

CITY OF ROSWELL

BICYCLE AND PEDESTRIAN

MASTER PLAN

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EXECUTIVE SUMMARY

The City of Roswell Bicycle and Pedestrian Master Plan (Bike-Ped Master Plan) builds upon a solid foundation of recreational trails, an extensive system of parks, and local policy support for improved safety and transportation options. Roswell also has the necessary ingredients to build a culture of biking and walking, including flat terrain and a favorable climate that make it attractive for biking and walking year-round. At the same time, the City's grid street network allows for easy access to major destinations and provides pedestrians and bicyclists a variety of routes to choose from. In addition to the opportunities afforded by the design and layout of the city, there are indications of greater demand for opportunities to walk and bike among Roswell residents.



However, the existing on-street bicycle system is lacking, and the pedestrian network is incomplete in some parts of the city, including older neighborhoods and along some major roads. Concerns with these gaps were expressed by the public during various meetings conducted throughout the creation of this plan. In response to these challenges and to build upon City's existing transportation network, the Bike-Ped Master Plan proposes a network of on-street bikeways, pedestrian facilities, and trails that link together major destinations throughout the city (see below). The plan also identifies pedestrian priority areas where enhanced sidewalks and frequent crossings would be most beneficial.

Major Priorities for the Roswell Bike-Ped Master Plan

- Implement bike lanes along College Blvd to create an east-west bikeway across the city with direct access to major destinations and recreational areas
- Maintain and expand the existing trails network
- General improvements to bikeways and pedestrian facilities throughout the City of Roswell

In addition to identifying locations and appropriate facility types, the Bike-Ped Master Plan contains a Design Guide that should be utilized in the design and installation of sidewalks, trails, and bikeways. The installation of a range of infrastructure types will help appeal to potential users with varying comfort levels and create safer conditions across the city.



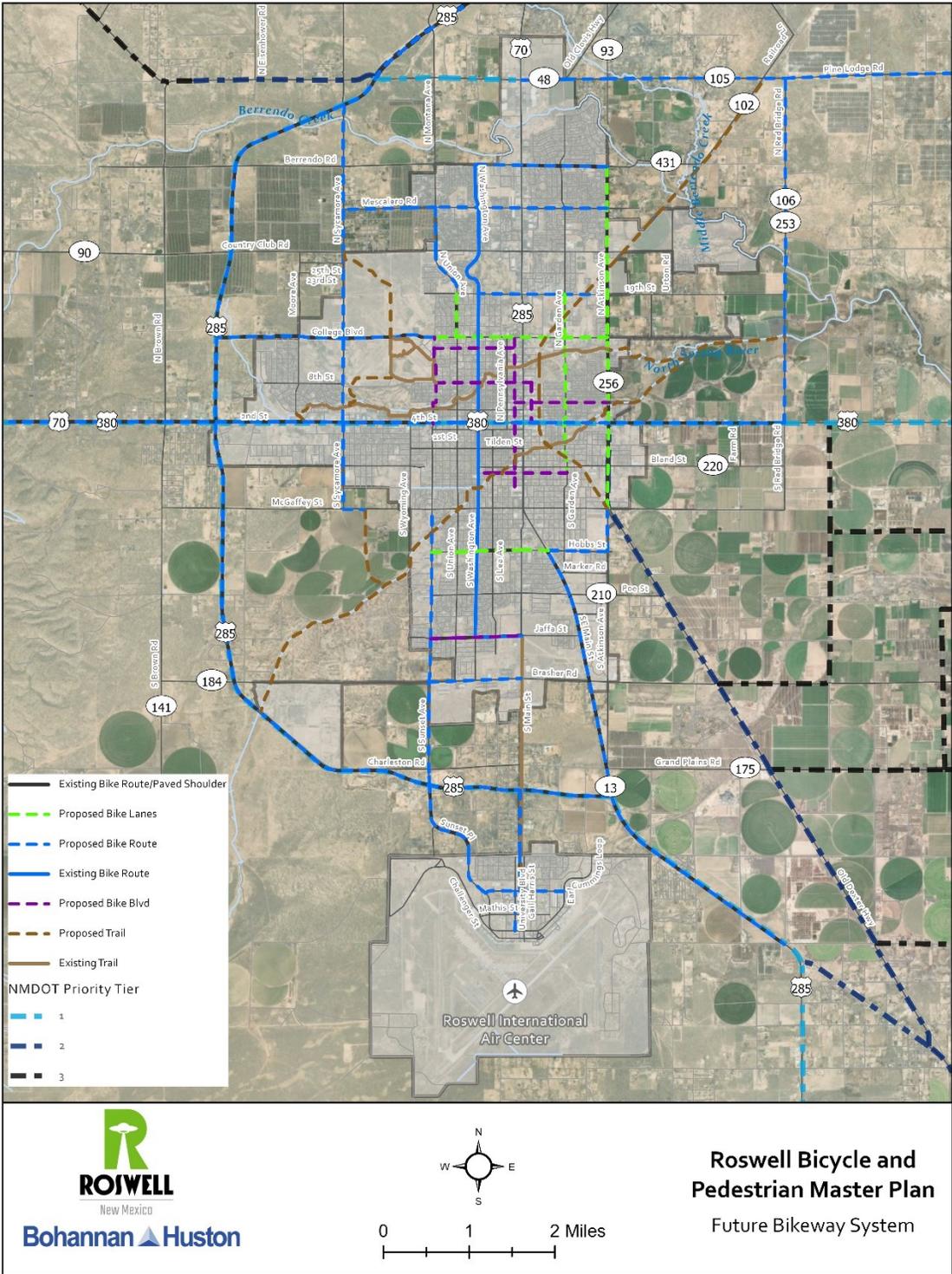
The proposed bicycle facilities network and the Design Guidance section contained in the Roswell Bike-Ped Plan are intended to provide a high level of user comfort.

A key consideration throughout the plan is that financial resources are limited and investments in new infrastructure must be strategic. Many of the recommended on-street bikeway improvements can be implemented by utilizing existing rights-of-way along major roads. Existing facilities and residential streets can also be enhanced through simple improvements such as the addition of signage, wayfinding, striping, and pavement markings. Ultimately, the plan will inform the expenditure of local funds and support grant funding for major improvements. The intent is that this plan may be referenced for many years to come.

Figure EX-1: Existing Conditions and Potential Improvements along Atkinson Ave



Figure EX-2: Proposed Bikeways and Trails Network



INTRODUCTION

Overview and Plan Purpose

The City of Roswell is home to approximately 50,000 people and is the largest city in southeastern New Mexico. The city is situated near two major highways, making it a major hub for economic activity for the region, and features considerable tourism activity. Despite the steady growth in the region, Roswell, like many towns and small cities, faces the challenge of ensuring a high quality of life for its residents and attracting and retaining young professionals.

Bicycle and pedestrian investments enhance the livability for existing residents and provide amenities for future businesses and residents deciding where to relocate. At the same time, providing safe bicycle and pedestrian facilities is a means of addressing public health and enabling residents to engage in active lifestyles. Moreover, generational shifts in lifestyle preferences are leading to more people choosing to walk, bike, and take transit for everyday activities such as commuting to work or school, shopping, or going out to eat.

As a result, there is a need to plan for and create a transportation system that provides additional options beyond single-occupancy vehicles for people to travel, explore, visit, and commute in Roswell today and in the future. At the same time, it is important to recognize that municipal resources are limited and that investments must be strategic. The City of Roswell Bicycle and Pedestrian Master Plan (Bike-Ped Master Plan) balances the desire for additional infrastructure with the need for good governance by providing tools and guidance for policymakers, agency staff, and the general public to pursue investments in active transportation infrastructure that are both feasible and fiscally responsible.

Plan Contents

The Roswell Bike-Ped Master Plan is divided into seven sections. The **Introduction** describes the plan purpose and benefits, the outreach strategies and input received as part of this planning process, and contains the plan vision, goals, and objectives. The second section – **Planning Context** – discusses the general state of biking and walking in the Roswell and the US, opportunities to encourage and the local and statewide plans and policies that support investments in walking and biking.

The following set of sections discuss existing conditions and potential improvements for **Pedestrian Facilities, On-street Bikeways, and Trails** respectively. These sections include the major products and findings of the Bike-Ped Master Plan, including pedestrian priority areas where sidewalk improvements should be prioritized and proposed on-street bicycle and trail networks.

These networks are complemented by the **Design Guidance** section which provides direction on the types of facilities and design characteristics that are appropriate for different routes and locations, and options for improving and expanding upon the network. Finally, the **Implementation** section describes general recommendations, policy and programmatic initiatives, funding opportunities, and next steps to turn the plan's vision into reality.

Plan Benefits

The City of Roswell has an opportunity to support investments in active transportation and recreation to maintain a high quality of life for its residents as the community continues to grow. Creating convenient and accessible bicycling and walking infrastructure to major destinations in the City of Roswell will provide viable transportation options that allow all visitors and community members to travel more freely throughout the city. Creating biking and walking routes that are safer and more attractive is also a cost-effective way to support economic vitality and generate local tourism.

Additionally, cities that support biking and walking are increasingly desirable places to live, especially for younger generations who value greater choice and independence. As this trend continues, investments in active transportation infrastructure can help attract and retain younger populations long-term – as well as the businesses who depend on the ability to recruit workers – to further stimulate the local economy.

Implementation of the Bike-Ped Master Plan will provide the following benefits for the entire Roswell community:

- Increased transportation options and safer environments for all modes
- Expanded recreational opportunities
- Improved public health outcomes
- Improved access to employment, education, and services
- Enhanced travel and tourism

Economic Development

Infrastructure that supports bicycling and walking fosters a strong and healthy local economy in a variety of ways, including increased access to jobs and the ability to capture tourism dollars. Residents and tourists that have opportunities to bike and walk tend to spend less on transportation, allowing for greater disposable income which can be used toward housing and to purchase goods and services that in turn support economic growth. Additional economic-development benefits are described below.

Access to Jobs

It is also important to recognize that not everyone in the City of Roswell drives a car as a result of financial situations, personal reasons, or physical, mental, or age limitations. For some, walking, biking, and taking transit are the only transportation options available, particularly for households of lower-incomes. Greater transportation options for individuals who do not have access to private vehicles leads to increased employment opportunities and allows businesses to access a broader range of potential employees.

Tourism

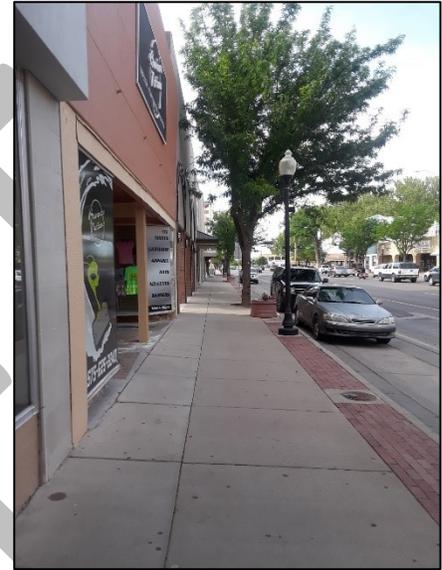
The City of Roswell is well-known for its events and festivals, as a retail hub, and as a hot spot for nearby tourist attractions; altogether, the region attracts about 250,000 visitors each year.¹

¹ <https://www.chavescounty.net/business-environment/>

Research from the Urban Land Institute shows that active transportation infrastructure, including trails, improve tourism by increasing the duration and frequency of visits. Designing a bike-friendly city in Roswell can leverage this high degree of tourism to encourage new types of visitors and current visitors to stay an extra day and spend money in ways that benefits the local economy.

Support Local Businesses and MainStreet Roswell

Increased bicycle and pedestrian activity has been shown to boost the local economy, including increased retail and dining trips. People who walk and bike to local businesses tend to spend less money per trip than people who drive – but take more trips overall – and ultimately spend more money. Investing in bicycle and pedestrian facilities will also complement the efforts of MainStreet Roswell to promote downtown Roswell as an attractive, vibrant, historic, and pedestrian-oriented place for residents and visitors. The downtown is the heart of the community, provides a sense of place, and reflects the arts and culture of Roswell. MainStreet Roswell capitalizes on the walkable Downtown area and would further benefit from increased access to the district.



Public Health

Built environment decisions such as how we design our streets have a significant impact on community health and quality of life. Streets designed to support walking and biking trips encourage healthy behaviors and improve safety, access, social connectedness, and equity. Well-connected and accessible bicycle and pedestrian facilities can even lead to spontaneous interactions between community members which strengthens social ties and promotes sense of place. Places that support high amounts of bicycle and pedestrian traffic tend to be the safest due to the phenomenon of having “more eyes on the street.” Dedicated infrastructure has even been shown to reduce traffic collisions and fatalities for all modes.

Public Health Benefits

- Improved safety
- Greater social interactions
- Reduced healthcare costs
- Mobility for youth and seniors
- Increased opportunities for physical activity levels
- Reduced risk of chronic disease

Designing for bicyclists and pedestrians also increases the number of people who are engaged in active transportation and meet recommended daily physical activity levels. Research has shown that biking and walking reduce the societal burden of health care costs and increases job productivity. People who walk or bike have reduced risk of chronic disease, take fewer sick days, and have fewer emergency room visits, all of which can lead to a reduction in health care costs and insurance premiums.

Encouraging More Pedestrians and Bicyclists

A key question when planning for bicyclists and pedestrians is how to appeal to a broad range of users. Traditional roadway design creates barriers for non-auto users, including populations that tend to be the least likely to have access to a car and are more dependent on biking, walking, and transit services to accomplish their daily needs.

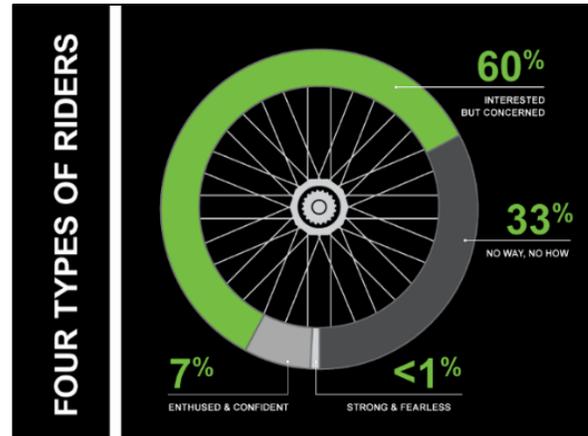
The Roswell Bike-Ped Master Plan encourages a broader range of users by providing more facilities, improving access to key destinations such as schools, and by ensuring designs that are comfortable for multiple user types. This approach is particularly beneficial for youth and senior populations that require transportation options outside of driving a car.

From a pedestrian standpoint, encouraging more people to walk involves a range of infrastructure techniques and land use conditions. In particular, the city can create more comfortable walking conditions through sidewalks that are well-connected, provide separation from vehicle travel, frequent crosswalks, and shorten distances required to cross streets as much as possible.

From a bicycle standpoint, it is important to understand that not all users feel comfortable using bike lanes or sharing roads with motor vehicles. The **four types of bicyclist's typology** is a useful tool for understanding different comfort-levels for biking. Across the US, individuals typically fall into one of these four categories based on their attitudes and comfort levels for bicycling:

- **Strong and fearless:** will ride regardless of challenging traffic conditions
- **Enthusied and confident:** will ride in most traffic conditions but prefer dedicated bikeway facilities
- **Interested but concerned:** will ride only if there are comfortable bikeway facilities available
- **No way no how:** will never ride for personal or physical reasons

The majority of bicyclists typically fall into the “interested but concerned,” meaning they are interested in riding a bicycle but will only do so if there are comfortable facilities available. Other than trails, there are currently limited options in the City of Roswell for bicyclists other than those who are “strong and fearless” or “enthusied and confident”. This plan addresses the needs of bicyclists of all comfort-levels by encouraging bicycle facility options that accommodate a wide range of users.



Source: PeopleforBikes

Opportunities for Biking and Walking in Roswell

General Conditions

The City of Roswell has the necessary ingredients to build a culture of biking and walking. Roswell has a favorable climate and flat landscape, making it very attractive for biking and walking year-round. Downtown Roswell and the City's grid street network allow for ease of access to major destinations and can more easily support walkability and bikeability. In addition to the physical opportunities afforded by the design and layout of the city, there are indications of greater demand for opportunities to walk and bike among Roswell residents (see the **Public Input** section). It is also critical to note that Roswell features various population groups with increased likelihood of depending on walking and biking as primary means of transportation.

Across the City, many existing residential streets are prime for low-cost and easy to implement improvements like bicycle boulevards. Refer to the **Design Guidance** section for more information. On major roads, there are large right-of-way (ROW) widths allowing for the installation of more robust infrastructure that supports biking and walking such as bike lanes and sidewalks with buffers.



From left: Sidewalk along Main St in Downtown Roswell; Trail crossing; Spring River Trail

Demographics

While providing bicycle and pedestrian infrastructure is beneficial to all residents, an effective and enhanced bike and pedestrian system will be especially critical for the mobility of those with limited or no access to a vehicle. Displayed in Table 1, 5.5 percent of households in Roswell have no vehicle available and 37.1 percent have one vehicle available, compared to 5.8 percent and 33.3 percent at the state level, respectively. Low-income populations have been shown to also face challenges in accessing reliable transportation; 21 percent of Roswell's population is below the federal poverty level. An enhanced pedestrian and bike system would provide increased opportunities to access local jobs, particularly for those with low-incomes.

Young people and children are likely to use opportunities for biking and walking either for recreation or for access to school; 24 percent of Roswell's population is under the age of 16. In any cases, these opportunities allow young people and children to spend more time outside and yield greater physical activity levels resulting in public health benefits. Additionally, as in other places,

the number of residents who are 65 years and older is continuously increasing (the population of Chaves County aged 65+ is expected to grow from 15% to 18% by 2040). For these individuals, having access to destinations without relying on a car is critical.

This plan also acknowledges the large immigrant population that exists in the City of Roswell which may not have been captured through Census data. Generally, this population is disproportionately dependent on biking, walking, and taking public transit as compared to the overall population. Therefore, the data retrieved and used for the purposes of this plan may be limited and may not tell the entire story of those living, working, and traveling in Roswell.

Table 1: Share of Households by Vehicle Availability

Housing Units by Vehicle Available	Roswell	New Mexico
No Vehicle Available	5.5%	5.8%
1 Vehicle Available	37.1%	33.3%
2 Vehicles Available	37.8%	37.2%
3 Vehicles Available	14.0%	16.3%
4 or More Vehicles Available	5.7%	7.5%

Source: 2013-2017 ACS 5-Year Estimates (US Census)

Observed Levels of Biking and Walking

Means of Transportation to Work

The principal source for walking and biking activity is the **American Community Survey (ACS)**, which tracks primary means of transportation to work. In the City of Roswell, like the state of New Mexico overall, the majority drive alone (81.4%) with carpooling the second most common form of commuting (11.0%). Walking, biking, and public transit comprise modest shares, as relatively few take public transportation (1.2%) or walk (1.8%), and even fewer bike (0.5%).

Table 2: Means of Transportation to Work

	Roswell	New Mexico
Drove Alone	81.4%	80.2%
Carpooled	11.0%	9.8%
Public Transportation	1.2%	1.1%
Bicycle	0.4%	0.8%
Walked	1.8%	2.1%
Other Means	0.7%	1.2%
Worked at Home	3.5%	4.8%

Source: 2013-2017 ACS 5-Year Estimates (US Census)

However, the ACS only captures commuting data and does not capture other types of walking and biking activity in Roswell. Based on the observed usage patterns along the trails network, it is clear that many members of the Roswell community also use the trails network and some roadways for recreational purposes. Nor does the ACS reflect the number of bicyclists and pedestrians that want to bike or walk (e.g. the “interested but concerned” subset of bicyclists) in Roswell but do not feel comfortable with the existing infrastructure or simply do not have access to nearby facilities that support biking and walking.

Overall Rates of Biking and Walking in the US

Overall, biking and walking have become more prevalent in the US in the last decade. Since 2007, data from the *American Community Survey* show a 50 percent increase in the amount of people who report biking to work and an eight percent increase in the number of people who report walking to work. Data from the National Household Travel Survey indicate 13 percent increase in the percentage of all trips by foot from 2009 to 2017.

School Travel Patterns

A bicycle audit was conducted at schools in the Roswell Independent Schools District to get a general idea for the number of students who ride their bikes to and from school. This assessment was based on the average amount of bikes found on racks across multiple school days in May of 2019. The audit provides a valuable source of information for the general number of students who bike to school in Roswell and can be used as a baseline comparison for future audits. The following schools had the largest number of bicycles found during this assessment:

- Goddard High School
- Roswell High School
- De Norte Elementary School

The audit also reveals a connection between available infrastructure and observed trips. For example, no bike-to-school trips were observed at University High School; however, the area is generally without formal bicycle infrastructure.

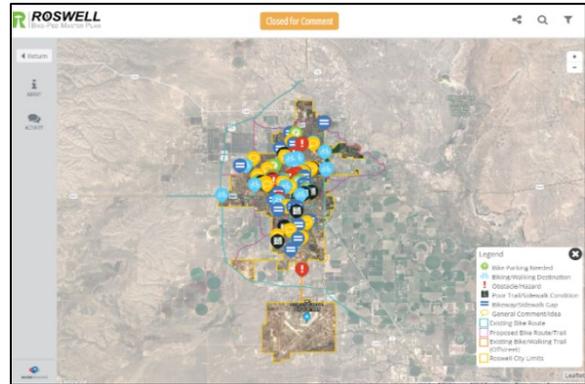


Public Input

Public outreach for the Bike-Ped Master Plan featured a multi-faceted approach, including a project website, an online interactive map and questionnaire, and in-person public meetings. Through these combined efforts, stakeholders were able to participate through a broader range of media than a more traditional public involvement process. Input was gathered in three phases:

- **Phase 1** focused on assessing the conditions of the existing transportation system specific to biking and walking in the City of Roswell and understanding public needs and concerns. Outreach efforts included an online questionnaire, an online interactive map, and the deployment of the project website. The input received was used to develop plan goals and objectives as well as determine major destinations that should be accessed via trails, on-street bikeway facilities, and pedestrian infrastructure.

- **Phase 2** allowed the Project Team to share results from the questionnaire and interactive map and solicit feedback on plan priorities. A public meeting provided an additional opportunity for residents to provide input on potential bikeway and pedestrian facility types and priority routes and destinations. A presentation was also provided to the City Council Infrastructure Subcommittee. The Project Team utilized the input received during this period to develop draft recommendations and refine the proposed bikeway network.
- **Phase 3** featured a public meeting and City Council meeting in which the Project Team shared a draft of the Bike-Ped Master Plan, including the proposed bikeways and trails network, pedestrian priority areas, design guidelines, and recommendations. Outreach efforts were geared towards educating the public on the current draft plan and collection of final input.



Summary of Public Feedback and Desired Improvements

There was broad consensus around certain topics during public outreach activities. Overall, the public felt that the existing trails within the City of Roswell should be maintained, gaps should be filled, and trails should be expanded. A clear need also emerged from public input to support utilitarian trips in addition to recreational trips for bicycling and walking in Roswell. Community members also felt that there is an adequate amount of facilities for more confident bicyclists to travel throughout the City but that options are limited for less confident bicyclists to do the same. From a pedestrian standpoint, there were a number of safety concerns related to motor vehicle speeds being too high for pedestrians to feel comfortable traveling along and across a street. As a response, many individuals requested additional pedestrian crossings. A detailed summary of all public input can be found in the Appendix.

Project Website

A project website was made available which described the overall purpose of the project and an overview of the planning process, provided materials from previous public meetings, and directed users to share input via a questionnaire and an online interactive map. The website was updated regularly throughout the duration of the project.



Online Interactive Map

An online interactive map was available from May 1, 2019 to July 31, 2019 that allowed community members to provide input on potential bicycle and pedestrian facilities and locations with perceived safety issues. The tool asked users to drag and drop icons at key locations around the City of Roswell (see Figure 1) and allows for an interactive experience as users can also provide comments or interact with other user input through “Like” and “Dislike” functions. There were a total of 108 responses collected through the interactive map and more than 200 unique visitors.

General comments and ideas focused on the need for improved connections to the Downtown area, recreational sites, and along the Spring River Trail. Users indicated the desire for additional trails facilities and bus stop improvements, as well as the need to maintain existing bicycle, pedestrian, and trail facilities. Users also indicated a high demand for additional bike parking at recreational facilities and along Main Street.

