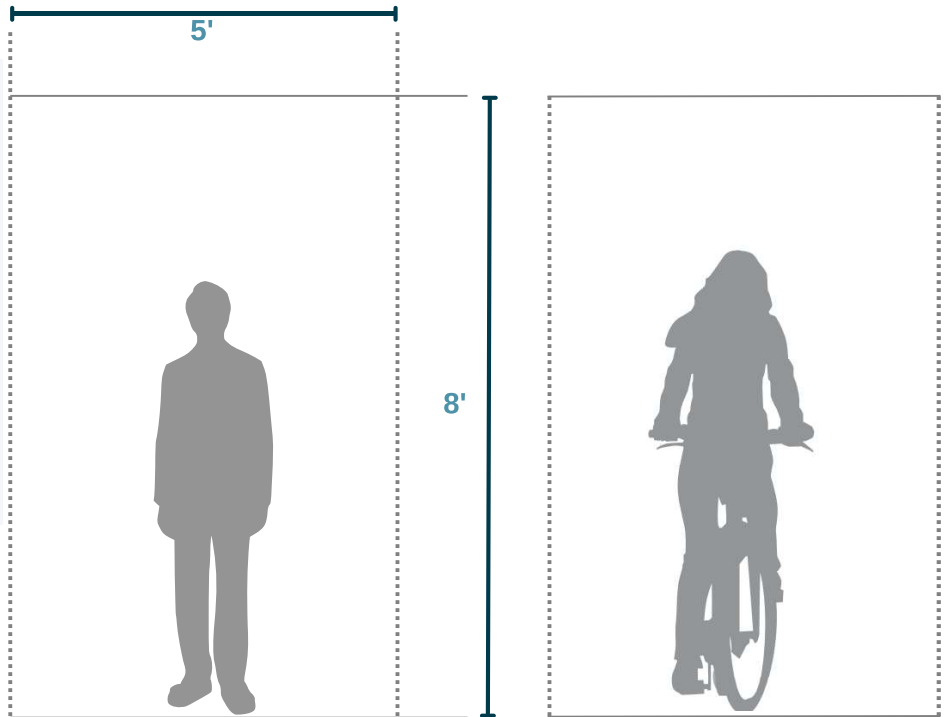
National Traffic Safety Board (2017) Reducing Speeding-Related Crashes Involving Passenger Vehicles. Available from: <https://www.nts.gov/safety/safety-studies/Documents/SS1701.pdf>

Figure 5

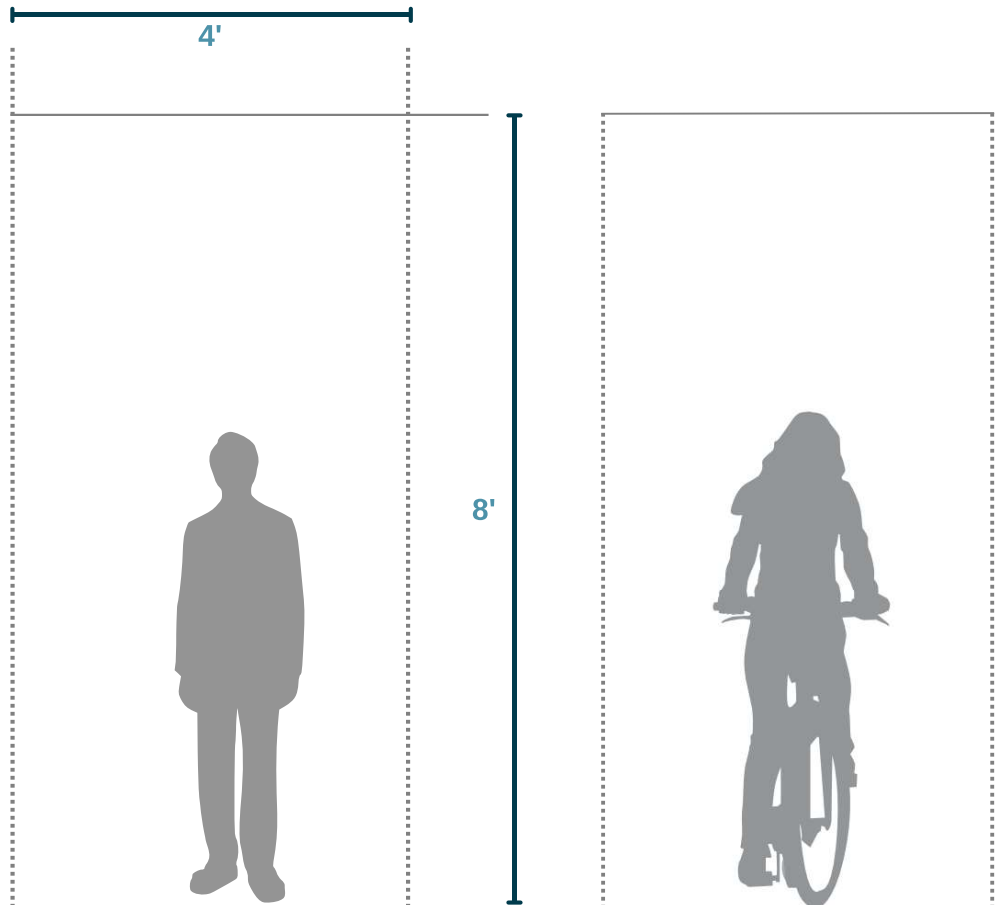
Pedestrian Access Route Dimensions

Continuous clear width and height is required of all pedestrian access routes (PAR).

A minimum width of 5 feet or at least as wide as the crosswalk, whichever is greater, is required.



Pedestrian Access Route Crossing Medians or Refuge Islands



Pedestrian Access Route

People Living with Disabilities

Designing an active transportation infrastructure that is inclusive for people living with disabilities involves a detailed understanding of various physical, cognitive, and sensory impairments. The goal is to create an environment that enables safe, comfortable, and independent travel for everyone. Here are the key design imperatives: that enable safe, comfortable, and independent travel for everyone. Here are the key design imperatives:

Accessibility

Curb Ramps and Tactile Warnings:

Curb ramps with tactile warning surfaces should be installed at intersections and crossings to assist visually impaired individuals. These ramps should have a gentle slope and be wide enough for wheelchairs.

Wide Pathways:

Sidewalks and paths should be wide enough to accommodate wheelchairs and mobility scooters, typically at least 5 feet wide, but wider in high-traffic areas.

Smooth Surfaces:

Surfaces should be smooth, stable, and slip-resistant to prevent accidents and ease navigation for wheelchair users.

Wayfinding and Signage

Clear Signage:

Signage should be clear, using large, high-contrast fonts and including Braille where appropriate. Consistent and intuitive symbols help in navigation.

Audible Signals:

Pedestrian crossings should have audible signals to aid visually impaired users and provide clear, timely instructions.

Tactile Maps:

At critical locations, tactile maps can help visually impaired individuals understand the layout of an area.

Safety

Intersection Design:

Intersections should be designed with features such as pedestrian refuge islands, extended crossing times, and clearly marked crosswalks.

Lighting:

Adequate lighting is crucial for safety and should be designed to minimize shadows and glare.

Traffic Calming Measures:

Implement measures such as speed tables, raised crosswalks, and narrow lanes to slow down traffic and enhance pedestrian safety.

Comfort and Convenience

Seating:

Provide seating at regular intervals along pathways. These should have armrests and backs to assist those with mobility impairments.

Shelters:

Weather protection at key points such as bus stops or resting areas is important.

Restrooms:

Accessible restrooms should be available and easy to locate.



Connectivity

Integrated Networks:

Ensure seamless connections between different modes of transportation (e.g., buses, trains) and the pedestrian network. This includes accessible transit stops and stations.

Continuity of Pathways:

Avoid interruptions in the pedestrian network, such as steps or uneven terrain, that can hinder the movement of people with disabilities.

Inclusive Design Principles

Universal Design:

Apply universal design principles that ensure that environments are usable by all people to the greatest extent possible without the need for adaptation or specialized design.

Engagement with Disability Communities:

Involve people with disabilities in the planning and design process to ensure their needs and preferences are met.

Technology Integration

Assistive Technologies:

Incorporate assistive technologies such as GPS-based navigation aids for visually impaired users and hearing loops for those with hearing impairments.

Real-Time Information:

Provide real-time updates on transportation schedules and route changes through accessible formats (e.g., apps with voice output and visual displays).



Maintenance and Management

Regular Maintenance:

Ensure pathways and facilities are regularly maintained to address wear and tear, debris, and seasonal hazards like ice or fallen leaves.

Clear Policies:

Develop and enforce policies that ensure accessibility features are not obstructed (e.g., by parked cars or construction work).

Implementation Strategies

Legislation and Standards:

Adhere to accessibility standards and guidelines such as the Americans with Disabilities Act (ADA) in the U.S. or similar regulations in other countries.

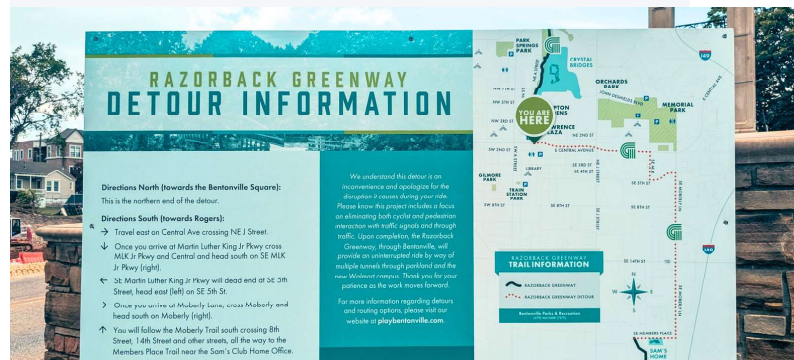
Training for Designers and Planners:

Provide ongoing education for transportation planners and urban designers on the needs of people with disabilities.

Funding and Incentives:

Allocate sufficient funding and incentives to prioritize and support accessible infrastructure projects.

In summary, designing an active transportation network for people living with disabilities requires a multifaceted approach that prioritizes accessibility, safety, and inclusivity. By integrating these imperatives into the planning and development process, urban environments can become more navigable and welcoming for everyone.



Shared-Use Facilities

Shared-use facilities allow for and accommodate different types of users and are focused on creating safe and comfortable connections for bicycle riders, pedestrians, and people using mobility devices such as wheelchairs and electric mobility scooters. The Move Fort Smith design guidelines focus on the following types of shared-use facilities:

1 Shared-Use Paved Paths

Shared-use paved paths are pathways dedicated to pedestrians and bicycle riders, separated from motor vehicles and roadways, and often found in parklands accommodating both pedestrians and cyclists.

2 Sidepaths

Sidepaths are shared-use paved paths running parallel to a road, separated from motor vehicles by a barrier or buffer, and are for use by pedestrians and cyclists.

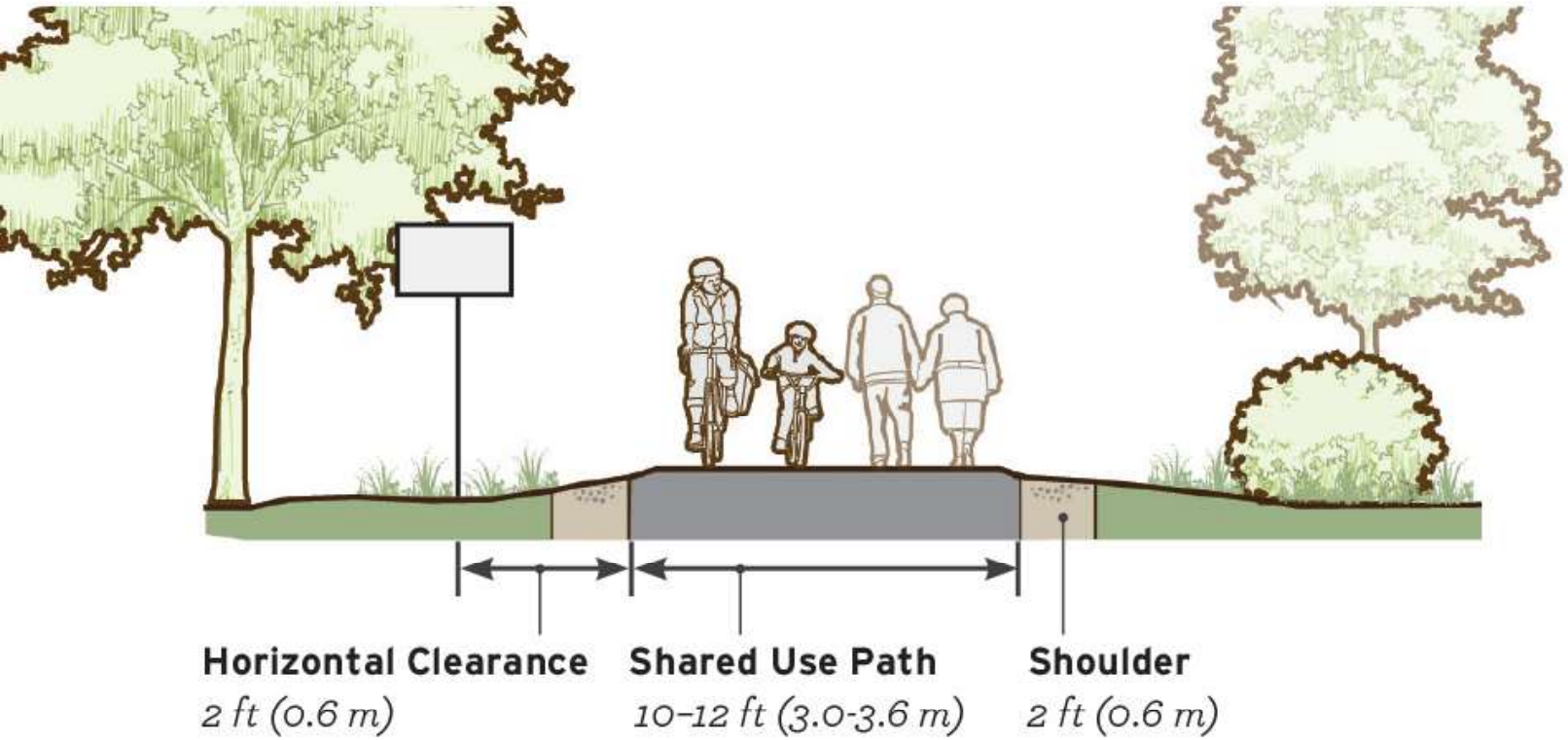
3 Mixed Traffic Alleyways

Alleyways allow pedestrians and bike riders to navigate residential or commercial areas along routes generally with low vehicular traffic and parallel to the larger street network.



1 Shared-Use Paved Paths

Shared-use paved paths can provide a travel network for non-motorized users to get to different places and make connections not along roadways. In addition to connecting different destinations, off-road shared-use paved paths can provide access to natural areas or for recreation.



Small Town and Rural Design Guide, FHWA



Shared-Use Paved Paths Design

Typical Applications:

- In natural areas and parks
- Shortcuts between cities or neighborhoods
- For recreation and transportation
- Surfaces can be concrete, asphalt, or other hard surfaces

Design Guidance:

- A 10 ft width is recommended in most situations and will be adequate for moderate levels of traffic and use.
- A 2 ft shoulder should be provided on each side of the path, kept clear of vertical elements or obstructions.
- A two-way bicycle path must be at least 8 feet long and is only recommended for low-traffic situations or short lengths.
- 12-14 ft is recommended for heavy-use situations with high concentrations of multiple users.
- Wider paths are useful to accommodate maintenance vehicles. They are also useful on steep grades to allow for comfortable passing and meeting and through curves to provide more operating space.

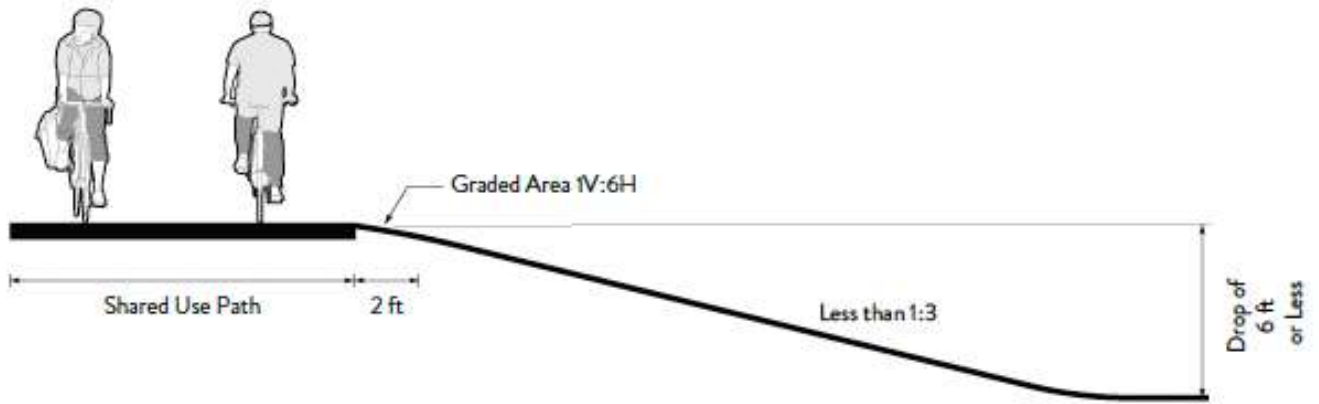
Side Slopes:

The shoulders of shared-use paved paths should be graded in a manner that provides a recoverable area for users who leave the path either intentionally or unintentionally. At a minimum, there should be a 2-foot-wide graded area with a maximum slope of 1V:6H. Ideally, the shoulder should be 3 to 5 feet wide, but the minimum 2 feet of clear shoulder at a maximum of 1V:6H slope should be maintained.

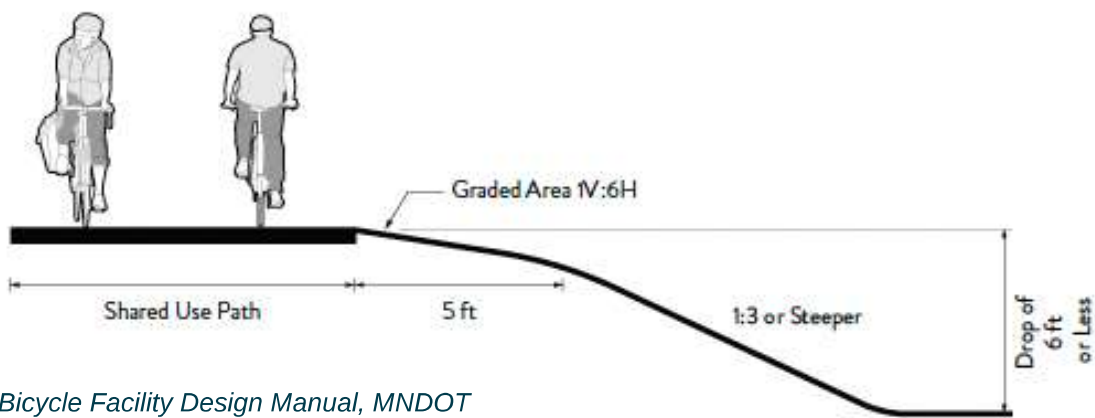
In locations with a downhill slope greater than 1V:3H adjacent to the path, a wider shoulder (5 feet or more) with a 1V:6H slope should be considered before the top of the steeper slope. Conditions such as slope, the height of the drop, and conditions at the bottom of the drop should be considered in analyzing whether barriers such as fences, rails, or dense vegetation should be used to reduce risks to trail users.

A physical barrier or rails are recommended where a 5-foot wide recovery area cannot be maintained, and there are:

- slopes of 1V:3H or steeper with a drop of 6 feet or greater,
- slopes of 1V:3H or steeper adjacent to a parallel body of water or other substantial obstacle,
- slopes of 1V:2H or steeper with a drop of 4 feet or greater,
- or slopes 1V:1H or steeper with a drop of 1 foot or greater.

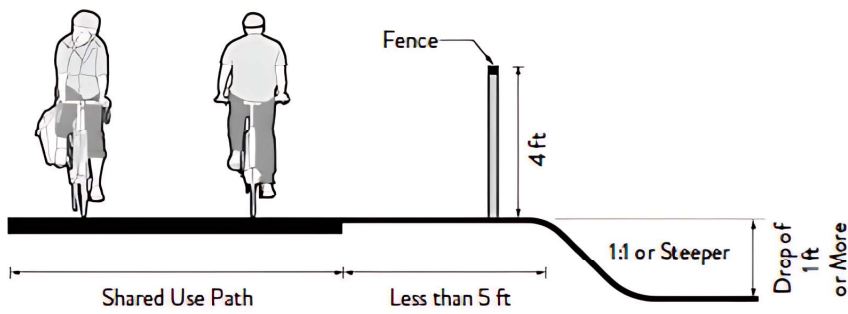
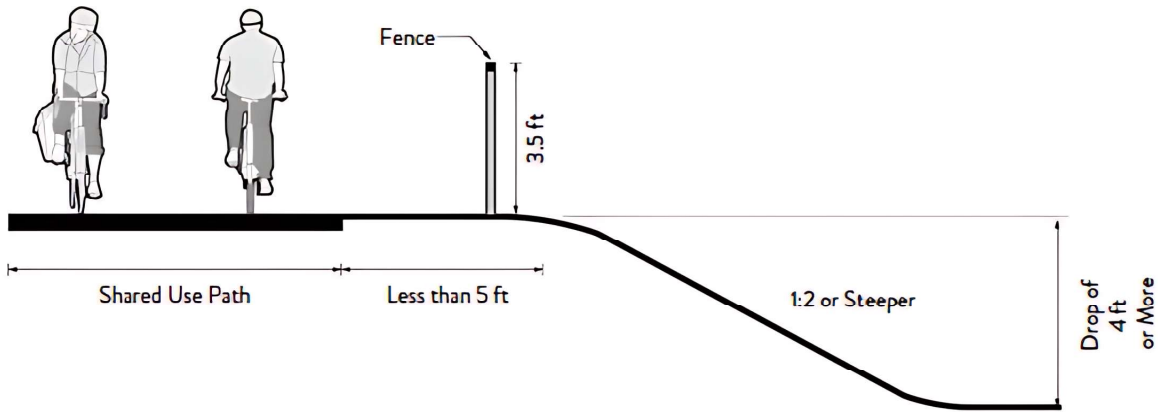
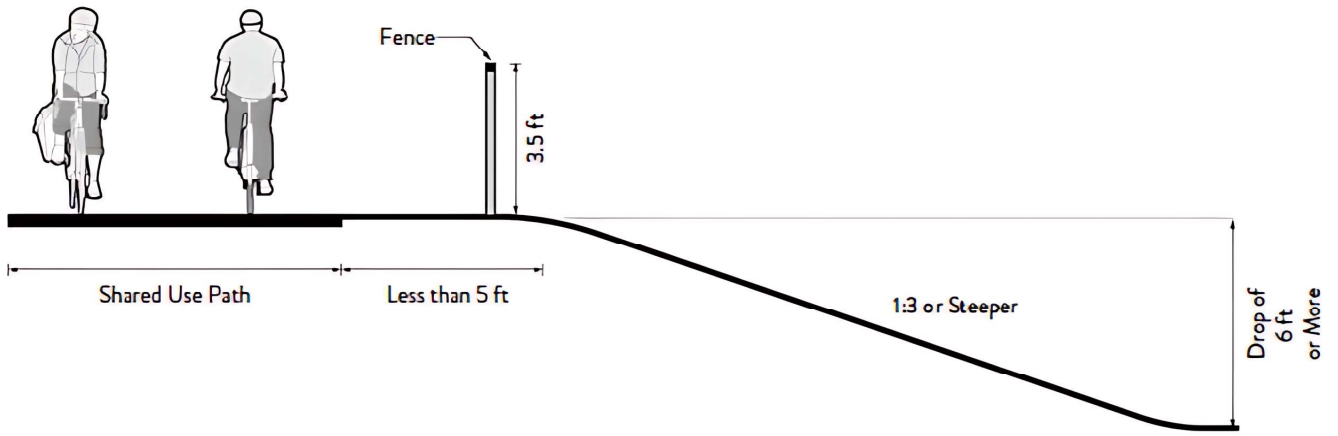


Condition 1: Gentle side slope, no fence or additional graded area needed



Bicycle Facility Design Manual, MNDOT





Bicycle Facility Design Manual, MNDOT



Cross Slopes:

The ideal cross slope for shared-use paved paths is 1%, as they are easier for people in wheelchairs to navigate while being able to convey drainage. Additionally, cross slopes should not exceed 2% to meet disability design requirements.

Cross slopes should transition to connect to existing slopes to adjust to changes in slope or drainage, or sometimes to a horizontal curve. These transitions should be smooth and comfortable for users and have a minimum length of 5 feet per 1% change in cross slope.

Stopping Sight Distance:

Shared-use paved path design should take into consideration stopping sight distance to ensure that there is time to react to unexpected conditions. Stopping sight distance calculations include variables such as reaction time, starting speed, the coefficient of friction between the path and the wheels, the grade of the path, and the braking ability of the user's equipment. Formulas for calculating stopping sight distance can be found in resources such as the 2012 AASHTO Bike Guide. Sight distance needs to be evaluated for vertical curves, as well as horizontal curves. In locations where there isn't adequate stopping sight distance for trail users, pavement markings such as a solid yellow center stripe indicating a "no passing" zone or curve warning signs should be considered.



Grade:

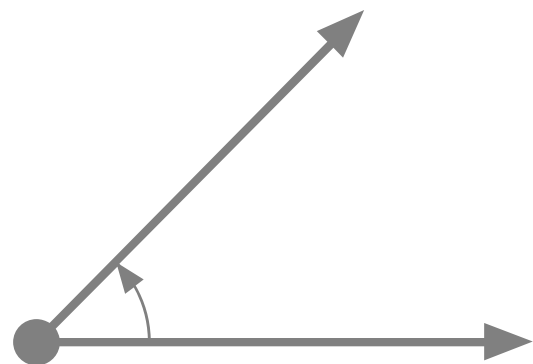
Shared-use paved paths should have a maximum grade of 5%. Grades should be minimized on long stretches, as steep ascents and descents can be difficult and dangerous for many trail users. Pedestrian access standards must also be met with off-road shared-use paved paths, which also limits maximum grades to 5%, except under certain circumstances which can be found on the U.S. Access Board website.

Options to mitigate excessive grades include:

- When long grades must be used, provide an additional width of 4 to 6 feet to permit slower bicyclists to dismount and walk uphill and to provide more space for fast downhill riders.
- Install hill warning signs for bicyclists (W7-5 in the MUTCD) and alert users to the maximum percent grade.
- Provide greater clearances on each side of the path and/or railings where appropriate.
- Provide resting areas and resting intervals with flatter grades.
- Use a series of short switchbacks with 4 to 6 feet of extra maneuvering space.
- Consider the use of advisory speed plaques.