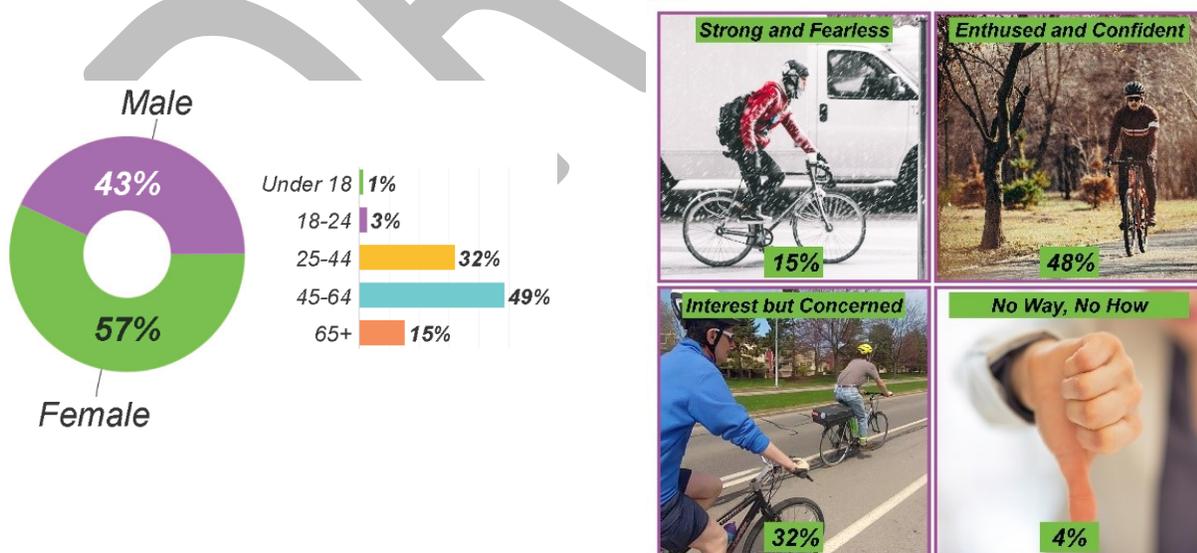
The online interactive map gathered feedback specific to the following:

- Bike parking needs
- Bicycling and walking destinations
- Network gaps
- Obstacles/hazards
- Locations with poor trail/sidewalk conditions
- General comments

Online Questionnaire

An online questionnaire was posted to the project website and available between May 1, 2019 to September 11, 2019. A total of 74 individuals participated. Respondents were asked a variety of questions regarding their current travel behaviors, comfort with different bicycle and pedestrian facilities, reasons for walking and biking, and factors that make it unpleasant to walk and bike in Roswell. Though respondents were disproportionately older (49% were between the ages of 45 and 64) and more likely to bike to work than typical Roswell residents (11% versus less than one percent), the results are nonetheless revealing about major issues and areas of concern.

Figure 1: Profile of Questionnaire Respondents



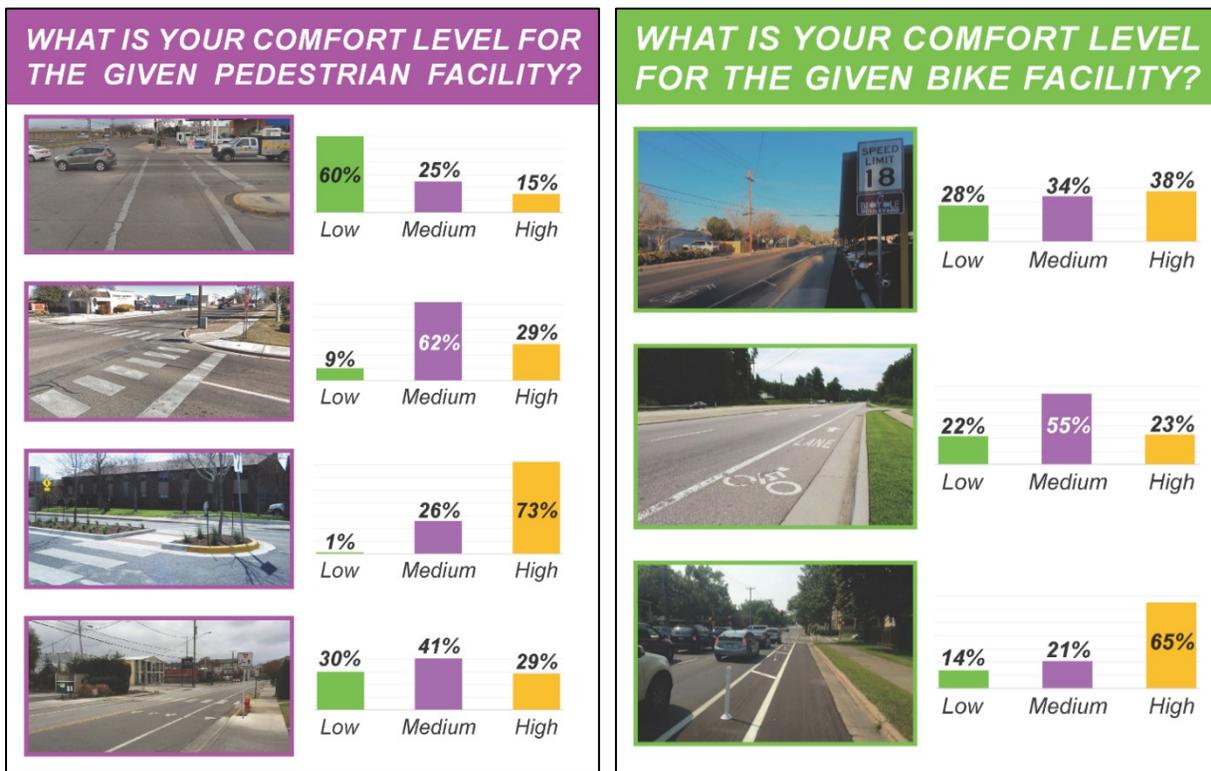
Biking Responses

Respondents indicated their comfort level riding on certain roadways with different types of bicycle infrastructure (see Figure 2). In general, respondents indicated a desire for additional bike lanes and some form of physical separation from motorists. When asked what factors make it unpleasant to bike in Roswell, almost all respondents indicated a “lack of bike lanes or trails” (85%), followed by “no safe places to cross major streets” (57%), “traffic speeds are too high” (42%), and “no street lighting” (38%). Respondents also indicated exercise, recreation, and health as their primary reasons for biking.

Walking Responses

Respondents indicated their comfort level walking on certain roadways with different types of pedestrian infrastructure as shown below. In general, respondents favored crosswalks with clearly marked crossings, and a majority (73%) indicated a high comfort level for crosswalks with pedestrian islands. When asked what factors make it unpleasant to walk in Roswell, a majority of respondents indicated either a “lack of sidewalks or trails” (71%) or “sidewalks/trails in poor condition” (67%), followed by “no safe places to cross major streets” (47%), “traffic speeds are too high” (44%), and “no street lighting” (40%). Respondents also indicated exercise, health, pleasure, and walking the dog as their primary reasons for walking.

Figure 2: Biking and Walking Responses for a Given Facility



Public Meetings

Additional outreach took place through a series of three public meetings to share updates regarding the project and gather additional ideas and input from the public. Public meetings were held in the Roswell Public Library on May 2, 2019; September 23, 2019; and February 24, 2020. General comments expressed by the public include creating a comfortable, accessible, connected, and safer bicycle and pedestrian system that provides access to schools and destinations; bicycle facilities that accommodate all comfort levels; and safer crossings along streets.

Steering Committee Meetings

A Steering Committee comprised of staff from various Roswell departments, as well as representatives from NMDOT, Roswell Public Schools, and the Southeast Regional Transportation Planning Organization, was convened to guide the development of the plan, review goals and objectives, and to propose improvements and general plan recommendations. A total of four steering committee meetings were held during the plan development process. General consensus during these meetings was built around maintaining and filling in gaps within the existing system, expanding the network, focusing on safety and equity, and connecting trails to major destinations.

DRAFT

Vision, Goals, and Objectives

The overall vision, goals, and objectives for this plan were developed by the City, stakeholders, and the general public. These are centered on providing additional transportation options by maintaining existing facilities and closing existing gaps within the overall non-motorized transportation network in Roswell.

Vision Statement

The Roswell Bicycle and Pedestrian Master Plan seeks to increase opportunities for people to walk and bike across the city as a means of expanding access to jobs and services for residents, increasing tourism and economic development opportunities, and improving public health outcomes. Roswell will pursue strategies and sustainable investments that balance the need to maintain existing facilities with the desire to expand the bicycle, pedestrian, and trails networks.

Plan Goals and Objectives

- I. Provide additional transportation options for Roswell residents and visitors through improved trails, on-street bikeways, and enhanced pedestrian facilities**
 - a. Identify routes and potential designs for on-street bikeways across the City of Roswell
 - b. Fill in gaps in the existing trails network and expand the system, as appropriate
 - c. Improve opportunities for people to walk across the City of Roswell, with particular emphasis on Pedestrian Priority Areas
 - d. Improve connections to public transit for pedestrians by enhancing sidewalks and implementing shelters and amenities at stop locations and for bicyclists through connections to transit routes
 - e. Encourage physical activity and promote public health and well-being through increased recreational opportunities and improved connections to parks and recreational sites
 - f. Increase access to schools, jobs, and services without relying on a private vehicle
 - g. Implement bike parking at recreational and commercial areas and encourage businesses to provide off-site parking
- II. Maintain existing trails, walking, and bikeways systems in good condition**
 - a. Perform routine maintenance to address cracks and deterioration of trail facilities
 - b. Keep on-street bikeways and trails clear of debris through street-sweeping and other maintenance efforts
 - c. Conduct regular evaluation of pavement conditions along designated bike routes
- III. Enhance the safety and comfort level of bicyclists and pedestrians**
 - a. Address safety and security for users through lighting, including along streets, at bus stops, and along trails

- b. Create additional on-street bikeways and other active transportation infrastructure that provides physical separation between motorists and bicyclists and pedestrians and appeals to users of varying comfort levels
- c. Apply roadway design techniques to reduce vehicle speeds and shorten crossing distances in Pedestrian Priority Areas
- d. Partner with NMDOT and Pecos Trails Transit on share the road campaigns to educate motorists on the potential presence of bicyclists and pedestrians
- e. Increase motorist awareness toward non-auto users through signage and pavement markings along designated bike routes and at key intersections
- f. Pursue education programs for motorists and bicyclists to improve understanding of safe travel behavior

IV. Create a well-connected set of trails and biking and walking routes

- a. Develop on-street bikeway connections between trails and complete sidewalk and bikeway networks throughout the City that allows residents and visitors to travel efficiently across the City and region
- b. Enable regional connections by integrating the municipal bikeway system with the statewide network identified in the NM Bike Plan and proposed trails and routes to nearby recreational sites.
- c. Promote regional destinations and trails as tourism opportunities
- d. Provide non-motorized/multi-modal access to major destinations, including schools and parks

V. Engage in inter-agency coordination efforts to expand the use of the bikeway and trails systems in Roswell and the region

- a. Coordinate with NMDOT to integrate the Roswell Bicycle and Pedestrian Master Plan with NM Bike Plan and ensure the incorporation of bikeways on NM and US highways in and near Roswell
- b. Coordinate with SERTPO on funding opportunities and regional planning initiatives that might connect to trails and on-street bikeways within the City of Roswell
- c. Work with Pecos Trails Transit to improve conditions for transit users and pedestrians around transit stop locations
- d. Coordinate with the Roswell Public Schools to increase education and awareness of active transportation opportunities for the youth population
- e. Work with the Parks and Recreation Department to ensure regular maintenance efforts on trails

VI. Identify cost-efficient improvements for the City

- a. Apply design techniques that are appropriate for the location and do not create unnecessary costs or maintenance burdens on the City
- b. Utilize existing right-of-way for bikeway and pedestrian improvements, where possible, minimizing the need for purchase of additional right-of-way
- c. Provide phasing options for some recommended improvements as the use of the multi-modal facilities increase over time

BICYCLE AND PEDESTRIAN PLANNING CONTEXT

General Considerations

The Bike-Ped Master Plan builds upon a solid foundation of bicycle and pedestrian planning in the City of Roswell. In addition to recent improvements to sidewalks and installing shoulders on major roads across Roswell, there is an extensive system of parks and a growing set of trails. Similarly, Main St and other corridors in Downtown and near major destinations feature quality facilities for people to walk. This section describes recent city planning efforts and policies and programs at the local and state level that support bicycle and pedestrian travel. This section also describes factors that affect biking and walking behavior in the City of Roswell, including safety and access to public transit.

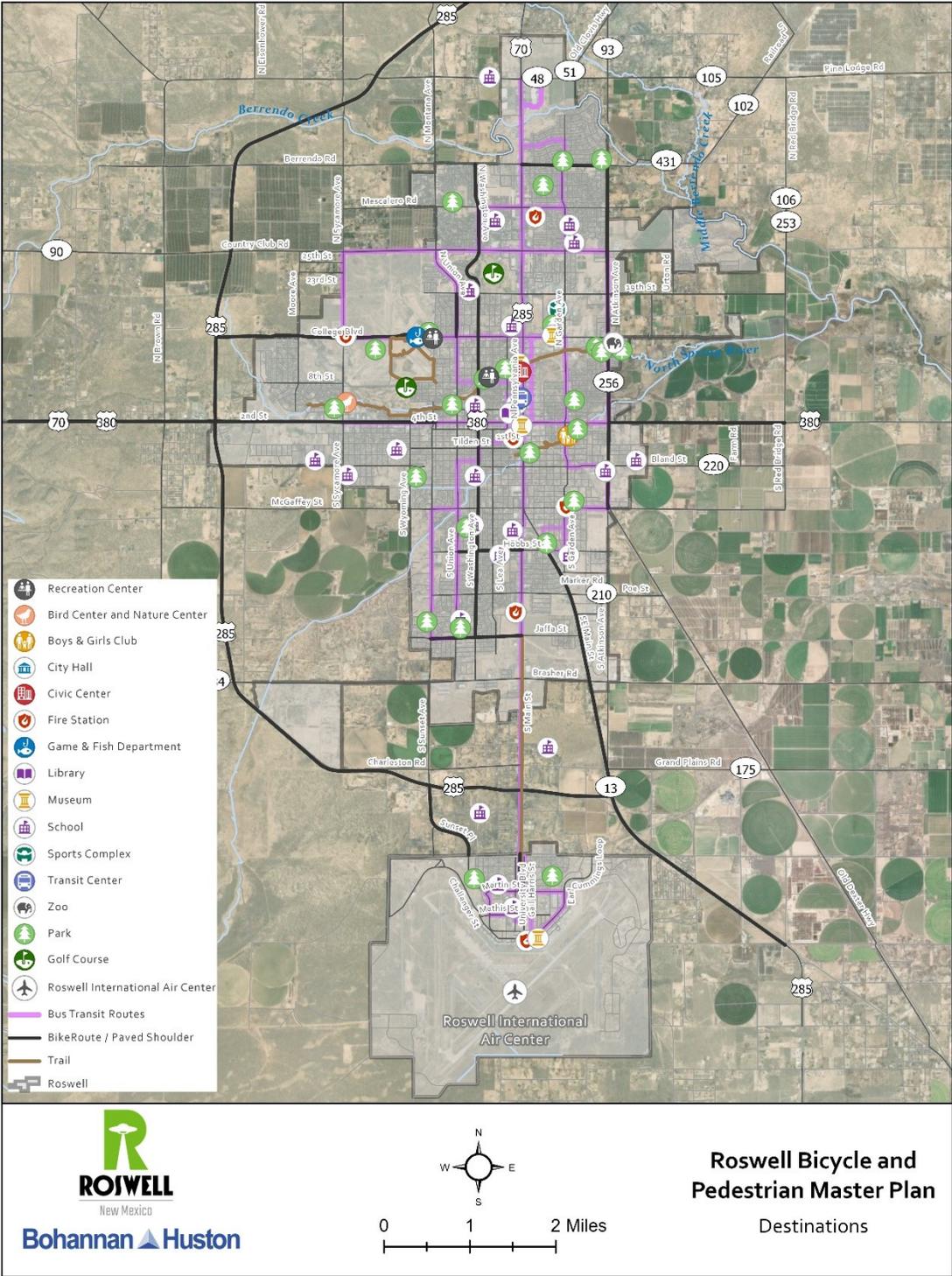
Major Destinations

Creating conditions for people to walk and bike requires infrastructure that allows individuals to feel comfortable utilizing and accessing major destinations. Popular cultural, social, recreational, and educational destinations were identified by staff from the City of Roswell and the public in order to identify locations with high levels of current or potential pedestrian and bicycling activity (see Figure 3). Many of these locations are also served by public transit, which is another generator of pedestrian trips.

The Bike-Ped Master Plan identifies routes and trails that link together these major destinations. The Plan also identifies pedestrian priority areas where major destinations are clustered together and greater probability of pedestrian activity (refer to the **Pedestrian Facilities** section for more information). Major destinations identified for this plan include:

- Roswell Recreation and Aquatic Center
- Bird Center and Nature Center
- Boys & Girls Club
- City Hall
- Fire Station
- Game & Fish Department
- Library
- Museums
- Schools
- Sports Complex
- Downtown Transit Center
- Spring River Zoo
- Parks
- Golf Courses
- Roswell International Air Center

Figure 3: Major Destinations



Safety

Transportation safety for all roadway users is a growing priority and public health concern. Bicycle and pedestrian safety are particularly important as these users are highly vulnerable when interacting with motor vehicles. Not surprisingly, concerns over safety is a significant barrier to using non-motorized modes of transportation.

These concerns are exacerbated by the urban form of many cities. Roadways located adjacent to land uses that generate pedestrian activity are often only designed for vehicles and high speeds. Such design increases the likelihood of crashes for all users and pose particular risks of severe crashes for non-auto users. At the same time, emerging research shows that providing dedicated infrastructure for bicycles and pedestrians has safety benefits for all users. Understanding where both crashes occur and where pedestrian and bicycle activity are greatest is therefore, a critical step in the development of roadway improvement projects.

Fatality Rates among Pedestrians and Bicyclists

Data from the *National Highway Traffic Safety Administration* show bicycle and pedestrian deaths from preventable traffic crashes are increasing across the US.

Fatalities by Mode	2017	2018	Change
Walking	5,977	6,283	5%
Biking	806	857	6%

Total Crashes in the City of Roswell

In the City of Roswell, there were a total of 5,048 crashes associated with all modes from the years 2013 to 2017. The majority of crashes occurred near the city center, along Main St, and at the intersections of major roads (see Figure 5 and Table 3); the intersection of Main St and 19th St experienced the most crashes of any location within the City. These areas generally have higher traffic volumes and speeds and roadway design patterns that encourage more aggressive driving behaviors. Specific intersections and other areas associated with high amounts of total crashes should be prioritized for improvements and design features that improve safety for all modes.

Table 3. Intersections with the Highest Amount of Total Crashes

Street	Intersection	Total Crashes	Traffic Volume (ADT)*
Main St	19 th St	120	20,739
	Country Club Rd	115	23,797
	College Blvd	114	26,118
	2 nd St	108	20,142
	McGaffey St	102	20,144
	E Berrendo Rd	77	23,123
2 nd St	Union Ave	43	18,078
	Sycamore Ave	33	9,112

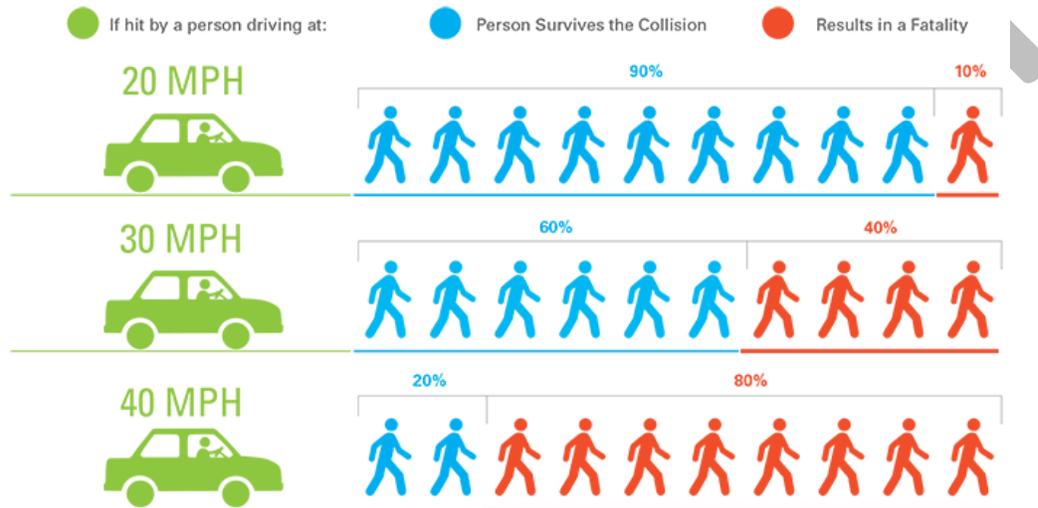
*ADT represents the total traffic volume approaching each intersection from all directions

Bicycle and Pedestrian-involved Crashes

Bicycle and pedestrian-involved crashes are scattered throughout Roswell (see Figure 6) Figure 6: Bicycle and Pedestrian Involved Crashes. Notable clusters of bicycle crashes are located near North Main St and Berrendo Rd, the city center along Main St between College Blvd and 2nd St, and the intersection of Hobbs St and Main St. The most notable pedestrian-involved crashes can be found along and near Main St. Crash data also reveals that many bicycle and pedestrian related-crashes occur near existing trails. These findings may be a function of the greater levels of bicycle and pedestrian activity in the area as well as issues with street crossings and barriers in access to trails (such barriers may also limit the use of trails).

Overall, there is a need for additional infrastructure that addresses safety for bicyclists and pedestrians, including greater physical separation between motorists and non-auto users. Traffic calming efforts can also reduce the risks to pedestrians and bicyclists in the event of a crash. National data indicates that pedestrians have a 90 percent chance of surviving a collision when a person is driving a vehicle at 20 MPH but only a 20 percent chance of survival when a person is driving a vehicle at 40 MPH.