Grades of less than 0.5% should be avoided because they create challenges with stormwater conveyance. It is better to use small rolling hills that convey storm drainage to outlet locations.

The path material must also be considered, as grades steeper than 3% may be difficult for users when the path is unpaved.



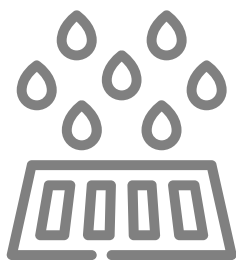
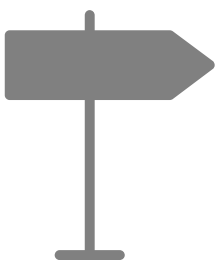
Design Speed:

Design speeds should be selected and used for all pertinent features along a shared-use paved path to provide continuity along the path. Usually, the selected speed should be at least as high as the preferred speed of the fastest common user. This speed depends on many conditions, including the type of equipment being used, the purpose and length of the trip, the condition and grade of the path, wind conditions, and the number and type of other users. Design speeds for paths are typically reported in 2 mph increments and range from 12 mph to 30 mph. Most paths in flat areas have a design speed of 18 mph, but it varies depending on all the path conditions. In some areas, it may be desirable to lower speeds through geometric design, such as horizontal curves, to reduce the likelihood of crashes at conflict points.

Pavement Markings:

Pavement markings on sidepaths can be used to indicate separation of lanes, provide guidance on assigned travel path, and provide information in advance of turning and crossing maneuvers. They should be retroreflective and use materials that will minimize loss of traction under wet conditions. On two-way paths, a solid yellow centerline stripe may be used when passing is not permitted (due to sight distance concerns or heavy user volumes), and a broken yellow line may be used when passing is permitted.

In some areas of extremely heavy path volumes, pedestrians and wheeled users can be segregated using pavement markings. The markings and signage should clearly define what lane is used for bi-directional pedestrian use and also define lanes for each direction of bicycle traffic. The pedestrian only lane should be on the side of the path with a view when applicable.



Horizontal Alignment:

Most adult bicyclists lean while turning at corners to avoid falling. There are two methods for calculating the minimum radius of horizontal curvature for bicycles: using the “lean angle” or the superelevation method. These methods are outlined in resources such as the 2012 AASHTO Bike Guide. When the minimum radius of horizontal curvature cannot be achieved in the path design, warning signs or widened pavement through turns can be used.

Signage:

Knowing your location within an active transportation network is important for user security while enhancing the experience. See the “Signage and Wayfinding” section under Trail/Greenway Amenities for additional information.

Vertical Alignment:

The vertical alignment should provide users with a smooth and comfortable experience. It should also provide users with sight distances that allow them to pass other users safely. In flat areas, a gradually rolling vertical profile can help convey stormwater better than letting the area remain flat around the path.

Drainage:

Minimum cross slopes of 1 percent typically provide conditions for adequate drainage, and paths are typically sloped uniformly in one direction rather than crowning. The slope direction typically follows the natural terrain to avoid the need for channelized flow where possible. When needed, manhole covers and bicycle-compatible drainage grates should be located outside the pathway.



Surfaces:

Paved shared-use paths can be either concrete or asphalt. Asphalt is the most common surface since it has the lowest initial cost. However, concrete paths have been proven to reduce maintenance costs over the long term and are more durable. When concrete is used, saw-cut concrete joints are recommended to improve users' experience.

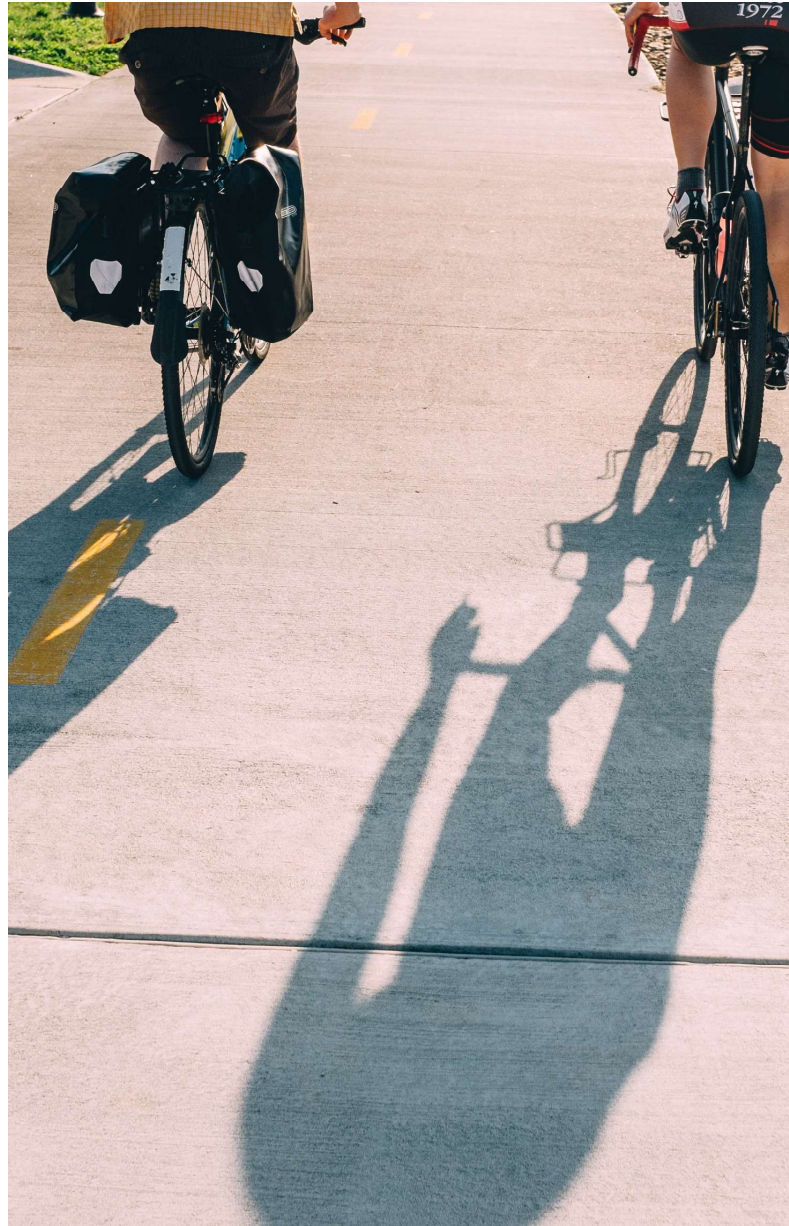
Asphalt's advantages include that it has a lower initial construction cost, is softer and preferred by runners and walkers, and pavement markings are often more visible on asphalt over concrete due to a higher contrast.

A soil investigation should be performed and considered along with the expected loads (maintenance and emergency vehicle use should be considered) on the trail to determine the pavement section design for all paved paths.

Efforts should be made to ensure a smooth riding surface. When utility covers or drainage grates are required, they should be bicycle-compatible and flush with the pavement surface.

Accessibility:

Aspects such as the surface type, cross slope, and grade directly affect the accessibility of shared-use paved paths. Wheelchair users can most easily navigate hard surface paths with a cross slope of 1%. Slopes of shared-use paved paths should be 5% or less, and rest areas and rest intervals should be considered for long stretches of steep slopes.



Locating Shared-Use Paved Paths

Floodway Trails/Greenways:

Trails and greenways planned within floodplains must consider preserving the existing vegetation. These areas provide water quality from stormwater runoff and habitats for wildlife. Infrastructure within these areas should be made of concrete or a form of grouted stone pathways that are compliant with federal, state, and local laws.

Utility Easement Trail/Greenway:

Utility easements not adjacent to a roadway can provide a route for trails, depending on the nature of the easement. Trails can often be located in easements for overhead electric and fiber optic lines as they are high enough that they won't interfere with the PAR, but these routes can vary in topography and may have drastic elevation changes. Typically, these easements are not very wide and require maintenance vehicles to traverse the easement. The design of trails in these areas should consider the additional weight of occasional maintenance vehicles to provide an adequate cross-section.

Drainage Easement Trail/Greenway:

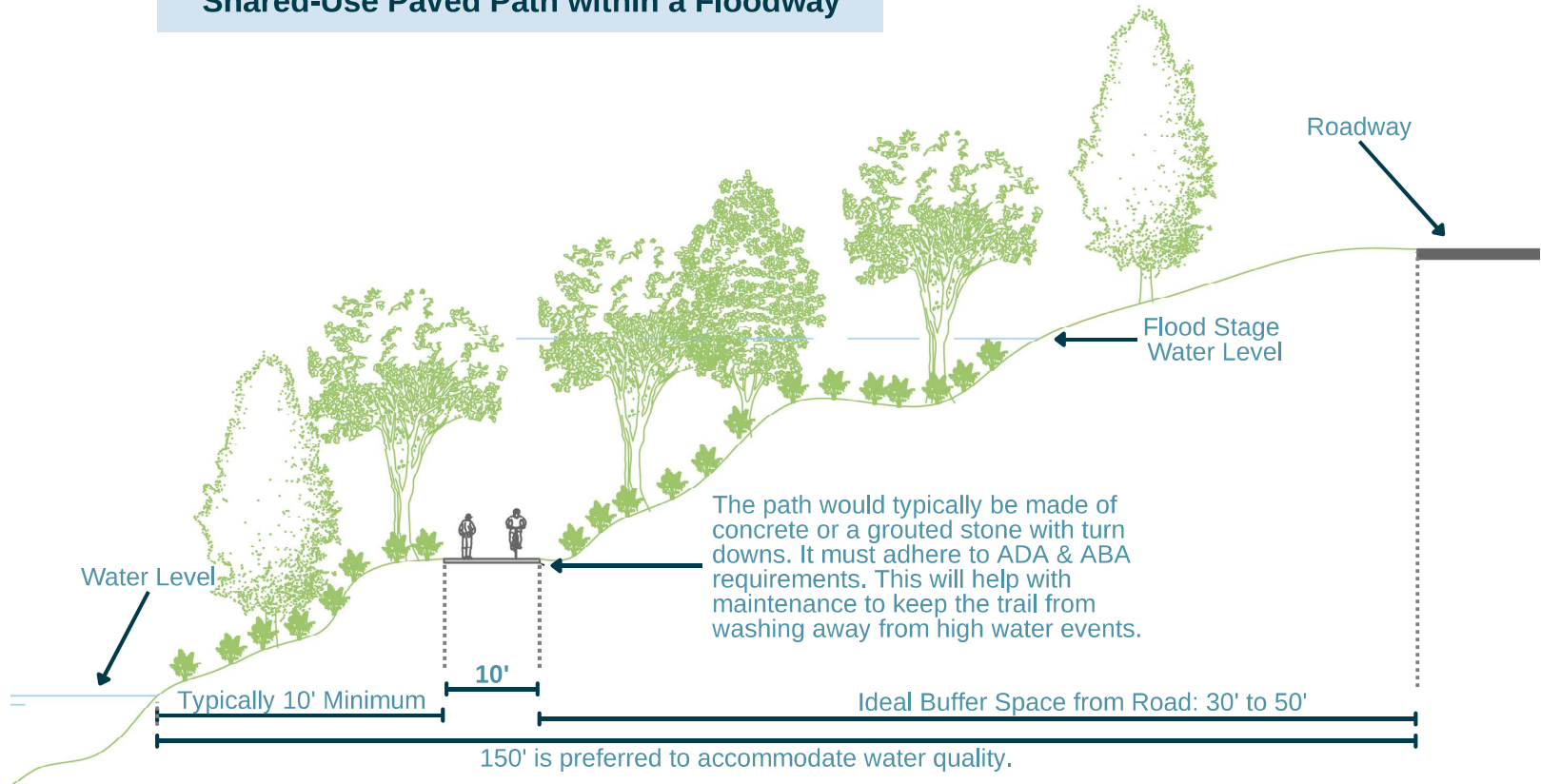
Like utility easements, drainage easements come in a variety of widths. These easements work great for trails because the drainage systems that are open designs are typically smooth and do not include steep grades. However, they can pose a safety risk due to their proximity to deep channels or ditches—especially during a storm event when water is moving fast. Trail designs along these types of drainage easements should separate pedestrian traffic from the channel or ditch by some type of physical barrier, such as a fence, decorative bollards with cabling, etc.



Railroad Right-of-Way Trail/Greenway:

Trails in railroad right-of-way are very common and can be found along abandoned and in-use railways. Railroad design requirements provide grades well within the ADA/ABA requirements. The right of way along abandoned railways is typically wide enough to facilitate wide trails and still provide plenty of room for bikes and pedestrian facilities like drinking fountains, benches, etc. Railroad bedside slopes are typically the shortfall in the design process. This makes transitions, drainage, and cross-connections difficult. Designs on railroad beds with slopes steeper than 3:1 should be designed with a 5-foot shoulder that is not included in the trail width. If a shoulder is not able to be installed, a railing or fence should be installed within 2 feet of the trail edge at a minimum height of 42 inches. Along with in-use railways, designs should be in accordance with the American Railway Engineering Association (AREA) standards for "Rails-with-Trails". Designs should include grade separation, which isolates the track from the trail. A buffer is also required between the trail and active tracks. It is also required that there are very few or no at-grade crossings with the track. Fencing or vegetative screening between the trail and active tracks is preferred, and signage needs to be posted explaining the dangers in the vicinity of the trail and tracks.

Shared-Use Paved Path within a Floodway





Drainage Features

Designs of trails and greenways should also consider drainage. Drainage features can consist of pipes, culverts, bridges, inlets, etc.

Culverts:

Stormwater management is important to prolong the life of the trail and reduce maintenance costs. The City of Fort Smith has standards and specifications that determine the materials allowed for construction. At a minimum, the top of the culvert should be 12 inches from the bottom of the trail surface material. Side slopes should be a minimum of 3:1 slope. Pipe sizes and lengths will depend on each project. It is recommended that the minimum pipe inside diameter be no less than 15 inches unless the design shows that a lesser pipe diameter is adequate.

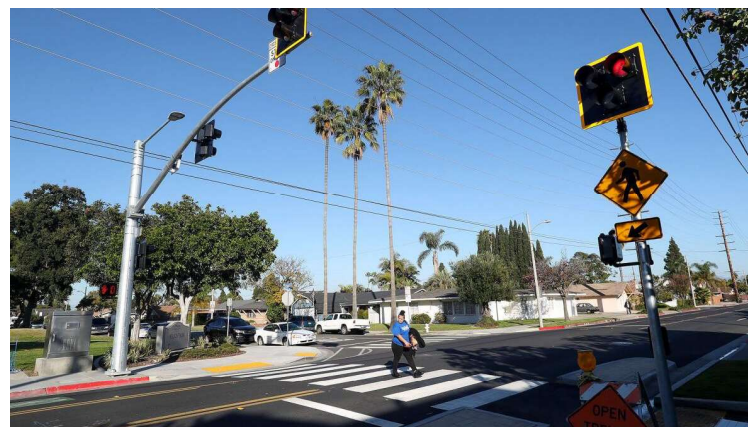
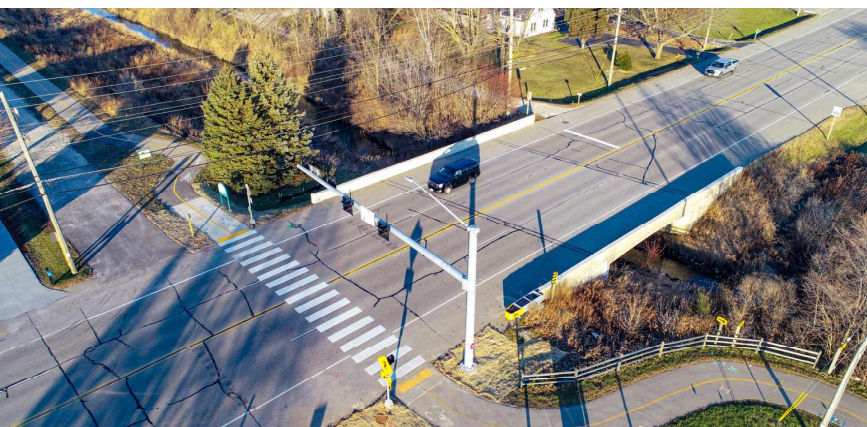
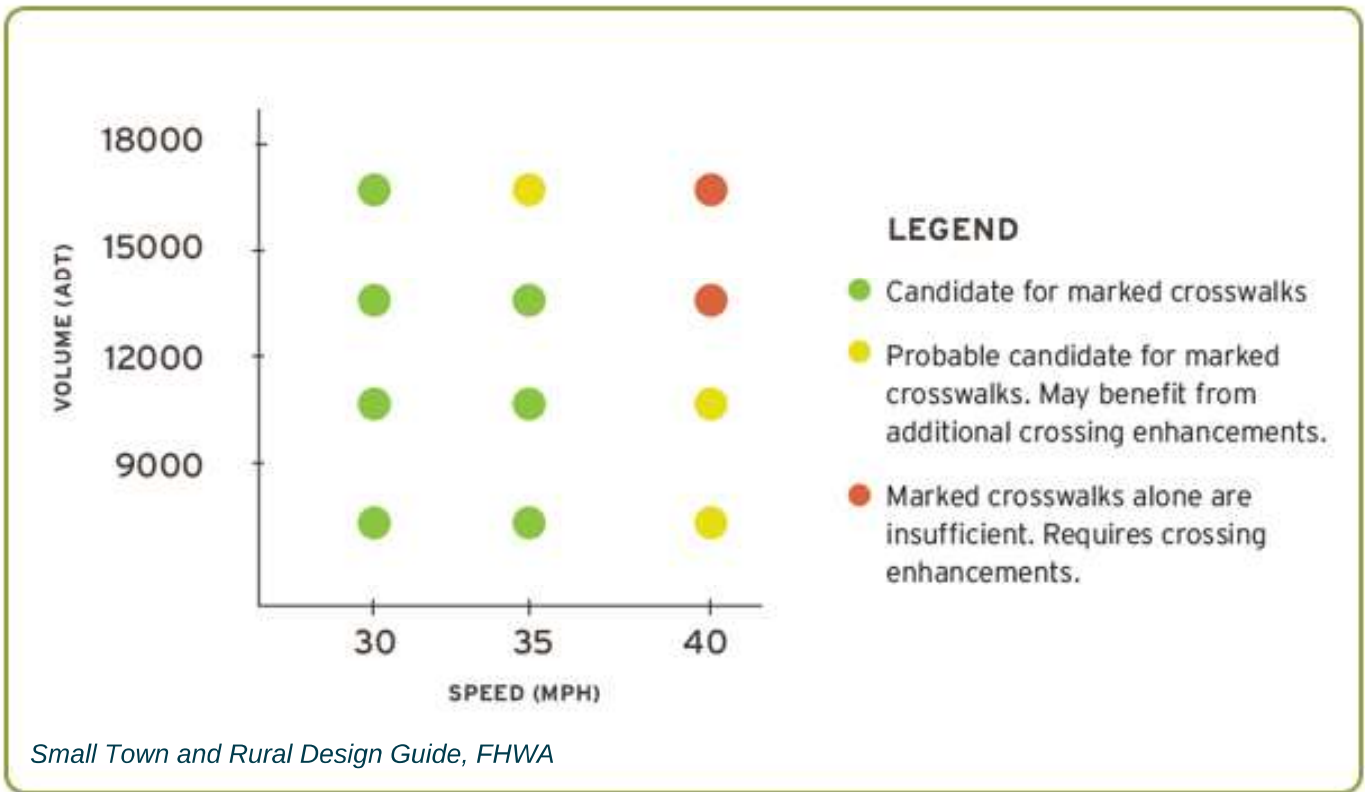


Bridges:

Bridges come in all shapes and sizes, are design-specific, and are usually themed to a zoning requirement or specific architectural standards. They are required to cross large waterways and sometimes even roadways.

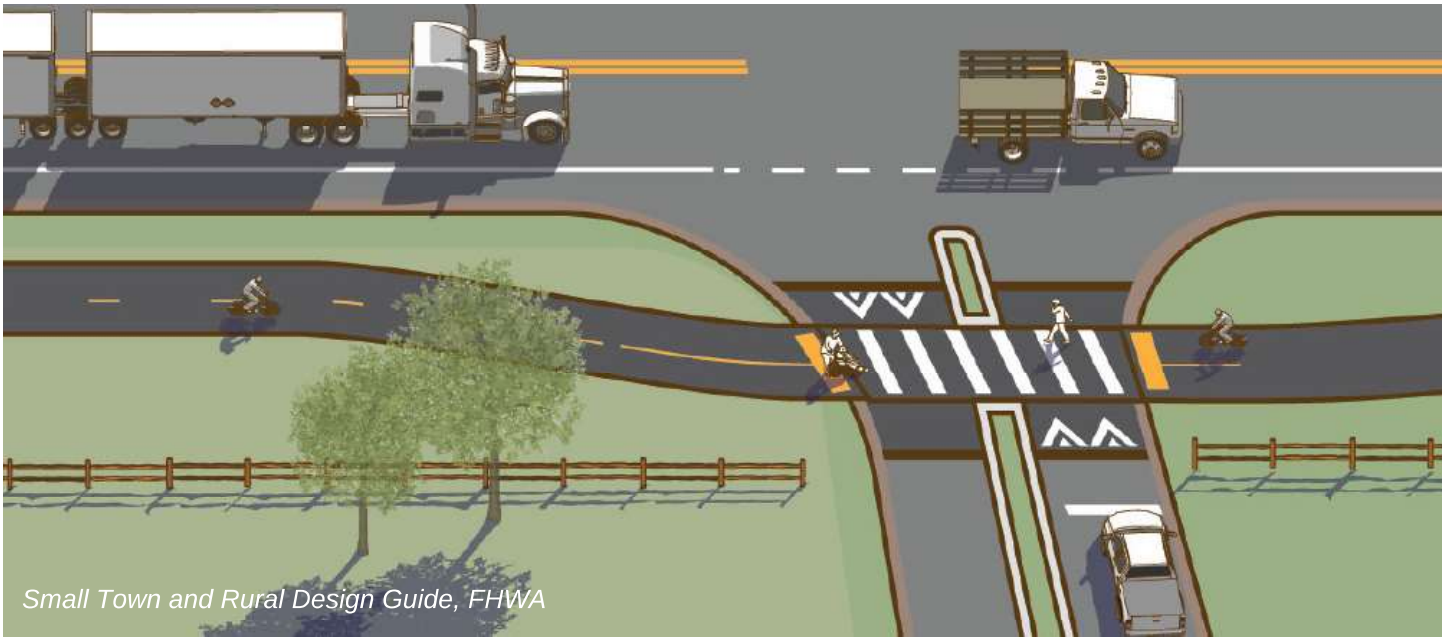
Shared-Use Paved Paths Intersection and Crossing Design

People of all ages and abilities use shared paths for activities like walking and cycling. These paths often intersect with roadways, posing user challenges at these points. When paths intersect roadways away from designated crossings, conflicts can arise between path users and road users. It is crucial to apply sound design principles for these midblock intersections, similar to regular road intersections. Inappropriate treatments at these crossings can lead to users' non-compliance. For instance, using stop signs where visibility is good may not be effective, whereas yield signs could match user behavior better. Conflicts may also arise at angled intersections, affecting sightlines between path and road users. Ideally, intersections should be close to a 90-degree angle to ensure good visibility and stopping distances for everyone. By incorporating these design principles, conflicts at path and roadway intersections can be reduced or prevented effectively.



Intersection Design:

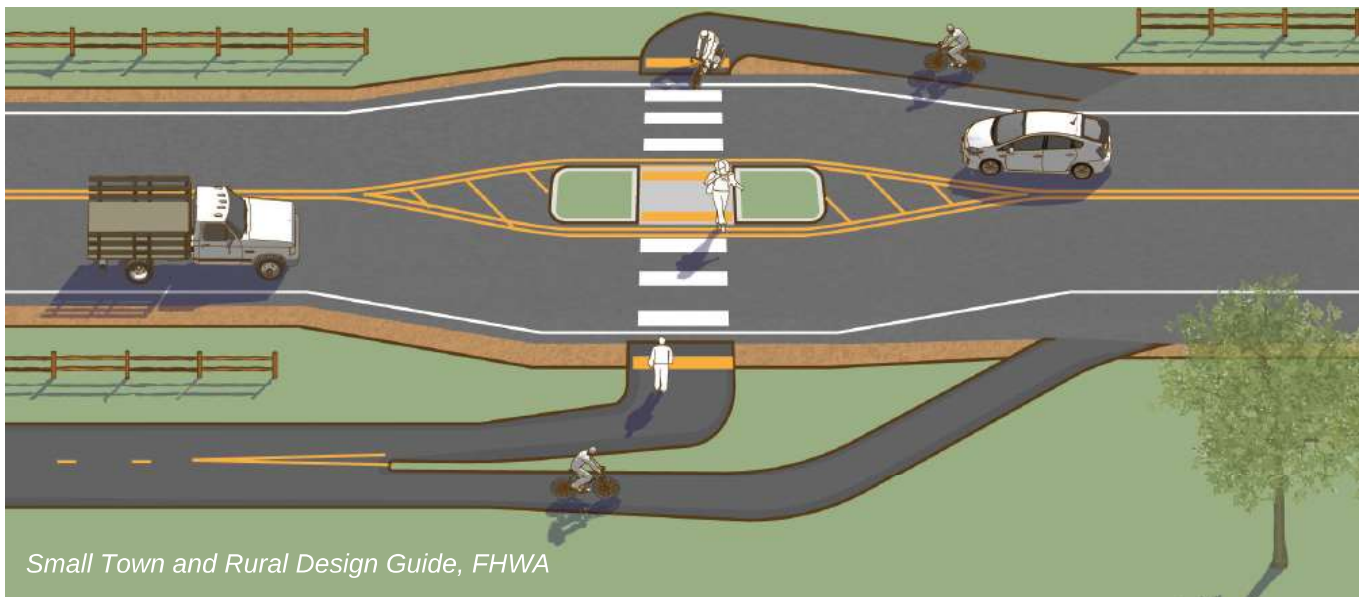
Intersection design for shared use paths requires careful attention to address potential conflicts. The design should be predictable and orderly to provide comfort and increase safety. Each intersection is unique and requires engineering judgment to determine the best treatment. Basic measures that can be used to reduce crash severity and frequency include reducing the speeds of path users and motorists, increasing the predictability of behavior, and limiting the amount of exposure at conflict points.