Figure 4: Pedestrian Survival Rates during Collisions at Different Motor Vehicle Speeds²



²Institute of Transportation Engineers – “Speed as a Safety Problem”

Figure 5: Crash Density - Intersections

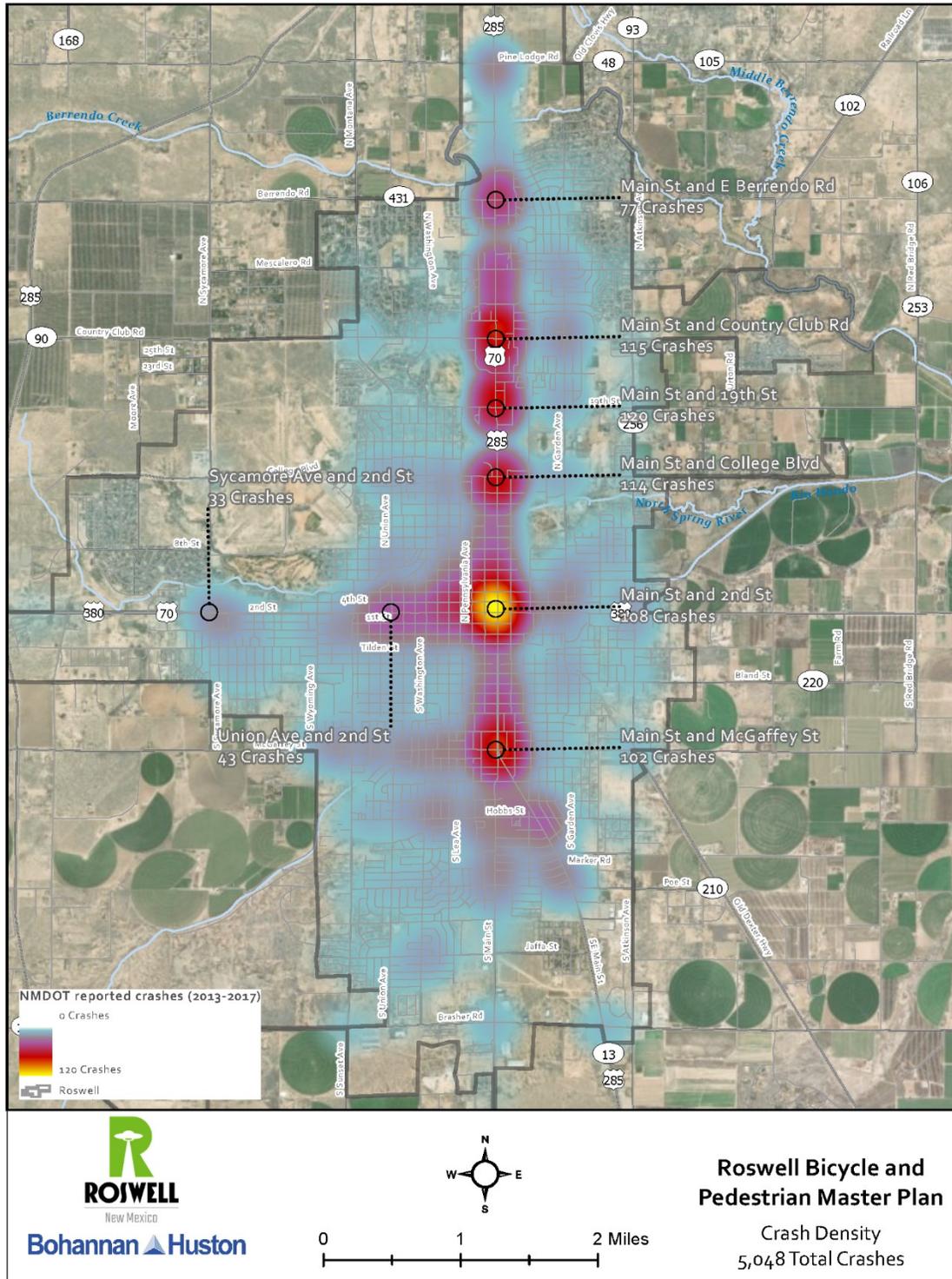
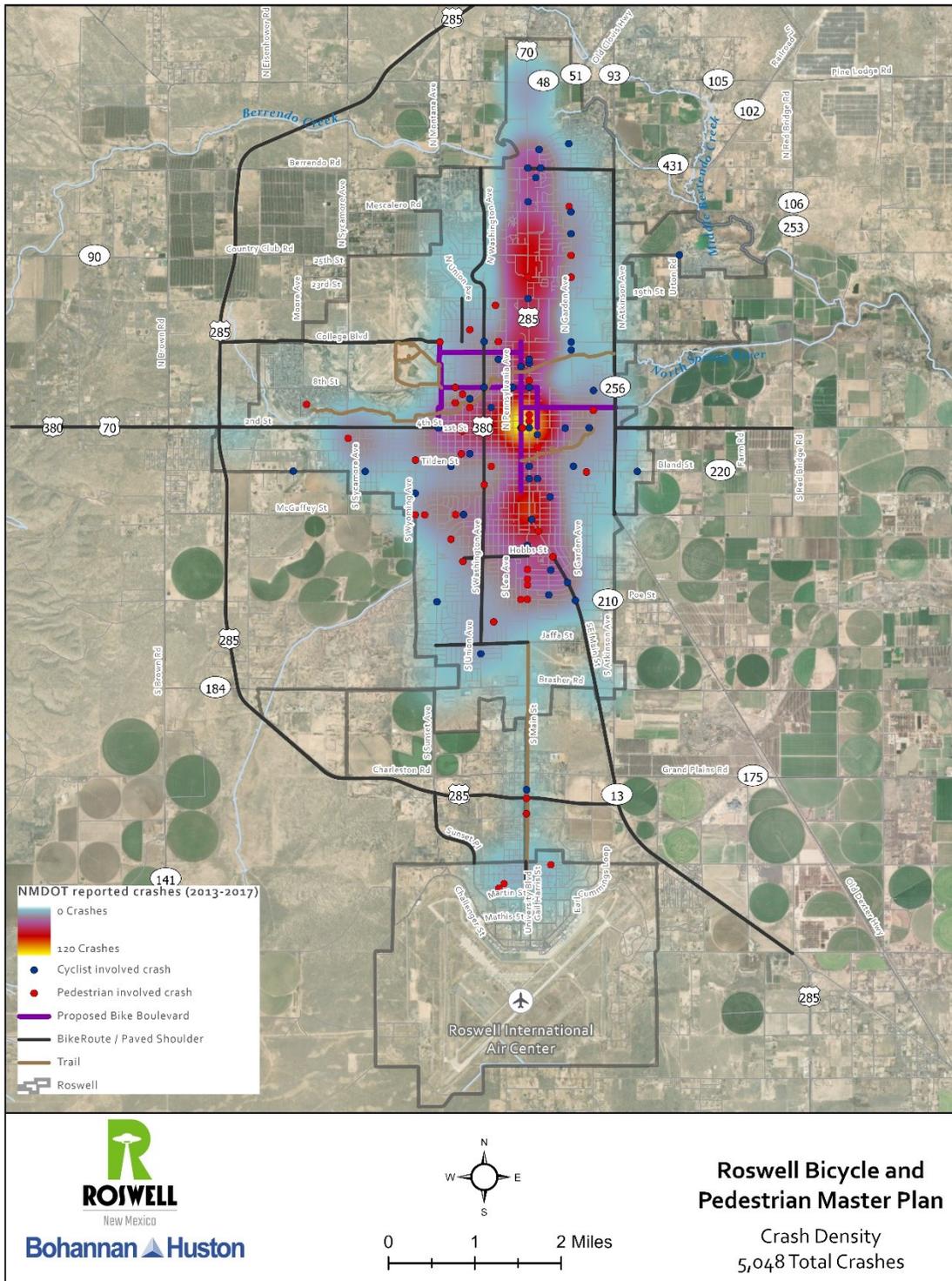


Figure 6: Bicycle and Pedestrian Involved Crashes



Public Transit

Walking and Biking and Transit Use

Public transit connections are an important part of bicycle and pedestrian planning for the basic reason that every transit user must travel by foot or by bike at some point during their trip, whether at the beginning or end (typically referred to as first and last mile).³ In particular, supportive pedestrian and bicycle facilities offer greater opportunities for people to access public transit, thus improving regional travel options and leading to increased job access and ridership.

By facilitating connections to transit, communities like Roswell can significantly increase the range of travel for its residents without a car. Research indicates most people are willing to walk 5 to 10 minutes ($\frac{1}{4}$ to $\frac{1}{2}$ -mile) to access a transit stop. Bicyclists are willing to travel farther; according to the Pedestrian and Bicycle Information Center, trips taken by bike to access transit casts an extended net to two or three miles. Improving the quality of infrastructure within these radii can increase the likelihood that individuals choose to utilize public transit and can enhance safety for current users.

Walking to and from transit can also support healthy physical activity levels by increasing the amount of people who reach the recommended minutes of daily physical activity. For others, utilizing public transit can be part of an active transportation lifestyle and a means of reducing transportation costs.



Pecos Trails Transit System

Public transit in the City of Roswell is provided by the Pecos Trails Transit system, which operates seven days per week and had a total annual ridership of approximately 154,000 in 2017.⁴ The bus routes connect to major destinations across the City, with all routes converging at the Downtown Transit Center. Bicyclists are accommodated through racks outfitted on the front of each transit vehicle. The majority of transit riders in Roswell are children, seniors, students, and people with disabilities.

Improving Connections to Public Transit

Considerations should be made for safe, convenient, and accessible infrastructure around and leading to public transit stops and station areas. In addition to improved pedestrian facilities along transit routes, pedestrian-oriented improvements should be included at stop locations including

³ <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/64496/ftareportno01111.pdf>

⁴ https://dot.state.nm.us/content/dam/nmdot/Transit_Rail/NMTransitGuide2018Final.pdf

benches, shade trees or shelters, and clear waiting areas. See the **Pedestrian Priority Areas** and **Design Guidance** sections for pedestrian facilities for additional information. Bicycle improvements that enhance public transit usage consist of improved on-street bikeways that connect with transit routes and bike racks at major stops and station areas.

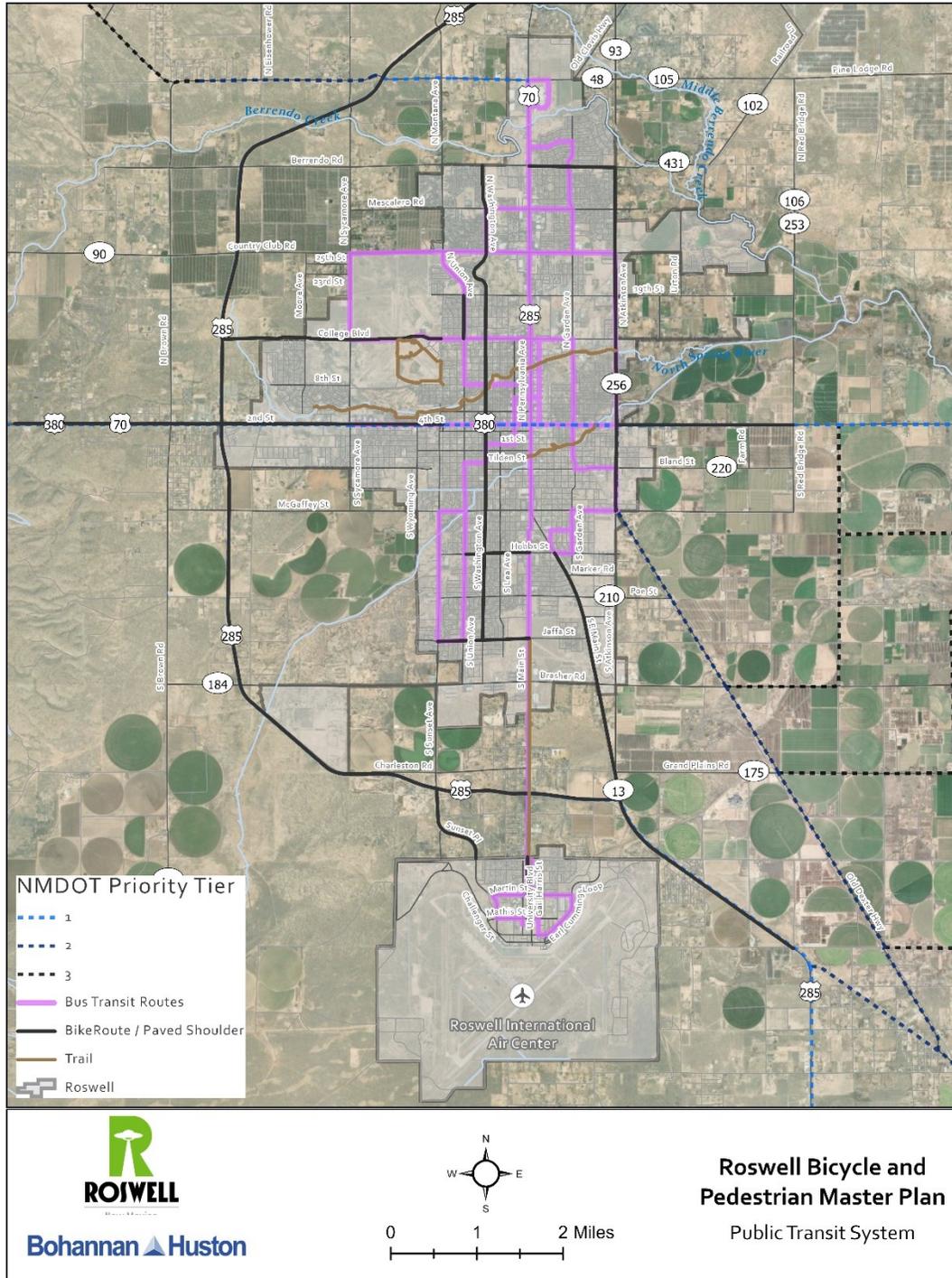
Policy Support for Transit Improvements

Major policy guidance for public transit in the City of Roswell is included in the Comprehensive Plan. Many of these items are focused on expanding and improving pedestrian infrastructure. Priorities include:

- To provide for cost effective and efficient transit services to youth, seniors, disabled, and other residents who do not drive or own a passenger vehicle
- Provide improvements to the Pecos Trails Transit system, including the systematic replacement of old buses and installation of new bus shelters
- Create a well-connected and accessible area for all transportation modes
- Make streetscape improvements throughout the Railroad District
- Creating a pedestrian focused area is paramount to the success of the Railroad District
- City should install or replace sidewalks, ADA ramps, curb and gutter, street lights, street furniture, and street trees throughout the area to make it more inviting to pedestrians

DRAFT

Figure 7: Pecos Trails Transit Routes



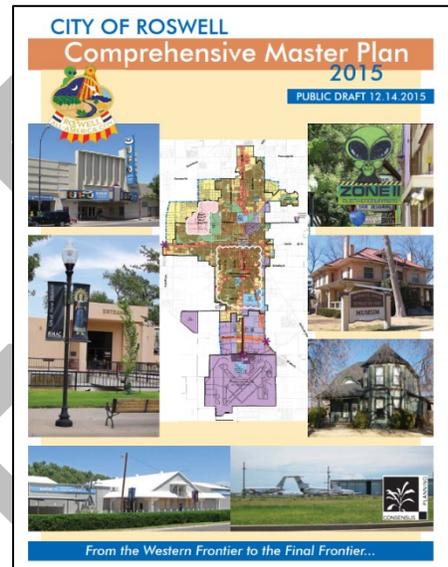
Policy & Planning Context

The City of Roswell has pursued and adopted various planning efforts in recent years that support investments in walking and biking infrastructure. This section summarizes these local initiatives as well as relevant statewide plans and programs.

City of Roswell Comprehensive Master Plan

Adopted in 2015, the most recent *City of Roswell Comprehensive Master Plan* is a policy document that helps guide physical growth and development in Roswell over the next 20 years. The Comprehensive Plan identifies community priorities and policy recommendations across a wide-range of issue areas.

With respect to the transportation system, the plan asserts that Roswell will pursue a balanced transportation system to efficiently move goods and people and address the need for clean and safe street conditions throughout the City. The plan recommends the City of Roswell prioritize bicycle and pedestrian infrastructure to ensure tourists and residents can safely and conveniently travel by foot or by bike. The plan also includes a bikeways and trails network map comprised of existing and proposed facilities. The Bike-Ped Master Plan updates and expands on that network, including more specific guidance on how the City of Roswell can achieve desired bicycle and pedestrian infrastructure improvements.

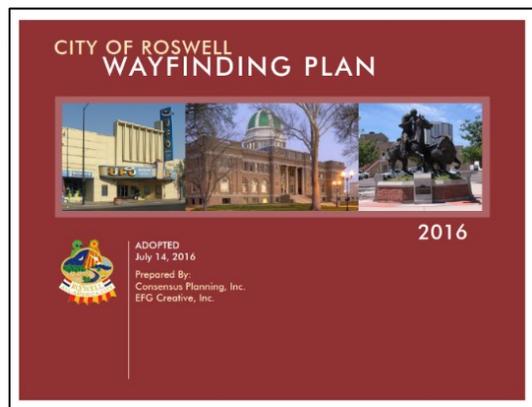


City of Roswell Wayfinding Plan

The *City of Roswell Wayfinding Plan*, adopted in 2016, was developed to promote a cohesive identity and sense of place for the city, and to make a lasting impression of Roswell as a welcoming place to visit. Specifically, the Plan promotes wayfinding as a way to capture tourists and encourage them to stay longer in the City of Roswell by making it easier to find destinations and attractions. A key aspect of this plan is ensuring that the wayfinding system is presented at a human scale and improves safety.

The Wayfinding Plan complements the *MainStreet Roswell Master Plan*, which recommends wayfinding specifically focused on downtown, by offering a City-wide scope to promote cohesiveness. According to the Wayfinding Plan, community elements to be highlighted through wayfinding should include existing historical, cultural, and recreational sites.

As Roswell builds out the on-street bikeways and trails networks, there is an opportunity to develop unique signage that guides visitors and residents to destinations across the city, while complementing the signage and other features promoted through the Wayfinding Plan.



Relevant Goals of the City of Roswell Wayfinding Plan

- Create a cohesive identity
- Emphasize a downtown and other areas in Roswell as a destination
- Enhance the visitor experience

ADA Transition Plan

The City of Roswell's ADA Transition Plan for Sidewalks, Roadways, and Accessibility was last updated in December of 2017. The purpose of this transition plan is to determine barriers for persons with disabilities and help identify improvements for new construction and reconstruction projects. Barriers associated with accessible travel in the City of Roswell include non-compliance because of signs, landscaping, and utility poles impeding on dedicated sidewalks. Additionally, about 15 percent of the roadways in the City of Roswell do not have curb and gutter and lack curb ramps or sidewalks. Of the roadways with curb and gutter, approximately 45 percent do not have curb ramps or sidewalks. Recommended improvements comprise implementing a barrier removal program, constructing new residential and commercial development, updating existing ramps as funding becomes available, working with NMDOT to assure compliance with ADA, and ensuring transit stops are accessible. The City also commits to dedicating funding towards ADA compliance projects.

City of Roswell Street Specifications

The Public Works Street Specifications document, most recently updated in 2005, provides technical guidance and information required for the design and construction of roadways in the City of Roswell. Among the guidance includes street widths, lane widths, sidewalks widths, as well as geometric criteria. Guidance in the Street Specifications is generally adapted from the NMDOT Standard Specifications document, while additional information is incorporated from the Subdivision Ordinance.

Per the Street Specifications, all sidewalks shall be 5 feet wide to ensure ADA compliance. Sidewalks are to be located flush with the curb for local streets and at the property line for roadways classified as arterials and collectors. Wider sidewalks may be placed flush with the curb on arterials and collectors with approval from the City engineer. The Street Specifications do not discuss the use of landscape buffers. On-street bikeways are also not included in the Street Specifications.

MainStreet Roswell

Main Street programs are part of a national movement to fuel revitalization in downtowns and main street corridors across the nation in order to celebrate character, preserve history, and catalyze economic returns. Transportation is a critical part of the success of Main Street communities, and solutions center on ensuring access to Main Street districts, walkability, and a general desire for people to park once and shop locally.

The City of Roswell is a dedicated MainStreet community consisting of property owners, banking institutions, residents, and other stakeholders. The program operates to strengthen historic preservation in downtown Roswell through rehabilitation efforts and building maintenance while also stimulating economic growth. Additionally, the program supports a myriad of events and

initiatives including downtown markets and the Shop Small Movement. More information can be found on the MainStreet Roswell website.⁵

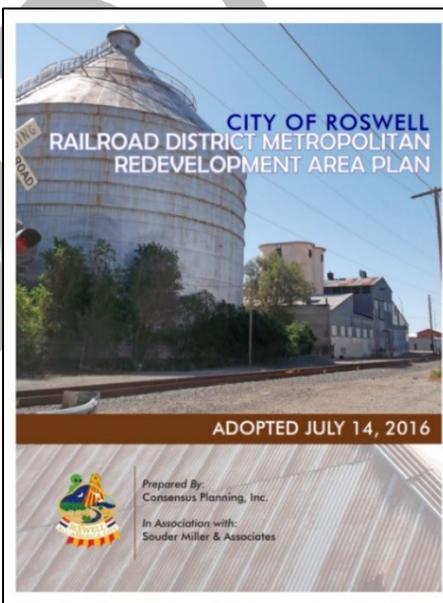
Old Municipal Airport Development

The City of Roswell is developing a master plan for the city-owned Old Municipal Airport area centered around College Blvd between Montana Ave and Sycamore Ave. The Master Plan identifies major development areas, transportation infrastructure, and other large features that are intended to support a walkable and bikeable mixed-use community and that creates housing types and lifestyle options that do not currently exist in Roswell. Though various steps remain in the implementation process, the master plan reflects a new development paradigm in the City of Roswell and may offer an example for incorporating multi-modal infrastructure into other development projects.

The Old Municipal Airport incorporates the existing trails and resources at the Cielo Grande Recreation Area – which comprises the southeast quadrant of the site – and the adjacent Recreation and Aquatic Center. The master plan proposal also includes multi-use trails and bike lanes along internal roads. Potential bikeway improvements along College Blvd are particularly important for connecting the area to the rest of the City of Roswell. Other routes where bicycle and pedestrian connections would be beneficial include Montana Ave and Sycamore Ave.

Railroad District Metropolitan Redevelopment Area Plan

The intent of the Railroad District Metropolitan Redevelopment Area Plan is for the Railroad District to become an extension of Downtown Roswell and serve as a vibrant place where Roswell residents can conveniently walk, bike, or drive to nearby community amenities, including museums and stores. MRA plans enable municipalities to designate areas as blighted and utilize public funds for redevelopment purposes, including public/private partnerships. The Railroad District is located to the immediate east of Main Street and encompasses the area from 2nd St to 8th and from Railroad Ave to Virginia Ave.



⁵ <https://mainstreetroswell.org/mainstreethome/>

In addition to proposing land uses, including public spaces and mixed-use areas, a primary objective of the MRA plan is to address infrastructure improvements to support private investment for redevelopment within the area. Overarching goals include creating a well-connected and accessible area for all transportation modes and promoting a district-wide “park once” strategy. The plan also identified public sector investments, including sidewalks, lighting, and curb and gutter as needed infrastructure improvements for the area. Identified investments that are relevant to this plan include:

- Improvements along 3rd St from Main St to Railroad Ave
- A pedestrian-only area along the railroad tracks between 5th St and 8th St
- Conversion of Railroad Ave as one-way from Second St to Fifth St
- Streetscape improvements throughout the District
- Installation of bicycle racks to serve residents and visitors
- Construction and installation of wayfinding elements

NM Bike Plan

The NM Bike Plan, the first comprehensive statewide effort of its kind, focuses on how to best provide residents and visitors with a safe and connected statewide bicycle network. The plan reflects the increased emphasis on the part of NMDOT toward multi-modal transportation and safety by applying priority tier designations to all facilities owned and maintained by NMDOT (i.e. US and NM highways). Tier designations are complemented by design guidance for appropriate infrastructure based on the roadway location and context. Implementation occurs by incorporating bikeway improvements into the roadway redesign and reconstruction process and during routine maintenance, when feasible. It is important to note that priority tiers do not reflect the order in which roadways will be improved, but the magnitude of benefits.

The NM Bike Plan serves as an important complementary document to the Bike-Ped Master Plan. US and NM highways form important parts of the Roswell area roadway network. Though improvements to these US and NM highways are not imminent – NMDOT will evaluate improvements as part of redesign and reconstruction efforts – it is important to consider how locally-owned roads integrate with the state-owned facilities and the role that NMDOT facilities can play long-term in bicycle connections across the City.

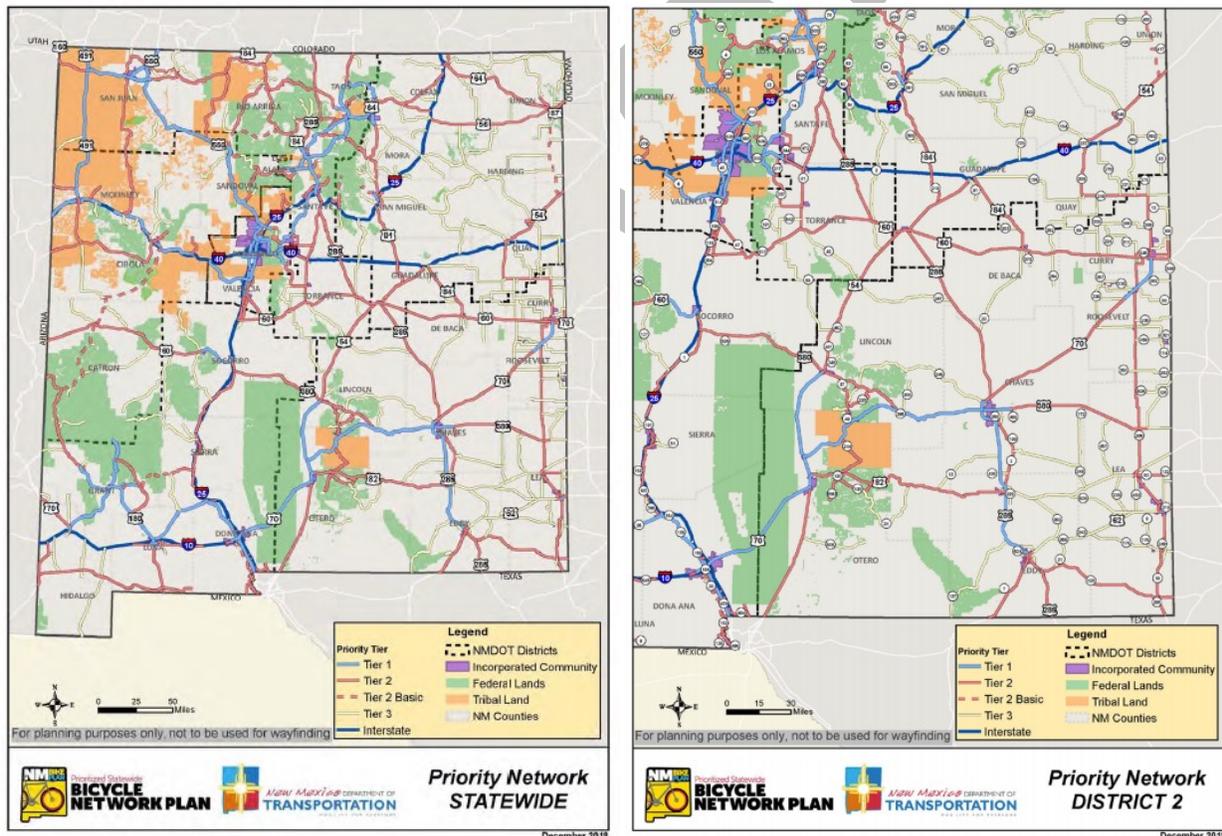


Priority Tiers for US and NM Highways in the Roswell Area

The priority tier system reflects routes that have current and potential demand for bicycling and that provide key long-distance connections. Tier 1 represents a bikeway that provides the greatest regional benefit. Tier 3 corridors indicate that no bikeway facilities are warranted. Tier 1 and Tier 2 highways identified as the highest priority in Roswell are shown below and in Figure 8.

- US 70 Relief Route – Tier 1
- US 70/2nd St – Tier 1
- US 70 (northeast of Roswell) – Tier 2
- US 285 (north of Roswell) – Tier 2
- NM 256/Old Dexter Highway – Tier 2
- Pine Lodge Rd – Tier 2/3
- NM 246 – Tier 3
- NM 253 – Tier 3
- NM 254 – Tier 3

Figure 8: NM Bike Plan Priority Network



NMDOT Policy Guidance

The plan overviews provided below should be considered for this plan because, as mentioned previously, US and NM highways pass through Roswell and are part of the overall City bikeway network. Improvements to these highways must consider and apply design and policy guidance at the state level. The City of Roswell should also be familiar with NMDOT policies as there are opportunities to collaborate with the NMDOT District Office to pursue projects on US and NM highways that would have benefits for Roswell residents. The City of Roswell can also leverage the recommendations from these plans for federal funding applications.

State Law NMSA 67-3-62 requires that provisions for pedestrian, bicycle, and equestrian traffic shall be considered as part of all NMDOT projects.

Bicycle Pedestrian Equestrian Advisory Plan and Pedestrian Safety Action Plan

The NM **Bicycle Pedestrian Equestrian Advisory Plan**, completed in 2009, sets forth statewide strategies and recommendations for active transportation. The plan is noteworthy in that it establishes active transportation as an area of emphasis. The plan specifically provides implementation guidance for safety, educational, and enforcement initiatives to create safer streets for all modes and encourage more people to bike and walk for transportation purposes. Beginning in 2020, NMDOT is developing a **Pedestrian Safety Action Plan** that identifies strategies for improving safety for non-motorists at both the statewide and local levels.

Strategic Highway Safety Plan

The Strategic Highway Safety Plan (SHSP) guides coordination of traffic safety programs throughout the state to help reduce fatal and serious injuries from crashes on New Mexico roads. The plan recommends the incorporation of bikeway infrastructure during reconstruction projects, and integration of bikeway improvements into resurfacing and other maintenance activities. Relevant strategies outlined in this plan for reducing crashes for bicycle fatalities and serious injuries on NM highways include:

- Consider bicycle usage and safety on shoulders
- Review guidelines and placement of rumble strips for safety of all users
- Develop guidelines and policies for safe interactions and connectivity of transit, pedestrian, and bicycle modes in planning and design of transportation facilities

Highway Safety Plan

The Highway Safety Plan (HSP) is required by the National Highway Traffic Safety Administration (NHTSA) and includes safety conditions and crash data in the state of New Mexico. Data-driven strategies are highlighted to address safety along NM highways to reduce crashes among all modes. Recommended strategies for increasing bicycle safety include educational efforts to promote safe driving behaviors and increasing awareness of bicyclists on the road.

PEDESTRIAN FACILITIES

General Considerations

As a policy, pedestrian facilities, should be provided in good condition throughout The City of Roswell. Sidewalks are the backbone for a pedestrian network and are the recommended pedestrian facility type, particularly for areas that generate high levels of pedestrian activity. Sidewalks in good condition constitute a five-foot minimum width to ensure compliance with the Americans with Disabilities Act (ADA), with a landscaping buffer recommended to further separate pedestrians from motor vehicles.

Major issues in the City of Roswell include limited sidewalk connectivity in some areas and existing sidewalks that do not meet ADA standards. This section identifies locations where the presence of sidewalks is most critical and evaluates conditions in those areas. This analysis – together with guidance contained in the Pedestrian and Bikeway Facilities Design Guide – provide the tools to address conditions for pedestrians across the City of Roswell.



From left: Recently-installed sidewalks along Montana Ave Uncontrolled crossing near ENMU-Roswell

Pedestrian Priority Areas

Pedestrian priority areas in the City of Roswell reflect locations where there are a high number of current or potential pedestrian trips and where the provision of quality sidewalks is most beneficial. Pedestrian priority areas also refer to locations where the City should pursue improvements proactively if there are sidewalks in poor conditions or few opportunities for individuals to safely cross the street.

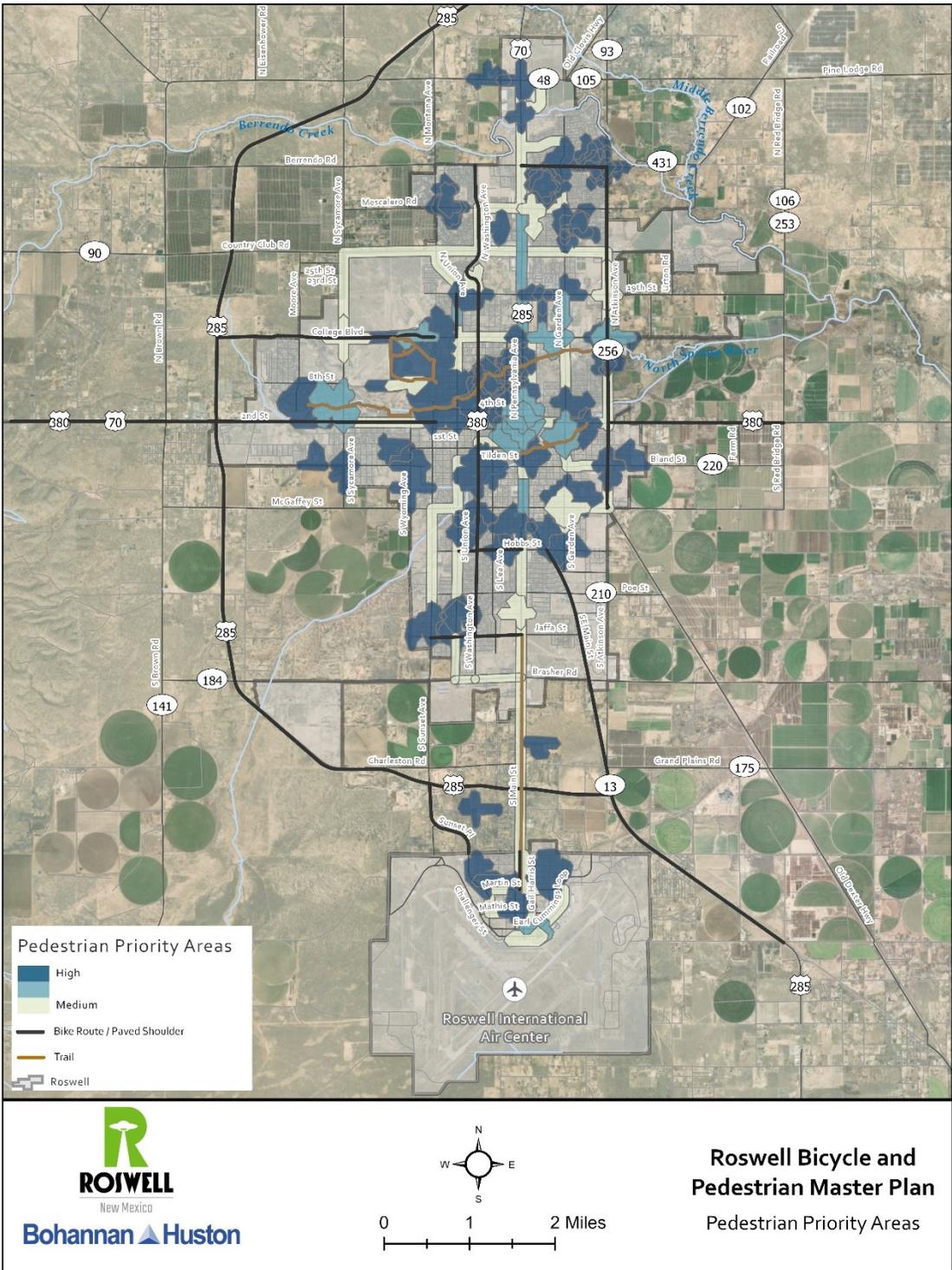
Pedestrian priority areas were developed using a walkable ¼-mile buffer around the major destinations identified by city staff and from public input collected through the online interactive map (see Figure 9 and refer to the **Major Destinations** section). Areas where destinations are clustered together are particularly high priorities for pedestrian improvements. Locations not identified on the map may be considered as low priority for proactive improvements by the City of Roswell. It is important to note that pedestrian facilities are still desirable in locations not identified as pedestrian priority areas and sidewalks should be included as part of new developments.

Desired Features in Pedestrian Priority Areas

The following design elements can reduce vehicle speeds and improve pedestrian safety and comfort level. These elements are especially important for pedestrian priority areas and should be applied whenever possible:

- Wide sidewalks with buffers
- Landscaping and street trees
- Pedestrian-scale lighting
- Slower posted speeds
- Reduced travel lane widths
- Signage and wayfinding
- Increased crosswalk frequency
- Curb extensions to reduce crossing distance

Figure 9: Pedestrian Priority Areas



Sidewalk Inventory Analysis

Purpose and Methodology

A sidewalk inventory analysis was completed for major roads (i.e. roadways classified as arterials and collectors) located in the pedestrian priority areas. Data collection included the presence of sidewalks and sidewalk width. For roadways with sidewalks, gaps were also identified for both sides of the roadway. A segment is considered to have a gap if there is missing or incomplete sidewalk for any portion of the segment (see Figure 10)).

Additional analysis was performed on the neighborhood or local streets that provide connections between pedestrian priority areas. This supplementary analysis was conducted to help inform the creation of a complete pedestrian network and better link the entire system together. Refer to Table 12 for the complete sidewalk inventory analysis for both major and local roads.

Components of Sidewalk Inventory Analysis

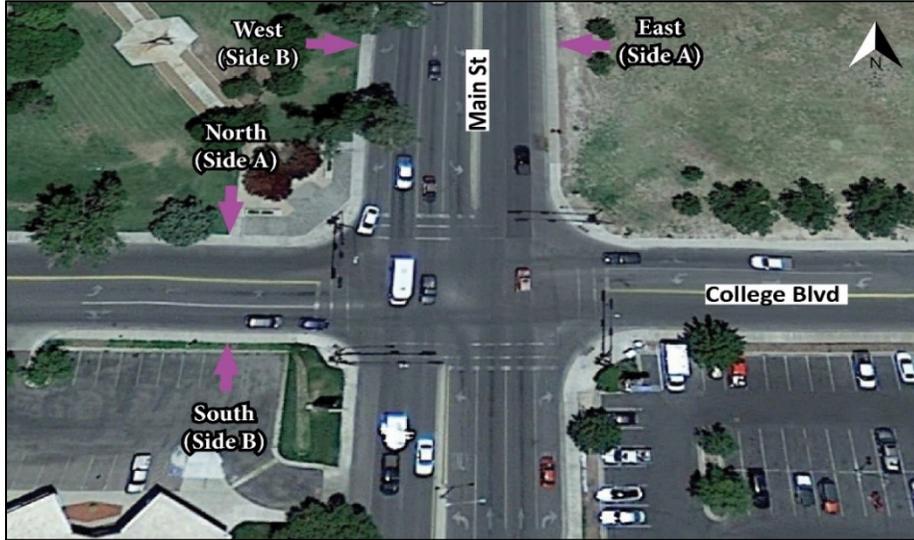
- Presence of sidewalks
- Gaps in existing sidewalks
- Sidewalk width

Figure 10: Sidewalk Gap along Country Club Rd



The sidewalk inventory analysis was completed using Google Earth and the street view application, with field sites performed as needed to supplement Google imagery. Measurements were documented for each side of the street (i.e. Side A and Side B) by segment (i.e. the stretch of roadway between major intersections or where major changes in roadway conditions or configuration occur). Figure 11 provides a visual of this analysis using College Blvd and Main St as an example. For instance, College Blvd runs east/west and sidewalks were documented in terms of the north and south sides of the street.

Figure 11: Example of Sidewalk Documentation along College Blvd & Main St



Source: Google Earth

Sidewalk Width and ADA Compliance

Where sidewalks are present, the width of the sidewalk was observed to determine deficiencies in infrastructure, including meeting ADA standards. The current ADA standard for minimum sidewalk width is 5 feet. Sidewalk widths between 4 and 5 feet may meet ADA standards if a passing zone of 5 feet or greater is provided at maximum intervals of 200 feet. Sidewalks that are 5 feet or greater are particularly desirable within pedestrian priority areas (refer to the **Design Guidance** section for more information). For these reasons, deficiencies in width was categorized as sidewalks less than or equal to 4 feet.

Major Roads

A total of 153 segments and almost 70 miles of arterial and collector roads were assessed; **Table 4** summarizes conditions along these facilities. Overall, sidewalks are present for about 60 percent of the major roads in pedestrian priority areas. Major roads where sidewalks are present along the entire roadway include Main St, Washington St, and 2nd St, have sidewalks along the entire roadway. A noteworthy roadway in pedestrian priority areas without sidewalks is McGaffey St.

Approximately 40 percent of the major roads with sidewalks include some form of gap. Frequent sidewalk gaps were observed along Sunset Ave, Garden Ave, 8th St, and 19th St, and small gaps were found along Atkinson Ave, Virginia Ave, Richardson Ave, Alameda St, and College Blvd.

Of the segments with sidewalks, the majority of facilities feature widths between 3 and 4 feet and therefore do not meet the current ADA standards. However, this also means there is an opportunity to improve a large number of sidewalks with modest investments, including the installation of regular passing zones or minor widening along the length of the sidewalk. Sidewalks along major roads that were more consistently observed as compliant with ADA standards include Main St, Bland St, and Garden Ave.

Table 4: Sidewalk Inventory Analysis for Major Roads by Side of Roadway

Analysis	Side A (East/North)			Side B (South/West)			Average
	Segments	Miles	Percent	Segments	Miles	Percent	
Sidewalks							
Yes	88	41.7	60%	95	44.5	64%	62%
No	65	27.9	40%	58	25.0	36%	38%
Total	153	69.6	100%	153	69.5	100%	100%
Gaps*/**							
Yes	34		39%	35		37%	38%
No	54		61%	60		63%	62%
Total	88		100%	95		100%	100%
Sidewalk Width*							
3-4'	65		74%	78		82%	78%
5' or greater	23		26%	17		18%	22%
Total	88		100%	95		100%	100%

*This data only includes locations where sidewalks are present (yes)

**Gaps were defined as having more than a minimal distance without sidewalks

Local Roads

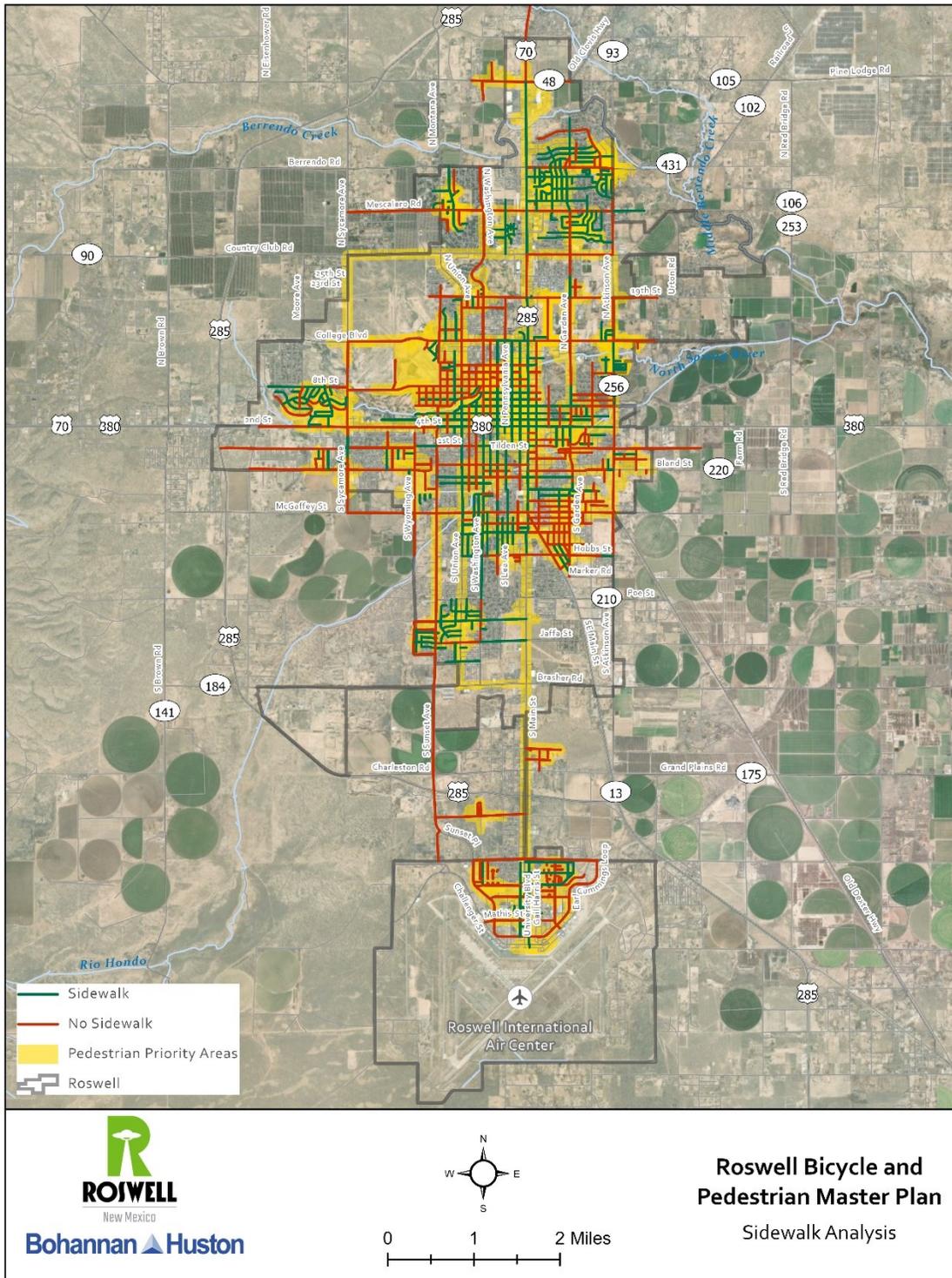
A more general assessment was completed for a total of 503 segments and almost 180 miles of local roads in pedestrian priority areas. Local roads were evaluated based on whether a sidewalk was or was not observed as being present on both sides of the road. A sidewalk was determined as being present if minimal to no gaps along the segment of the roadway were found.

Sidewalks are present about half of the time on both sides of the local roads, whereas about 60% of major roads feature sidewalks on both sides of the street.

Table 5: Sidewalk Inventory Analysis for Local Roads by Side of Roadway

Analysis	Side A (East/North)			Side B (South/West)			Average
	Segments	Miles	Percent	Segments	Miles	Percent	
Sidewalks							
Yes	302	90.0	50%	300	84.7	47%	49%
No	201	88.5	50%	203	93.8	53%	52%
Total	503	178.5	100%	503	178.5	100%	100%

Figure 12: Sidewalk Inventory Analysis for Local and Major Roads



TRAILS AND SHARED FACILITIES

General Considerations

Multi-use trails are integral components of quality of life for communities across the US. Well-located multi-use trails are popular among pedestrian, joggers, and bicyclists for both recreational and commuting trips, and are important from a transportation perspective by appealing to a broader range of users than on-street bikeways. The presence of trails has also been shown to boost economic spending at nearby businesses, provide access to jobs and community amenities, encourage physical activity and exercise at little to no-cost, and help create a more attractive environment.

However, there are still gaps in the network that limit the extent to which trails can be used for long-distance travel. This section describes existing trail facilities, potential improvements, and proposed extensions across the city. These improvements, when combined with on-street bikeways and pedestrian facilities form a complete and well-connected network that greatly enhance the ability for Roswell residents and visitors to travel across the city without a private vehicle. Existing trails in the City of Roswell are described below. Additional details are provided in Table 6.

Evaluation of Conditions along Roswell City Trails

Evaluation of trails can be completed using the Trail Evaluation spreadsheet provided in Appendix F to better address trail maintenance needs and identify potential improvements.

Trail extensions and new trails may be pursued in phases. Many of the projects described below would be strong candidates for federal funding grants administered through NMDOT. See the funding options in the **Implementation** section for additional information. Trails in the City of Roswell are generally maintained by the Parks and Recreation Department. Maintenance efforts are ongoing, including pavement restoration and regular resurfacing efforts, as appropriate.

Existing Trails Network

Spring River Trail

Existing Conditions

The Spring River Trail provides east/west connections across most of the City of Roswell, linking the Spring River Park & Zoo with Enchanted Lands park west of Sycamore Ave. Spring River Trail is the longest and most popular trail in Roswell and provides extensive opportunities for recreation and long-distance travel. Other major destinations linked by the Spring River Trail include Cahoon Park, the Roswell Museum, Civic Center, and other destinations near Downtown.



Proposed Improvements

The proposed improvements include minor extensions for Spring River Trail to both the east and the west. The east extension would include about 1.1 miles of trail and connect the existing facility with a future phase of the Hondo River Trail. The west extension would connect to 2nd St and require about 0.35 miles of additional trail. The west extension should be considered a near-term priority, while the east extension may be considered a long-term priority. Other near-term priorities include additional lighting and resurfacing.

Hondo River Trail

Existing Conditions

The Hondo River Trail connects East 2nd Street with Main St south of Downtown and is a little over a mile long. The trail offers direct access to Hondo Park and the Boys and Girls Club of Roswell and provides a useful connection for bicyclists who may wish to avoid the highly trafficked areas around Downtown and along 2nd St.



Proposed Improvements

There are meaningful opportunities to extend the Hondo River Trail a significant distance in each direction. The ultimate vision is to connect the trail to the Spring River with the Spring River Trail extension to the east and Relief Route/Highway 285 to the west. Extensions to the Hondo River Trail may be considered medium-to-long term priorities. Near-term priorities along the Hondo River Trail include additional lighting and security measures, as user safety and security were identified as issues during the public and stakeholder outreach process.

Cielo Grande Trails

Existing Conditions

The Cielo Grande Trail consists of two loops totaling a little over two miles located around and through the Cielo Grande Recreational Area. Various access points connect the trail network to the adjacent neighborhoods. The Cielo Grande Trail network is used primarily for recreational purposes, though improvements along College Blvd and Montana Ave could allow the trails to be used as a connection for longer-distance trips. Sidewalks were recently-installed along Montana Ave south of College Blvd, improving access to trails network and creating a connection to the Recreation and Aquatic Center.



Proposed Improvements

No improvements are identified at this time. However, an access trail could be pursued through the Nancy Lopez Golf Course to connect the residential areas to the south of 2nd St/US 70 with the Cielo Grande Recreation Area. A logical access point could be at Nevada Ave and 4th St.

South Main St Trail

Existing Conditions

The South Main St Trail runs parallel to the Main St on the east side of the roadway. The trail appeals to recreational users and commuters and generally connects the Airport and ENMU-Roswell with the south Downtown area. However, the trail currently terminates at Jaffa St to the north and Hobson Rd to the south, leaving gaps on both ends.

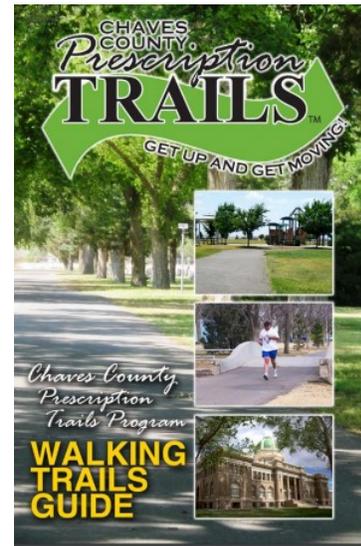


Proposed Improvements

The South Main St Trail could be extended south from Hobson Rd to Martin St. This extension would improve connections to ENMU-Roswell and University High School and should be considered a near to medium-term priority.

Chaves County Prescription Trail Program

The Chaves County Prescription Trail Program encourages people to walk or wheelchair roll more throughout the day to promote healthy lifestyles. The program provides prescriptions for safe and convenient walking routes and paths, trails, and parks in the City of Roswell, Bottomless Lakes State Park, Lake Van, Town of Dexter, and Town of Hagerman. Community members can also use the *Walking Trails Guide* as part of educational efforts supported by the program. The guide includes maps for different walking routes throughout Chaves County, walking tips, a walking log, and general descriptions for some of the best places to walk around the area.