Small Town and Rural Design Guide, FHWA

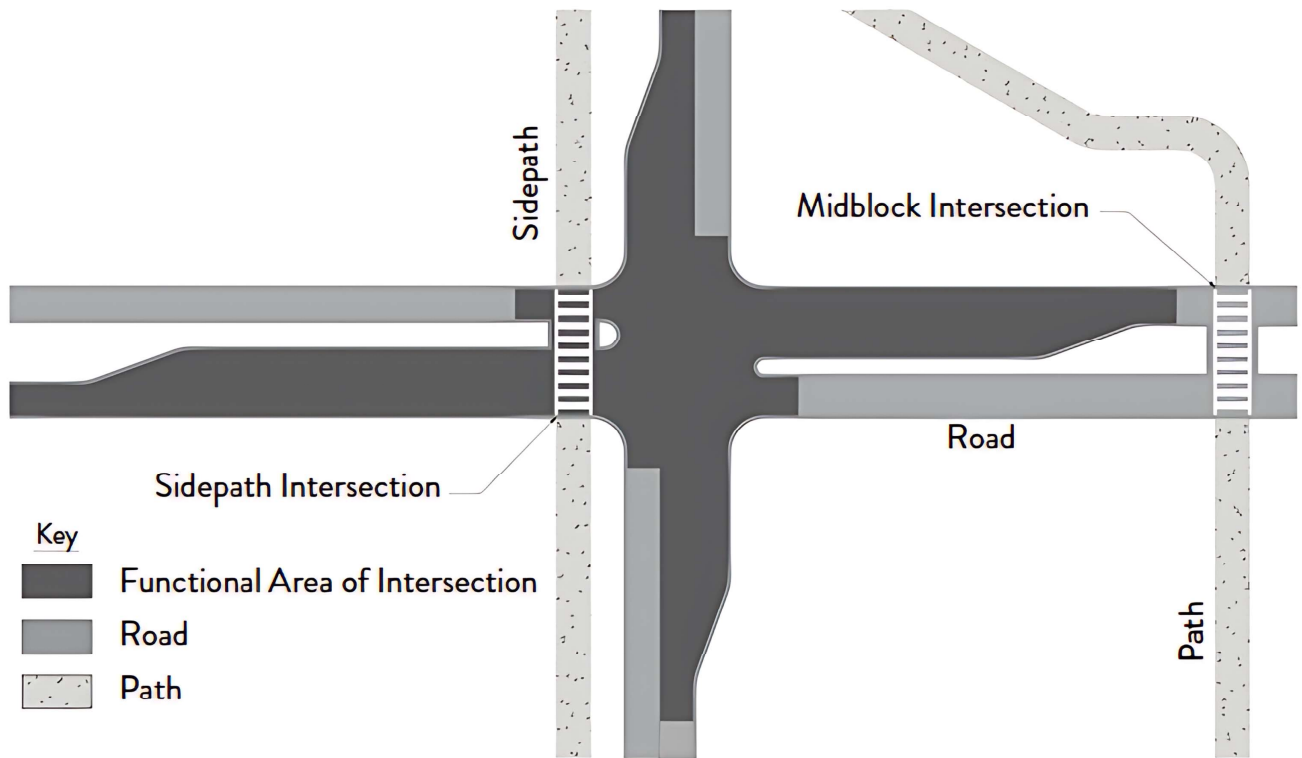
Mid-Block Crossing Design:

Mid-block crossings are similar to intersection design, and the same design principles apply. Many features can be considered, and some may be appropriate at different locations, but engineering judgment should be used to determine appropriate treatments based on the conditions at the crossing location. One principle that should be considered in the design is that it is safest at crossings for the path to be perpendicular to the roadway and provide the best lines of sight for path users and drivers.



Small Town and Rural Design Guide, FHWA

In accordance with updated (2023) MUTCD guidance, for crossings where the visibility of the intersection is limited on the shared-use path approach to the intersection, warning signs should be used to alert vehicular traffic that there is a crossing ahead. If the path allows for two-way traffic at the crossing, the markings on the pavement should reflect the direction of the path. The use of colored pavement in the crossings is preferred but not required. While separated bikeways along straight road segments are increasingly common, their design at intersections presents unique challenges and opportunities for ensuring cyclist safety and efficiency.



Bicycle Facility Design Guide, MNDOT

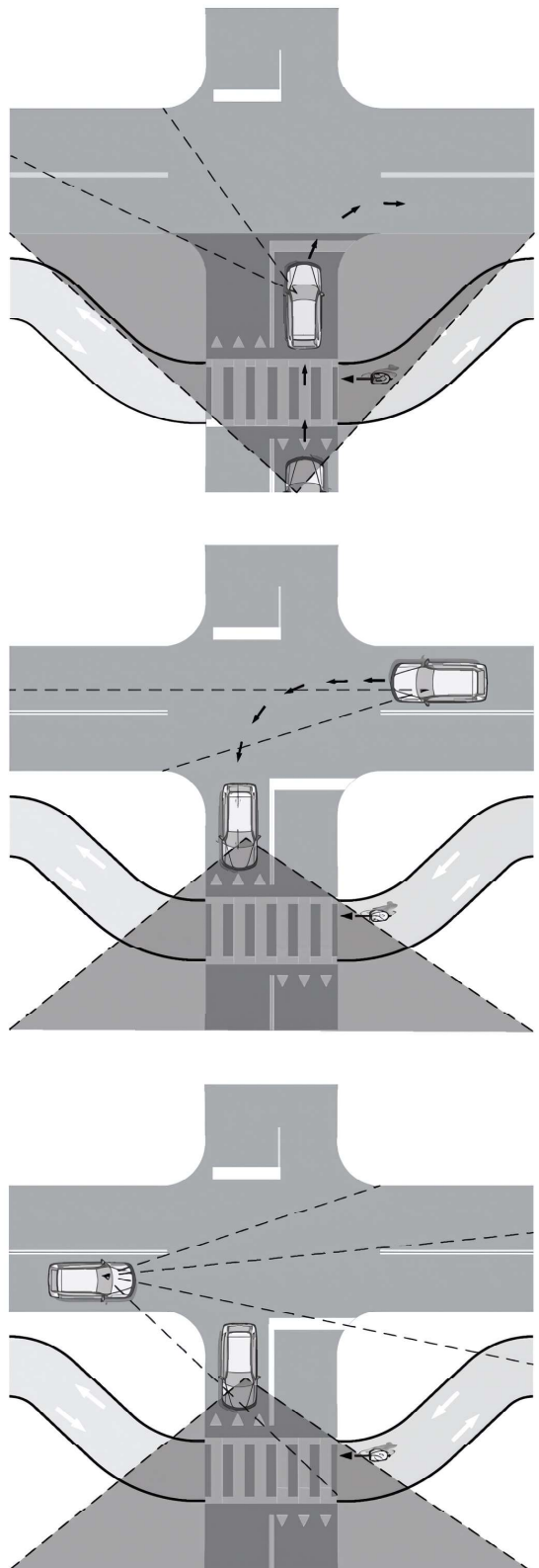


Offset Geometry:

A challenge in designing a sidepath is that many motorists are not trained or accustomed to checking for pedestrians. One option for improving sight lines and user orientation and creating more space for vehicles to yield is a “bend-out” design. These designs should have a minimum offset of 6 feet.



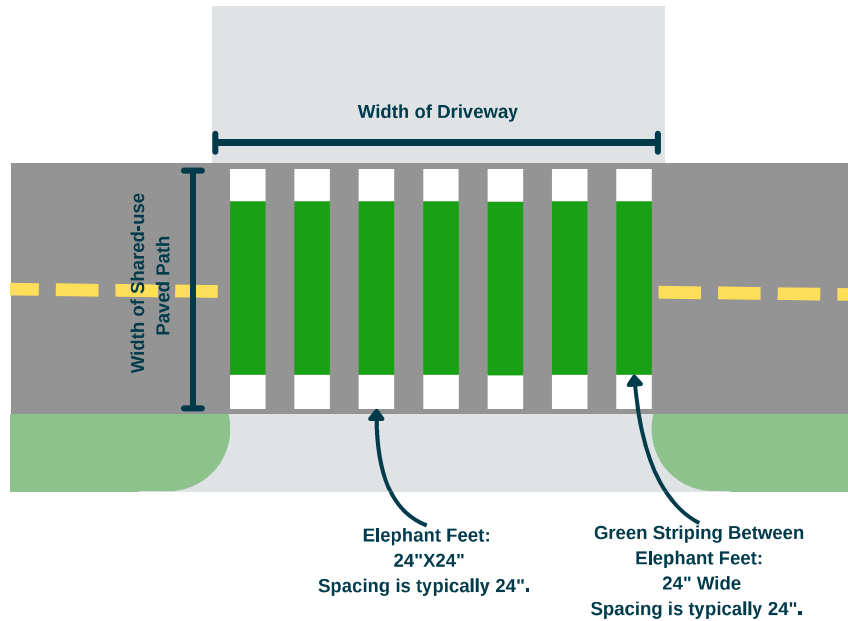
Offset Geometry or “Bend-Out” Improvement



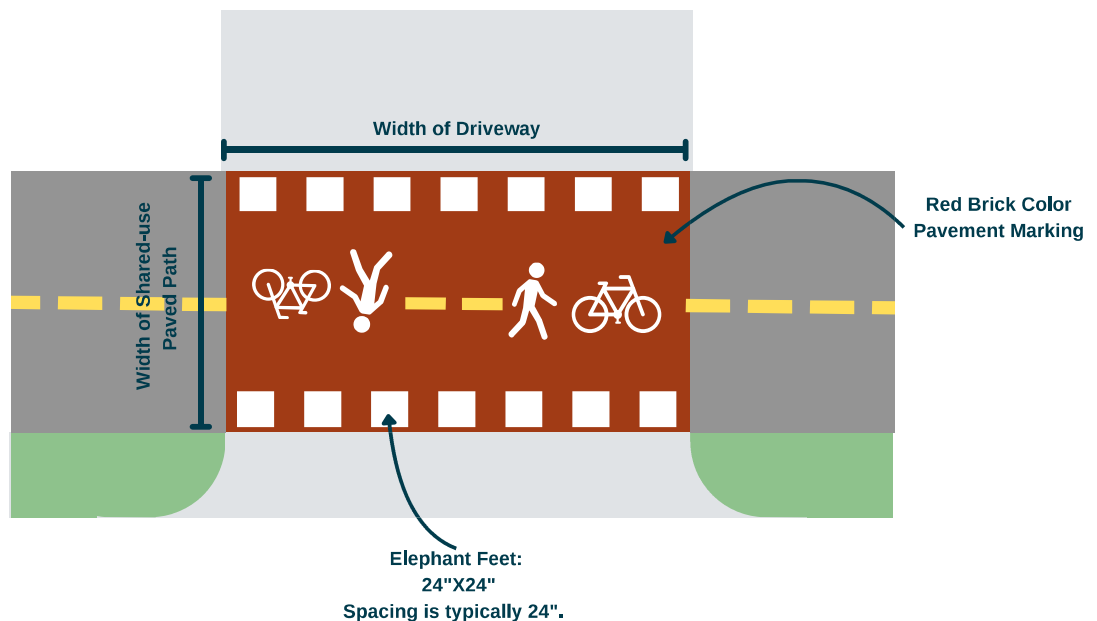
Driveway Intersections:

Pathways with a low density of driveways are the ideal condition. However, shared-use paths frequently must cross driveways and some design options help bring drivers' attention to the path and its users. One option is to continue the path surface across the driveway so it is clear that the path users have the right of way. Signs and pavement markings can also be used, as well as small corner radii, to encourage reduced speeds.

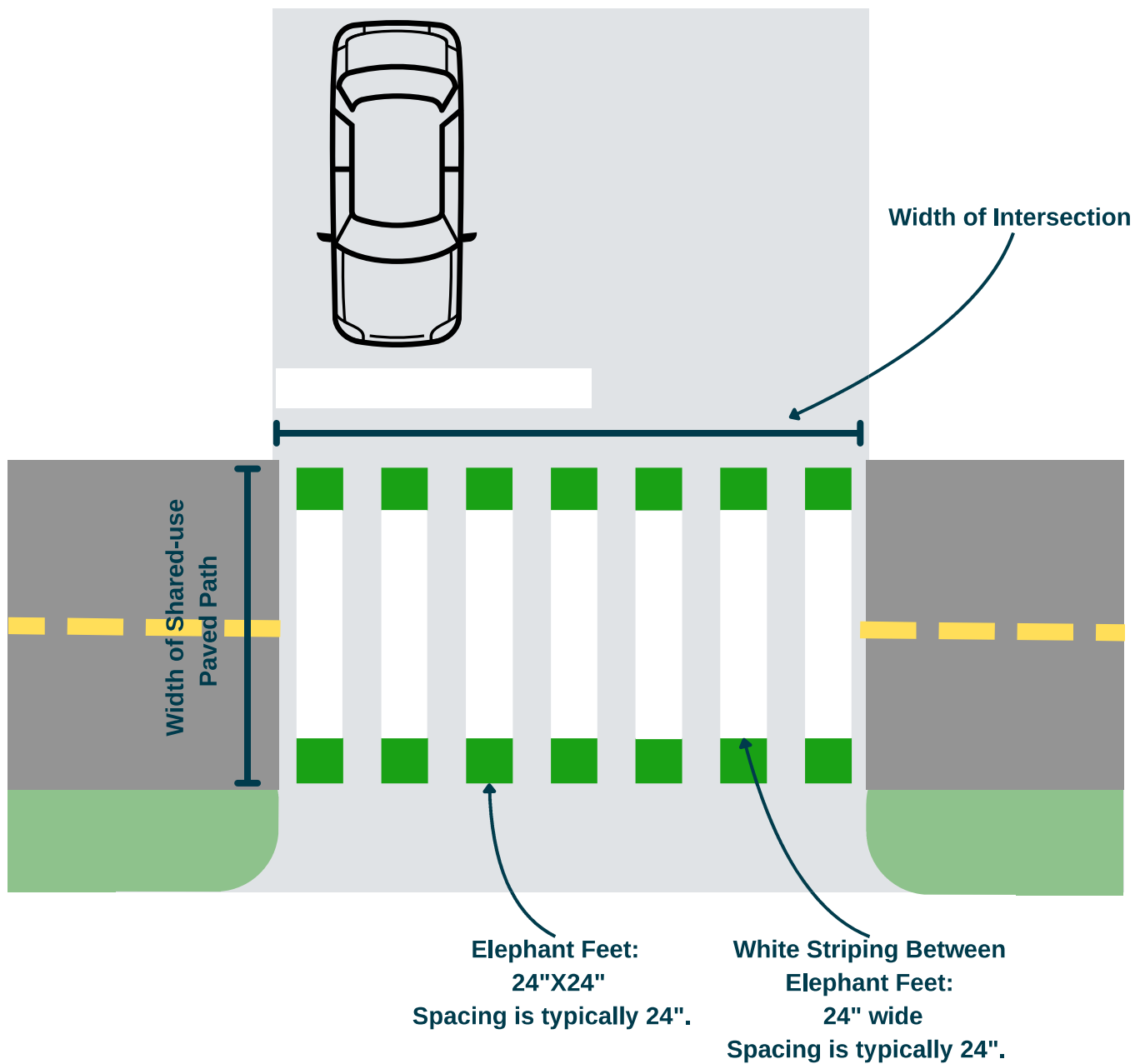
Option A



Option B



Recommendations for Shared-Use Paved Path/Sidepath Minor Intersection Crossing



Shared-Use Paved Path Amenities

Trail and greenway designs should include various amenities and furniture, such as bike racks, benches, landscaping, lighting, signage, and other site furnishings. While most of these are not required on all projects, they are highly encouraged if the budget allows for them.

Bike Racks:

There are numerous designs and styles, and they are very difficult to standardize. However, the general rule for the use of bike racks should be:

- Located within 50 feet of a building entrance where cyclists would naturally transition on foot.
- Racks should be installed and oriented away from walls and sidewalks in a manner that allows the rack to be used without impeding the pedestrian access route of the sidewalk or other means of travel.
- Racks installed at the curb edge should be placed so it doesn't conflict with opening car doors from an adjacent parking space.



Bollards:

Typically, bollards keep vehicular traffic from entering the bike/pedestrian shared-use path or facility. Bollards are also available in many styles and a variety of installation methods. The use of bollards is project-specific and should match the style of the surrounding area. However, much care should be taken in their use because they present obstacles to the travel path of bicycles and pedestrians. Removable bollards should be used in areas that require maintenance or emergency vehicles to access the trail/pathway.

Paved and Non-paved Trail Enhancements:

For users of a trail system and active transportation network, some simple solutions can be added to the project to enhance the overall safety and user experience. Examples of these types of enhancements are as follows:

Benches/Seating Areas:

Seating can often be overlooked but is an essential amenity for users of a natural surface or greenway trail system. The ability to stop, rest, and connect with others and nature can dramatically increase user experience and benefits.

Tool Stations:

Many of us have been on a bike ride and ran into a chain break, flat tire, or had to adjust an element on our bicycle. Many riders don't carry tools or may have just the basics. Installing tool stations in strategic locations both on natural surface trails and greenways can help users avoid a long walk back to the car. Tool stations can increase safety and convenience by allowing users to make adjustments and repairs conveniently.

Restrooms:

Access to safe and clean restrooms along trail systems helps users feel like they can enjoy the trail longer than if a restroom were unavailable. Strategically locating restrooms, even portable facilities, can help a wider portion of the population enjoy the outdoors.

Water Fountains:

Water is essential to life, especially during exercise or fitness. Adding water fountains along trail systems can help users stay safe and avoid an all-too-common medical issue of dehydration. Water fountains should include lower watering pans for users enjoying the trails with dogs.

Dog Parks:

Most parks and public open spaces have leash laws. Including off-leash dog park areas along the trail system would likely be a welcome addition for the many dog owners in the area.

Relief/Viewing Areas:

Along trail corridors, there will often be areas where users might want to enjoy a view or take a break. Establishing these viewing areas off the trail corridors is important to avoid conflict on the trail. Where possible, include shade structures at these relief points. During summer, shade can increase users' comfort and safety for those needing respite from the summer sun.

Art Installations:

Creating unique art installations helps to enhance a trail system and can attract local and out-of-town riders to view, take photos, and enjoy the experience.



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Landscaping:

Landscaping can vary widely based on the project location. It is a best practice to maintain at least 2' of horizontal clear space between the edge of the trail and other objects, which should be kept in mind when planning vegetation along trails. Sight distances should also be considered when planning landscaping along trails and greenways.



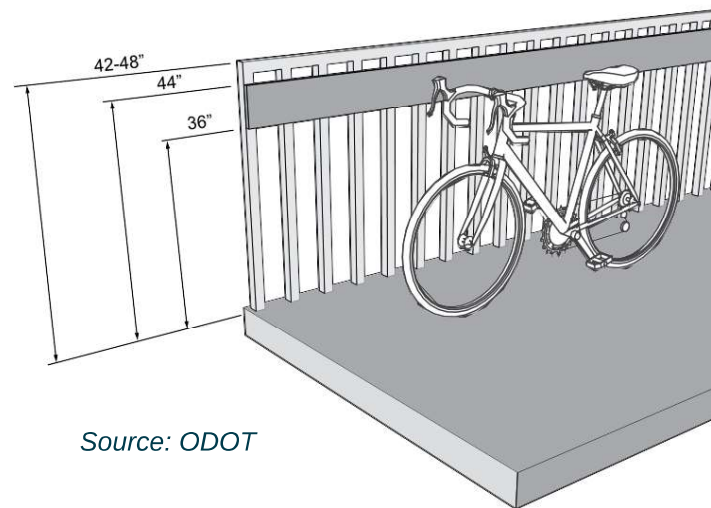
Lighting:

Lighting can improve visibility and increase users' feelings of safety. Lighting should be designed to meet the community's needs and concerns while being placed in locations that require increased visibility for safety.



Railing:

Railing provides a physical barrier between trail users and a hazard, whether that is a steep slope, a drop, a body of water, or some other obstacle. It is a best practice to maintain at least 2 feet of horizontal clear space between the edge of the trail and the front face of the railing to provide a clear recovery area for trail users. The ends of rails should be flared away from path edges and should be marked with object markers if they are within the 2 feet of clear space adjacent to the trail. Engineering judgment should be used to determine appropriate rail spacing depending on the hazard.



Source: ODOT

Signage and Wayfinding:

Knowing your location within an active transportation network is important for user security while enhancing the experience. An opportunity exists for the city to develop a comprehensive wayfinding and signage program for the natural surface trails and the active transportation network. A comprehensive wayfinding and signage plan can delve into the system's look, feel, and brand to create a unified approach to navigating the county on bike and foot. Essential elements of a wayfinding and signage plan are as follows:

Clear and Consistent Signage:

Ensure all signage is clear, easy to read, and consistent throughout the trail system. Use large fonts and high-contrast colors to make signs easily visible, even from a distance. Ensure that the trail systems' signage has a consistent look and feel both in the physical structure of the sign and in the maps.

Trailhead Signage:

Provide clear signage at trailheads indicating the trail's name, difficulty level, length, and any important safety information. Trailhead signage should also include a map of the trail system with key landmarks and points of interest marked.

Trail Markers:

Install trail markers regularly along the trail to reassure users that they are on the right path. Depending on the terrain, these markers can be posts, blazes painted on trees, or other visible markers.

Directional Signs:

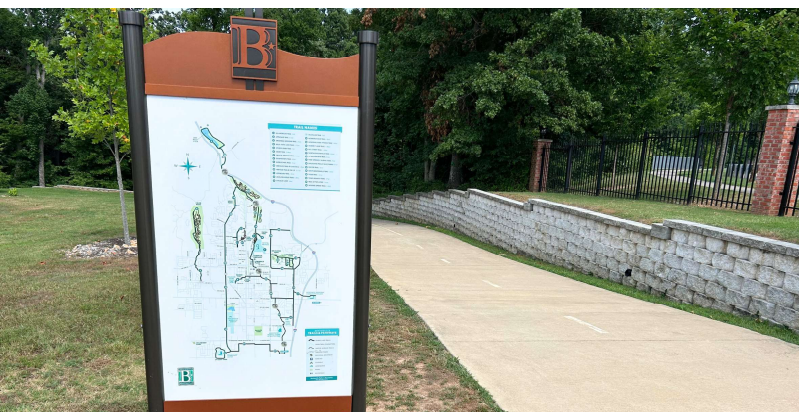
Place directional signs at trail junctions and decision points to help users navigate the trail system. Use arrows or symbols to indicate where users should go to reach specific destinations or points of interest.

Distance Markers:

Install distance markers at regular intervals along the trail to inform users of how far they have traveled and how far they have left to go. This information can be especially helpful for planning breaks and estimating travel time.

Emergency Information:

Include emergency contact information and instructions on what to do in case of an emergency on-trail signage. This can include contact numbers for local emergency services, trail rules, and safety tips.



Trail Maps:

Provide trail maps at key locations such as trailheads, parking areas, and visitor centers. These maps should be easy to read and include information on trail difficulty, length, elevation gain, and points of interest.

Multilingual Signage:

If the trail system is frequented by users who speak different languages, consider providing multilingual signage to ensure that all users can understand important information.

Accessible Signage:

Ensure that signage is accessible to users with disabilities, including those who are visually impaired or have mobility impairments. Use braille, tactile markers, and wheelchair-accessible formats as needed.

Regular Maintenance and Updates:

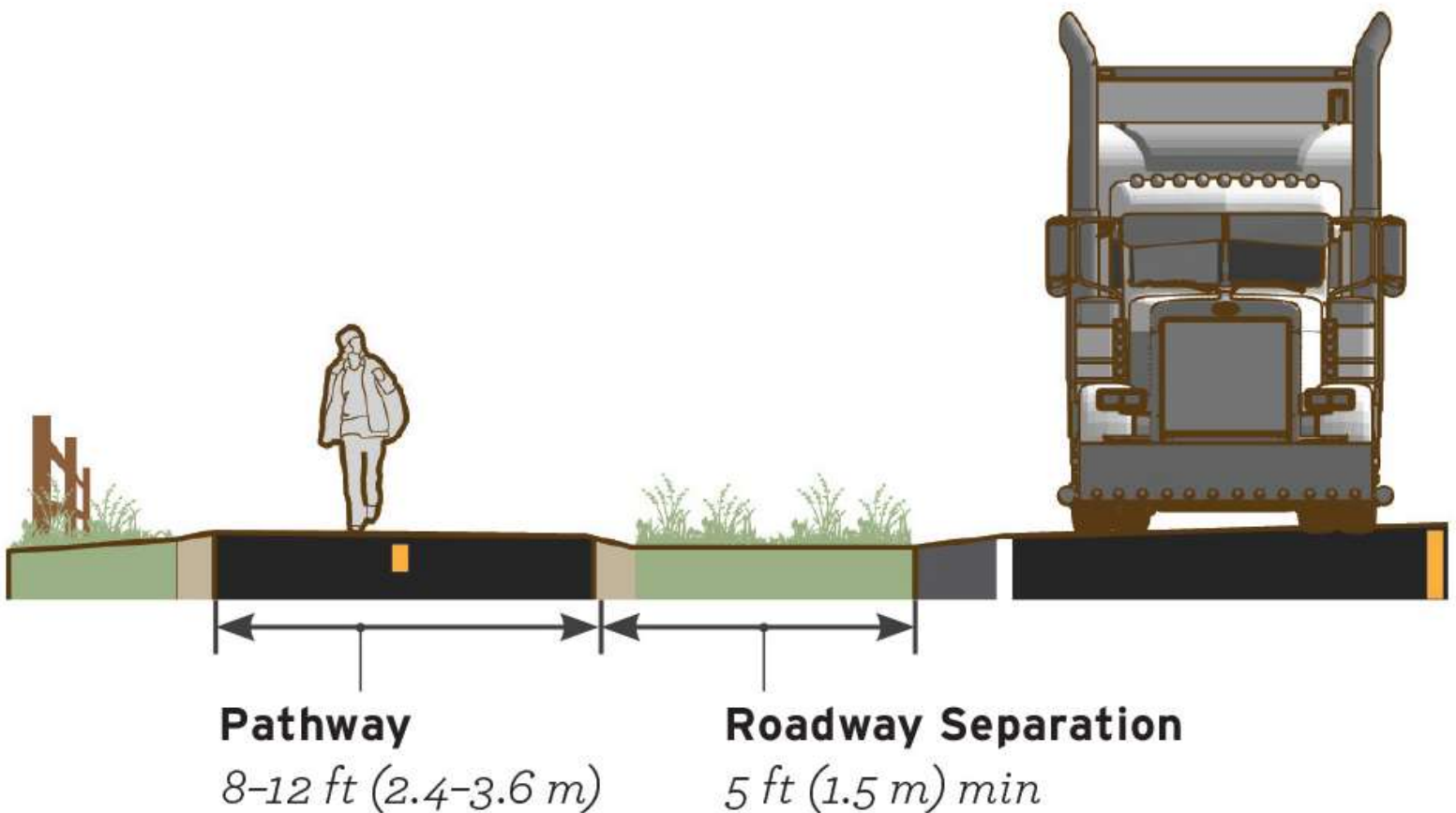
Regularly inspect and maintain signage to ensure that it remains in good condition and continues to provide accurate information to users. Replace damaged or faded signs promptly to avoid confusion.