Proposed Trails

This plan identifies the following proposed trails and trail connections. These additional facilities would enhance connectivity and provide greater recreational and commuting opportunities at the local and regional level. Proposed trails are summarized in Table 7..

Sycamore/Cielo Grande Access Trail

The Sycamore/Cielo Grande Access Trail crosses through undeveloped land and links proposed bikeways along Sycamore Ave with the Cielo Grande Recreation Area near Country Club Rd. An access point at the southern end of the trail includes a spur to the Cielo Grande Trail Network. The proposed trail passes through the Old Municipal Airport development area and the alignment and the alignment is subject to change. Improvements along Sycamore Ave are also necessary to improve connectivity and to ensure bicyclists can make safe connections on the west side of the trail. This trail may be considered a medium-term priority.

McGaffey Trail

The McGaffey Trail links McGaffey St with the proposed extension of the Hondo River Trail in southwest Roswell via a 1.0 trail through undeveloped land. The trail may be considered a long-term priority and is appropriate only after the Hondo River Trail is extended.

BNSF Rail Trail

Another proposed trail is the BNSF Rail Trail. This would transform the former BNSF rail line corridor on the east side of the city into a trail connecting to the overall bikeway and pedestrian system. Converting old rail lines into trails is a common practice successfully applied across the country, a trails movement spurred in response to the high demand for new trails within communities. The construction of this trail is dependent upon several factors including successful negotiations with the railroad. Refer to the **Rails-to-Trails** section below for more information.



Cape Cod Rail Trail - Source: Wikipedia

Rails-to-Trails

The BNSF Rail Trail could follow the model of rail-to-trails programs across the country. Many railroad lines have fallen into decline over time, leaving miles of abandoned corridor lines across the landscape. However, abandonment creates an untapped community resource that can provide value to residents and visitors through recreational opportunities.

The conversion of abandoned railroad lines into trails, referred to as rails-to-trails or rail-trails, connects people with nature and can close existing gaps and create additional connections between and within communities. Today, over 2,000 rail-trails and almost 25,000 miles of trails dedicated to non-motorized activities have been constructed (<https://railstotrails.org>).

Pecos Valley Regional Trail Connections

The Pecos Valley Trail is a regional initiative to link together a series of recreation and natural areas and tourist sites while providing connections to the City of Roswell. The project is led by NMDOT and is noteworthy for the collaboration among a range of agencies and jurisdictions, including Chaves County, Bureau of Land Management, Bitter Lake National Wildlife Refuge, Bottomless Lakes State Park, and others, and highlights the natural beauty and diversity of landscapes and habitats in the area.

The route features a combination of paved and unpaved trails, depending on the surrounding context, as well as on-street connections. The proposed bike network provides connections across the City of Roswell that ultimately link with the Pecos Valley Trail project. The project is estimated to cost approximately \$4.4 million dollars, and NMDOT has secured the majority of the funds through a grant from the Federal Lands Access Program (FLAP).

As the Pecos Valley Trail project advances, the City of Roswell may consider a marketing campaign to seize on the tourism potential associated with the project. The Dragonfly Festival, Crane's and Cocoa, hunting activities, and other events at BLNWR currently draw a substantial amount of people to the refuge. By combining existing city, county, state roads, and new trails with recreational sites, this project has the potential to attract new tourism to the region, including road cyclists, and allow residents to travel longer distances and experience new recreational opportunities.

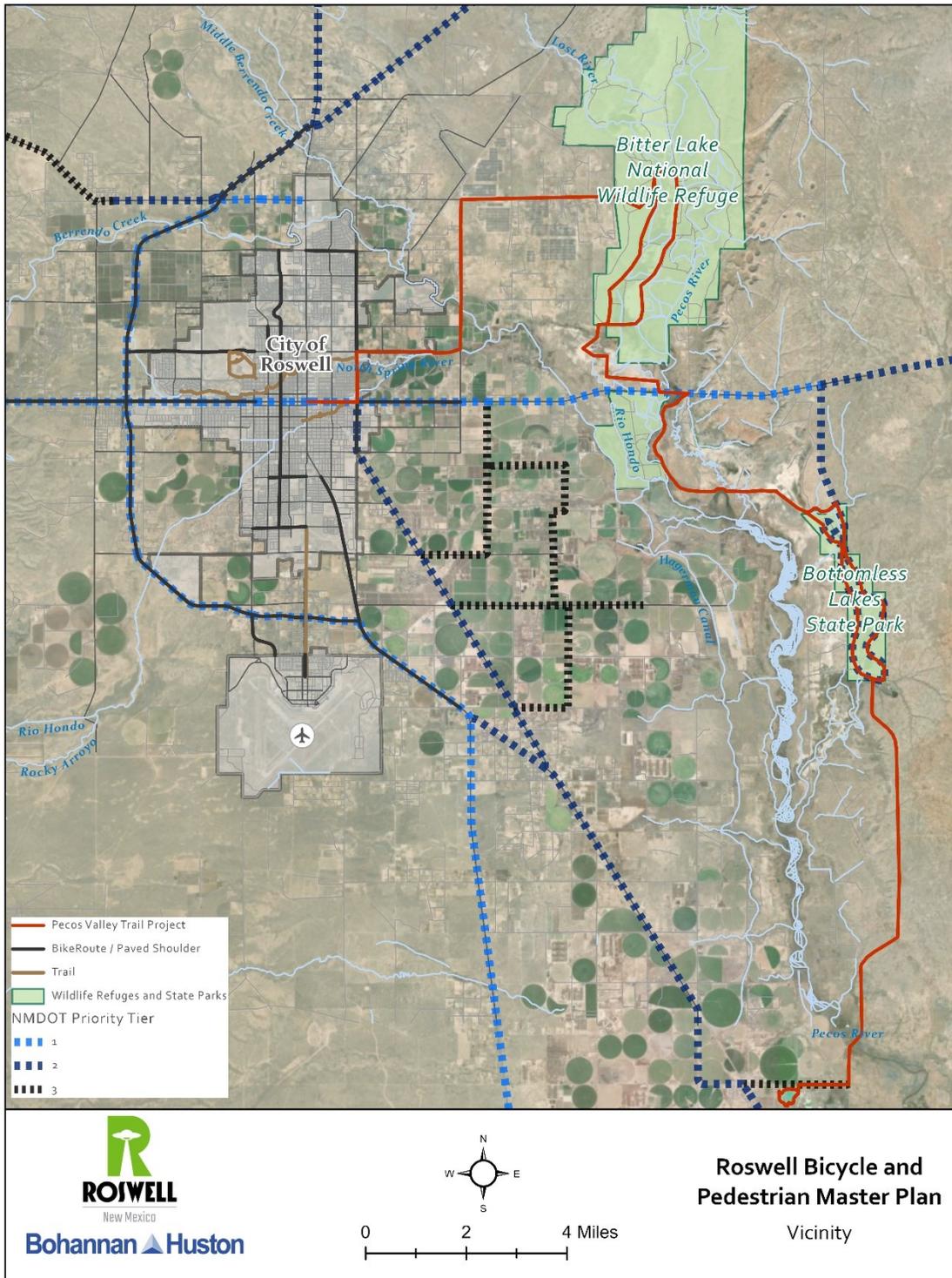
Table 6: Proposed Improvements for Existing Trails

Trail Name	Distance (Miles)	Location	Major Destinations and Connections	Proposed Improvements
Spring River Trail	4.08	East-west: Spring River Park & Zoo to Riverside Dr and Highland Rd	Spring River Park & Zoo, Loveless Park, Spring RV Park, N Main St, Goddard Planetarium, Roswell Museum & Art Center, Roswell Adult Center (RAC), Cahoon Park, J Kenneth Smith Bird Sanctuary and Nature center	Regular resurfacing Lighting, security Signage/wayfinding Trail extensions (see below)
Hondo River Trail	1.1	East-west: 2nd St and Orchard Ave to Main St and Hendricks St	Hondo Park, Farmers Country Market, Headstart Center, Boys & Girls Club of Roswell, Family Dollar	Regular resurfacing Lighting, security Signage/wayfinding Trail extensions (see below)
Cielo Grande Recreation Trails	2.24	Loop trails through Cielo Grande Recreation Area	Access from College Blvd and Montana Avve; Recreation and Aquatic Center	Regular resurfacing Lighting, security Signage/wayfinding External trail connections (see below)

Table 7. Proposed Trails

Trail Name	Distance (Miles)	Location	Major Destinations and Connections	Existing Conditions	Time-frame
Spring River Trail - West Extension	0.34	West end of Spring River Trail to 2nd St; alongside Riverside Dr	US 380/2nd St, West Roswell	Undeveloped land; Riverside Dr	Near Term
Spring River Trail - East Extension	1.08	Atkinson Ave to Hondo River Trail Extension; Primarily through Chaves County land	Spring River Park and Zoo; regional connection to Red Bridge Rd	River; agricultural land	Medium
Hondo River Trail - West Extension - Part 1	1.5	Southwest from Richardson Ave to Sunset Ave along river corridor	Bikeways along Deming St, Washington Ave, Sunset Ave	River corridor	Medium-Long Term
Hondo River Trail - West Extension - Part 2	3.12	Sunset Ave to US 285 Relief Route along river corridor; Primarily through Chaves County land	Regional connection to US 285 Relief Route	River; agricultural land	Long Term
Hondo River Trail - East Extension	2.67	US 380/2nd St to Red Bridge Rd; Primarily through Chaves County land	Regional connection to Red Bridge Rd	River; agricultural land	Medium-Long Term
S Main St Commuter Trail	2.46	Hobson St to Earl Cummings Loop	ENMU-Roswell, Roswell International Air Center, various schools, existing S Main St trail	Undeveloped land	Medium Term
Sycamore Trail	1.32	Northwest of Cielo Grande Recreation Area; Old Municipal Airport	US 285 Relief Route, Cielo Grande Recreation Area	Undeveloped land	Medium Term
McGaffey Trail	1.02	Southwest of Roswell city limits, south of McGaffey St	Hondo Trail, McGaffey St	Agricultural land	Long Term
Spring River-Cielo Grande Connection	0.92	West of Cielo Grande Recreation Area; Old Municipal Airport	Cielo Grande Trail to Spring River Trail	Undeveloped land	Near Term
BNSF Rail Trail	6.26	Old BNSF rail line (eastern portion of the City)	Pine Lodge Rd, Atkinson Ave	Rail corridor	Medium Term

Figure 13: Pecos Valley Trail Integration Project and Regional Connections



ON-STREET BICYCLE FACILITIES

General Considerations

To complement the system of trails and to encourage bicyclists beyond recreational users, there must be a complete network that allows individuals to access major destinations across the city. A series of bicycle routes were previously proposed in the City of Roswell Comprehensive Plan (2015); bikeway facilities along roads owned and maintained by the State of New Mexico are also considered in the NM Bike Plan. While some of these routes feature signage, such as Washington Ave, or wide paved shoulders that are generally appropriate for many bicyclists, such as Hobbs St or Atkinson Ave, most routes do not offer dedicated bikeways or other improvements that would improve conditions for bicyclists.

To better understand the bicycling opportunities across the city, the Project Team reviewed existing conditions along previously identified facilities and other potential routes. The resulting Proposed Bikeways and Trails Network can be found in Figure 13. Steps in this process included:

- Defining existing facilities by type
- Understanding the quality of bikeways and user comfort level (i.e. level of service)
- Identifying potential on-street routes and facility types

Figure 14: Examples of Existing Bikeways in Roswell



From left: Bike route signage on Washington Ave; Paved shoulders on Atkinson Ave; Paved shoulders on Hobbs St

On-street Bikeway Facility Type Definitions

For the purposes of this plan, facility types are based on the following definitions (see Figure 14). Refer to the **Design Guidance** section for more information.

- *Shared Roadway*: Roadways where bicyclists and motor vehicles share the same paved travel area. These roadways may feature wide lanes that allow for bicyclists to travel on the roadway edge. While many routes identified in the Proposed Bicycle and Trails Network may be currently classified as such, shared roadways are not a formal bicycle facility type. Improvements are desired to transform these routes into one of the other facility types defined below.
- *Bike Route*: Bike routes may be one of two types. **Rural bike routes** generally feature paved shoulders where bicyclists may travel long distances and connect to regional destinations. Low volume roads with no shoulders present may also be designated as bike routes. **Urban bike routes** include local or residential roadways with some signage and/or pavement markings but no dedicated bike lanes. Bike routes through residential areas may be implemented as a short-term measure and upgraded to bicycle boulevards over time.
- *Bicycle Boulevard*: Residential streets with low volumes and speeds where regular signage and pavement markings are applied to alert motorists of the presence of bicyclists and to help provide directional guidance for bicyclists. Traffic calming is often applied to offer a low-stress alternative to traditional bike routes. Bike boulevards are typically located in more dense urban areas to increase bicycle comfort and alert motor vehicles of the presence of bicyclists. There are currently no roadways that can be classified as bicycle boulevards in Roswell, though several bicycle boulevards are proposed in this plan.
- *Conventional Bike Lane*: Roadways with a dedicated space for bicycle travel generally located on the edge of the paved roadway surface area immediately adjacent to motor vehicle traffic or on-street parking. Pavement markings and signage are also applied periodically. Conventional bike lanes could be easily implemented along existing roadways through striping and the installation of signage and pavement markings.

Bicycle Level of Service Analysis

Methodology

Bicycle level of service (LOS) analysis was completed for existing bike routes and roadways identified for future on-street bicycle improvements. This analysis is a commonly used best-practice in bicycle planning to consider user traffic characteristics, bicyclist comfort level, and general infrastructure quality. Bicycle LOS helps identify how existing and proposed bikeways can or should be improved.

The following attributes were evaluated as part of the bicycle LOS analysis:

- Number of lanes
- Daily traffic volume
- Posted speed limit
- Percentage of heavy vehicles
- Width of outside lane
- Width of bike lane (if present)
- Width of on-street parking (if present)
- Total paved travel area
- Pavement conditions

Based on the composite set of conditions, roadways received a bicycle LOS designation as High, Medium, or Low. A bicycle LOS of *low* indicates there are uncomfortable and/or unsafe conditions for bicyclists and the quality of infrastructure to support bicycling is poor.

Findings

The Bicycle LOS for the existing bikeway network, including City of Roswell streets and NMDOT highways, is shown in Figure 17. Overall conditions across the city are variable and reflect the need for general investments in on-street bikeways. However, in many cases, improving conditions for bicyclists involves only modest interventions. Many roadways, such as Union Ave and Sycamore Ave, feature adequate paved travel areas and relatively low traffic volumes, making it possible for bicyclists to comfortably ride along the edge of the roadway. For these roadways, issues arise from the lack of separation from motorists through features such as a lack of delineated bike lanes. See Appendix A for examples of bikeway facility improvements within the existing right-of-way that would significantly improve bicycle LOS.

Another major consideration is roadway surface quality. Many roadways in the City of Roswell feature pavement in poor condition, which negatively affects the user comfort level and can also act as a deterrent for potential bicyclists. Poor roadway conditions are reflected in the LOS for many roadways listed below.

Low LOS Routes	High LOS Routes
<ul style="list-style-type: none"> • 2nd St (portions) • College Blvd • Garden Ave • Old Dexter Hwy • Pine Lodge Rd • Sycamore Ave 	<ul style="list-style-type: none"> • 2nd St (portions) • 19th St • Atkinson Ave (north) • Berrendo St • Jaffa St • Montana Ave • US 285 Relief Route • Washington Ave

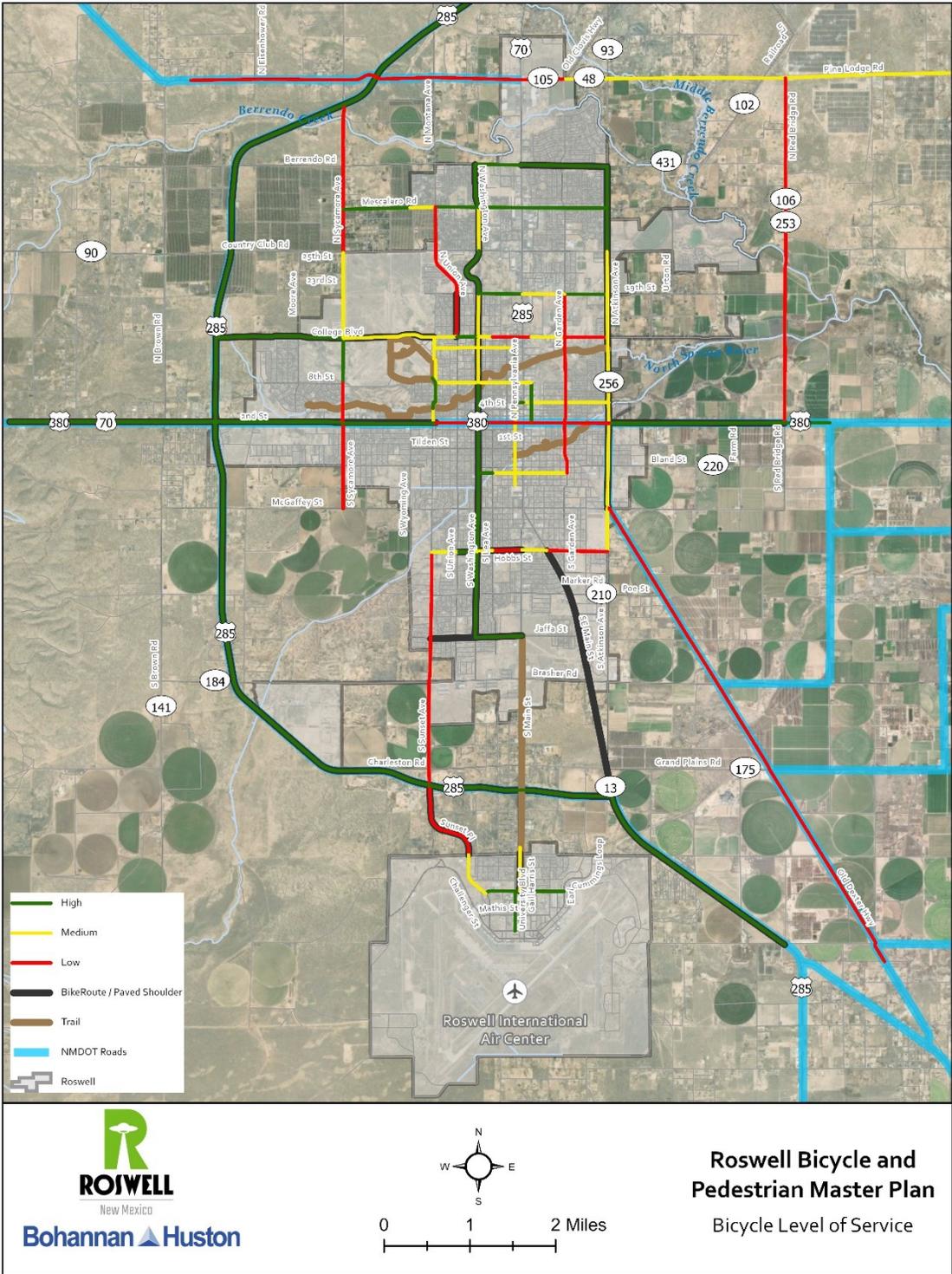
Figure 15: Low Bicycle LOS – College Blvd



Figure 16: High Bicycle LOS – Relief Route



Figure 17: Bicycle Level of Service along Selected Routes



Proposed Bikeways Network

The proposed bicycle network includes conventional bike lane facilities, bicycle boulevards, and bike routes (see Figure 18). This network was developed based on a review of major destinations, input from the public and agency staff, and findings from the LOS analyses. The intent of this network is to generate a more complete bicycle system that appeals to all comfort levels. The network is intended to link together major destinations, provide access to trails, and to complement the state highway network where bikeways facilities will be implemented over time. More information on specific roadways and their associated proposed improvements is provided below. Consult the **Design Guide** section for additional design considerations for these facility types.



Conventional Bike Lanes

Locations where conventional bike lanes are desired are listed below. Roadways with wide existing lanes or paved shoulders are optimal candidates for conventional bike lanes. College Blvd is particularly noteworthy and a high priority route for the City of Roswell. Refer to Appendix B for conceptual layouts and descriptions of roadway improvements required for the installation of continuous bike lanes along the corridor. 2nd St is also noteworthy as bike lanes along the corridor would provide connections across the city, including to various north-south bikeways. An NMDOT facility, US 380 is included in the NM Bike Plan as a Tier 1 facility, meaning wide bike lanes are a high priority when roadway improvements are undertaken along the corridor.

East/West

- College Blvd: Atkinson Ave to Sycamore Ave
- 2nd St: Within City limits (*NMDOT Facility*)
- Hobbs St: Main St to Sunset Ave

North/South

- Atkinson Ave: Berrendo Rd to McGaffey St
- Main St: US 285 Relief Route (south) to Martin St
- Garden Ave: 19th St to Deming St
- Union Ave: 19th St to College Blvd
- Sycamore Ave: Country Club Rd to 2nd St

Bicycle Boulevards

Residential streets with low traffic volumes (less than 3,000 ADT) and speeds (less than 25 mph), in relatively dense urban areas, are appropriate roadways for the installation of bicycle boulevards. The recommended bicycle boulevard routes listed below include roadways that provide access to major destinations, such as Montana Ave which connects to the Recreation and Aquatic Center and the Cielo Grande Recreation Area, and Virginia Ave which provides access to the Railroad District. Richardson Ave and 13th St are parallel routes to Main St and College Blvd respectively, and creating bicycle boulevards along these roadways would offer a logical alternative for bicyclists that may not feel as comfortable riding alongside traffic on busy roads.

East/West

- 5th St: Atkinson Ave to Richardson Ave
- 8th St: Virginia Ave to Montana Ave
- 13th St: Richardson Ave to Montana Ave
- Deming St: Garden Ave to Washington Ave
- Jaffa St: Main St to Sunset Ave

North/South

- Virginia Ave: 8th to 2nd St
- Richardson Ave: College Blvd to Summit St
- Montana Ave: College Blvd to 2nd St

Bike Routes

Locations where formalized bike routes are desired are listed below. These roadways offer wide travel or paved shoulders where modest improvements could improve conditions for bicyclists. The roadways listed below are generally in more rural parts of the city where full bike lanes are not necessary.