2 Sidepaths

Shared-use paved paths along roadways are often referred to as sidepaths. They are used by non-motorized users (bicyclists, pedestrians, joggers, wheelchairs, etc.) and provide a physically separated travel area from motorized traffic. The increased separation between motorized and non-motorized traffic provides a more comfortable experience for a wider variety of users. In areas of high speed and high traffic volume, increasing the space between the roadway and the sidepath is recommended to maintain a high comfort level for users. Crosswalk enhancements are also recommended with increased speed and traffic volume.

Another consideration in using sidepaths is reducing the risk of collisions, especially at intersections and driveways. This can be done by reducing the number of driveways, encouraging low-speed approaches at crossings, maintaining visibility to all users, and designing to increase awareness of all users. These designs may include elements like small roadway turning radii, using crosswalk markings through the pathway's crossing, raised crossings, and stop or yield markings on the roadway to discourage encroachment.



Small Town and Rural Design Guide, FHWA

Sidepath Design

Typical applications:

- Total traffic lanes - 3 or more
- Along high-volume or high-speed roadways where increased separation is desired
- Where there is room in the right-of-way to accommodate
- Fill gaps in the network between other low-stress routes

Design Guidance:

- Sidepath width impacts user comfort and path capacity. Additional path width is necessary to maintain comfort and functionality as user volumes or the mix of modes increases.
- Minimum recommended pathway width is 10 ft (3.0 m). In low-volume situations and constrained conditions, the absolute minimum sidepath width is 8 ft (2.4 m)
- Provide a minimum of 2 ft (0.6 m) clearance to signposts or vertical elements.
- Separation from the roadway should be informed by the speed and configuration of the adjacent roadway and by available right-of-way.
- The preferred minimum separation width is 6.5 ft (2.0 m). The minimum separation distance is 5 ft (1.5 m).
- Separation narrower than 5 ft is not recommended, although it may be accommodated with a physical barrier between the sidepath and the roadway. The barrier and end treatments should be crashworthy, which may introduce additional complexity if frequent driveways and intersections exist. Refer to the AASHTO Roadside Design Guide 2011 for additional information.
- When in public right-of-way and functioning as a sidewalk, sidepaths should be designed in accordance with PROWAG.

Pavement Markings:

The same recommendations apply from shared-use paved paths. Additionally, pavement markings can be used at potential conflict points to prevent collisions between motorists and path users. This can include stop bars at intersections as well as crosswalk markings across the intersection. It can also include markings on the path to warn users to yield and watch for vehicles.

Grade:

The same recommendations apply from shared-use paved paths. However, there is additional guidance that although shared-use path maximum grades should be 5%, the grade should also generally match the grade of the adjacent roadway. When the roadway grade exceeds 5%, the shared-use path may match or be less than the roadway grade.

Cross Slopes:

The same recommendations that apply to shared-use paved paths apply to sidepaths.

3 Mixed Traffic Alleyways

Alleyways allow pedestrians and bike riders to navigate residential or commercial areas along routes generally with low vehicular traffic and parallel to the larger street network. They can provide a link through city street networks but require additional consideration in their implementation. The alleyways must provide a safe environment with lighting and a paved surface without potholes or damage. The alleyway should also have signage that clarifies who the intended alley user is, whether it is just bikes and pedestrians or a mix of vehicles, bikes, and pedestrians.



Achieving Multi-Modal Networks, FHWA

Typical Applications:

- In urbanized, higher-density areas, careful attention should be paid to the types of traffic (Delivery, vehicle, waste management) and how to properly and safely mix them in the alleyway.
- In single-family, lower-density areas, careful attention should be paid to vehicular access to reduce speeding and cut through traffic.

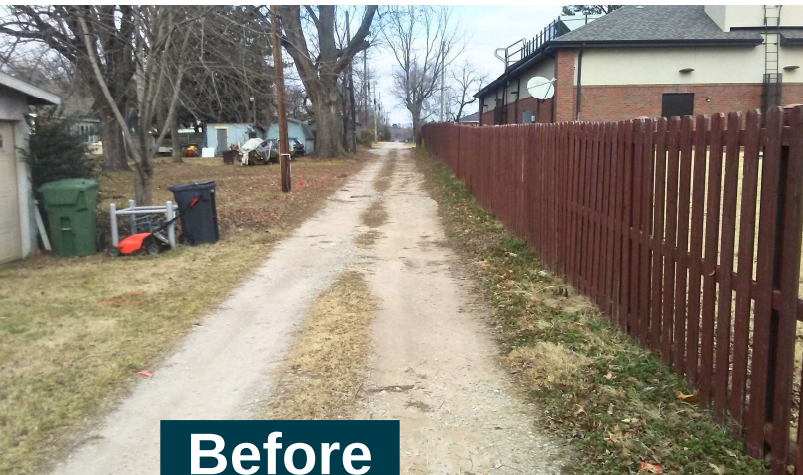
Design Guidance:

- Lighting is recommended in these areas to increase safety for all modes of traffic.

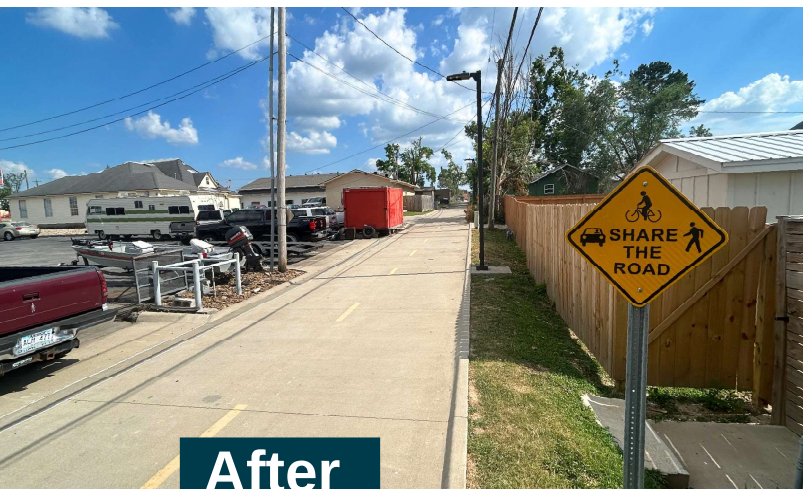
Peer Community Case Study: Rogers, AR

In 2017, Rogers, AR, was working to complete a key shared-use paved path connection from the Razorback Regional Greenway to Downtown Rogers, called the Railyard Loop. The city studied the corridor and found few options to create a safe and comfortable connection along 2nd Street. Upon further study, the city developed a unique solution to an approximately 1-mile section of the Railyard Loop by revitalizing an existing alleyway. The city designated this as a mixed-traffic facility to prevent disrupting businesses and residences in the area, allowing vehicles to access businesses and residences along the alleyway. The city installed lighting, raised street crossings, and RRFBs to increase user safety. The vehicle volume is currently very low, and the new section of the Railyard Loop is widely used by people on foot and by bike. See below for before and after photos.

Railyard Loop



Before



After



Bicycle Facilities

Well-designed bicycle facilities not only encourage more cycling but also help individuals operate their bikes legally and predictably. This design guidance focuses on the following bicycle facilities, as outlined below:

1 Physically Separated Facilities

Separated Bike Lanes:

Separated bike lanes have horizontal and vertical separation from motor vehicles, distinct from pedestrian areas, enabling one-way or two-way travel.

2 Visually Separated Facilities

A. Conventional Bike Lanes:

Bike lanes are sections of the road designated for one-way bicycle traffic, while buffered bike lanes have a painted buffer zone and no vertical separation from motor vehicles.

B. Buffered Bike Lanes:

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. A buffered bike lane is allowed as per MUTCD guidelines for buffered preferential lanes

C. Paved Shoulders:

Paved shoulders refer to extra pavement wide enough for bicycle use, located outside the travel lane and separated from motor vehicles by the roadway's edge line.

3 Mixed Traffic Facilities

Shared roadways are present in various settings, allowing cyclists to ride legally, including local neighborhood streets, urban streets, and suburban and rural highways. These roadways offer cyclists minimal to no physical separation from motor vehicles and are best suited for low-volume, low-speed roads. Shared roadways form the basis for many bicycle boulevards, but function as designated bicycle facilities only when properly designed.

A. Bicycle Boulevards:

Bicycle boulevards are streets with low motorized traffic volumes and speeds, designated and designed to prioritize bicycle travel. Bicycle Boulevards use signs, pavement markings, and speed and volume management measures to discourage through trips by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets.

1 Physically Separated Facilities

Separated Bike Lanes (FHWA) or Cycle Tracks (NACTO)

A separated bike lane (SBL) is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. An SBL is physically separated from motor traffic and distinct from the sidewalk. SBLs have different forms, but all share common elements—they provide space that is intended to be exclusively or primarily used for bicycles and are separated from motor vehicle travel lanes, parking lanes, and sidewalks. In situations where on-street parking is allowed, SBLs are located on the curbside of the parking (in contrast to bike lanes). SBLs may be one-way or two-way and may be at street level, at sidewalk level, or at an intermediate level. At sidewalk level, a curb or median separates them from motor traffic, while different pavement colors/textures separate the SBL track from the sidewalk. If at street level, they can be separated from motor traffic by raised medians, on-street parking, or bollards. By separating people on bikes from motor traffic, SBL can offer a higher level of security than bike lanes and are attractive to a wider spectrum of the public.

**One-Way Separated
Bike Lane with
Poured Median**



1 Pedestrian separation:

Separation from pedestrians is particularly important when a separated bike lane is located immediately adjacent and at the same level as a sidewalk.

- Design and construct separated bike lanes that are clearly distinct from the sidewalk. This is accomplished using a curb, separation buffer space, different pavement or other surface treatments, or detectable tactile guidance strips.

2 Roadway separation:

The roadway separation is the vertical element between the bike lane and the adjacent roadway. The width of the separation will vary depending on the separation type.

- A separation width of 3 ft (0.9 m) allows for various separation methods and provides space adjacent to a parking lane to accommodate door swing and passenger unloading.
- A minimum width roadway separation of 1 ft (0.3 m) may be possible with a mountable or vertical curb face.

Small Town and Rural Design Guide, FHWA

Typical Applications:

The separated bike lane zone offers a clear operating area for bicyclists. Because of the physical separation between the bike lane and the adjacent travel lanes, the design may be more sensitive to debris accumulation, maintenance access, and operating space impacts than conventional on-street bike lanes.

Design Guidance:

- The preferred minimum width of a one-way separated bike lane is 7 ft (2.1 m). This width allows for side-by-side riding or passing.
- The absolute minimum bike lane width is 5 ft (1.5 m). At this width, bicyclists will not be able to pass slower users until there is a break in the facility and an opportunity to overtake.
- A clear-through area of 10 ft (3.0 m) is beneficial for allowing snow plows and street sweepers to access the area.
- Two-way separated bike lanes should have a preferred combined width of at least 12 ft. Given this total width, clear signs and markings should be provided so that the separated bike lane is not mistaken for an additional motor vehicle travel lane.

Types of Roadway Separation for Separated Bike Lanes

Flexible Delineator Posts/
Rigid Bollards



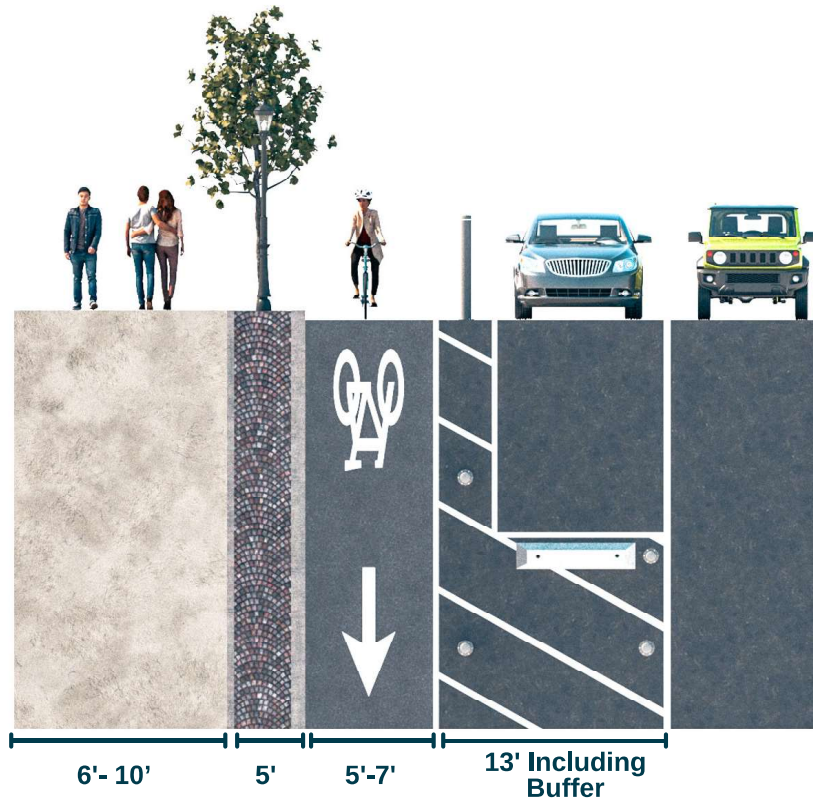
Parking
Stops



Planters



On-street Parking

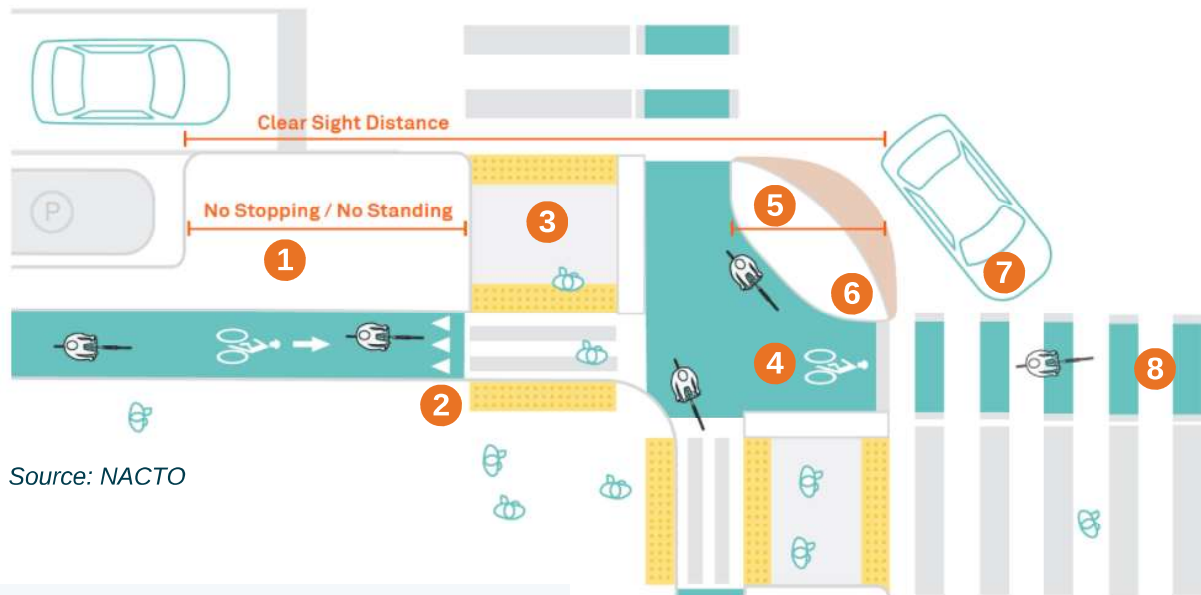


Separated Bike Lanes Intersection and Crossing Design

Intersections and crossings are important considerations in designing safe and comfortable bike lanes. Due to vehicular traffic converging at intersections, strategic design is needed to mitigate risks.

Protected Intersection:

Protected intersections use corner refuge islands, forward stop bars, and setback crossings to maintain the separation between cyclists and vehicles. These elements improve visibility and provide safe waiting areas for cyclists, making it easier for them to navigate the intersection.



Source: NACTO

1 No Stopping / No Standing Zone

Motor vehicle parking and stopping are prohibited on the approach to the intersection.

2 Bike Yield Line (Optional)

Yield lines allow for visual intersection warning

3 Pedestrian Islands

Islands reduce crossing distances and improve visibility by keeping the intersection clear. Wider islands support high volumes of people walking and biking, raising the intersection's capacity. In some cases, islands can reduce the signal time needed for pedestrians.

4 Bike Queue Area

People biking can wait ahead of the crosswalk for a green signal or a gap in traffic. This shortens crossing distances and accommodates the natural positioning of people biking. Bike detection is optional.

5 Bikeway Setback

The setback determines how much room will be available for drivers to wait and yield,

and the angle at which they cross the bikeway. Larger setbacks provide better visibility and give people bicycling more time to notice and react to turning vehicles.

6 Corner Island

A corner island separates bikes from motor vehicles, prevents motor vehicles from encroaching on the bikeway, and creates a protected queuing area for people on bikes waiting to turn.

7 Motorist Waiting Zone

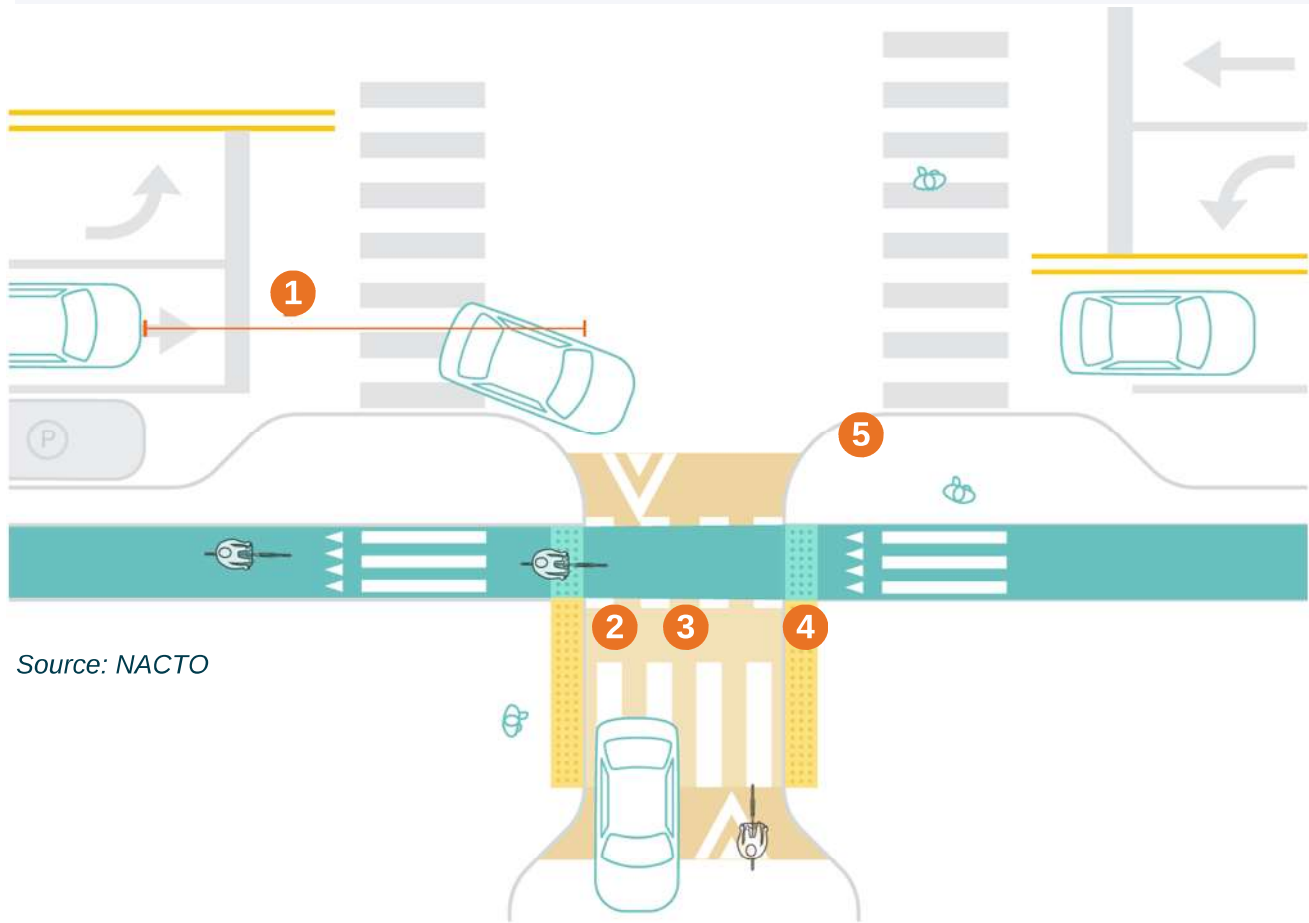
The space between the motor vehicle lane and the crossbike provides a place for motor vehicle drivers to wait before turning across the bike's path of travel.

8 Crossbikes / Intersection Crossing Markings

Markings provide conspicuity and directional guidance to bikes in the intersection. They are marked with dotted bicycle lane line extensions and may be supplemented with green color or bike symbols between these lines.

Minor Street Crossing:

For cyclists needing to make left turns, two-stage turn queue boxes offer a safe method. Cyclists cross one leg of the intersection and wait in a designated area before crossing the second leg, minimizing their exposure to vehicular traffic.



Source: NACTO

1 Clear Sight Distance

A clear approach sightline gives drivers time to see and yield to people in the crossbike and gives people on bike or on foot time to see and react to turning cars.

2 Crossbike & Crosswalk Markings

Crossbike and crosswalk markings provide conspicuity to people on a bike or on foot. High-visibility markings provide the formal crosswalk and crossbike.

3 Raised Crossing

Raised crossings improve bicyclists' visibility and reduce the speed at which vehicles turn by bringing the vehicle crossing up to (or near) the sidewalk level. In addition, the raised crossing is a signal to turning cars that through-moving bikes and pedestrians have the right of way.

4 Detectable Warning Surfaces

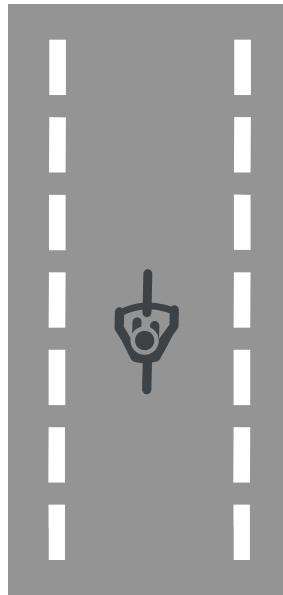
Detectable warning surfaces alert people who are blind or have low vision that they are entering an intersection.

5 Compact Corners

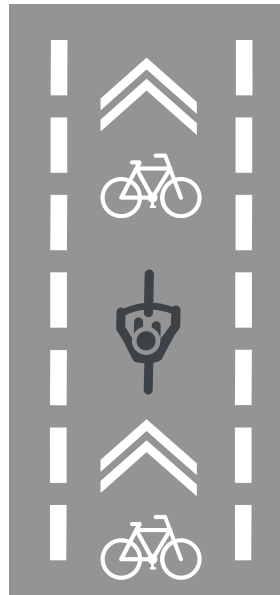
Small turn radii force turning drivers to slow down. If there is no raised crossing, the corner radius is the primary method to reduce turn speed.

Intersection Crossing Markings:

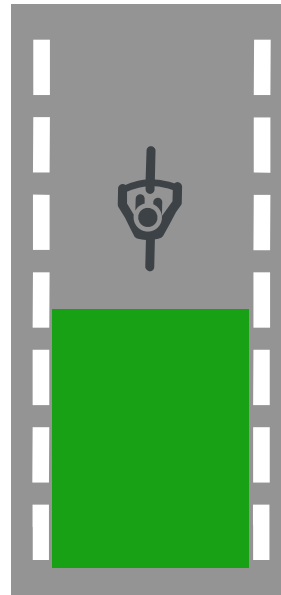
Intersection crossing markings indicate the intended path of bicyclists. They guide bicyclists on a safe and direct path through intersections, including driveways and ramps. They provide a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane.



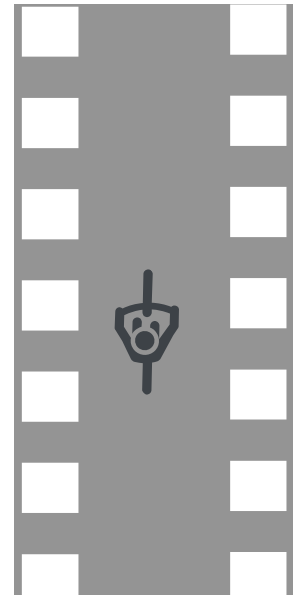
Dotted lines shall bind the bicycle crossing space. See MUTCD Sec. 38.08 for dotted line extensions through intersections. Stripping shall be a minimum of 6 inches adjacent to motor vehicle travel lanes and shall otherwise match the width and lateral positioning of leading bike lane striping, except when using elephant feet markings.



Shared lane markings (MUTCD Figure 9c-9) may be used for increased visibility within conflict areas or across entire intersections. Placement shall be in the middle of the moving lanes and close to crosswalks.



Colored pavement may be used for increased visibility within conflict areas or across entire intersections.

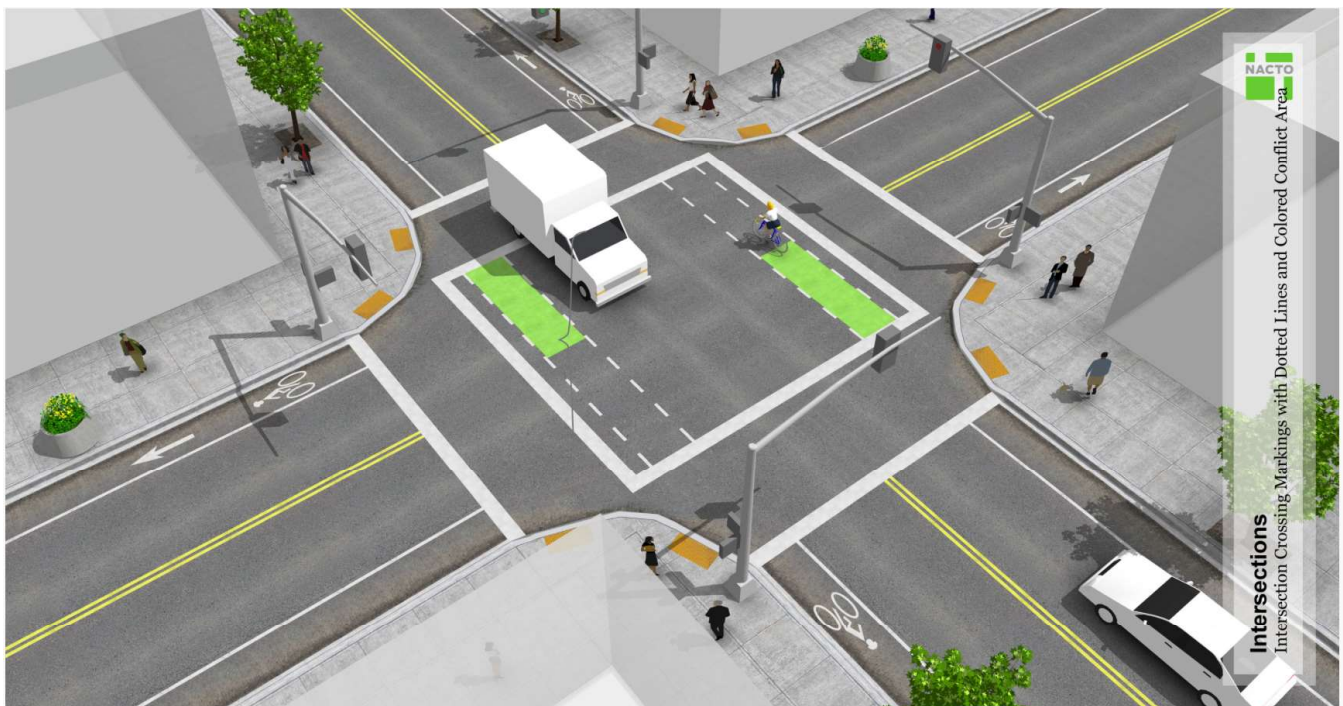


Elephant's feet markings may be used as an alternative to dotted line extensions to increase visibility. If used, the markings should be 14-20 inches square, with equal distance spacing between markings. Markings should be positioned on the outside of the lane.

Source: NACTO

Design Guidance:

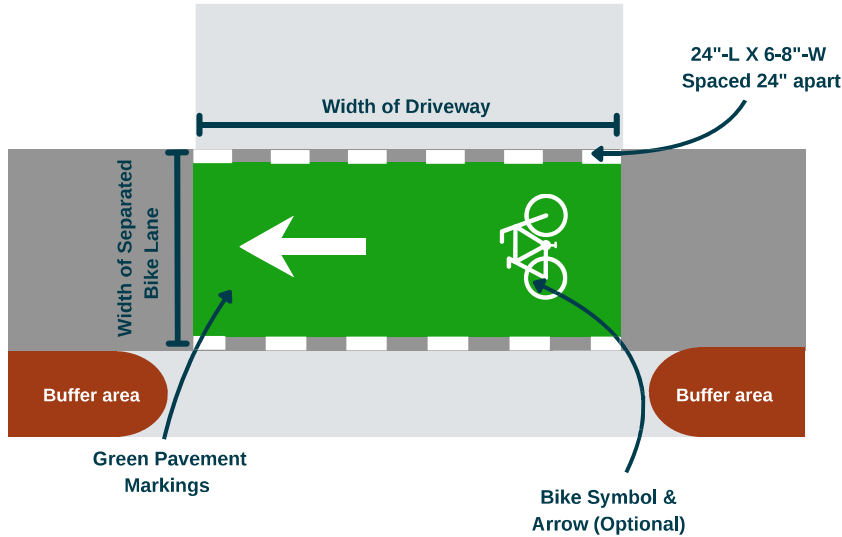
- Dotted lines should bind the bicycle space and should be white, skid-resistant, and retro-reflective (see MUTCD for requirements for dotted line extensions through intersections).
- Crossing lane width should match the position and width of the bike lane on each side of the intersection.
- Colored pavement may be used for increased visibility within conflict areas or through the entire intersection
- When two-way cycle tracks go through the intersection, markings should indicate the two-way traffic through the intersection.



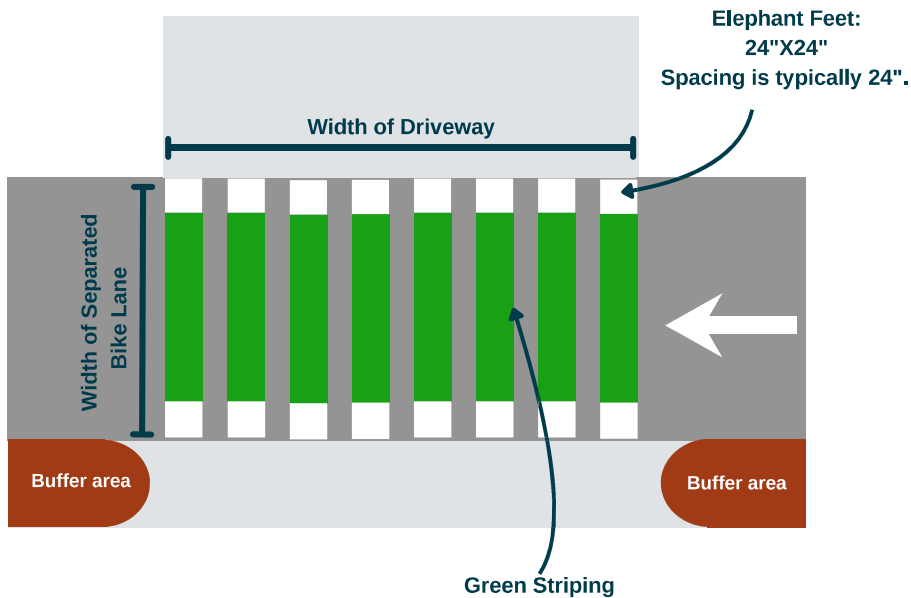
Source: NACTO

One-Way Separated Bike Lane Driveway Crossings

Option A



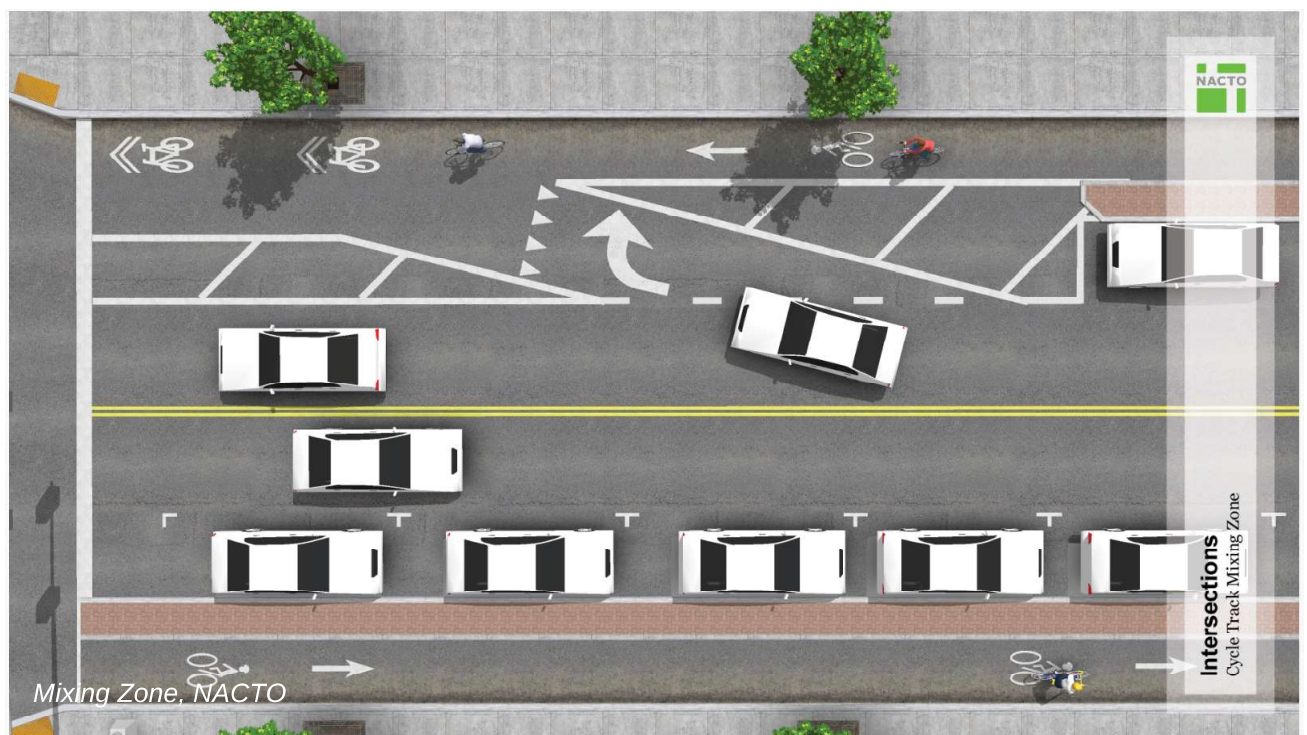
Option B



Separated bike lanes frequently cross driveways. Pavement markings and signage can help to increase visibility for bike riders in the SBL and help influence motorists to yield where applicable. The figures at left show options for pavement markings which can help achieve these goals. Pavement markings can be applied as paint or as thermoplastic. Thermoplastic is a higher cost option however, it does have a longer useful life. *Please reference MUTCD 11th edition for full details and specifications for pavement markings and regulatory signage.*

Mixing Zones:

Mixing zones are where a vehicular lane and bicycle lane cross paths and merge or switch lane placement. This typically occurs at intersections where the vehicular traffic has a dedicated right-turn lane. Mixing zones are only applicable on street segments with one-way separated bike lanes. Streets with speeds in excess of 35 mph may require deceleration lanes in advance of the mixing zone.



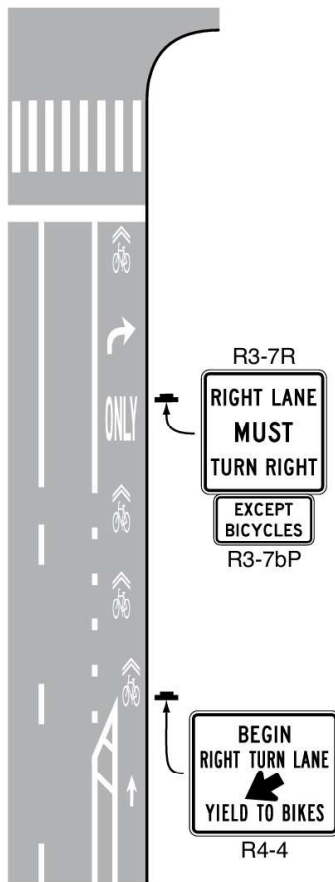
Typical Applications:

- Where the bicycle lane is one-way in the same direction of traffic as motorists.
- Where speeds are 35 mph or less.
- Where it isn't possible to provide dedicated bicycle facilities at the intersection approach.

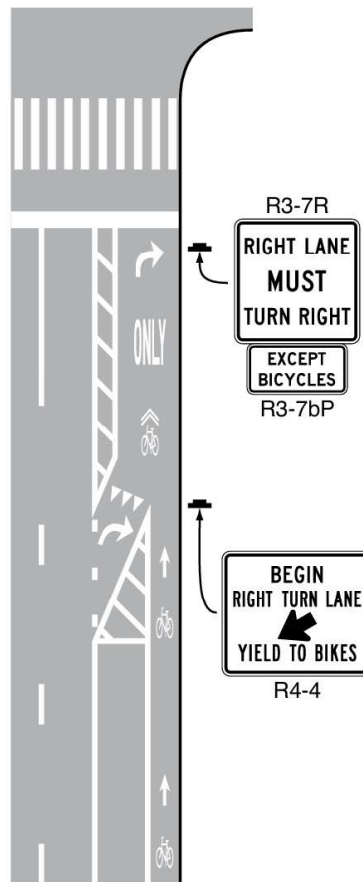
Design Guidance:

- Mixing zones with a yielding area shall have markings to indicate where motorists enter the shared space and shall yield.
- Where the mixing zone continues into the intersection and bicycles, and motorists continue to share space, shared lane markings and turn arrows shall be provided in the lane.
- Signage and markings should be used to inform users of the mixing zone and provide instructions for positioning in the lane.

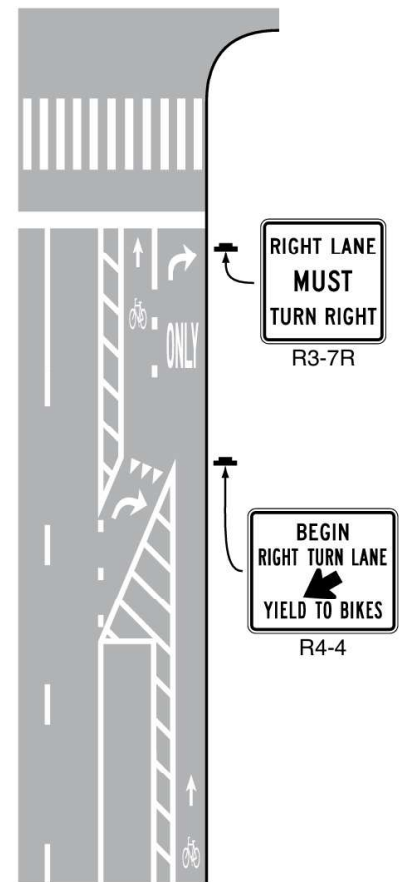
A – Mixing zone without yielding area



B – Mixing zone with yielding area



C – Reestablishment of bike lane after crossing paths with right-turning motor vehicles



Mixing Zone Markings, FHWA MUTCD 11th Edition

Loading Zones:

Truck loading zones in urban areas often involve taking up parking spaces or partial lanes along a roadway. This can often result in blocking a bike lane. Dedicated commercial loading zones can add safety and improve traffic flow. These zones should be placed where it's convenient access to businesses while causing the least inconvenience to traffic flow. Typically, these zones are located at alley crossings or on streets where on-street parking is not needed. Loading zones should be 8 to 10 feet wide and provide enough room where traffic can easily navigate the street.

Typical Applications:

- In commercial or industrial zones where goods must be loaded/unloaded.

Design Guidance:

- Dedicate loading zones and designate them with signs and pavement markings.

Transit Zones:

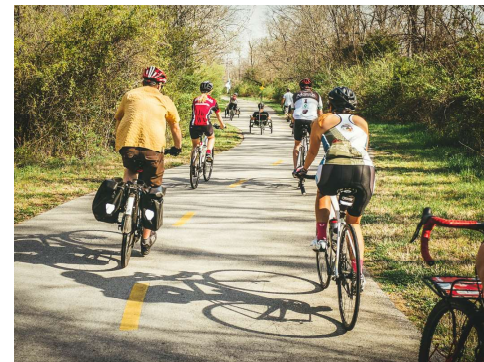
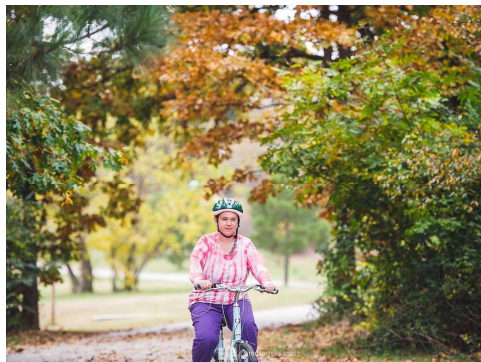
Transit zones must also be considered in the design of facilities for vulnerable road users. Transit stops have their own requirements, which must be evaluated alongside their connections with bike and pedestrian facilities. Bicycle facilities and transit facilities should be designed with each facility in mind to improve safety and minimize conflicts.

Typical Applications:

- Along transit routes and at transit stops.

Design Guidance:

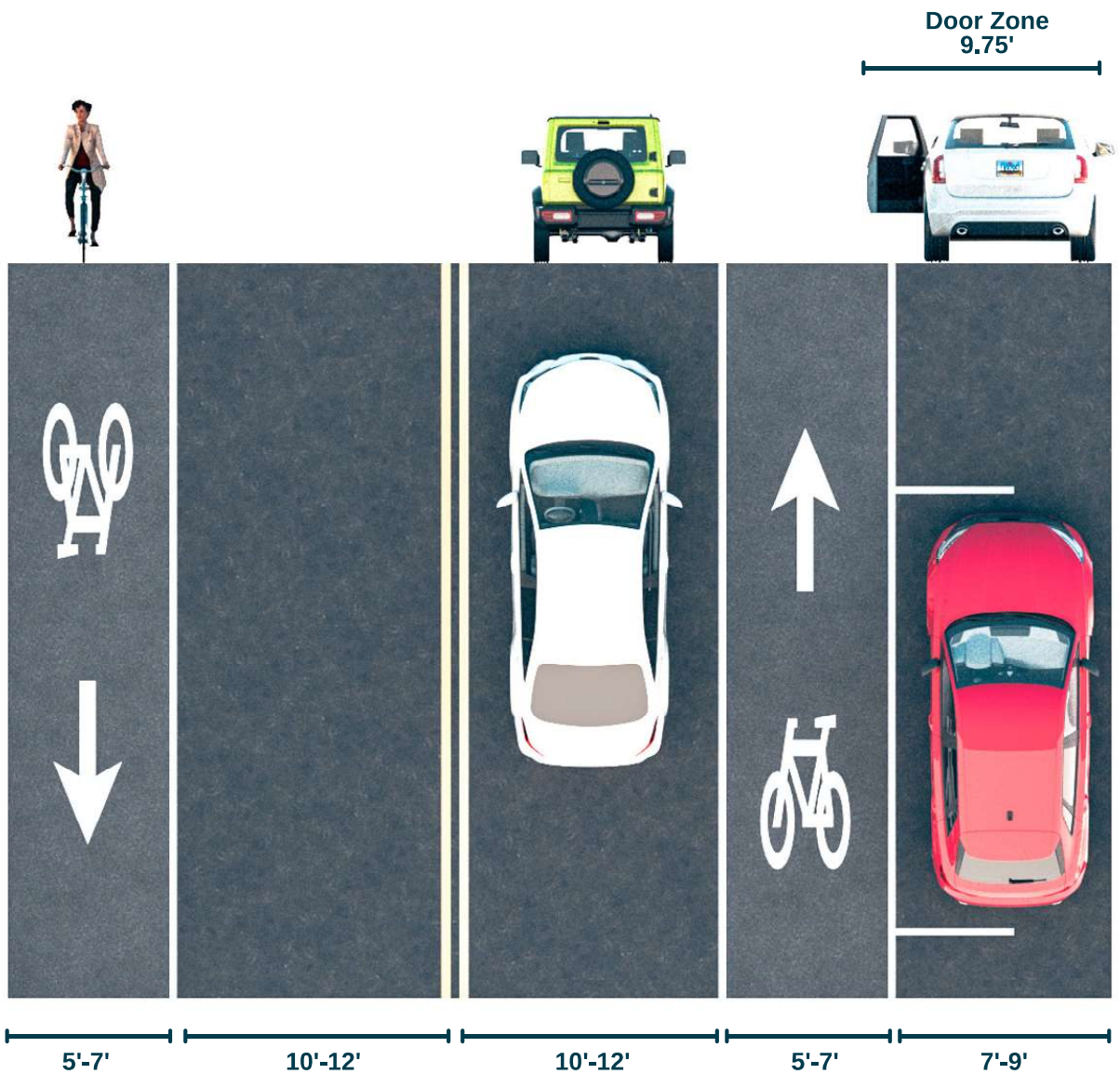
- Dedicate transit zones and designate them with signs and pavement markings.
- Attempt to minimize conflicts between transit and bike routes, which will vary depending on the type of bicycle facility.



2 Visually Separated Facilities

A. Conventional Bike Lanes

Conventional bike lanes provide an exclusive space for bicyclists on the roadway. Conventional bike lanes can be located adjacent to both directions of vehicular traffic. Vehicular traffic is not allowed to travel in dedicated bike lanes unless temporarily to access parking, entering & exiting alleyways or driveways. Stopping, standing, and parking within a dedicated bike lane is prohibited.



Typical Applications:

- Bike lanes are most helpful on streets with $\geq 3,000$ motor vehicles average daily traffic.
- Bike lanes are most helpful on streets with a posted speed ≥ 25 mph.
- On streets with high transit vehicle volume.
- On streets with high traffic volume, regular truck traffic, high parking turnover, or speed limit > 35 mph, consider treatments that provide greater separation between bicycles and motor traffic.

Design Guidance:

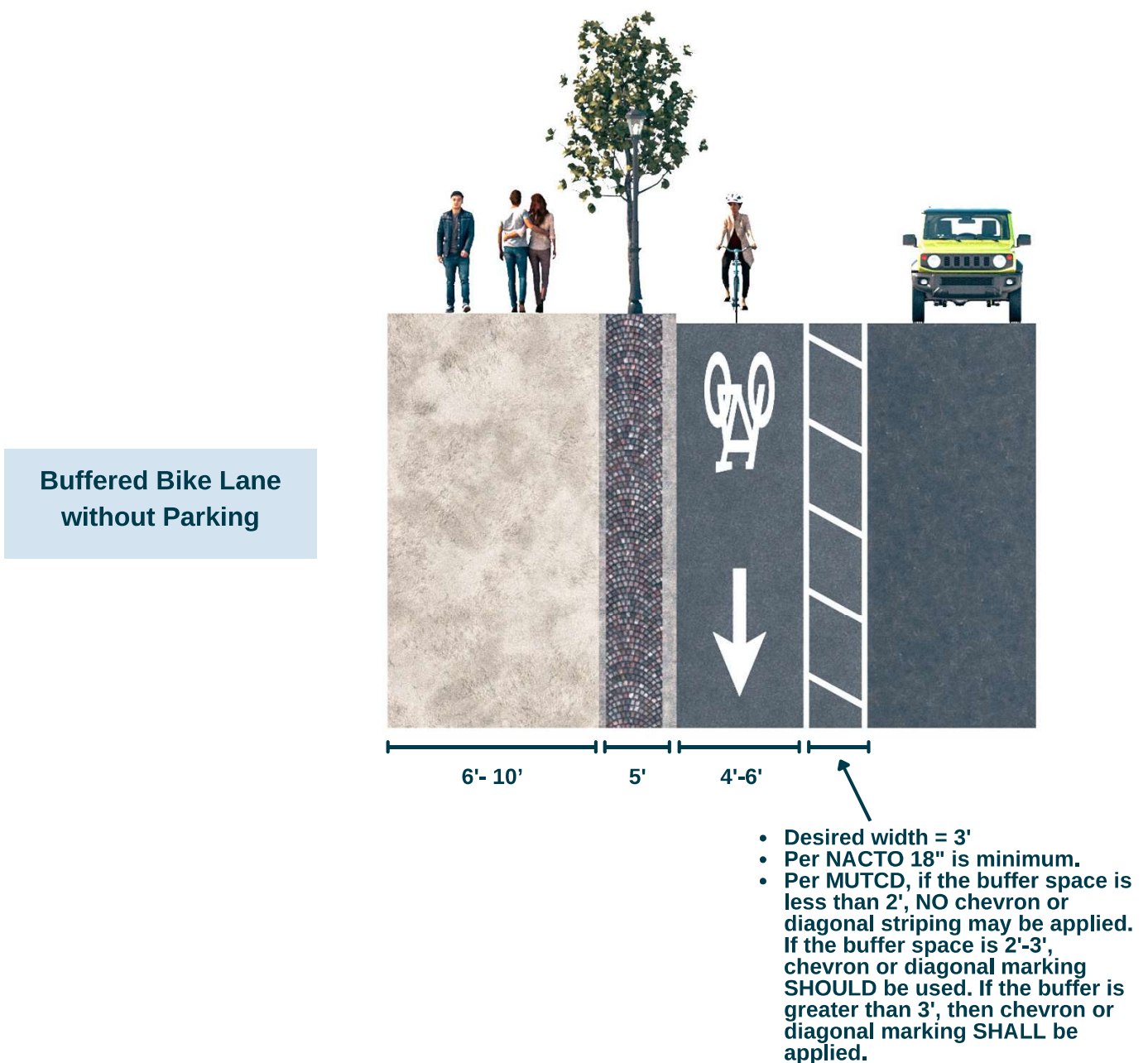
- Design bike lanes to separate road users and reduce the stress of motor vehicle passing events.
- The preferred minimum width of a bike lane is 6.5 ft (2.0 m) to allow for bicyclists to ride side-by-side or pass each other without leaving the bike lane.
- The absolute minimum bike lane width is 4 ft (1.2 m) when no curb and gutter are present or 5 ft (1.5 m) when adjacent to a surface, guardrail, another vertical surface, or on-street parking stalls (AASHTO Bike Guide 2012).
- Widths 7 ft (2.1 m) or greater may encourage motor vehicle use of bike lanes for parking or driving. If extra width is available or desired, configure with a buffer zone to delineate space.
- When placed adjacent to a parking lane, the desirable reach from the curb face to the edge of the bike lane (including the parking lane, bike lane, and optional buffer between them) is 14.5 feet; the absolute minimum reach is 12 feet. A bike lane next to a parking lane shall be at least 5 feet wide unless there is a marked buffer between them. Wherever possible, minimize parking lane width in favor of increased bike lane width.
- The desirable bike lane width adjacent to a guardrail or other physical barrier is 2 feet wider than otherwise to provide a minimum shy distance from the barrier.

Pavement Markings:

- Mark a bike lane line with a normal solid white line and a standard bike lane symbol marking. The MUTCD 2023 provides standards and guidance for applying these elements.
- Lane markings should remain solid and not dotted at the driveway crossing. The MUTCD does not recognize a driveway as an intersection (MUTCD 2023, AASHTO Bike Guide 2012).
- Bicycle lane word and/or symbol and arrow markings (MUTCD Figure 9E-1) shall be used to define the bike lane and designate that portion of the street for preferential use by bicyclists. These markings shall be placed outside of the motor vehicle tread path at intersections, driveways, and merging areas in order to minimize wear from the motor vehicle path.
- A solid white lane line marking shall be used to separate motor vehicle travel lanes from the bike lane.
- A through bike lane shall not be positioned to the right of a right-turn-only lane or to the left of a left turn-only lane (MUTCD 9E.02). A bike lane may be positioned to the right of a right-turn-only lane if split-phase signal timing is used.

B. Buffered Bike Lanes

Buffered bike lanes are conventional bike lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle lane and/or parking lane. As per MUTCD chapter 9, buffered bike lanes are required to have the bicycle lane word and/or chevron and arrow. This defines the lane to be used solely for bicyclists. A buffer is not required between the bike lane and parking, and a solid line may be used to separate them. However, if there is additional road width, a buffer between the parking and bike lane may be considered to reduce door zone conflicts or to narrow vehicle travel lanes to encourage slower vehicle speeds. The lane markings should be dashed in areas where traffic is meant to cross the bicycle lane.



Typical Applications:

- Can be applied in most places where a standard bike lane is considered.
- On streets with higher travel speeds, higher traffic volumes, and/or higher truck traffic volumes, additional visual separation can increase the comfort of bike riders.
- On streets with extra lanes or extra lane width.
- Special consideration should be given at transit stops to manage bicycle & pedestrian interactions.