East/West

- 19th St: Atkinson Ave to Washington Ave
- Berrendo Rd: Atkinson Ave to Washington Ave
- Brasher Rd: Main St to Sunset Ave
- College Blvd: Sycamore Ave to US 285 Relief Route
- Hobbs St: Atkinson Ave to SE Main St
- Martin St: Earl Cummings Loop to Earl Cummings Loop
- Mescalero Rd: Atkinson Ave to Sycamore Ave
- McGaffey St: Sycamore Ave to Co Rd 188
- Pine Lodge Rd: Hickman Rd to Main St
- SE Main St: Hobbs St to US 285 Relief Route

North/South

- US 285 Relief Route: N Main St to S Main St (*NMDOT facility*)
- Atkinson Ave: Hobbs St to McGaffey St
- Earl Cummings Loop: Hobson Rd to Martin St
- Main St: Hobson Rd to Martin St
- Montana Ave/Union Ave: Mescalero Rd to 19th St
- Red Bridge Rd: Pine Lodge Rd to 2nd St (*Chaves County facility*)
- Sunset Ave/Sunset Pl: Hobbs St to Hobson Rd
- Sycamore Ave: US 285 Relief Route to McGaffey St
- University Blvd: Martin St to Earl Cummings Loop
- Washington Ave: Berrendo Rd to Jaffa St



Figure 18: Proposed Bikeways and Trails Network

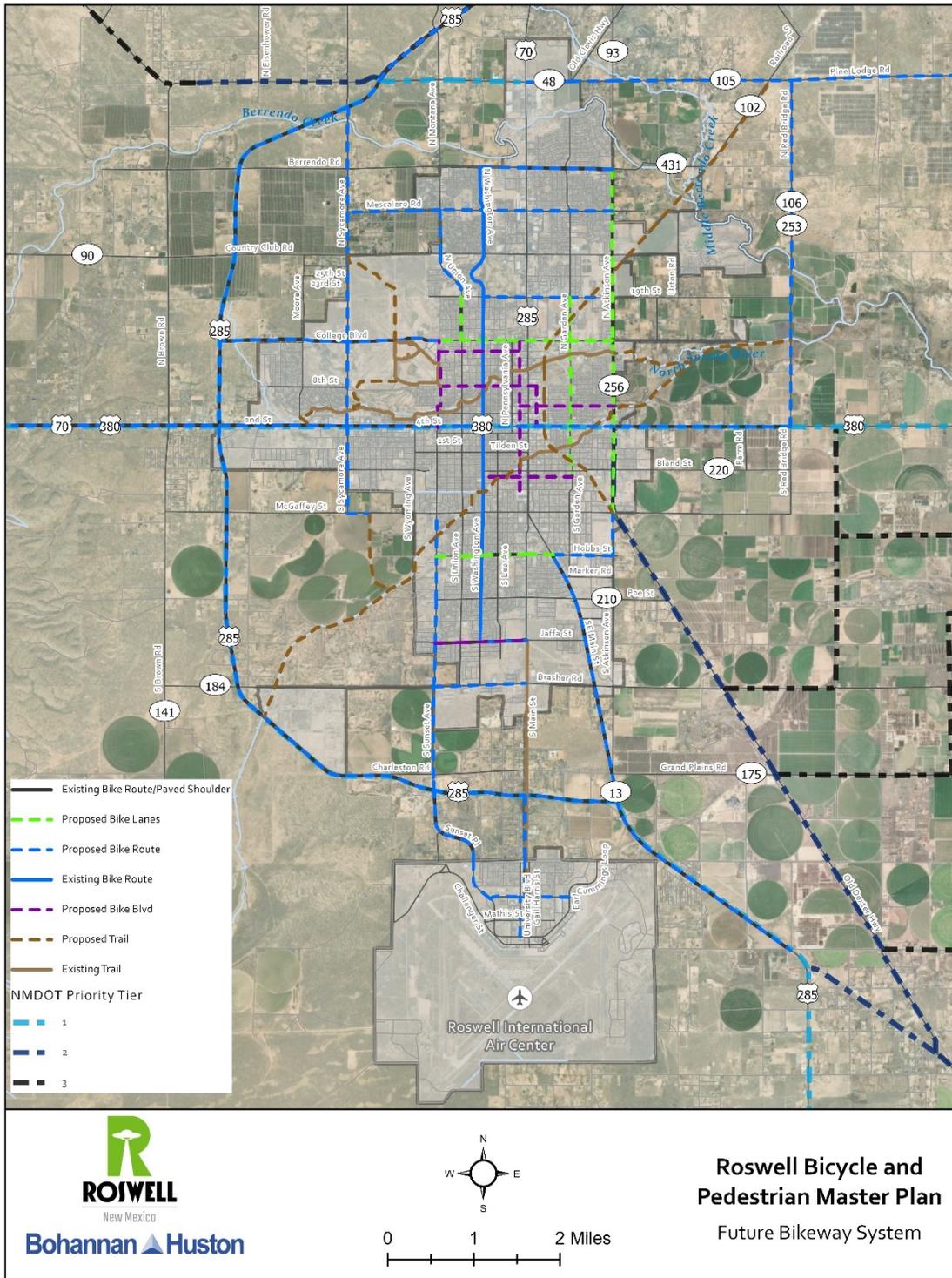
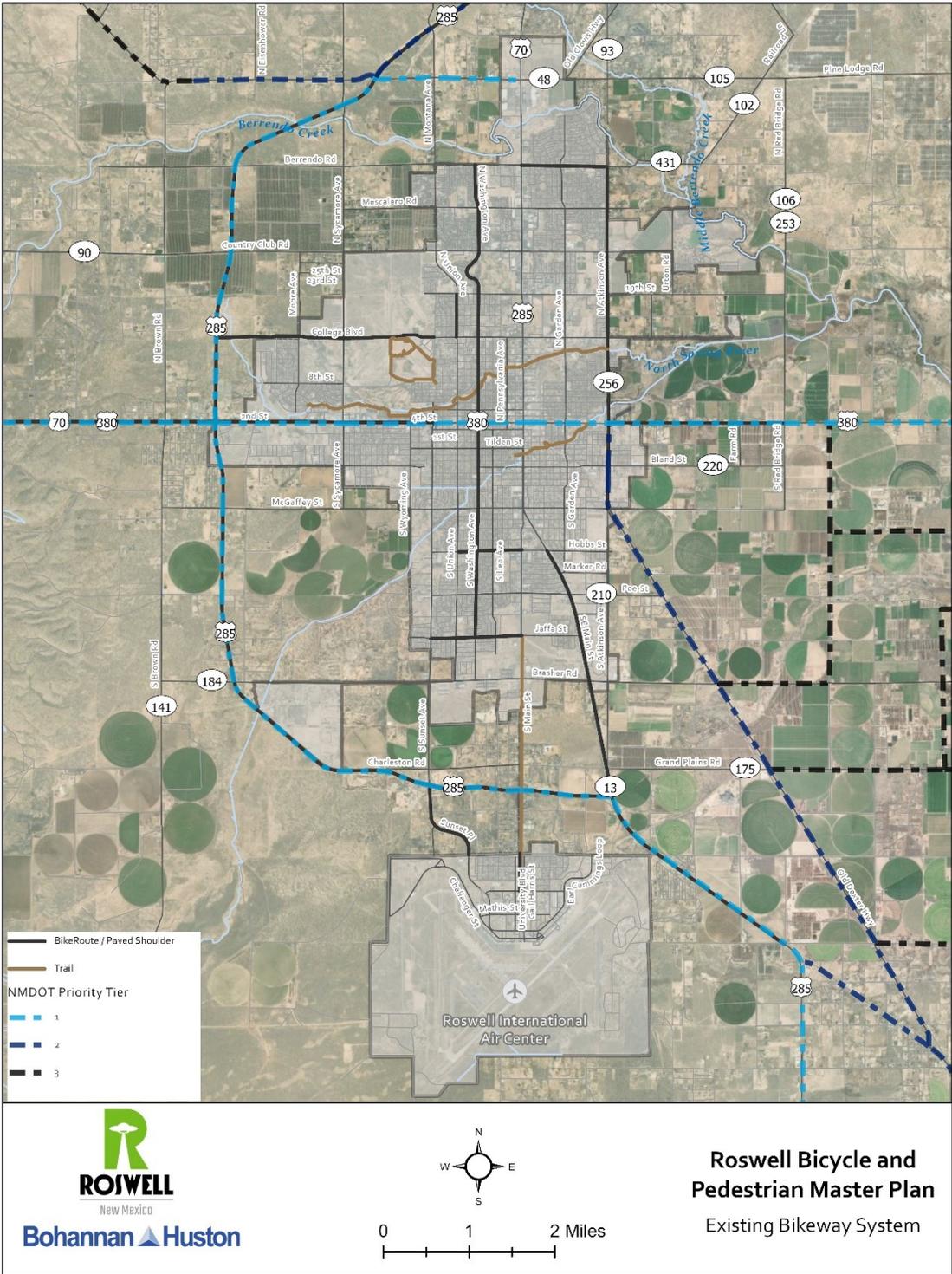


Figure 19: Existing Conditions along Bikeways Network



PEDESTRIAN & BICYCLE FACILITIES DESIGN GUIDE

Introduction/Purpose

This section complements the proposed bikeway and trail network and designated pedestrian priority areas by providing the tools to allow City staff to implement improvements over time according to the. Though the design guide does not specify the design features that should be implemented on each individual corridor or location, this section includes definitions, appropriate locations, and design considerations for the application of pedestrian and bicycle facilities throughout the City of Roswell.

Improvements may be applied proactively in the form of dedicated bicycle and pedestrian projects or as part of roadway improvement and rehabilitation projects. Guidance included within this section should also apply to new roadways and roadways subject to improvements or rehabilitation.



Uncontrolled crossing with flashing beacons along Main St

ADA/PROWAG Standards

The American's with Disabilities Act of 1990 (ADA) established minimum standards for the design of newly constructed or altered facilities to ensure they are accessible and usable by people with disabilities. These standards were updated in the *2010 ADA Standards for Accessible Design*. The *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way* (PROWAG) apply to pedestrian facilities in the public right-of-way to ensure they are accessible and usable by people with disabilities. These guidelines can be used in addition to the 2010 ADA standards.

Major considerations for compliance with ADA/PROWAG standards include the slope of curb ramps, cross slopes along sidewalks and trails, ensuring pedestrian facilities are free from obstructions, and maintaining sufficient width or clear pedestrian zones.

All new streets in the City of Roswell shall be designed in accordance with ADA/PROWAG standards. When completing roadway improvements or rehabilitation of existing roadways, all efforts should be made to conform to ADA/PROWAG standards. Such roadway improvements are a major opportunity to incorporate bicycle and pedestrian facilities. Where PROWAG standards differ from ADA standards, ADA shall be used.

Pedestrian Facilities

This section describes pedestrian facilities for roads owned and maintained by the City of Roswell. Pedestrian facilities provide necessary infrastructure for walking and allow people to access major destinations; facility types and design vary by location and include sidewalks and pedestrian lanes. Trails can be used as alternative options for pedestrian facilities where appropriate. See the **Trails and Shared Facilities** section for additional guidance.

Additional infrastructure and street elements that supporting walkability are found in the **Street Network Elements and Pedestrian/Bicycle Friendly Design** section. These street elements are highly encouraged in pedestrian priority areas whenever possible. Refer to the **Pedestrian Priority Areas** section for more information.

Sidewalks

Definition and Appropriateness: Sidewalks physically separate pedestrians from the road and provide a safe facility for walking. Sidewalks can be attached or detached; detached sidewalks should be installed whenever possible. Sidewalks are acceptable on all roads but only appropriate and cost-effective on more urban or residential corridors. When installed, they should be placed on both sides of the street. Sidewalks are especially important in pedestrian priority areas.



Design Considerations: Sidewalks should be a minimum of 5 feet to ensure compliance with ADA, with a recommended minimum width of 6 feet. Additional width is desired along major roads in pedestrian priority areas. Sidewalks can either be located immediately adjacent to the road or combined with a landscape buffer to increase the distance between pedestrians and motor vehicle traffic. Sidewalks must comply with ADA and PROWAG standards. Table 8 provides a summary of the recommended sidewalk and landscaping buffer widths for pedestrian priority areas and other locations across the City of Roswell. Refer to the **Landscape/Buffer Zones and Street Trees** section for more information on landscaping recommendations.

Table 8. Recommended Minimum Sidewalk and Landscaping Buffer Widths

	Pedestrian Priority Areas	Other Locations
Sidewalk Width	6-8'	5-6'
Landscape Buffer Width	4-6'	0-4'

Source: FHWA

Pedestrian Lanes

Definition and Appropriateness: Pedestrian lanes are on-street walking routes that may be applied as low-cost temporary facilities or along streets with constrained right-of-way (ROW). Pedestrian lanes are most appropriate on residential roads with low traffic volumes and speeds of 30 MPH or less. They are particularly desirable in pedestrian priority areas that lack sidewalks.

Design Considerations: The minimum width of a pedestrian lane is 5 feet. Pedestrian lanes can be located on one or both sides of the road. When located immediately adjacent to a road, a striped or vertical buffer is encouraged to enhance pedestrian safety. Pavement markings that indicate the space is intended for pedestrians are strongly encouraged. Pedestrian lanes must meet ADA standards. Refer to the *Rural Design Guide from Small Town and Rural Multimodal Networks* (FHWA, 2016) for additional guidance.



Source: *Rural Design Guide* (FHWA, 2016)

Table 9: Pedestrian Facilities Summary Table

Facility Type	Appropriate Locations and General Guidance
Sidewalks	<ul style="list-style-type: none"> Major roads and residential corridors Additional width and buffers desired in pedestrian priority areas
Pedestrian Lanes	<ul style="list-style-type: none"> Existing local or neighborhood street with constrained right-of-way

Trails and Shared Facilities

This section provides design considerations for multi-use trails and sidepaths in the City of Roswell. Since the primary difference among between these facilities is the location, the design guidance provided below applies to both facility types.

Multi-Use Trails

Definition and Appropriateness: Multi-use trails are bi-directional facilities in their own right-of-way that serve a variety of non-motorized modes including bicyclists and pedestrians. Multi-use trails can be used for transportation and recreational purposes, and are typically located along rivers, streams, abandoned railroad ROWs, or within/between parks. Multi-use paths are different from sidepaths since they are not located immediately adjacent to or in line with a roadway. The Spring River and Hondo River Trails are examples of multi-use trails.



Sidepaths

Definition and Appropriateness: Sidepaths are located immediately adjacent and parallel to a roadway. This type of facility serves bi-directional travel and offers a more comfortable experience for users of all ages and abilities than on-street facilities. Sidepaths are typically shared by bicyclists, pedestrians, and other users, and may be used as a substitute for sidewalks if sufficient width is provided. Sidepaths should feature a minimum 5 feet of separation or buffer from the roadway, with 6.5 feet or more preferred. The South Main St Trail can be considered a sidepath.



Design Considerations for Trails and Sidepaths

Trails should be of adequate width with the appropriate amount of signage and wayfinding to ensure all trail users have an enjoyable experience. Refer to the *Guide for the Development of Bicycle Facilities* (AASHTO, Current Edition) for more information on the design of trails, including engineering criteria such as grade and cross slope. See the Signage/Wayfinding section below for additional guidance.

Trail and Path Width

Trails and sidepaths should be a minimum of 10 feet with 12 feet preferred. A minimum of 8 feet may be provided where right-of-way is constrained. Shoulders at least 2 feet in width should be constructed along the edge of the trail or path. Signposts or other vertical elements or amenities along the edge of the trails should be located in the buffer area. An additional 3 feet of buffer space should be provided between the shoulder edge and any vertical building structures. Signposts or other vertical elements and amenities located along the edge of the trail should be located in the buffer area.

Pavement and Trail Markings

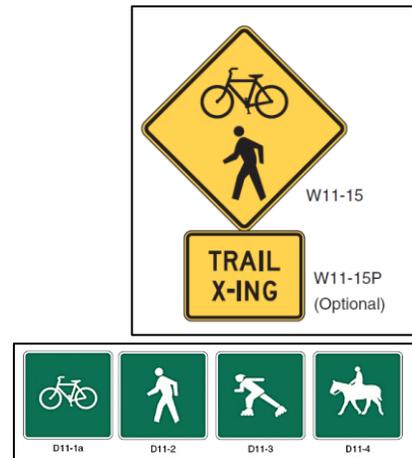
Trails can include **pavement markings** – including pedestrian and bike stencils – to relay information for users. A four to six-inch wide, yellow centerline stripe can be used on trails with heavier volumes to separate non-motorized traffic traveling in opposite directions.

Centerline striping is appropriate on trails where there are high volumes of users, on curves with limited sight distance, or along trails with no lighting and trail use is allowed at night. Refer to the *MUTCD* (FHWA, Current Edition) for design guidance.

Stop and yield lines can be used in locations where users approach a traffic control device to indicate where a user should stop or yield. If used, stop and yield lines should be placed a minimum of 2 feet behind the nearest sidewalk or edge of the roadway where a sidewalk is not present.

High visibility crosswalks should be used with ladder or zebra striping to increase visibility of trail users by motor vehicles at crossings. Road name/path name should be included at all trail crossings. Warning signs can be also be applied using a combined bicycle-pedestrian warning sign, or bicycle warning sign. Additional pavement markings and advance stop or yield lines can be applied as desired.

Mile markers can be added along trails at incremental intervals or every quarter to enhance user experience. These can be placed on posts or on the pavement. Careful consideration should be given to the amount and frequency of signs, as too many signs can create unnecessary clutter. Refer to the *Manual on Uniform Traffic Control Devices (MUTCD)* (FHWA, Current Edition) for more information.



Source: FHWA

Materials

Materials should be selected based on cost, life expectancy, user acceptance, and accessibility. Paved trails and sidepaths may be constructed of asphalt or concrete. Concrete is preferred at underpasses and other locations where long-term durability is desired. Refer to the *Trail-Building Toolkit* (RTC, 2019) for more information.

Maintenance

Maintenance of trails and sidepaths should be a high priority in Roswell, as expressed by the City and community members during outreach activities. Safety should be the central concern driving maintenance operations. As such, maintenance should be performed on a continuous basis, including trail inspections, sweeping, and trash removal to ensure facilities are free of debris and obstructions. Access for maintenance should also be considered during design to ensure maintenance activities can be completed in a safe manner.

Maintenance of trails and paths is generally performed by the Parks and Recreation Department. Community members or organizations may also be provided with opportunities to volunteer with trail clean-ups ([Volunteer Form](#)).

On-Street Bicycle Facilities

On-street bikeway facilities includes a range of infrastructure types along with signage, pavement markings, and other features that promote bicycle travel. This section provides definitions and guidance on appropriateness by location and basic design considerations. Refer to the *Urban Bikeway Design Guide* (NACTO, Current Edition) for additional design guidance.

Conventional Bike Lanes

Definition and Appropriateness: Conventional bike lanes are located on the paved roadway surface area immediately adjacent to motor vehicle traffic or on-street parking and create a dedicated space for bicycle travel. Conventional bike lanes are appropriate on arterial and collector roads with 3,000 ADT or higher and posted speeds greater than or equal to 25 MPH.

Design Considerations: Bike lanes should be a minimum of 5 feet, not including the gutter pan, with widths up to 6.5' desired. When bike lanes are located immediately adjacent to on-street parking, the preferred combined minimum width of the parking area and bike lane is 13 feet. Bicycle symbols should be used periodically throughout the facility.



Source: www.cambridgema.gov

Use of Green Paint

Green paint may be utilized along bike lanes as shown below or strategically applied approaching intersections or transition points where bicyclists intersect with driveways



Buffered Bike Lanes

Definition and Appropriateness: Buffered bike lanes are the same as conventional bike lanes but have an additional buffer separating bicyclists from motor vehicle traffic or on-street parking. Buffered bike lanes can be implemented on any streets where a conventional bike lane is considered appropriate, though additional right-of-way is necessary. Buffered bike lanes should be considered on streets with high truck traffic, traffic volumes, or with posted speeds greater than 35 MPH. Buffered bike lanes may also be used as a traffic calming technique to narrow lanes or excess roadway space.

Design Considerations: The recommended width of a buffered bike lane is the same as a conventional bike lane with a minimum buffer of 18 inches and desired buffer of 2-3 feet. Additional maintenance is needed for buffered bike lanes compared to conventional bike lanes to ensure the striping does not fade. Bicycle symbols should be used periodically throughout the facility.



Long Beach, CA – Source:www.press-telegram.com

Protected Bike Lanes

Definition and Appropriateness: Protected bike lanes are similar to buffered bike lanes but use vertical elements to physically separate bicyclists from motor vehicle traffic or on-street parking. Protected bike lanes are most appropriate on streets with high traffic volumes and speeds, or along streets with multiple lanes, though are not appropriate on roads with numerous driveways or access points.

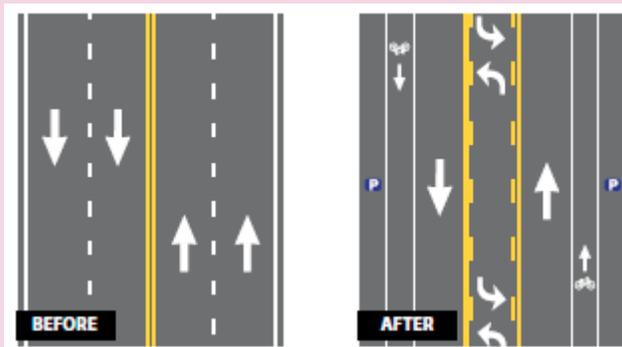
Design Considerations: The typical minimum width of a protected bike lane is 5 feet with a desired width of 7 feet in locations where bicycle passing is expected. The absolute minimum buffer width should be 1.5 feet with a desired minimum of 3 feet. The buffer can include vertical elements like bollards or signs. Vertical elements may include permanent curbs, detachable plastic bollards, as well as moveable or temporary features such as planters. Regular maintenance is needed for protected bike lanes. Bicycle symbols should be used periodically throughout the facility as well.



Iowa City, IA – Source:www.kcra.com

Road Diets

A road diet is when a travel lane is removed or travel lanes are narrowed to reallocate space for other uses and modes, including bike lanes. Per NMODT, four-lane roads may be considered for road diets with center turn lanes when traffic volumes are below 10,000 vehicle per day. Candidates for road diets include Sunset Ave, Hobbs St west of Union Ave, and Union Ave north of College Blvd.



Bicycle Boulevards

Definition and Appropriateness: Bicycle boulevards consist of residential streets with low traffic volumes and speeds that are designed to provide bicyclists with low-stress travel alternatives to traditional bike routes. Bicycle boulevards are most appropriate in somewhat denser areas of Roswell, including pedestrian priority areas.

Design Considerations: Bicycle boulevards include the use of signs, pavement markings (sharrows), and traffic calming features to discourage pass through motor vehicle traffic, including reduced speed limits and mini-roundabouts. Bicycle boulevards are typically branded and given specific names to designate routes. When choosing to brand a bicycle boulevard, community preferences and definitions of bikeways should be considered.



Albuquerque, NM

Bike Routes

Definition and Appropriateness: **Rural bike routes** generally feature paved shoulders where bicyclists may travel long distances and connect to regional destinations. Low volume roads with no shoulders present may also be designated as bike routes. **Urban bike routes** include local or residential roadways with some signage and/or pavement markings but no dedicated bike lanes. Bike routes through residential areas may be implemented as a short-term measure and upgraded to bicycle boulevards over time.

Design Considerations: The width of a paved shoulder is dependent on the location and vehicle speeds. The minimum width of a paved shoulder is 4 feet with, greater width is recommended to increase comfort, side-by-side riding, and passing. Rumble strips may also be applied as desired along the outside lane striping. Occasional signage is desired for all bike routes regardless of location, but bike stencils or other pavement markings are not required. Table 10 provides recommended paved shoulder widths based on posted vehicle speeds. Refer to the *Rural Design Guide* (FHWA, 2016) for more information.



Paved shoulders along US 285 Relief Route

Table 10. Recommended Shoulder Width by Posted Speed

Posted Speed	Recommended Width
≤35 MPH	4-5'
≥40 MPH	5-6'

Source: FHWA



Table 11: Bikeways Summary Characteristics

	Appropriate Locations	Key Features	Width
<i>Conventional Bike Lanes</i>	<ul style="list-style-type: none"> Arterial and collector roads with more than 3,000 vehicles per day and posted speeds greater than or equal to 25 MPH 	<ul style="list-style-type: none"> Dedicated space for bicycle travel on the outside edge of the roadway Pavement markings and bicycle stencils 	5-6'
<i>Buffered Bike Lanes</i>	<ul style="list-style-type: none"> Streets with high truck traffic and volumes or with posted speeds greater than 35 MPH 	<ul style="list-style-type: none"> Striped buffer between bike lane and outside general purpose travel lane Pavement markings and bicycle stencils 	5-6' plus 1.5-3' buffer
<i>Protected Bike Lanes</i>	<ul style="list-style-type: none"> Streets with high truck traffic and volumes or with posted speeds greater than 35 MPH 	<ul style="list-style-type: none"> Vertical separation and buffer general purpose travel lane 	5-7' plus 1.5-3' buffer
<i>Bicycle Boulevards</i>	<ul style="list-style-type: none"> Local/residential roads with 3,000 vehicles per day or less Parallel to major roads 	<ul style="list-style-type: none"> Extensive signage and pavement markings Reduced speed limit Traffic calming 	N/A – Shared roadway
<i>Bike Route</i>	<ul style="list-style-type: none"> High speed rural roadways that provide regional connections 	<ul style="list-style-type: none"> Paved shoulders Some signage 	4-6'

What is the Difference?

Bike Routes (Urban) vs Bicycle Boulevards

Bike routes in urban areas and bicycle boulevards are shared roadways in which there is no dedicated infrastructure for bicyclists. The principal difference is that bike routes in urban areas are unimproved bikeways with minimal signage and little or no pavement markings, while bicycle boulevards include a variety of elements such as signage, wayfinding, pavement markings, branding, and reduced speed limits. The majority of the existing bike facilities in the City of Roswell can be defined as unimproved bike routes. Bike routes may be introduced as an intermediate step in the implementation of either bicycle boulevards or bike lanes.



Bike Routes (Rural) vs Bike Lanes

The principal difference between bike routes in rural areas and bike lanes is the location and the level of signage and pavement markings. Both facility types feature a striped area on the roadway edge, though bike lanes are intended for use by bicyclists only whereas paved shoulders may be used by bicyclists as well as for parking in emergency situations. Bike lanes generally feature bicycle stencil pavement markings and more frequent signage. Bike lanes and paved shoulders for bike routes are similar widths, though buffers and vertical barriers may be applied to bike lanes.



Elements of Bicycle Facilities

Shared-Lane Markings

Definition and Appropriateness: Shared-lane markings, also referred to as sharrows, are located on the paved roadway surface and used to indicate a shared space for bicyclists and motor vehicles. Sharrows are a standard element for bicycle boulevards and are appropriate for residential streets with low volumes and speeds less than 25 MPH. They are also appropriate for designated bike routes that do not feature shoulders or bike lanes and may be applied along short stretches of busier roads where a bicycle connection is desired but the installation of bike lanes is not practical.

Design Considerations: Bike-and-chevron “sharrows” are typically placed in the center of the travel lane. Sharrows are not a facility type and should not be used in place of bike lanes where space allows. Frequent maintenance of sharrows is necessary. Refer to the *MUTCD* (FHWA, Current Edition) and *Urban Design Bikeway Design Guide* (NACTO, Current Edition) for more information.



Bicycle Stencil Markings

Definition and Appropriateness: Bicycle stencils are applied within bike lanes to inform motorists that the space is dedicated for bicyclists. These markings are applied to bike lanes but are not necessary on bike route with paved shoulders.

Design Considerations: Frequent maintenance of bicycle stencil markings is necessary. Refer to the *MUTCD* (FHWA, Current Edition) and *Urban Design Bikeway Design Guide* (NACTO, Current Edition) for more information.



Source: traffic-concepts.com

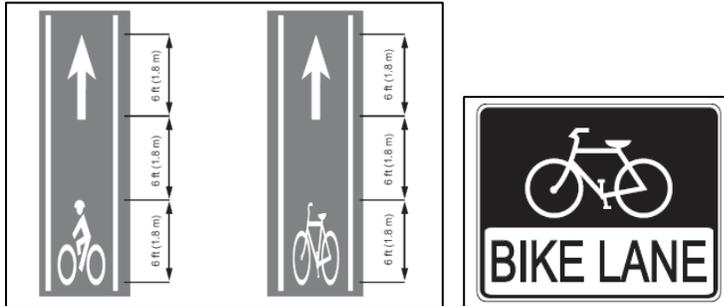
Signage/Wayfinding

Signage and wayfinding are important for increasing motor vehicle awareness, bicycle navigation, and re-enforcing bicycle travel paths. The addition of signage and wayfinding can complement various facility types (e.g. bike lanes, bike routes, and bicycle boulevards) Signage may include speed limit signs, regulatory signage, and colored street signs. These types of elements should be applied consistently throughout the length of the bikeway facility, including where the bikeway begins and ends. Signage should also be located at intersections to alert motor vehicles of pedestrian and bicycle traffic to allow for safe crossing.

Wayfinding signs can also provide users with information such as time and distance to certain destinations or connecting routes. Wayfinding signs should be located in the right-of-way and designed to allow users to easily recognize and respond to directional guidance in a timely manner.

Bike Lanes

Bike lanes should be marked with longitudinal white pavement markings. Words, symbols, and/or an arrow should be used when defining bike lanes; markings should be placed at the beginning of the bike lane and at periodic intervals based on engineering judgement. Bike lane signs should be used in addition to pavement markings.



Source: FHWA

Bike Routes

Signage for bike routes should use the D series green “BIKE ROUTE” sign. Other signs with names to major destinations or route names can be added as desired. Wayfinding signs with arrows and mileage can also be used in conjunction with bike route signs.



Source: FHWA

Bicycle Boulevards

Bicycle boulevards should be visually identified with the use of pavement markings and wayfinding signs. Bicycle boulevards use the bike-and-chevron “sharrow” marking in frequent intervals to indicate a shared street between bicyclists and motor vehicles. Signage or markings should be used where the route transitions to another street to allow bicyclists to continue along the boulevard. These signs should include destinations with arrows and distances and/or bicycle times. Bicycle boulevards typically include distinct speed limits signs posted at frequent intervals. Bicycle boulevards also offer an opportunity for unique branding and signage should be liberally to reinforce the use of the street as a bikeway facility.



Street Network Elements and Pedestrian/Bicycle-Friendly Design

In addition to basic infrastructure, creating safe and comfortable opportunities for people to walk and bike requires street designs that reduce traffic speeds and minimize conflicts with motorists. This section identifies street elements that support bicycle and pedestrian activity and describes their applicability in the City of Roswell. These street elements are especially critical in pedestrian priority areas.



Application to Pedestrian Priority Areas

Pedestrian priority areas are based on the street networks that provide connections to and between major destinations and pedestrian generators in the City of Roswell. The elements below are especially important for pedestrian priority areas and should be applied whenever possible as they can reduce vehicle speeds and improve pedestrian safety and comfort levels. Refer to the **Pedestrian Priority Areas** section for additional information on the purpose of this designation and for the process for identifying priority areas.

Desired street elements in pedestrian priority areas:

- Wide sidewalks with buffers
- Increased crosswalk frequency
- Curb extensions to reduce crossing distance
- Low posted speeds
- Reduced travel lane widths
- Landscaping and pedestrian-scale lighting
- Signage and wayfinding

Designated Crossings

Controlled Crossings

Definition and Application: Signalized or controlled crossings are locations with traffic controls that require motorists to come to a complete stop to allow pedestrians and bicyclists to cross (e.g. traffic signals and stop signs). Signalized crossings are appropriate intersections of major roads and at locations that provide access to major pedestrian and bicycle destinations. Signalized crossings should be provided at least every ¼-mile where pedestrians are present – and may be located every 1/8-mile or less in high-ranked pedestrian priority areas – and at least every ½-mile in other areas of Roswell.



In pedestrian priority areas where designated crossings are spaced more than ¼-mile apart, where block lengths exceed 600', or across from pedestrian generators such as schools or trails, mid-block crossings with pedestrian hybrid beacon signals may be considered.

Design Considerations: Pedestrians should be accommodated at signalized intersections by minimizing crossing distances, providing adequate crossing times, installing high visibility crosswalks and advance stop lines, and ensuring ramps meet ADA standards. Other treatments at signalized intersections for bicyclists and pedestrians can include pedestrian signal crossing displays and push buttons, curb extensions/bulb-outs, bike lanes, and street lighting. Refer to the *MUTCD* and the *Signalized Intersections Informational Guide* (FHWA, Current Edition) for more information.

Table 12. Key Characteristics for Controlled Crossings

Appropriate Locations	Distance between Crossings
<ul style="list-style-type: none"> • Intersections of major roads with high speeds and traffic volume • Locations that provide access to major pedestrian and bicycle destinations 	<ul style="list-style-type: none"> • At least every ¼-mile where pedestrians are present • Every 1/8-mile or less in high-ranked pedestrian priority areas • At least every ½-mile in other areas of Roswell

Source: FHWA



Mid-block crossings should be considered where trails intersect with major streets, when designated crossings are spaced more than ¼-mile apart, or where block lengths exceed 600 feet. Mid-block crossings may be controlled or uncontrolled.

Uncontrolled Intersections

Definition and Appropriateness: Uncontrolled crossings are designated locations for bicyclists and pedestrians to cross a roadway without traffic controls such as traffic signals or stop signs. These crossings may be located at intersections or mid-block and are particularly important where trails cross major streets and where places with high pedestrian traffic are located across the street from each other.



Design Considerations: Uncontrolled crossings should apply countermeasures to increase motorist awareness and improve safety for based on the type of street and specific needs. Some countermeasures that could be applied include crosswalk visibility enhancements, raised crosswalks, median refuge islands, overhead signs, Pedestrian Hybrid Beacons (PHBs), or road diets. High visibility marked crosswalks and median refuges should be applied on streets with speed limits greater than 40 MPH and where users must cross more than two lanes of traffic at a time. Median refuges should be at least 6 feet in width. The use of active warning devices, such as hybrid beacons, may be applied on a case-by-case basis. Refer to the *MUTCD* (FHWA, Current Edition) and *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* (FHWA, 2017) for more information.

Landscape/Buffer Zones and Street Trees

Definition and Appropriateness: Landscape areas and buffers at the street edge can serve to create a more pedestrian-friendly environment by separating pedestrians from motor vehicle traffic.

Landscape/buffer zones can also be used for stormwater management, bicycle parking, on-street parking, and utilities. Landscape/buffer zones also have the effect of calming traffic.

Design Considerations: Buffers should be a minimum of 2 feet with a preferred width of 4 feet or more if landscaping is provided. Landscape buffers with street trees provide shade for pedestrians and are highly desirable where space permits. Landscape/buffer zones



and street trees are strongly recommended within pedestrian priority areas and are appropriate on other roadways as right-of-way and maintenance budgets allow.

Curb Return Radii and Extensions

Definition and Appropriateness: **Curb return radii** are the curved corners where two streets intersect with one another. Curb return radii help guide motor vehicles completing turning movements and should be based on corridor type and location. In general, smaller curb return radii force vehicles to reduce speeds during turning movement, thus improving safety for pedestrians.

Curb extensions, also referred to as bulb-outs or bump-outs, are also used to reduce the width of the roadway at crossings and therefore shorten pedestrian crossing distances. The additional space at a curb may be used for street trees, landscaping, and street furniture.



Source: NACTO

Design Considerations: Curb return radii should be larger for roads with higher traffic volumes such as those with frequent truck and bus traffic that require wider turns. Smaller radii are generally appropriate on roads with lower speeds and may be explicitly used to reduce pedestrian crossing distances and to reduce vehicle speeds during turning movement. Radii range between 15 to 35 feet depending on the type of streets that intersect where turning movements are completed. Smaller radii are desired in pedestrian priority areas. Refer to the *Green Book* (AASHTO, Current Edition) for additional guidance.

Curb extensions may also serve as a traffic calming technique. Installations may be permanent or temporary by using low-cost materials such as temporary curbs, bollards, planters, or striping. For more information, refer to the *Urban Street Design Guide* (NACTO, Current Edition).

Pedestrian-Scale Lighting

Definition and Appropriateness: Pedestrian-oriented lighting is lighting located and illuminated towards pedestrians walking along sidewalks, crosswalks, or paths. This type of lighting helps increase safety and improve comfort for pedestrians and bicyclists, as well as improving security. Pedestrian-oriented lighting also enhances the aesthetics of downtown environments.

Design Considerations: Lighting is most effective when it is placed along both sides of the street at a consistent level with a focus on illuminating pedestrians and increasing visibility for drivers. Lights should be placed in advance of midblock and intersection crosswalks on both approaches. For motorists to see and respond to pedestrian traveling in a crosswalk, the luminaire should be installed 10 feet from the crosswalk between the approaching motor vehicle and the crosswalk. Refer to the *Pedestrian Safety Guide and Countermeasure Selection System* (PEDSAFE, 2013) for additional guidance.

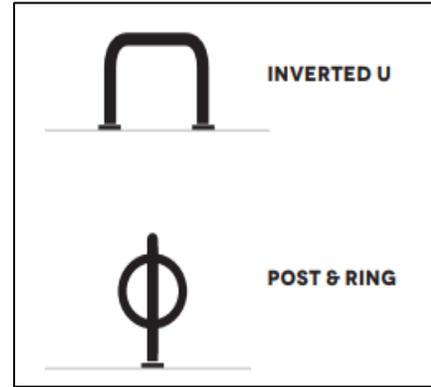


Source: wustl.edu

Bicycle Parking

Definition and Appropriateness: Bicycle parking includes racks and posts that afford secure short-term parking options for bicyclists in public places. Bicycle parking may be located in landscape/buffers zones outside of businesses, in the frontage zone for commercial buildings, along sidewalks so long as ADA clear zone requirements are met, and in public spaces such as plazas and parks.

Design Considerations: Short-term bike parking facilities such as an inverted U or post and ring are the most appropriate design options for the City of Roswell. A variety of surfaces can be used when installing bicycle parking including concrete pads, asphalt, pavers, or soft surfaces. Sturdy concrete pads are the preferred design option and should be used whenever possible. Bicycle parking areas should be a minimum 6 feet in length and 2 feet in width. Racks should maintain a clear line of sight for sidewalk users and should not impede pedestrians traveling along sidewalks. Refer to the *Essentials of Bike Parking: Selecting and Installing Bicycle Parking that Works* (APBP, 2015) for additional guidance.



Source: APBP

Traffic Calming Treatments

Traffic calming treatments are a set of techniques that can serve the dual purpose of reducing vehicle speeds and improving comfort level for bicyclists and pedestrians. The treatments below can be applied individually or in combination depending on available right-of-way, current traffic speeds, and location/context.

On-Street Parking

On-street parking can be used as a buffer to protect pedestrians from the road, help lower traffic speeds, and reduce street crossing distance for pedestrians. Delineated or striped on-street parking can also reduce the drivable space of roadways and reduce travel speeds.

Curb Extensions/Bulb-Outs

Curb extensions or bulb-outs narrow the roadway surface area to reduce crossing distances for pedestrians and increase visibility of pedestrians. These treatments also increase the space available for street trees and plantings.

Speed Bumps and Speed Cushions

Speed bumps and cushions are techniques used to reduce traffic speeds and generally make conditions more favorable for pedestrians. Speed bumps and cushions are appropriate for residential areas and locations where speeds are less than 35 MPH.

Traffic Circles/Mini-Roundabouts

Traffic circles or mini-roundabouts are raised median islands located at unsignalized intersections. These traffic control techniques may be applied in addition to or in place of four way stops and are appropriate for residential streets with speeds less than 30 MPH.

Lane Narrowing

Many general purpose travel lanes in Roswell are wider than the recommended widths (i.e. 10-12'), leading to excessive speeds. Travel lanes may be narrowed, with excess roadway space allocated for bike lanes, landscape buffers, or curb extensions. Lane narrowing is appropriate for streets where there are safety and speed issues present or where widths are greater than the recommended minimum.

Road Diets

A road diet is when a travel lane is removed to reallocate space for other uses and modes. Typically, road diets are applied to undivided four lane roadways that are converted into three lane roadways with two through lanes and a center turn lane. The reallocation of space provides opportunities to install bike lanes, median refuge islands, and/or on-street parking.

References

Pedestrian and Bikeway Facilities

1. AASHTO. *A Policy on Geometric Design of Highways and Streets*. American Association of State Highway and Transportation Officials, Washington, DC, 2011 or most current edition.
2. AASHTO. *Guide for the Development of Bicycle Facilities*. American Association of State Highway and Transportation Officials, Washington, DC, 2012 or most current edition.
3. FHWA. *Incorporating On-Road Bicycle Networks into Resurfacing Projects*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, 2016.
4. FHWA. *Manual on Uniform Traffic Control Devices for Streets and Highways*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, n.d.
5. FHWA. *Small Town and Rural Multimodal Networks*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, 2016.
6. FHWA. *Walkways, Sidewalks, and Public Spaces*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, n.d.
7. NACTO. *Urban Bikeway Design Guide*. National Association of City Transportation Officials, 2011 or most current edition.

Street Network Elements and Pedestrian-Friendly Design

1. AASHTO. *A Policy on Geometric Design of Highways and Streets*. American Association of State Highway and Transportation Officials, Washington, DC, 2011 or most current edition.
2. APBP. *Essentials of Bike Parking: Selecting and Installing Bicycle Parking that Works*. Association of Pedestrian and Bicycle Professionals, 2015.
3. FHWA. *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, 2017.
4. FHWA. *Manual on Uniform Traffic Control Devices for Streets and Highways*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, n.d.
5. FHWA. *Signalized Intersections Information Guide*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, 2013.

Traffic Calming Treatments

1. AASHTO. *A Policy on Geometric Design of Highways and Streets*. American Association of State Highway and Transportation Officials, Washington, DC, 2011 or most current edition.
2. FHWA. *On-Street Parking Enhancements*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, n.d.
3. FHWA. *Road Diet Informational Guide*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, 2019.
4. NACTO. *Urban Street Design Guide*. National Association of City Transportation Officials, 2011 or most current edition.

ADA/PROWAG

1. U.S. Access Board. *Americans with Disabilities Act Standards for Accessible Design*. U.S. Access Board, Washington, DC, 2010.
2. U.S. Access Board. *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way*. U.S. Access Board, Washington, DC, 2011.

Signage and Wayfinding

1. AASHTO. *Guide for the Development of Bicycle Facilities*. American Association of State Highway and Transportation Officials, Washington, DC, 2012 or most current edition.
2. FHWA. *Manual on Uniform Traffic Control Devices for Streets and Highways*. Federal Highway Administration, U.S. Department of Transportation, Washington, DC, n.d.
3. NACTO. *Urban Bikeway Design Guide*. National Association of City Transportation Officials, 2011 or most current edition.

Design Guidance for Trails

1. RTC. *Trail-Building Toolbox*. Rails-to-Trails Conservancy, 2019.

IMPLEMENTATION

Providing additional opportunities for Roswell residents and visitors to bike and walk safely across the city requires a combination of improved facilities and programmatic and policy initiatives that encourage more users. This section describes additional efforts and funding opportunities that the City of Roswell could pursue to fully realize the benefits of this plan and to incorporate bicycle and pedestrian considerations into local decision-making. The recommendations complement the Design Guidance and the bikeway network and pedestrian priority areas identified in this plan.

Recommendations

Adopt a Complete Streets Resolution

Adopting the Complete Streets Resolution can provide a policy foundation to successfully implement the networks outlined in this plan. While streets generally play a significant role in connecting people to and from major destinations, Complete Streets are designed for everyone, regardless of age, ability, or transportation mode.⁶ By integrating people and places, Complete Streets create multi-modal transportation systems that enhance public health and economic vitality, balance transportation needs; and promote safety and equity.

Streets designed for everyone in mind are desirable places that people want to visit and can help attract new businesses, industries, and residents. Furthermore, Complete Streets can help showcase Downtown Roswell and further the goals outlined in MainStreet Roswell by promoting a pedestrian-oriented and attractive downtown. Adopting a Complete Streets Resolution at the City Council level would provide policy support for the Roswell Bike-Ped Master Plan and reinforce the need for a transportation system that supports all modes and meets the needs of all residents and visitors.

The Complete Streets Resolution would address the following:

- State the City of Roswell's commitment to Complete Streets principles
- Provide a policy foundation for the City of Roswell Bike-Ped Master Plan
- Inform the City's master project lists to include improvements for bikeways, pedestrian facilities, and trails
- Provide guidance for improvements to the existing transportation system and the planning and design of new transportation projects

A more detailed description on Complete Streets and a model Complete Streets resolution can be found in Appendix C.

⁶ <https://smartgrowthamerica.org/program/national-complete-streets-coalition/publications/what-are-complete-streets/>

Establish a Bicycle and Pedestrian Advisory Committee

A bicycle and pedestrian advisory committee is a group tasked with providing input and guidance to decision makers on bicycle and pedestrian related projects, policies, and programs. The City of Roswell should establish a committee consisting of staff from different agencies including Planning, Public Works, Parks and Recreation, Pecos Trails Transit, Roswell Public Schools, plus members of the general public. This committee should also invite NMDOT, when appropriate, to ensure a collaborative process for implementing bicycle and pedestrian efforts on a regional scale. This committee could meet monthly or quarterly to identify issues observed at specific locations and to provide direction on potential improvements. For more information on establishing a bicycle and pedestrian advisory committee refer to the report *Making Bicycling and Walking a Norm for Transportation Agencies: Best Practices for Bicycle and Pedestrian Advisory Committees* (League of American Bicyclists).

Inter-Agency Coordination

Developing a complete bicycle and pedestrian network in Roswell requires the involvement of departments across the City, as well as outside agencies. Coordination with NMDOT is particularly critical as the agency owns and maintains several key roadways and desired bike routes through the city. NMDOT is also responsible for the distribution of various state and federal fund sources. The City of Roswell should coordinate regularly with NMDOT to ensure bikeways are implemented on US and NM highways in the Roswell area in accordance with the NM Bike Plan.

City of Roswell staff should also continue to participate in the Southeast Regional Transportation Planning Organization (SERTPO), which is responsible for coordination on regional transportation issues and provides recommendations for projects to receive federal funding through the Regional Transportation Improvement Program Recommendations (RTIPR) list. Many federal grant applications, including funding for trails and other bicycle and pedestrian projects are submitted through SERTPO. See the Funding section for additional discussion.

Bicycle Signage and Wayfinding

To complement the proposed bicycle network, low-impact signage and wayfinding should be installed to assist bicyclists and trail users with navigating the system and as a useful tool for increasing motorist awareness. Signage could be developed with a unique set of Roswell-related themes and imagery to create an element of branding. The addition of other information, such as distances and directions to major destinations, could be combined with signage when appropriate. Refer to the Design Guide for additional guidance.

Signage and wayfinding are especially important in areas with high pedestrian traffic to allow people to orient themselves with their surroundings and navigate throughout the rest of the city. Pedestrian-scale signage and wayfinding are highly recommended along Main Street and in other pedestrian priority areas. Refer to the Pedestrian Priority Areas section for more information.



Integrate Design Guidance into Regulatory Documents

An important step towards reaching the goals outlined in this plan is incorporation of bicycle and pedestrian infrastructure into the City of Roswell's regulatory documents. Updates to the **Development Standards/Subdivision Regulations** would ensure the incorporation of properly designed sidewalks and on-street bikeways as part of all new development projects. The City could also incorporate provisions for on-site bike parking.

The design guidance for bicycle and pedestrian facilities included as part of this plan could be incorporated into the **Technical Standards** as the Bike-Ped Master Plan generally calls for wider bike lanes and sidewalks than the City's current design document. The Technical Standards affect new roadways and reconstruction of existing roadways. Updates to the Technical Standards would provide additional guidance for design engineers and support for City staff when reviewing engineering design documents.

Bike Parking

Bike parking can help encourage people to stay longer at retail and other destinations, increase bicycling for utilitarian trips and active transportation, and support quality of life for residents and visitors in Roswell. The City should install bike parking in public places, with emphasis on prioritizing those located near major destinations. The landscape buffer area can be used as a viable option for installing bike parking. Bicycle parking provisions should also be included in the City of Roswell's Municipal Code to encourage bike parking in site development for new facilities and for additions to existing facilities.



Bicycle and Motorist Safety Education Programs

Bicycle and safety education programs help increase knowledge, skills, and behaviors specific to safely operating a motor vehicle or bicycle to reduce the risk of injuries and fatalities. These programs vary in content, format, and duration based on needs and resources. Collaborations with Roswell Public Schools is warranted for successful implementation of many of these programs.

Walking School Bus and Bike Train

This program includes parents accompanying a group of students walking or biking to school on a pre-planned route to offer a safe and healthy transportation option. Collaboration with the Roswell Public Schools would be required to proceed with this program.

Bike Rodeos and Bike Camps

Bike rodeos and bike camps are programs that allow youth to explore riding in real-life traffic situations to gain safe biking skills. These programs help reduce barriers to bicycling for youth and instill healthy behaviors starting at a young age. City departments, including the Police Department or Parks and Recreation Department, could help put on these events.

Bikeology

Bikeology is a set of curricula that provides physical education teachers and recreational specialists with the necessary tools for implementing on-the-bicycle safety education programs to build confidence and safe bicycling skills among middle and high school students. Collaboration between Roswell Public Schools and/or the Parks and Recreation Department would be necessary for this

program. For more guidance, refer to the report *Bikeology: A middle and high school bicycle safety curriculum for physical education teachers and recreation specialists* (American Alliance for Health, Physical Education, Recreation, and Dance, 2014).

League of American Bicyclists

The League of American Bicyclists provides technical assistance for cities who wish to become more bikeable communities through their well-received, **Bicycle Friendly Community program**. This program is intended to promote partnerships and compile data necessary to garner momentum for creating more bike-friendly environments. There is an application process and acceptance into the program is required in order to receive this designation. The City of Roswell should pursue the bike-friendly community designation to capture greater recognition, help secure funding, and build political support for biking in the community.

The League of American Bicyclists also provides educational programs through in-class and on-bike training courses taught by certified **League Cycling Instructors (LCIs)**. The City of Roswell could pursue this program by funding a staff person to receive LCI certification and eventually offer City-sponsored biking courses upon completion of the certification. More information can be found on the League of American Bicyclists website.

Motorist Education Programs

Motorist education programs can be implemented using a variety of educational methods including promotional videos, pamphlets, and billboards to encourage safer driver behavior. Additionally, high school driver training courses could include information about sharing the road and discussions surrounding potential hazards in situations where bicyclists are present. Many government agencies also include bicycle awareness components as part of driver training to operate a public vehicle. Additional stand-alone, low-cost educational efforts that the City of Roswell could pursue include educational announcements from various organizations posted on social media and online websites that provide bicycle safety tips. Local organizations may also collaborate with physicians to “prescribe” bicycle helmets and/or bicycle safety classes to patients who currently ride or want to ride a bike.

Safe Routes to School

Roswell should consider establishing a Safe Routes to School Program (SRTS) that makes walking and biking a safer and more accessible transportation option for all children and helps increase the number of children who walk or bike to school. Specifically, SRTS programs promote biking and walking to school for youth through infrastructure improvements, enforcement, safety education, incentives programs, and other tools. Educational programs for SRTS focus on teaching pedestrian, bicycle, and traffic safety, and increasing awareness of the benefits of biking and walking. SRTS On a larger scale, this program positively impacts children’s health, can reduce traffic congestion near schools, and improve air quality and quality of life. To establish a SRTS program, certain steps must be taken in order to achieve success. See the *Safe Routes to School Guide* (PBIC, 2015) for more information.