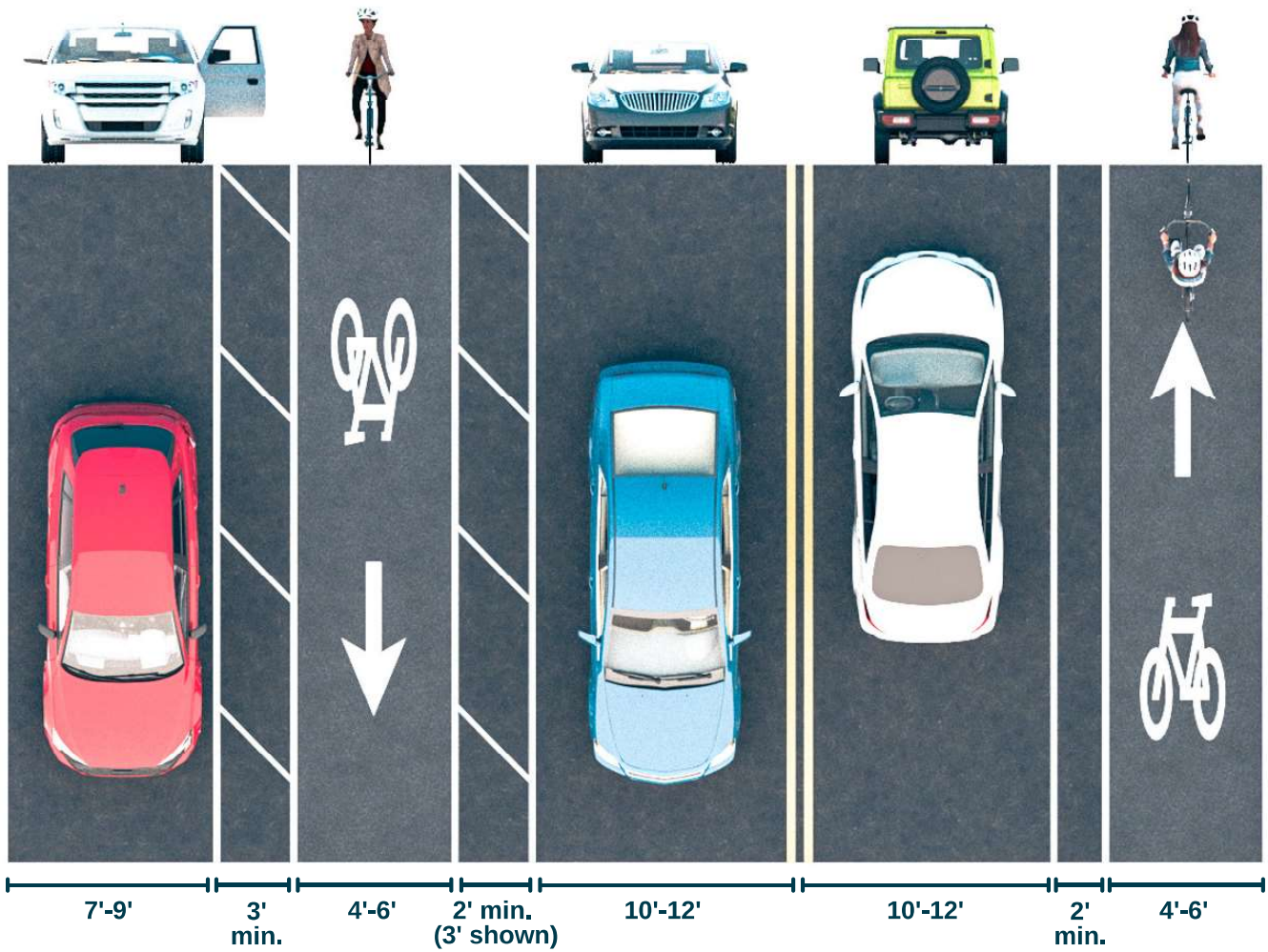
Design Guidance:

- Bicycle lane word and/or symbol and arrow markings (MUTCD Figure 9E-1) shall be used to define the bike lane and designate that portion of the street for preferential use by bicyclists.
- The buffer shall be marked with 2 solid white lines. White lines on both edges of the buffer space indicate lanes where crossing is discouraged, though not prohibited. For clarity, consider dashing the buffer boundary where cars are expected to cross at driveways.
- The buffer area shall have interior diagonal cross-hatching or chevron markings if 3 feet wide or wider.

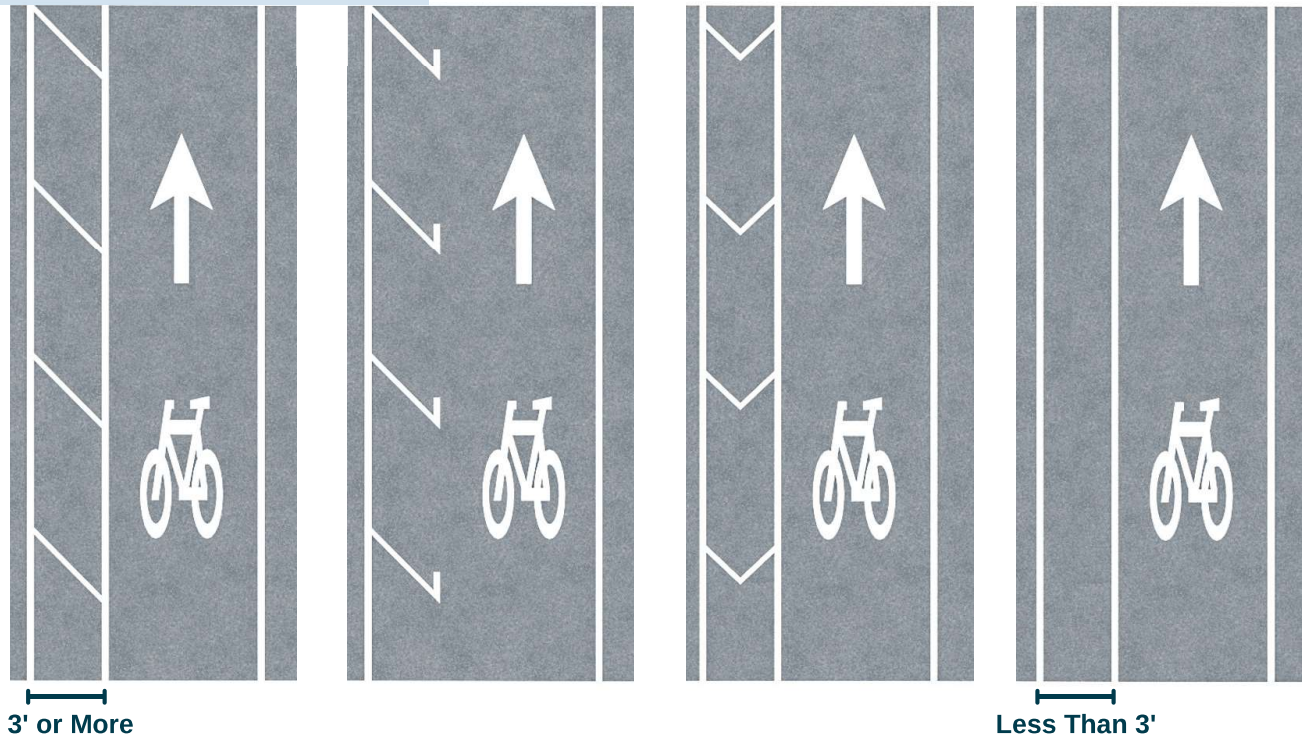


Urban Bikeway Design Guide, NACTO

Visually Separated Bicycle Facility with Parking

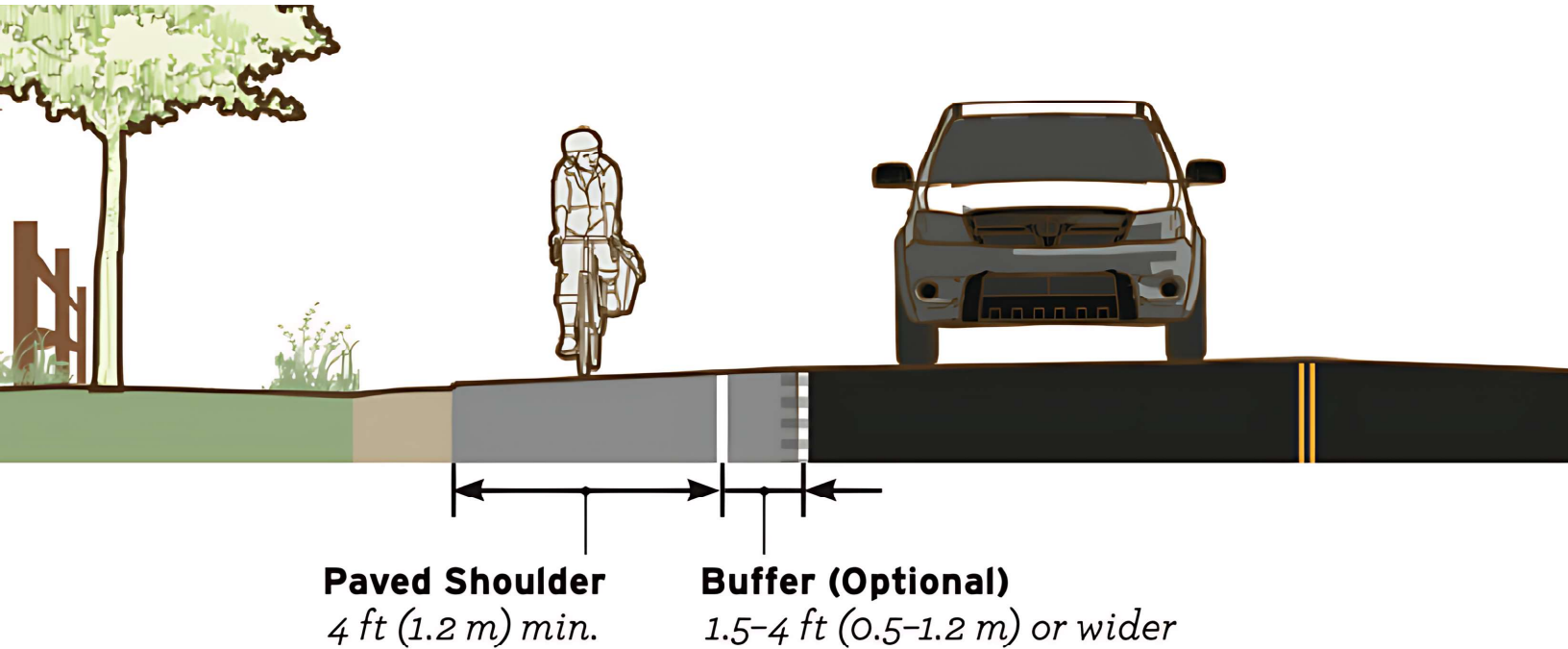


Preferred Buffer Types



C. Paved Shoulders

Paved shoulders on the edge of roadways can be enhanced to serve as a functional space for bicyclists and pedestrians to travel in the absence of other facilities with more separation. Shoulders that are maintained so they are clear of debris provide a safer and more inviting facility for bicyclists.



Small Town and Rural Design Guide, FHWA

Functional Classification	Volume AADT	Speed (MPH)	Recommended Minimum Paved Shoulder Width
Minor Collector	Up to 1,100	35	5 ft
Major Collector	Up to 2,600	45	6.5 ft
Minor Arterial	Up to 6,000	55	7 ft
Principal Arterial	Up to 8,500	65	8 ft

Small Town and Rural Design Guide, FHWA

Typical Applications:

- Appropriate on roads with moderate to high volumes and speeds and on roadways with a large amount of truck traffic. It may function on multilane roads with heavy traffic, but it fails to provide a low-stress experience in this condition.

Design Guidance:

Clear Paved Shoulder Width:

Any amount of clear paved shoulder width can benefit pedestrians and bicyclists; however, to be fully functional for their use, the paved shoulder area should be wide enough to accommodate their horizontal operating envelope.

- To accommodate bicyclists and pedestrians' use of the shoulder, provide a minimum width of 4 ft (1.2 m) adjacent to a road edge or curb, exclusive of any buffer or rumble strip.
- Where possible, provide greater width for added comfort, user passing, and side-by-side riding.

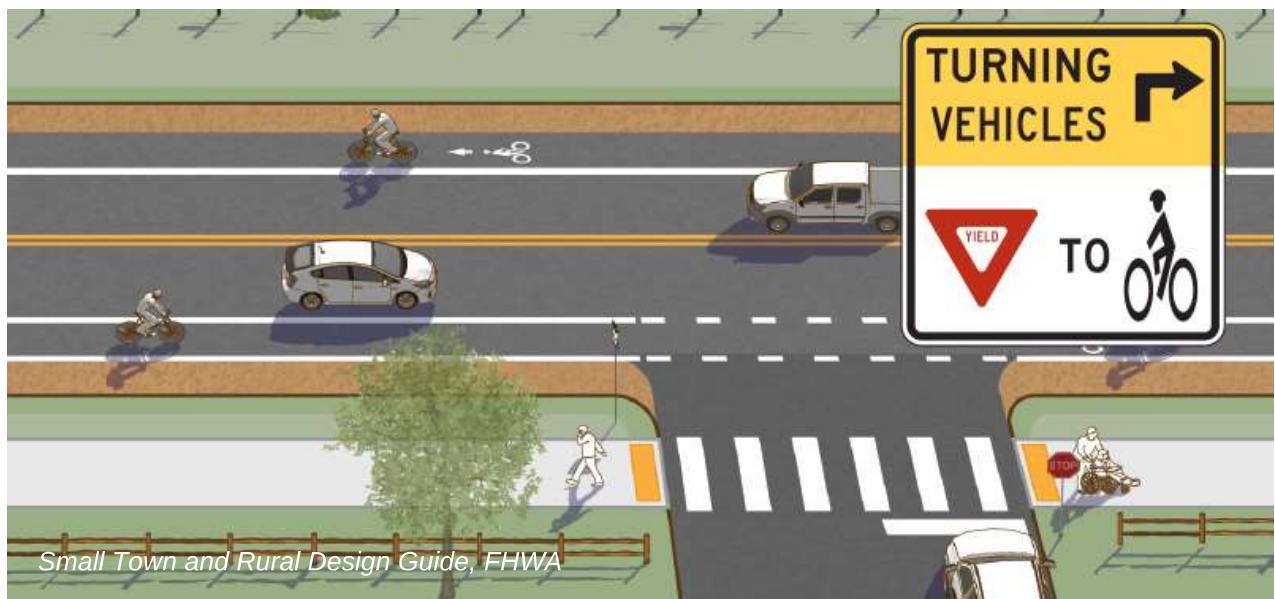
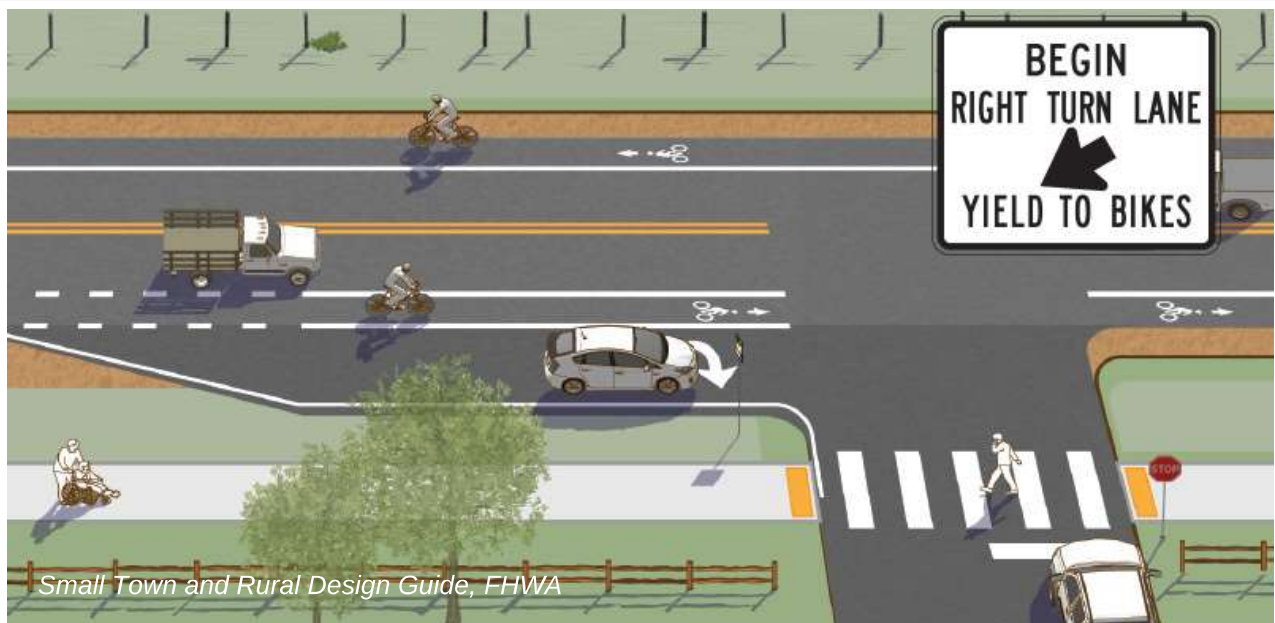
Use of Rumble Strips:

- Rumble strips are an FHWA-proven safety countermeasure for reducing roadway departure crashes. Research has shown that installing rumble strips can reduce severe crashes but may negatively impact bicycle travel if they are poorly constructed. Rumble strip design should consider leaving gaps to allow bike riders to safely leave the shoulder to turn left or maneuver around debris in their path. Additional information on rumble strip design can be found in FHWA Technical Advisory 5040.39 and on the FHWA Rumble Strips and Rumble Stripes Website.
 - If rumble strips are desired on bicycle network routes optimize the dimension, design, and placement of rumble strips to be more tolerable to bicyclists.
 - 12-inch spacing center-to-center
 - 6–8 inches long, perpendicular to roadway
 - 6 inches wide, measured parallel to the roadway
 - 3/8 inch deep
 - Place rumble strips to overlap with the roadway edge line, also known as edge line rumble strips or rumble stripes.
 - Provide a bicycle gap pattern to allow access into and out of the shoulder area by bicyclists. The gap pattern consists of a 12 ft clear gap followed by rumbles, typically 40–60 ft (12.1–18.2 m) (NCHRP Synthesis 490, 2016).

Visually Separated Bicycle Facilities- Intersection Design

Design strategies for bike lanes at intersections emphasize reducing speeds, minimizing exposure, raising awareness, and communicating right-of-way priority.

- Under most conditions, bicyclists have priority over turning traffic. Markings and signs should support this priority and remind motorists of the obligation to yield.
- Adjacent to a through-right lane, use a modified R10-15 Turning Vehicles Yield to Bikes sign to clarify user priority.
- Where a right-turn lane is established to the right of a bike lane, the R4-4 Begin Right Turn Lane Yield to Bikes sign reminds motorists to yield to bicyclists before entering the lane.
- Where special emphasis is desired, green pavement color may be used within bike lanes and at merging or weaving areas where motor vehicles may cross bike lanes. For more information on the use of color, refer to FHWA Interim Approval 14 2011.



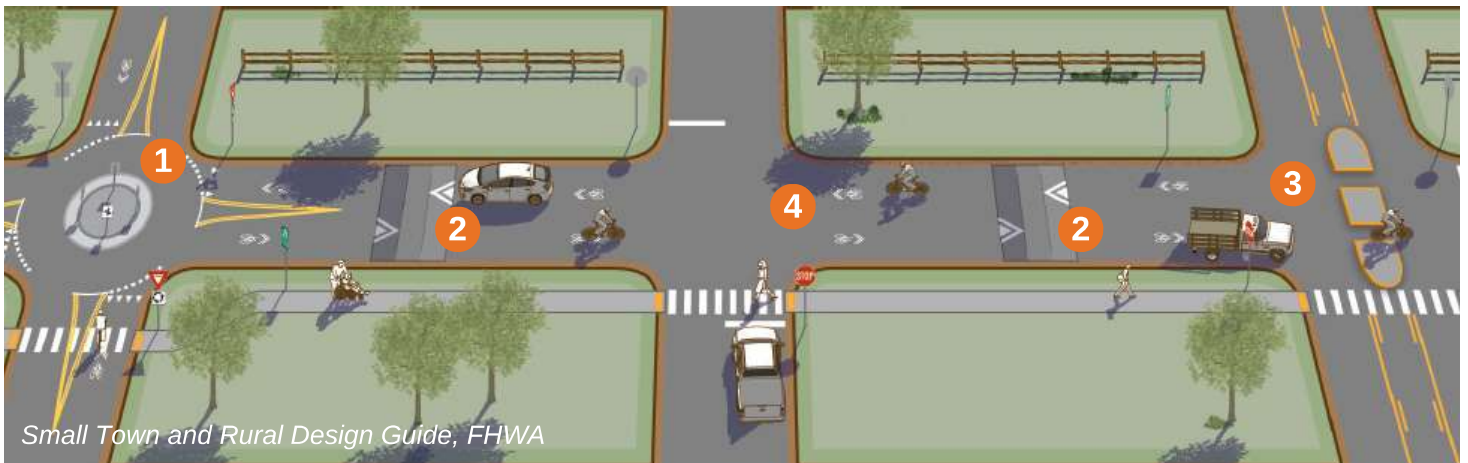
3 Mixed Traffic Facilities

A. Bicycle Boulevard

Bicycle boulevards are streets with low motorized traffic volumes and speeds, designated and designed to prioritize bicycle travel. Bicycle Boulevards use signs, pavement markings, and speed and volume management measures to discourage through trips by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets.

Low-traffic residential streets can be designated for bicycle use. Optimal street dynamics and design elements include but are not limited to the following:

- Traffic calming measures such as speed bumps, chicanes, or roundabouts.
- Bicycle-friendly intersections with features like bike boxes and signage.
- Neighborhood connectivity to provide direct routes to key destinations.
- Regular maintenance and enforcement to ensure compliance with traffic calming measures.



1 Horizontal Traffic Calming Element

A mini Roundabout helps to slow and calm traffic and also keep traffic moving.

2 Vertical Traffic Calming Elements

Speed tables help to calm traffic and provide additional comfort to bike riders.

3 Routing Restriction

Traffic diverters help to prioritize this route for bike riders and pedestrians.

4 Pavement Markings

Clearly marked and bright pavement markings help notify all modes that this is a mixed-traffic facility.



Urban Bikeway Design Guide, NACTO

Typical Applications:

- Total traffic lanes - less than 3
- Posted Speed Limit – less than 30mph
- Average Daily Traffic – 3K or less
- On-street parking – infrequent
- Where a separated bike lane or pathway is not feasible

Design Notes:

- **Low-Traffic Designation:** Designate residential streets with low motor vehicle traffic volumes as bicycle boulevards to provide safe and comfortable routes for cyclists.
- **Traffic Calming Measures:** Implement traffic calming measures such as speed bumps, traffic circles, or raised crosswalks to reduce vehicle speeds and enhance cyclist safety.
- **Intersection Treatments:** Design bicycle-friendly intersections with features such as bike boxes, advanced stop lines, and improved visibility to increase cyclist safety and comfort.
- **Neighborhood Connectivity:** Ensure bicycle boulevards provide direct routes and connectivity to key destinations such as schools, parks, and commercial areas to encourage bicycle use for local trips.

Additional Design Notes:

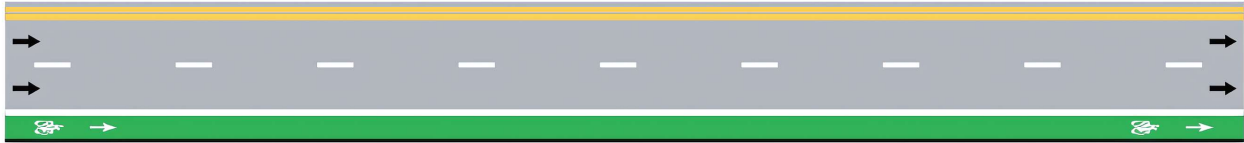
- Bicycle wayfinding signage and pavement markings shall be included on bicycle boulevards. Pavement markings and identification/wayfinding signs provide a strong visual identity for the street and designate the corridor as a bicycle route.
- Where the bicycle boulevard turns or jogs onto another street, signs and/or markings shall be provided to indicate how users can remain on the route.
- Centerline stripes (if present) shall be removed or not repainted, except for short sections on intersection approaches with a stop line or traffic circle. Drivers have an easier time passing bicyclists on roads that do not have centerline stripes. If vehicles cannot easily pass each other using the full width of the street, there is likely too much traffic for the street to be a successful bicycle boulevard.



Use of Green Paint in the Roadway for Bicycle Facilities

Green paint in the roadway is helpful for bike riders and motorists. It can help increase bike riders' visibility, especially at points of conflict, and delineate the spaces on the road designed for bikes. Many factors must be considered when adding green paint, including the ongoing maintenance of these areas. The MUTCD provides guidance for when and how it should be incorporated into bicycle facilities. Below are a few uses of green paint from the MUTCD.

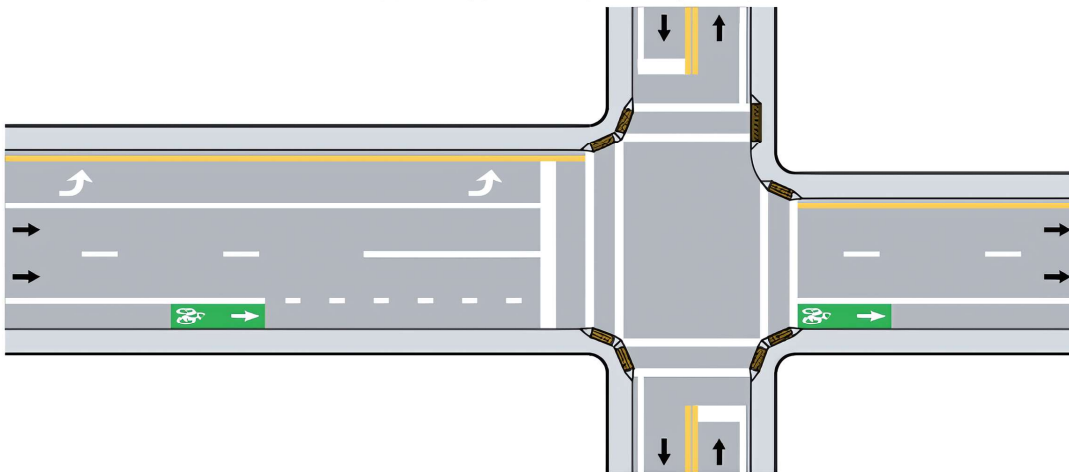
A – Applied to the entire corridor



B – Limited to the bicycle symbol and arrow



C – Applied approaching and departing an intersection



D – Applied supplementing the dotted line approaching intersections and/or the dotted extensions of bicycle lanes through intersections



Source: MUTCD-11th Edition

Pedestrian Facilities

Most modes of transportation begin and end with a walk or roll. Well-designed and strategically placed sidewalks, pedestrian crossings, and signals can increase safety and comfort for the largest user group of any active transportation network. While sidewalks, pedestrian crossings, and signals are focused on moving pedestrians safely and comfortably, they also serve bicycle riders in most cases. *In 2021, cyclists were added to the protected users of crosswalks. While people on bicycles must yield to pedestrians in a crosswalk, they no longer have to dismount to use a crosswalk.* In Arkansas, all vehicles must yield to those in a crosswalk. Move Fort Smith design guidance focuses on the following pedestrian facilities, as outlined below:

1 Sidewalks:

Sidewalks are an essential element in a community as they are often the most readily accessible and cost-effective way to connect residents to destinations within the city.

2 Pedestrian Crossings:

A walkable environment includes safe and frequent crossings. We will explore some aspects that should or can be included.

A. Pedestrian Refuge/Crossing Islands:

Pedestrian islands reduce the exposure time for pedestrians or bicyclists at intersections and can also allow users to cross one direction of traffic at a time.

B. Marked Crossings:

High-visibility marked crossings can be utilized at intersections or other locations where pedestrian traffic is anticipated to improve yielding behavior by drivers.

C. Curb Ramps:

Curb ramps provide accessible pedestrian access between sidewalks and the street where there is a curb face or change in elevation.

3 Pedestrian Crossing Signals:

Pedestrian crossings and signals are crucial components of urban infrastructure designed to enhance the safety and convenience for pedestrians. Signals can be utilized at intersections or mid-block to warn motorists and bring additional attention to pedestrians. Signalized intersections are used frequently in cities nationwide; however, in the Move Fort Smith design guidance, two signals will be explored in greater detail.

A. Rectangular Rapid Flashing Beacon:

RRFBs are manually or passively activated warning beacons alerting drivers to yield.

B. High-Intensity Activated Crosswalk Beacon:

HAWKS are hybrid signals that stop traffic on high-volume roadways.

4 Additional Pedestrian Safety Countermeasures:

A. Curb Extensions:

Curb extensions are an element that can physically narrow the roadway and create safer and shorter crossings for pedestrians.

B. Crosswalk Visibility Enhancements:

Low visibility creates an unsafe environment at crossings.

C. Leading Pedestrian Interval:

Leading pedestrian intervals give pedestrians time to enter crossings before the signal changes for motorists.

1 Sidewalks

Sidewalk Considerations

Sidewalk widths will vary based on available ROW, street widths, and adjoining uses. Sidewalk widths should be based on the anticipated use and the surrounding amenities and uses. For example, a downtown sidewalk should have a greater width than a sidewalk located in a typical residential street. High-volume sidewalks will require additional width to allow for passing in various directions compared to lower-volume sidewalks.



6' - 8'	6' - 12'	6' or More
Frontage Area	Pedestrian Area	Amenity Area

Frontage Area:

The area from the front door to the right of way but can also adjoin or abut buildings, front porches, stoops, lawns, or other landscaped areas. In downtown environments, this area can include outdoor retail signage, seating, awnings, or other intrusions within the right of way.

Pedestrian Area:

This area typically comprises a sidewalk or shared-use path. It is the portion of the right of way meant for pedestrians to travel actively. The width should be set to accommodate the volume of pedestrian activities, which should include the passing of people both alone and in groups and the use of wheelchairs, strollers, or wagons.

Amenity Area:

This area is typically between the pedestrian area and the street. It is usually occupied by streetlights, signal boxes, benches, trash receptacles, trees or other landscaping, bike racks, and various stormwater control measures. These areas can create snow storage areas from cleared streets or sidewalks.

Figure 7 outlines recommendations for utilizing available right-of-way for all street classifications as listed in the City of Fort Smith Master Street Plan. These guidelines are not intended to be rules but instead, a tool to help inform design decisions affecting pedestrians along city streets and roads. Context-sensitive solutions and engineering judgment should be applied.

Figure 7

Street Classification	ROW Width (ft)	Street Width (ft)	Frontage Width	Pedestrian width	Amenity Width	Sidepath (SP)	Sidewalk Location
Boulevard	160	84	Variable	6-10	Varies based on design	Yes	Both sides or along one side with SP on the other. The SP
Major Arterial	100	66	2-4	6	6	Yes	If used with SP on one side. If not used with SP sidewalk on both sides.
Minor Arterial	100	54	2-4	6-10	6	Yes	If used with SP Sidewalk on one side. If not used with SP sidewalk on both sides.
Industrial	70	40	Typically not needed	5-6	6-10	Yes	If used with SP Sidewalk on one side. If not used with SP sidewalk on both sides.
Major Collector	70	38	Varies depending on planning district	6-10	6	Yes	Depending on zoning, these street types may or may not have on-street parking. If so, this would only allow pedestrian routes on one side of the street unless additional ROW is acquired.
Residential Collector	60	38	Varies depending on planning district	6-10	6	Yes	Depending on zoning, these street types may or may not have on-street parking. If so, this would only allow pedestrian routes on one side of the street unless additional ROW is acquired.
Residential Collector w restricted parking	60	32	Varies depending on planning district	6-10	6	Yes	If an SP is used than no sidewalk
Residential	50	27	Varies depending on lot sizes	6	4-6	No	Typically along one side of the road, however, in areas of high ped volume consider both sides.
Estate	60	26	Varies	Sidewalk not typically used	varies	Yes	These are usually rural roads that have shoulders. Would be prime candidate for a meandering path next to these roads. Because of the lack of vertical separation from vehicular traffic sidewalks not recommended.

Street Classification:

The City of Fort Smith Classifications streets per the 2020 Minimum Street Standards.

Right-of-Way (ROW):

Minimum ROW widths per the 2020 Minimum Street Standards.

Street Width:

This measurement is from the back of curb to back of curb per the 2020 Minimum Street Standards.

Sidepath:

This represents if it is possible to add a path along the roadway based on classification. Every project is unique and presents issues as feasibility. Shared-use paths and sidepaths are typically 10 feet wide.

Sidewalk Location:

Recommendation on what side of the roadway to locate a sidewalk.

2

Pedestrian Crossings

A. Pedestrian Refuge/Crossing Islands

Crossing islands provide pedestrians with a refuge when using multistage crossings. These are typically found at mid-block crossings where pedestrians must cross the street away from an intersection. These can also be found in roundabouts, right turn lanes, or even in downtown areas where the crossing is unusually long or misaligned. Crossing islands have various designs and warrant an engineered solution. As traffic speed or the number of traffic lanes that must be crossed increases, crossings feel less safe for pedestrians entering the intersection. Pedestrian islands can be used to reduce the exposure time for pedestrians or bicyclists at intersections and can also allow pedestrians to cross one direction of traffic at a time. The FHWA has published considerations for pedestrian islands. These include that they should be considered in curbed sections of multilane roadways with a significant mix of pedestrian and vehicular traffic, where traffic volumes are over 9,000 vehicles per day and travel speeds are 35 mph or greater. Other design considerations include being at least 4 feet (preferably 8 feet) in width and an adequate length to accommodate the anticipated number of pedestrians waiting for traffic gaps before crossing.

Typical Applications:

- In areas where vehicle speeds and volumes make pedestrian crossings prohibitive.
- Typically applied where three lanes of traffic or more diminish pedestrians' feelings of safety and comfort.

Design Guidance:

Crossing Island Requirements:

- Should be in crossings that are 50 feet or more.
- Pedestrian refuge islands should be at least 6' in width, however, 8-10' feet is preferred.
- Mid-block crossings should have a "Z" configuration that forces pedestrians to face oncoming vehicular traffic.
- Raised concrete islands or some form of vehicular barrier is required to protect anyone using the crossing island. Vegetation and aesthetic treatments can be used if it doesn't obscure visibility.
- Where a 6-foot wide median cannot be attained, a narrower raised median is still preferable to nothing. The minimum protected width is 6 feet, based on the length of a bicycle or a person pushing a stroller. The refuge is ideally 40 feet long.

Pedestrian Refuge Islands Examples



Source: City of Charlotte, NC

B. Marked Crossings

Marked crossings are not always necessary at intersections on streets with low volumes and speeds. However, they should be considered near schools, transit stops, hospitals, major public buildings, and parks regardless of traffic volumes and speeds.

Judgment should be used on the applicability and design of crossings, but generally, marked crossings should be used on multi-lane roads (over 2 lanes) when speeds are higher than 20 mph or when there are high traffic volumes (such as over 3000 ADT).

It should be noted that marked crosswalks do not create a safe crossing. Additional safety measures are often needed to create traffic calming and increase safety at crossings.

Design Guidance:

- All legs of signalized intersections should be marked unless there is a section where pedestrians are prohibited from crossing.
- Crossings should be placed to accommodate pedestrian desire lines. They should be at intersections but may be needed mid-block in high-traffic areas to encourage crosswalk use.
- Markings should be highly visible.



C. Curb Ramps

Curb ramps are required anywhere the pedestrian travel-way crosses a vehicular or rail travel-way. This is enforced by Federal, State, and Local laws that protect pedestrians, bicyclists, and individuals with mobility disabilities. Curb ramps come in various sizes and shapes based on roadway design, grades, and drainage. At a minimum, curb ramp landings are typically 5 feet by 5 feet, with a max cross slope in all directions of 2%. Ramp and landing widths should reflect the width of the sidewalk. Flares along the ramp are required when the surfaces adjacent to the ramp are traversable. A barrier curb is usually used when adjacent to landscape or other amenities that make the space un-walkable.

Design Guidance:

Ramp Requirements:

- Max slope – 1:12 or 8.33%
- Max slope of side flares – 1:10 or 10%
- Max cross slope – 2%
- Truncated domes are required at all curb ramps. This is to alert those with visual impairments that they are coming up to the street edge.
- Avoid using radial curb ramps as this could cause an individual with visual impairments to navigate the street outside of the painted crosswalk.



3 Pedestrian Crossing Signals

There are several types of pedestrian crossing signals. The most familiar and common are located at signalized intersections. Two additional signals, RRFBs, and HAWKS, are also used at pedestrian crossings. Pedestrian Signals are typically located at signalized intersections and allow time for pedestrians to cross the street safely and in the direction of normal traffic flow. Signals can also be used to cross islands. The issue with signals is that some individuals will cross against the direction of the signal, which can cause crashes or disrupt normal traffic flow, which can cause vehicles to rear-end another vehicle. Signal guidance and requirements are found in the MUTCD.

Typical Requirements:

- A signal must be timed to allow sufficient time for crossing the street
- Signals must have an audible sound to notify those with visual impairments that it is safe to cross
- Delay left turn movements to allow pedestrians to clear the crossing
- Adequate signage is needed to inform pedestrians how to use the signal
- Signal timing is typically 3.5 feet per second as a measurement of travel time

Types of Pedestrian Signal Activation

Pedestrian Light Controlled:

Features: These crossings are controlled by pedestrian-operated signals. Pedestrians press a button to activate the traffic light, stopping vehicles and allowing pedestrians to cross.

Location: Common in urban areas with significant pedestrian activity.

Pedestrian User-Friendly Intelligent:

Features: These crossings use sensors to detect when pedestrians are waiting and when they have finished crossing. The lights adjust accordingly to ensure safe crossing times.

Location: Typically found in urban areas, it is designed to be more responsive to pedestrian needs than pedestrian-actuated crossings.



A. Rectangular Rapid Flashing Beacon (RRFB)

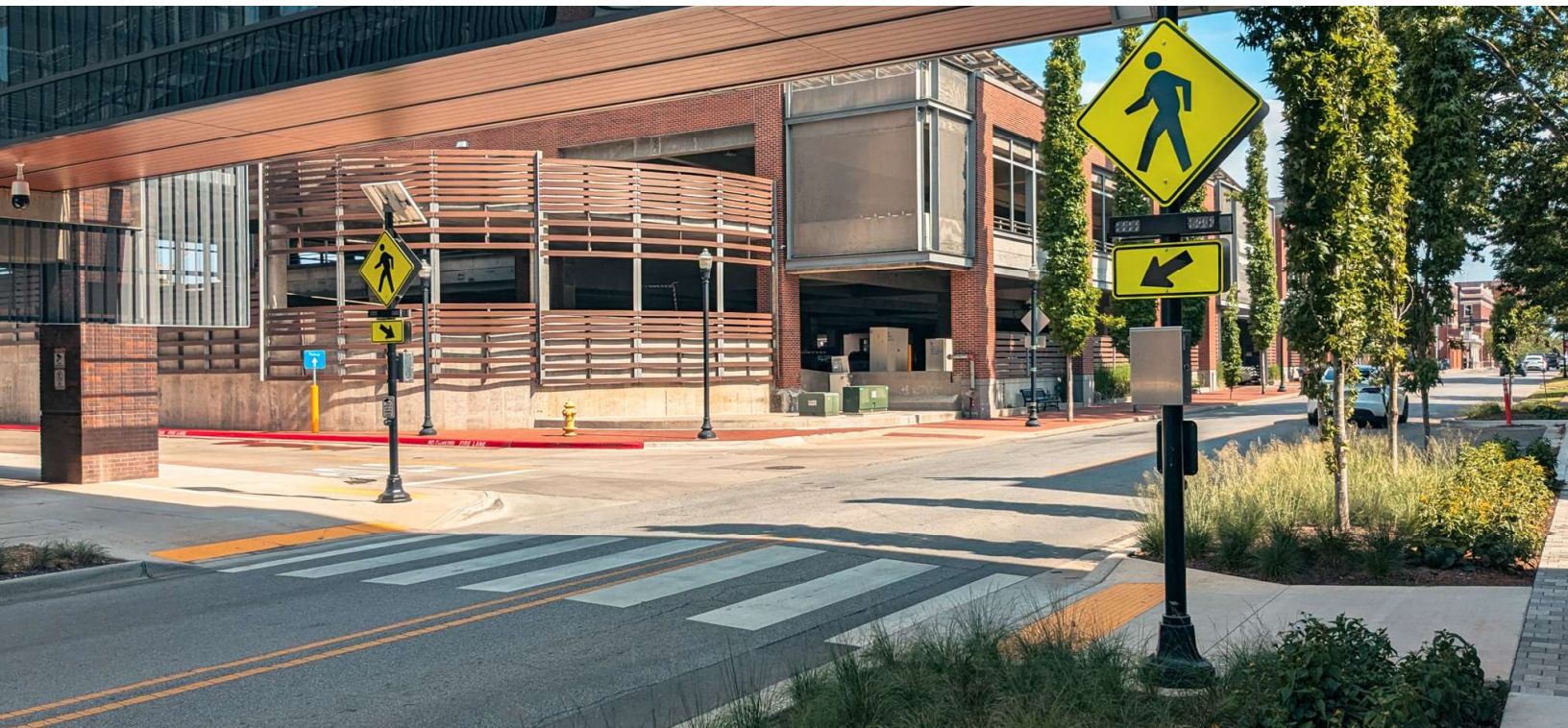
RRFBs are warning beacons that can be installed at a crossing to alert drivers that a crosswalk is in use and that they need to yield. They are used in combination with the standard crossing warning signs and markings and can be used at mid-block crossings or intersections where a signal is not warranted. RRFBs can be activated manually or passively through detection.

Typical Applications:

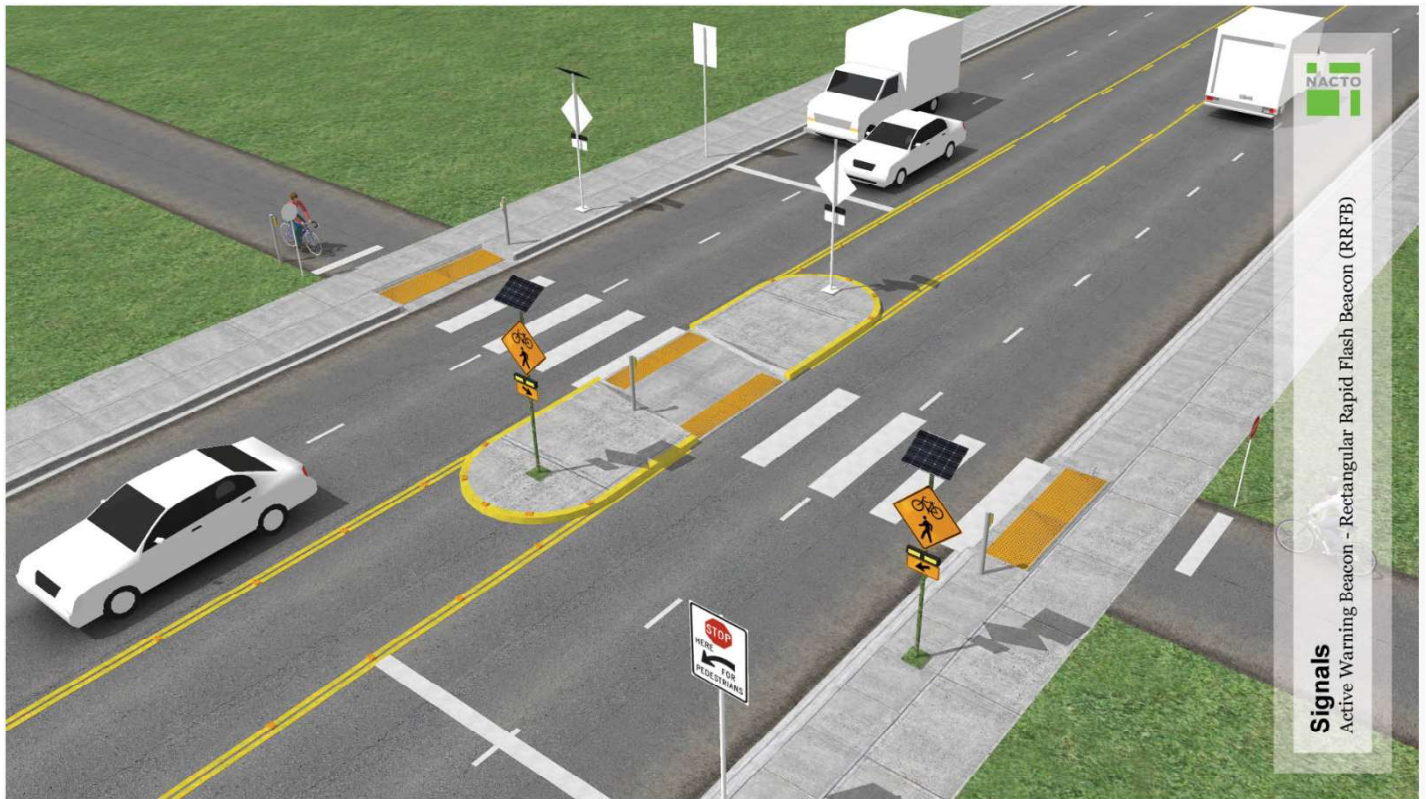
- Crosswalk visibility enhancements
- Pedestrian refuge island
- Advance STOP or YIELD markings and signs

Design Guidance:

- Install RRFBs in the median rather than the far-side of the roadway if there is a pedestrian refuge or other type of median.
- Use solar-powered panels to eliminate the need for a power source.
- Reserve the use of RRFBs for locations with significant pedestrian safety issues, as over-use of RRFB treatments may diminish their effectiveness.
- A detailed study of actuation is recommended to provide a context-sensitive solution and avoid false signals, which could diminish effectiveness.



RRFB with Median and Pedestrian Refuge Island Example



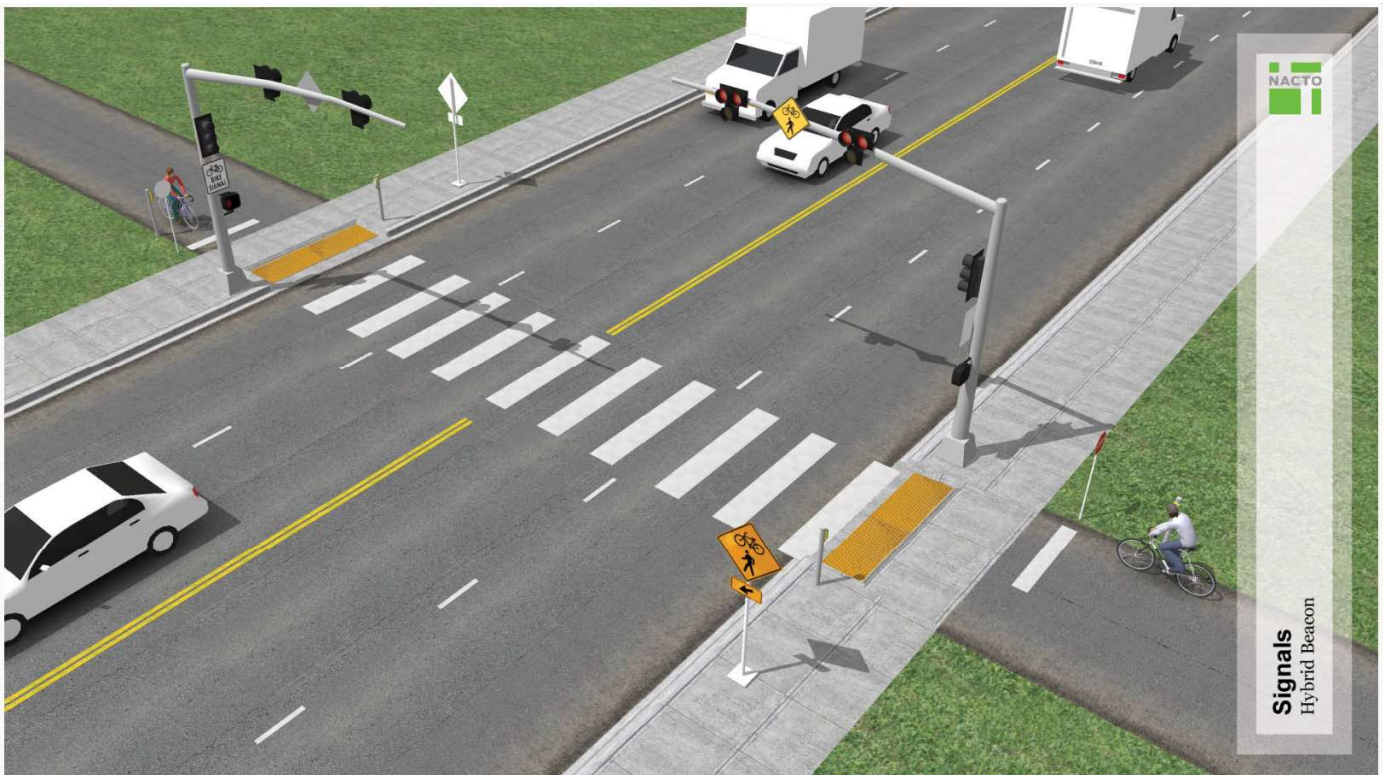
Urban Bikeway Design Guide, NACTO

A. High-Intensity Activated Crosswalk Beacon (HAWK)

High-Intensity Activated Crosswalk Beacon (HAWK) is a hybrid signal that allows pedestrians and bicyclists to stop traffic from crossing high-volume roadways. This type of signal is usually located along long stretches of roadway where intersecting roads don't warrant a signal. The MUTCD recommends a minimum volume of pedestrians and bicyclists an hour for major arterial crossings or volumes exceeding 2,000 vehicles per hour. This type of crossing should be added for all crossings where other crossing controls have proven inadequate. Push button actuators should be placed conveniently for all users and abide by other ADA standards. Passive signal activations such as cameras, pavement loops/pucks, and infrared sensors may also be considered.

Typical Applications:

- In general, HAWKs are used where it is difficult for pedestrians to cross a roadway, such as when gaps in traffic are insufficient or speed limits exceed 35 miles per hour.
- They are very effective at locations where three or more lanes will be crossed, or traffic volumes are above 9,000 annual average daily traffic.
- Installation of a HAWK must also include a marked crosswalk and pedestrian countdown signal.
- If a community is not already familiar with HAWKs, agencies should conduct appropriate education and outreach as part of implementation.



Urban Bikeway Design Guide, NACTO

HAWK System Examples



4

Additional Pedestrian Safety Countermeasures

A. Curb Extensions

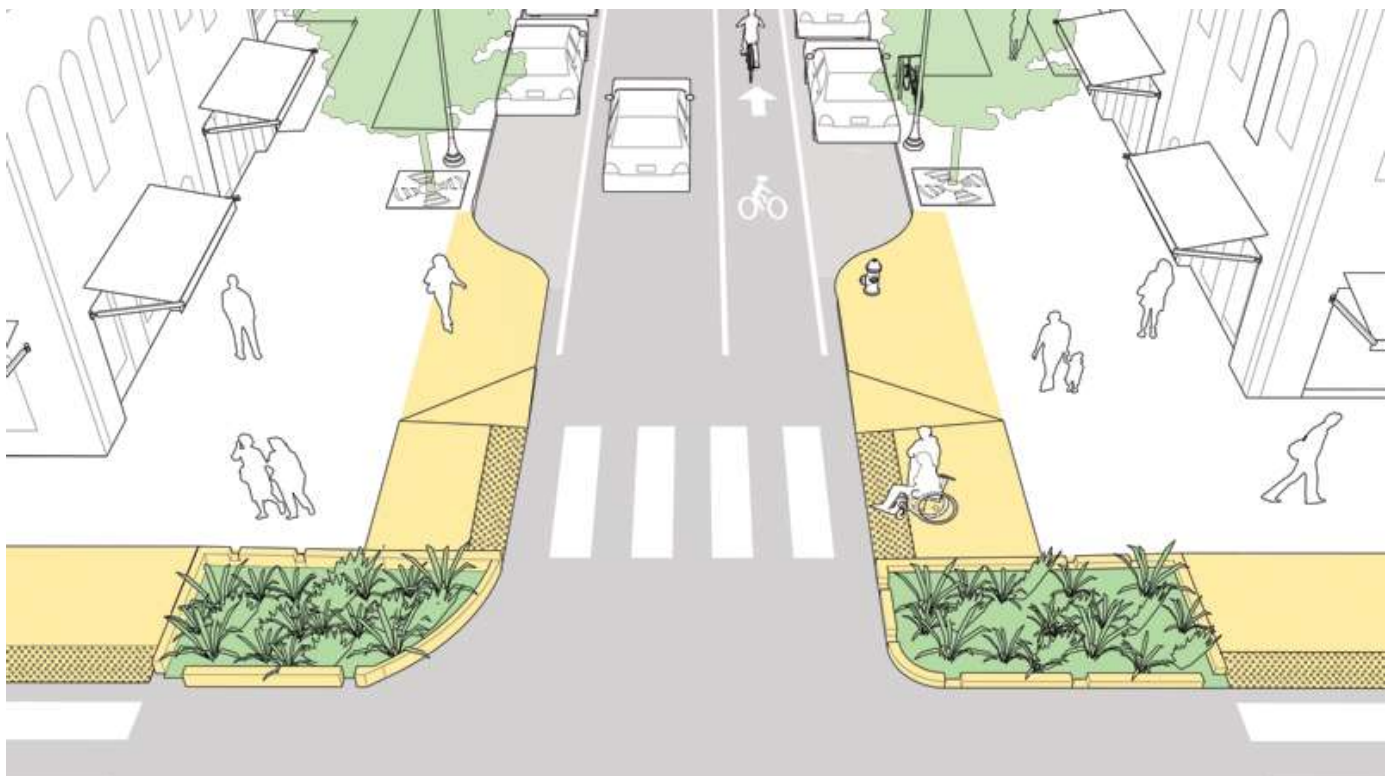
Curb extensions narrow the roadway both visually and physically. They improve pedestrian visibility by aligning them with parking lanes and also create shorter and safer crossings for pedestrians. The narrowing of the roadway and decrease in the curb radii also encourages slower turning speeds.

Typical Applications:

- In neighborhoods or low-speed streets where there are high numbers of pedestrians, and slower vehicle speeds are desired.
- Where on-street parking is present to increase pedestrian visibility.

Design Guidance:

- Where curb extensions create drainage impacts, they can be designed as islands with a small 1 to 2-foot gap between the curbs or use a trench drain.
- Curb extensions should be at least as long as the width of the crosswalk.



Urban Street Design Guide, NACTO

B. Crosswalk Visibility Enhancements

Poor lighting conditions, obstructions such as parked cars, and horizontal or vertical roadway curvature can reduce visibility at crosswalks, contributing to safety issues. For multilane roadway crossings where vehicle volumes are in excess of 10,000 Average Annual Daily Traffic (AADT), a marked crosswalk alone is typically not sufficient. Under such conditions, more substantial crossing improvements could prevent an increase in pedestrian crash potential. According to FHWA, the following enhancements can be made to improve crosswalk visibility.

High-Visibility Crosswalks:

High-visibility crosswalks use patterns (i.e., bar pairs, continental, ladder) that are visible to both the driver and pedestrian from farther away compared to traditional transverse line crosswalks. They should be considered at all midblock pedestrian crossings and uncontrolled intersections. Agencies should use materials such as inlay or thermoplastic tape instead of paint or brick for highly reflective crosswalk markings.

Improved Lighting:

Crosswalk lighting should aim to illuminate with positive contrast to make it easier for a driver to identify the pedestrian visually. This involves carefully placing the luminaires in forward locations to avoid a silhouette effect of the pedestrian.

Enhanced Signing and Pavement Markings:

On multilane roadways, agencies can use "YIELD Here to Pedestrians" or "STOP Here for Pedestrians" signs 20 to 50 feet in advance of a marked crosswalk to indicate where a driver should stop or yield to pedestrians, depending on State law. To supplement the signing, agencies can also install a STOP or YIELD bar (commonly referred to as "shark's teeth") pavement markings.

In-street signings, such as "STOP Here for Pedestrians" or "YIELD Here to Pedestrians," may be appropriate on roads with two- or three-lane roads where speed limits are 30 miles per hour or less.

Safety Benefits:

- High-visibility crosswalks can reduce pedestrian injury crashes by up to 40%.
- Intersection lighting can reduce pedestrian crashes by up to 42%.
- Advance yield or stop markings and signs can reduce pedestrian crashes by up to 25%.

Sources:

1. *The Relative Effectiveness of Pedestrian Safety Countermeasures at Urban Intersections - Lessons from a New York City Experience (2012)*
2. *Handbook of Road Safety Measures (2004)*
3. *Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments, FHWA (2017).*

C. Leading Pedestrian Intervals

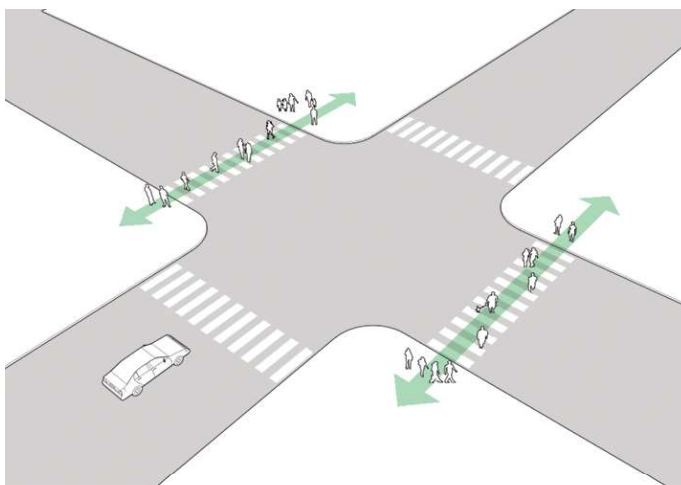
A leading pedestrian interval (LPI) allows pedestrians to enter the crosswalk at an intersection 3 to 7 seconds before vehicles are given a green indication. Pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn right or left.

LPIs provide the following benefits:

- Increased visibility of crossing pedestrians.
- Reduced conflicts between pedestrians and vehicles.
- Increased likelihood of motorists yielding to pedestrians.
- Enhanced safety for pedestrians who may be slower to start into the intersection.

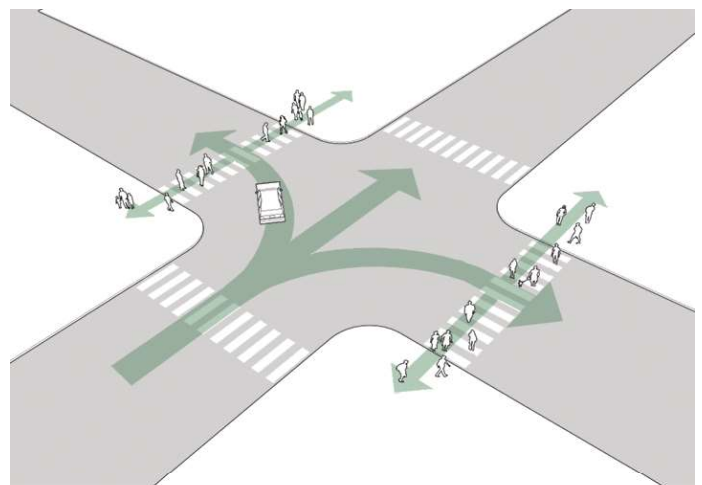
Safety Benefits:

- LPIs have been shown to have a 13% reduction in pedestrian-vehicle crashes at intersections.



Phase 1 (3-7 seconds):

Pedestrians are given a minimum 3 to 7 second head start entering the intersection. This is the pedestrian-only phase.



Phase 2 (After 3-7 seconds):

Through and turning traffic is given the green light. Turning traffic yields to pedestrians already in the crosswalk.

Sources

1. *Manual on Uniform Traffic Control Devices, Section 4I.06. FHWA (2023).*
2. *Safety Evaluation of Protected Left-Turn Phasing and Leading Pedestrian Intervals on Pedestrian Safety, FHWA (2018)*

Traffic Calming

According to FHWA and ITE, “The primary purpose of traffic calming is to support the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort. These objectives are typically achieved by reducing vehicle speeds or volumes on a single street or a street network. Traffic calming measures consist of horizontal, vertical, lane narrowing, roadside, and other features that use self-enforcing physical or psycho-perception means to produce desired effects.”

Traffic calming measures are used to alter driver behavior in a way that improves safety for all users, and often focuses on improving conditions for non-motorized street users. These measures not only increase safety by reducing vehicle speed and/or volume, but they can create a sense of place for communities.

1 Vertical Treatments

2 Horizontal Treatments

3 Street Width Reduction

4 Routing Restriction



1 Vertical Traffic Calming Treatments

Vertical treatments force drivers to slow down by creating a change in the height of the roadway. Extensive planning, design, and public outreach are needed prior to traffic calming elements being placed on the street. Designers should strive to design context-sensitive and appropriate solutions. Examples of vertical treatments include:

- Speed Hump
- Speed Cushion
- Speed Table
- Offset Speed Table
- Raised Crosswalk
- Raised Intersection

Typical Applications:

Vertical speed control elements should be applied where the roadway's target speed cannot be achieved through the use of conventional traffic calming elements, such as medians, narrower roadways or lanes, curb extensions, enforcement, or lower speed limits.

Design Guidance:

- Unless otherwise desired, vertical traffic calming should reduce a street's target speed to 20 mph or less.
- Implementation may be carried out on a trial basis to gauge residents' support before finalizing the design. Temporary speed humps, tables, and cushions should be used with caution as they can diminish residents' opinions due to unappealing design and reduced functionality.

Raised Intersection Example



Source: NACTO

2 Horizontal Traffic Calming Treatments

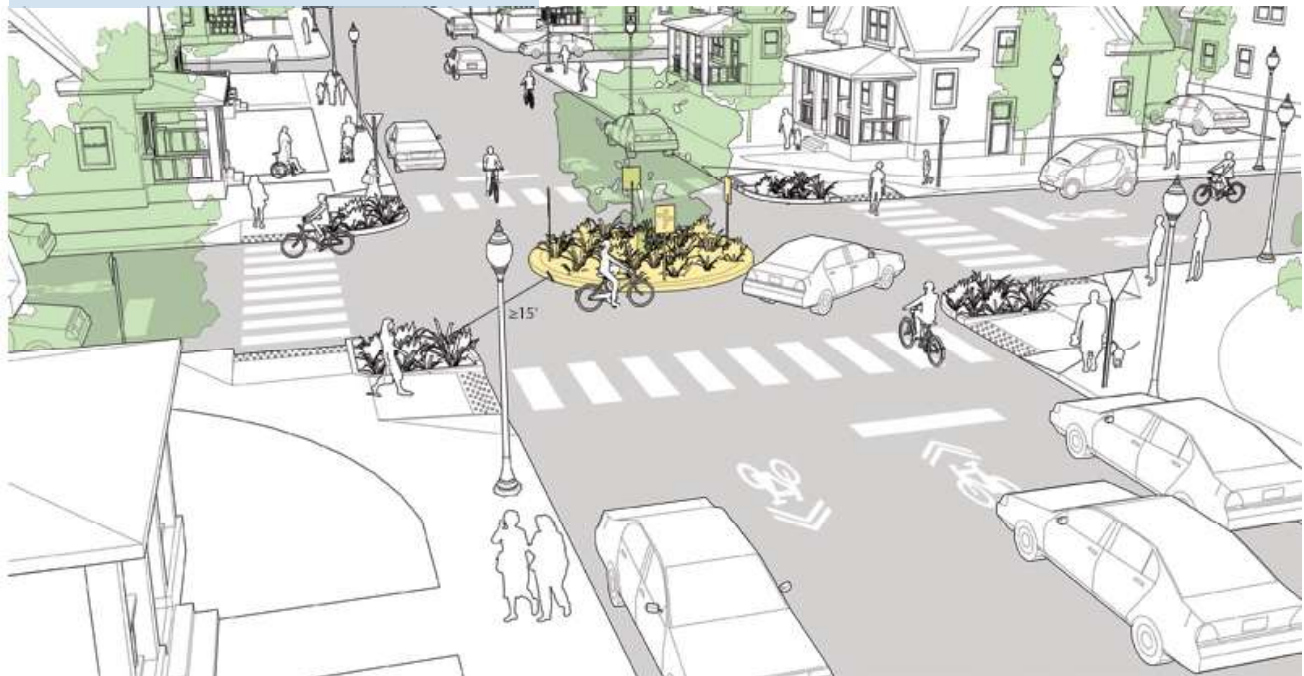
Horizontal treatments create a horizontal shift or deflection in the roadway for drivers to navigate. This shift requires drivers to reduce their speed from what it would be if they were driving in a straight path. Extensive planning, design, and public outreach are needed before traffic calming elements are placed on the street. Designers should strive to design context-sensitive and appropriate solutions. Examples of horizontal treatment include:

- Lateral Shift
- Chicane
- Realigned Intersection
- Traffic Circle
- Roundabout
- Mini-roundabout

Design Guidance:

- When using horizontal speed management treatments, a minimum clear width of 12 feet for travel shall be maintained.
- Speed limits shall comply with local restrictions.
- Speed zones (other than statutory speed limits) shall only be established based on an engineering study performed in accordance with traffic engineering practices (MUTCD 2B.13).
- Speed limits shall be in multiples of 5 mph, and signs shall be located at the points of change from one-speed limit to another (MUTCD 2B.13).

Mini Roundabout Example



Source: NACTO

3 Routing Restriction

Routing restrictions are intended to eliminate some portions of cut-through traffic by preventing particular vehicle movements. Some routing restrictions can be created using paint on the roadway, but they are most effective when raised curbs or other physical barriers exist. Extensive planning, design, and public outreach are needed before traffic calming elements are placed on the street. Designers should strive to design context-sensitive and appropriate solutions. Examples of routing restrictions include:

- Diagonal Diverter
- Full Closure
- Half Closure
- Median Barrier
- Forced Turn Island

Typical Applications:

- Urban and suburban settings along roadways and at intersections.
- Where it is desired to reduce vehicle traffic along a particular route and an alternative route is available to vehicular traffic.
- Each type of routing restriction has different applications, and the use of each should be considered with engineering judgment.

Design Guidance:

- Where emergency vehicle access is still needing to be maintained, there should be breakaway or lockable bollards or gates.
- A gap or channel in the physical restrictions can allow at-grade access for bicyclist movements.
- It is important to consider where diverted traffic will go and what effect that will have.
- Each type of routing restriction has its own design requirements and should be designed with engineering principles and judgment.

Route Restriction Example



Source: NACTO

4 Travel Lane Width Reduction

Reducing travel lane widths is an effective traffic-calming measure that can help slow down vehicle speeds and enhance safety for all road users. Here's how narrower travel lanes contribute to traffic calming and slowing traffic:

Physical Impact on Traffic Flow

Reduced Speed:

Studies have shown that reducing lane widths from 12 feet to 10 or 11 feet can result in lower vehicle speeds. The reduced width discourages speeding and promotes a more controlled driving pace.

Traffic Calming Effect:

Narrower lanes can create a natural traffic-calming effect, slowing down vehicles without the need for additional physical barriers like speed bumps.

Safety Improvements

Shorter Crossing Distances for Pedestrians:

Reducing lane widths can shorten the distance pedestrians need to cross, decreasing their exposure to moving vehicles and enhancing their safety.

Increased Buffer Zones:

Narrowing travel lanes can create space for wider shoulders, bike lanes, or buffer zones between travel lanes and sidewalks, providing additional safety for cyclists and pedestrians.

Enhanced Visibility:

Slower speeds and narrower lanes improve drivers' ability to see and react to pedestrians, bicyclists, and other vehicles, reducing the likelihood of accidents.

Space Reallocation

Bike Lanes and Sidewalks:

The space saved from narrowing travel lanes can be reallocated to create dedicated bike lanes and wider sidewalks, promoting active transportation and improving safety for non-motorized users.

Landscaping and Buffer Zones:

Additional space can also be used for landscaping, street furniture, or buffer zones, enhancing the street's aesthetic appeal and providing physical barriers that further calm traffic.

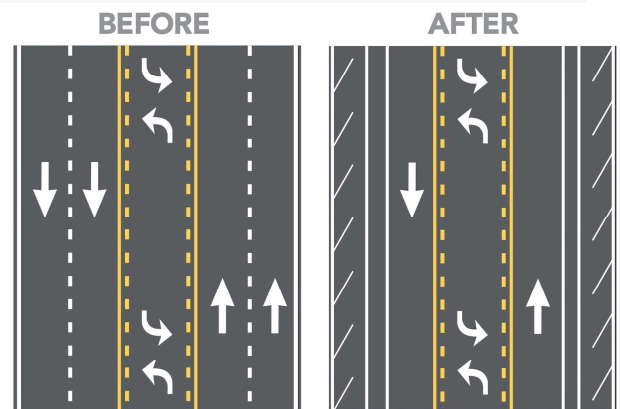
Design Guidance:

- Reducing lane widths should involve careful attention to design and planning, coupled with extensive public engagement.

Evaluating Surplus Right-of-Way

Opportunities exist to evaluate the right-of-way (ROW) along corridors or sections of roadway to evaluate their current usage and whether there is an opportunity to alter their current use to provide better facilities for vulnerable road users while still providing sufficient service levels for motorists. Road reconfigurations provide a method of utilizing existing right of way and roadway width to increase safety and can often include additional facilities for other modes of travel, such as dedicated transit lanes, widened and enhanced sidewalks, and bike lanes.

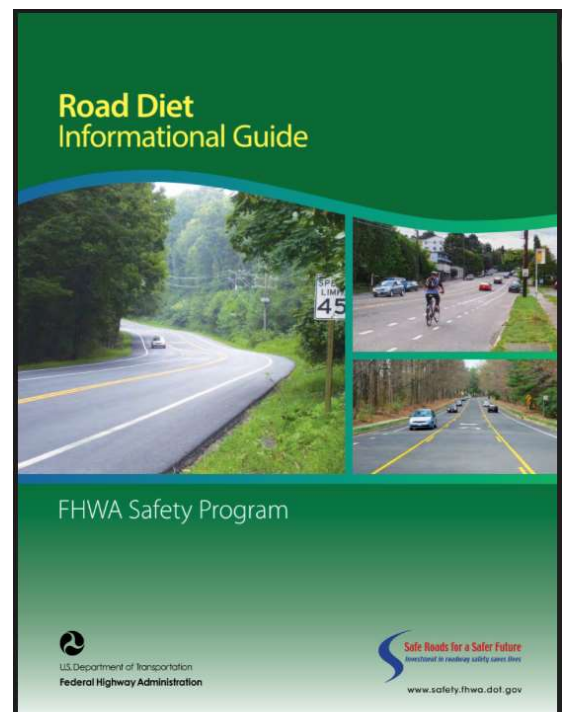
According to FHWA, a Road Diet repositions pavement markings to better meet the needs of all road users. A classic Road Diet converts a four-lane undivided roadway to a three-lane roadway, but many other reconfigurations are used by States and local jurisdictions. For example, a road diet could convert the roadway space from five to three lanes, two to three lanes, or various lanes of a three-lane roadway. An agency could even use a Road Diet on a one-way street.



This five-lane to three-lane Road Diet removes lanes to allocate space for multipurpose use.

Road Diet FAQ, FHWA

Resources such as the Road Diet Information Guide (FHWA) guide the appropriate application and implementation of road diets. Many factors should be considered when planning and designing a road reconfiguration, including extensive public outreach and traffic studies and the potential positive and negative effects on all stakeholders, including businesses, neighborhoods, vulnerable road users, and motorists.





09

Funding

Funding Strategies

Funding is imperative when approaching a project as vast and detailed as the Move Fort Smith Plan. Stakeholders must consider many funding sources as they embark on implementing a master plan. Developing a comprehensive funding plan for active transportation infrastructure involves identifying various sources of funding from local, state, and federal levels and considering private funding options.

Local Funding

Private Funding Sources:

Philanthropy can often play an important role in moving projects such as the Bike Park and Adventure Center from vision to reality. The philanthropic industry has shifted its focus over the last two decades away from funding legacy organizations and projects to a focus on strategic investments that can have a measurable impact in a given area. Rarely will a philanthropy fund 100% of a construction project; rather, grant funds can be used to fund a match that is often required for a federal or state grant. There are several ways private philanthropy can assist and support projects such as the Move Fort Smith Plan.

Leverage Funding:

An example of leverage funding is NW Arkansas during the planning, design, and construction of the Razorback Regional Greenway. The region of NWA developed a vision to tie the community together with a greenway. The community determined it would need a 20% local match to leverage the Federal Transportation Investment Generating Economic Recovery (TIGER) 2 grant funds. The region developed a plan, approached the Walton Family Foundation, and received a grant for this purpose. Additionally, philanthropic funding can be structured to serve as a match to incentivize the local community to allocate funding. Specific to NWA, the Walton Family Foundation employed a 1:1 match program, which provided dollar-for-dollar match funds for designated projects related to trails and active transportation. Match funds leveraged municipal funding and allowed the region to plan and build over 550 miles of natural surface trails and over 200 miles of shared-use paved paths.

Program-Related Investments (PRI):

PRIs are an often overlooked tool to help projects such as the Move Fort Smith Plan move toward implementation. PRIs can be established as low or no-interest loans that can be structured in many ways to help meet philanthropic goals and help spread the cost of property acquisition and construction over multiple years. PRIs are far less complicated than traditional bond issues and allow for a significant amount of flexibility for the municipality and the funding organization.



One example is Centennial Park in Fayetteville, AR. The City of Fayetteville identified a ~300-acre parcel of land in Southwest Fayetteville. This land was slated to be a housing development. However, the developer could not perform, and the land was now in the hands of a bank. The city worked with the Walton Family Foundation, and a blended grant/PRI was developed to help purchase the property. The Walton Family Foundation provided 50% of the land purchase price as a traditional grant and structured the remaining 50% as a PRI, which was to be paid back by the city within a set timeframe.

Corporate Sponsorship:

Given the thriving economy in Fort Smith, there may be opportunities for the city to seek sponsorship from businesses and corporations interested in supporting active transportation initiatives in exchange for branding opportunities or community goodwill. Local organizations that may have an interest in playing a role are as follows:

- ArcBest
- OK Foods
- Mercy Hospital
- University of Arkansas Fort Smith

It is essential to develop a corporate sponsorship plan and approach so that the sponsorships and associated brand recognition are consistent with the look, feel, and brand.

Public Funding

Local Public Funding Sources:

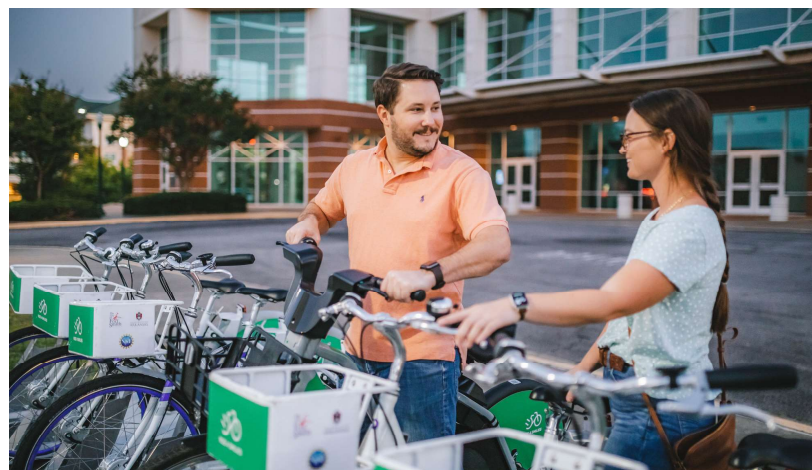
Municipal Budget Allocation:

An opportunity exists to work directly within the city to develop a specific budget dedicated to active transportation infrastructure projects. It is likely that the city currently has a dedicated portion of the city sales tax revenue allocated to streets and roads. The city could consider allocating a portion of those funds for active transportation projects identified in the master plan.

Local Bonds:

The city may want to consider issuing municipal bonds dedicated to funding active transportation and trails projects. These bonds can be repaid over time using local tax revenues.

An example is Lake Atalanta in Rogers, AR. The city issued a bond to fund improvements to Lake Atalanta, including paved paths, natural surface trails, road improvements, infrastructure, and the Railyard Bike Park.



State and Federal Funding

Arkansas Department of Transportation (ARDOT):

Some of the shared-use paved paths within the Move Fort Smith Plan fall along or adjacent to ARDOT facilities. A conversation with ARDOT may help to leverage state planning and construction funding for these trails. ARDOT can provide assistance and support in applying for the following federal funding programs.

Transportation Alternatives Program (TAP):

TAP aids Local Public Agencies (LPAs) in funding community-based projects that expand non-motorized and multimodal travel choices and enhance the transportation experience. Such projects improve the cultural, historical, and environmental aspects of transportation infrastructure. The program does not fund traditional roadway facilities or maintenance projects. Instead, it emphasizes constructing and expanding active transportation facilities that provide equitable accommodations for all users. Outcomes of the supported projects lead to quality-of-life benefits for residents, alternative mode accessibility, safety, reductions in pollutants and emissions, and the expansion of recreational facilities.

Each project must:

- Have logical termini and independent utility;
- Be accessible to the public and not used as a rental space for offices, events, etc.;
- Be used as intended and maintained for the useful life as set forth in the Useful Life Schedule
- It must be not-for-profit. An admission fee may be acceptable if the cost is reasonable and reinvested to support the operation and upkeep of the TAP-funded facility.

TAP funding can reimburse up to 80% of eligible project costs. A minimum local match of 20% is required. Any expenditures toward the local match are required to meet the same project eligibility as the federal portion of the project. The match requirement can be met using eligible local, state, or federal funds. However, state and federal transportation funds are not eligible as a match, including state revenue sharing funds. State and federal transportation funds may supplement the TAP award and pay excess project costs outside of the TAP-funded amount; it is the LPA's responsibility to verify eligibility. The staff within the City of Fort Smith and ARDOT are experienced with the TAP program and have applied for and been awarded funds in 2023.



Recreational Trails Program (RTP):

The Recreational Trails Program (RTP) is an assistance program of the U.S. Department of Transportation's Federal Highway Administration (FHWA) that provides funds to the states for recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The RTP embraces the "user-pay/user-benefit" philosophy of the Highway Trust Fund, which collects an estimated \$270 million per year in motor fuel excise tax from non-highway recreational fuel use. These funds represent a portion of the motor fuel excise tax collected from non-highway recreational fuel use in each state: fuel used for off-highway recreation by snowmobiles, all-terrain vehicles, off-highway motorcycles, and off-highway light trucks. States are required to use 40 percent of their RTP funds for diverse recreational trail use, 30 percent for motorized recreation, and 30 percent for non-motorized recreation.

Each state develops and manages its own program of project selection and grant administration, in partnership with communities, agencies, and nonprofit organizations. Sebastian County has been the recipient of previous RTP funds that were used within the Ben Geren trail system as well as at trails at Torriane Lake. The City of Fort Smith has been awarded RTP funds in 2015 for the Rice Carden Walking Trail - West Riverfront Trail.

Reconnecting Communities and Neighborhoods (RCN) Program:

The RCN Program provides funding for three types of grants:

1. Community Planning Grants
 2. Capital Construction Grants
 3. Regional Partnerships Challenge Grants
- If eligible, awarded applications may receive funding from one or both funding programs, RCP and NAE.

1. Community Planning Grants will award RCP and/or NAE funding for planning activities for future construction projects and allow for innovative community planning to address localized transportation challenges.
2. Capital Construction Grants will award RCP and/or NAE funding to carry out a project to remove, retrofit, mitigate, or replace an existing eligible dividing transportation facility with a new facility that reconnects communities; mitigates a burdening transportation facility that is a source of air pollution, noise, stormwater, heat, or other burdens; or implements a strategy to reduce environmental harm and/or improve access through transportation improvements.
3. Regional Partnerships Challenge Grants will award NAE funding to a project led by two or more eligible applicants to address a persistent regional challenge related to equitable access and mobility. Eligible activities for Regional Partnerships Challenge Grants are the same as those listed under Capital Construction and Community Planning Grants but must have a regional focus, and clearly demonstrate regional coordination and leveraging of local, state, and federal resources and policies.