Steps for Creating a Safe Routes to School Program

According to the Safe Routes to School Online Guide, the following steps may be followed when creating an SRTS program:

1. *Bring together the right people:* Identify stakeholders who want to make walking and biking to school safe and appealing for children including those from a wellness council or pedestrian and bicycle advisory board.
2. *Hold a kick-off meeting:* Use this meeting to create an overall vision and identify next steps to take to moving towards achieving this vision. Information on the SRTS program should be included in this meeting. Typically, committees are formed to distribute tasks.
3. *Gather information and identify needs:* Survey students and parents, collect information by counting bikes on racks, and observe behavior before and after school to gain a better understanding of current challenges. Traffic counts, speed, and injury data can also be useful to identify safety issues.
4. *Identify solutions:* A combination of education, encouragement, engineering, and enforcement strategies will be needed. Solutions should be prioritized, with safety the first consideration.
5. *Make a plan:* The plan typically includes encouragement, education, and engineering strategies with timelines and evaluation methods.
6. *Fund the plan:* Some strategies can be applied that are relatively low cost and require little time for implementation, such as new signs or paint on a crosswalk.
7. *Act on the plan:* Hold a kick-off event and invite the media to help spread the word. Other events may be timed to coincide with International Walk to School Day or a Walking Wednesday.
8. *Evaluate, make improvements, and keep moving:* Consistently evaluate the strategies being implemented to understand current impacts and improvements needed to remain successful. One simple measure is to conduct a baseline count of pedestrians and bicyclists and track changes over time. Provide regular updates to keep partners interested and engaged.

Funding

Federal Funding Opportunities

A major benefit of adopting the Bike-Ped Mater Plan is the added potential for securing grants. In New Mexico, NMDOT facilitates a series of programs and funding sources that the City of Roswell could apply to for expanding the pedestrian and bikeway networks. Though the evaluation and project selection processes for these funding programs varies, applications are generally managed through SERTPO, which submits applications to NMDOT. City of Roswell staff should work with SERTPO on application schedules and requirements. Each program requires a local match.

Transportation Alternatives Program (TAP)

The Transportation Alternatives Program (TAP) is a federal reimbursement program administered by NMDOT. TAP can be applied to projects focused on pedestrian and bicycle facilities, including trails projects and safe routes to schools programs. The total state allocation was \$5.7 million in FY 2020; entities may be awarded up to \$2 million. Refer to the *Active Transportation and Recreational Programs Application Guide* (NMDOT, Current Guide) for more information.

Recreational Trails Program (RTP)

The Recreational Trails Program (RTP) is a federal reimbursement program administered through NMDOT. The RTP funds projects for additional multimodal transportation options including the development and maintenance of recreational trails and facilities for motorized and non-motorized use. The total state allocation was \$1.4 million in FY 2020; there are no minimum or maximum funding amounts for RTP. Refer to the *Active Transportation and Recreational Programs Application Guide* (NMDOT, Current Guide) for more information.

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

The Congestion Mitigation Air Quality (CMAQ) Improvement Program, originally implemented in 1991, helped shift federal policy towards a multi-modal and environmental focus. The CMAQ program supports surface transportation projects and other efforts that help improve air quality and reduce congestion to meet National Ambient Air Quality Standards. Eligible projects include those that contribute to maintenance or attainment of air quality standards and reduce air pollution, including bicycle, pedestrian, and trail projects. Consult the NMDOT T/LPA Handbook for additional information.

Local Funding

This City of Roswell may use local funds to implement the facilities identified in the Bike-Ped Master Plan. In contrast to federal funds, local funds may be used in a flexible manner and do not require certifications or other sometimes time-consuming steps. However, local funding for transportation projects is already limited. Many communities pursue a dedicated GO bond funding for bicycle and pedestrian projects, while others set-aside a percentage of GRT revenue or GO bond revenue for pedestrian and bicycle facilities. The latter approach ensures a smaller but dedicated stream of funds that allows for implementation over time.

In addition to proactive implementation of bicycle and pedestrian projects, the City of Roswell can incorporate improvements into regularly-scheduled maintenance and reconstruction projects along City-owned roadways. This approach would require only modest additional costs, especially for on-street bikeways where only signage and striping are required. However, this approach requires a patient long-term strategy for developing the bicycle and pedestrian systems.

Preparing for Emerging Modes

Micro-Mobility

One of the most significant innovations in cities in recent years is the emergence of micro-mobility – fully or partially human-powered small vehicles that include devices such as skateboards and electric scooters (commonly referred to as e-scooters), as well as services such as bike share. Micro-mobility modes allow users to make short- or medium-length trips traveling up to 15 mph to complete daily activities or for recreational purposes. Part of the appeal of micro-mobility is the increase in transportation options. According to the National Association of City Transportation Officials (NACTO), shared mobility has increased more than two-fold from 35 million in 2017 to 84 trips million in 2018.

However, many cities do not have infrastructure to support these modes or appropriate regulations in their traffic codes. Major challenges associated with these modes include injuries from e-scooter accidents, as well as conflicts with pedestrians, clutter, and insufficient awareness/education surrounding city rules and regulations for correct use. The City of Roswell can proactively respond to and regulate emerging technologies in order to improve safety and mobility and expand recreational opportunities for residents and tourists alike. Refer to the white paper in Appendix D for more information.

Key Recommendations

To combat these challenges and enable the benefits these devices can offer, Roswell leaders can better prepare for their arrival using a thoughtful and deliberate approach. Key recommendations for Roswell to consider in the shorter-term include the following:

- Update the traffic code to clarify where e-scooters may operate. Develop general provisions as the legal framework for operation of these devices, including maximum speeds for devices.
- Update street design guidelines to include micro-mobility and provide sufficient infrastructure for users to safely operate all transportation devices

APPENDIX A: RENDERINGS OF POTENTIAL IMPROVEMENTS

The renderings below depict potential bikeway facility improvements to roadways in the City of Roswell. In each of these cases, the roadway is included in the proposed Bikeways and Trails Network and improvements could be completed utilizing the existing paved surface area. Major improvements therefore consist of restriping, pavement markings, and signage.

Atkinson Ave: North of McGaffey St

Atkinson Ave is currently listed on the Bikeways and Trails Network as a bike route due to the presence of striped paved shoulders. However, the shoulders do not contain pavement markings or regular signage associated with bike lanes (see Figure 20). The renderings depict the addition of signage and bicycle stencil pavement markings to increase motorist awareness and further clarify that the space is dedicated for bicyclists.

Figure 20: Before and After Renderings – Atkinson Ave



Hobbs St: Near Roswell High School

Hobbs St is a multi-lane arterial roadway that provides direct access to Roswell High School. Given the high traffic volumes (about 5,000 vehicles per day) and number of lanes of traffic, which can lead to excessive speeding, additional separation between motorists and bicyclists is desirable. Figure 21 depicts the installation of protected bike lanes. Buffered bike lanes that provide additional separation but no physical barrier between motorists and bicyclists would also be appropriate. The installation of buffered or protected bike lanes would increase the bicycle LOS along this corridor from low/medium to high.

Figure 21: Before and After Renderings - Hobbs St



13th St: West of Richardson Ave

13th Ave is a low volume neighborhood street that runs parallel to College Blvd. While bike lanes are proposed on College Blvd, which runs parallel to 13th Ave one block to the north, not all bicyclists may feel comfortable riding alongside traffic on an arterial roadway (College Blvd carries over 6,000 along the portion of the corridor parallel to the proposed 13th St Bicycle Boulevard). A bicycle boulevard would appeal to users who feel more comfortable along neighborhood roads with lower levels of traffic and vehicle speeds. The proposed speed limit and bicycle boulevard signage shown in Figure 22 are for illustrative purposes and may be customized for the City of Roswell.

Figure 22: Before and After Renderings - 13th St



APPENDIX B: COLLEGE BLVD CONCEPTUAL LAYOUTS

General Characteristics

The conceptual layouts provided below depict the installation of a bike lane on both sides of the street for the full extent of the corridor from Montana Ave to Atkinson Ave. College Blvd is a critical east-west connection that traverses the extent of the city and connects the Cielo Grande Recreation Area, Recreation and Aquatic Center, Downtown, and the Spring River Park & Zoo. The Roswell Bike-Ped Master Plan identified College Blvd as a high priority route for improvements; however, the installation of on-street bikeways requires additional consideration as the paved surface area varies from segment to segment.

This appendix contains a series of exhibits of segments along the corridor organized from east to west. Though additional design efforts would be required, the conceptual layouts are useful in understanding the roadway reconfiguration and the tradeoffs required to provide a continuous facility along College Blvd. Among the noteworthy changes include several sections where roadway widening is required and the elimination of a small number of on-street parking spaces. The design maintains the center turn between Kentucky Ave and Garden Ave.

Corridor Segments

Montana Ave to Washington Ave

No roadway widening or changes to the cross-section are required. The cross-section features wide outside lanes and 38 feet of paved surface area between the curb and gutter. The conceptual layouts depict general purpose lanes of 11 feet and buffered bike lanes in each direction.

Washington Ave to Kentucky Ave

Roadway widening is required to the east of Missouri Ave to accommodate bike lanes in each direction. The conceptual layouts indicate that 5 to 8 feet of additional right-of-way are required on the north side of the street and 3 to 6 feet of additional right-of-way are required on the south side of the street to provide sufficient space for buffered bike lanes.

Kentucky Ave to Main St

For the portion of the segment immediately east of Kentucky Ave, an additional 2 to 5 feet of right-of-way is required on both the north and south sides of the street for the installation of bike lanes. The corridor currently features a center turn lane beginning to the east of Kentucky Ave. This center turn lane is preserved in the conceptual layout.

Main St to Garden Ave

An additional 2 to 5 feet of right-of-way is required on both the north and south sides of the street along the majority of this segment for the installation of bike lanes. The conceptual layout depicts 5 feet conventional bike lanes and 11 feet general purpose lanes. The corridor could be further widened to support buffered bike lanes. The existing center turn lane is preserved along this segment.

Garden Ave to Atkinson Ave

For the portion of the segment immediately east of Garden Ave, an additional 5 to 7 feet of right-of-way is required on both the north and south sides of the street for the installation of bike lanes. This widening is necessary to maintain the eastbound left turn lane. The corridor does not feature center turn lanes east of the Garden Ave intersection. Along the remainder of the corridor, buffered bike lanes and 11 feet general purpose lanes can be installed within the existing paved surface area.

Figure 23: Montana Ave to Washington Ave

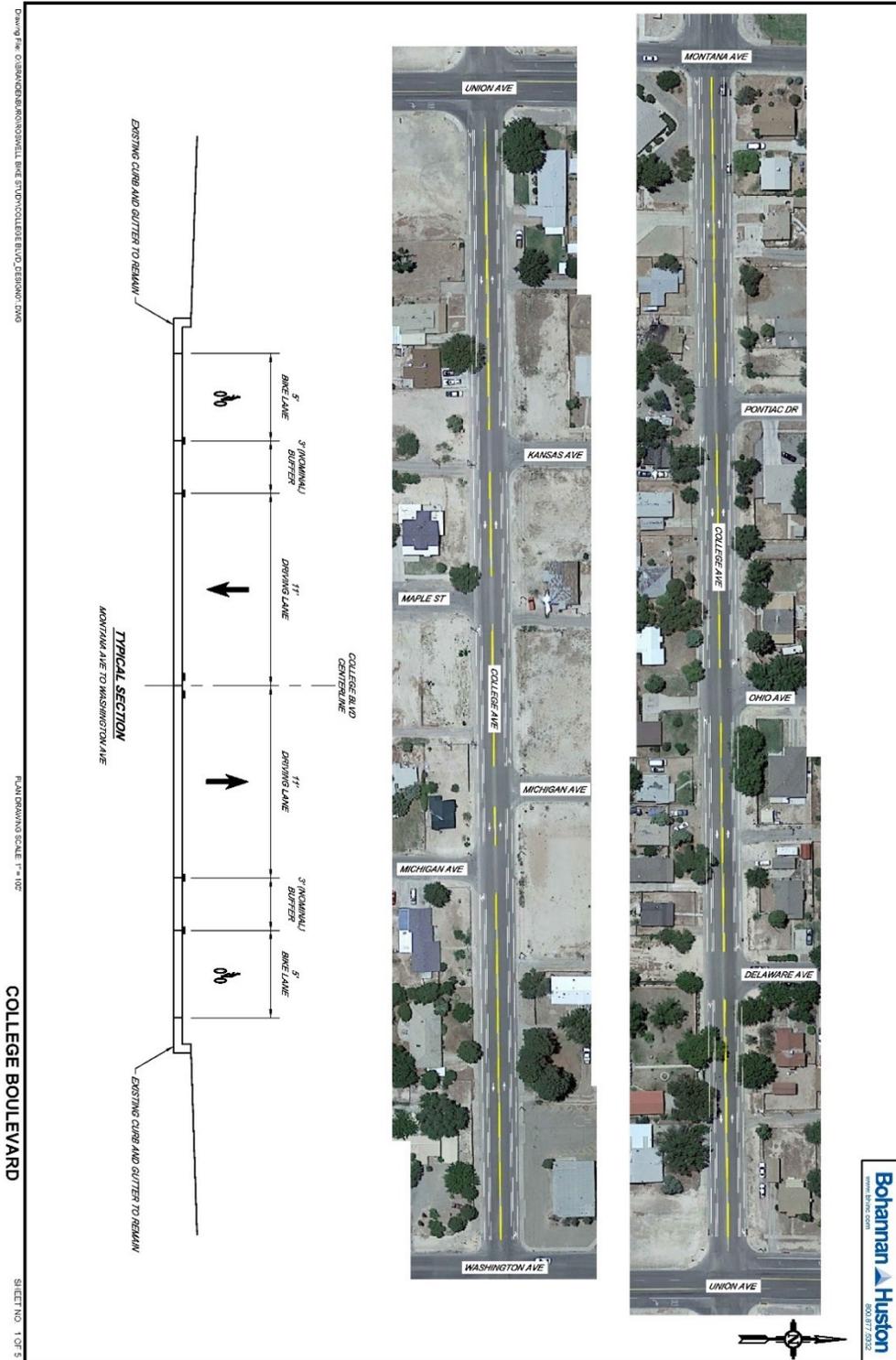


Figure 24: Washington Ave to Kentucky Ave

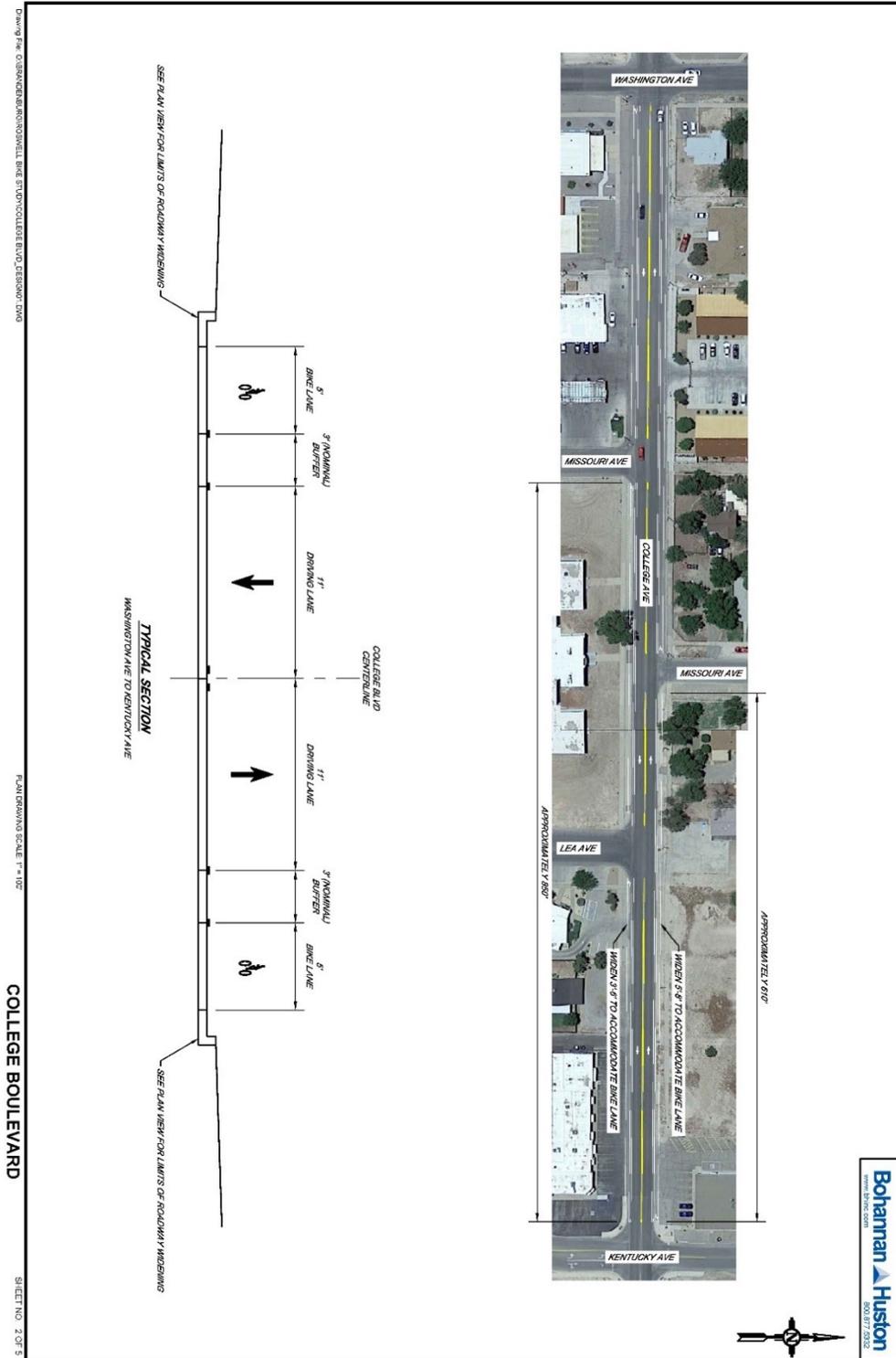
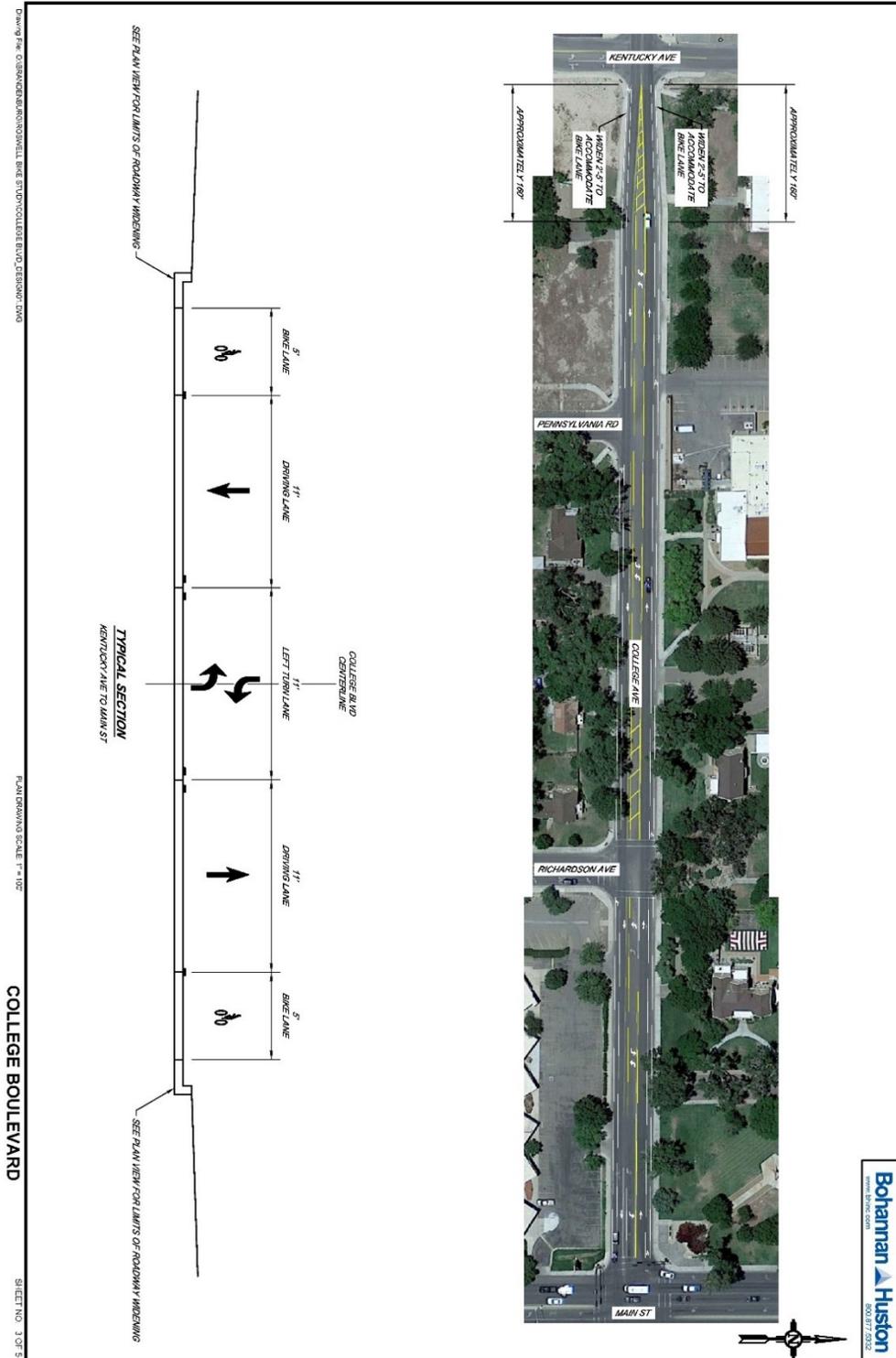


Figure 25: Kentucky Ave to Main St



APPENDIX C. ADOPTING COMPLETE STREETS POLICIES

Introduction

This memo supports potential complete streets policies that could be undertaken by the City of Roswell by defining the concepts and benefits of complete streets and outlines recommended steps and action items. This memo concludes with a draft complete streets resolution for consideration.

Overview of Complete Streets

Complete Streets are streets designed for everyone in mind whether users are pedestrians, bicyclists, transit riders, or motorists, and regardless of age or ability. Principles of complete streets focus on a people-centered approach to street design and require changes in transportation planning, design, maintenance, and funding decisions that consider all residents and modes of travel. Complete streets policies and programs help formalize a community's responsibility to plan, design, and maintain streets that are safe and accessible for all road users. In the City of Roswell, complete streets principles are appropriate because they align with and complement the community's vision and goals for the future and support the implementation of the Bicycle and Pedestrian Master Plan, which is ongoing. Refer to Appendix A for more information.

Benefits of Complete Streets

Streets are public places that play a significant role in connecting people to and from major destinations. Prioritizing complete streets in the City of Roswell can result in multi-modal transportation systems that enhance quality of life and economic vitality, balance transportation needs, and promote safety for all community members. Streets designed for everyone in mind are also desirable places for people to visit and can help attract new businesses, industries, and residents. In Roswell, complete streets can help residents and visitors conveniently access and connect to downtown and other parts of the city using a variety of modes. Complete streets design concepts can also promote a pedestrian-oriented and attractive downtown to achieve the goals outlined in MainStreet Roswell.

Implementation Options

There are a variety of implementation options for cities to demonstrate their commitments to complete streets. These commitments can be non-binding or binding and can include developing complete streets principles, adopting ordinances and resolutions, re-writing or developing design manuals, adding complete streets language into comprehensive plans, and developing internal policies that guide project development.

The implementation process typically begins by creating a community vision for what to accomplish through complete streets policies or guiding principles, and then translating this vision into practice through adoption and implementation. The development of the Bicycle and Pedestrian Master Plan and associated design guidelines and analysis fulfill this need.

To support the policies and action items, the City of Roswell may develop internal processes and training to ensure implementation of complete streets is successful, thoughtful and intentional. These internal actions include:

- Reviewing the existing procedures and habits that guide decision making and updating to ensure bicycling, walking, and public transit are included
- Providing a thorough understanding to planners, engineers, consultants, elected officials, and other agencies on new procedures
- Creating and applying performance measures documenting the performance of CS implementation, which can be used for future projects and funding

Complementary actions include updates to the zoning code and subdivision ordinance to ensure land uses and urban design policies support pedestrian and bicycle-friendly infrastructure and account for the needs of public transit.

Recommendations

Relevant commitments that could be applied in the City of Roswell includes making revisions to the city street standards and adopting formal policies approved by City Council. As a first step in showing their commitment to complete streets, the City of Roswell should approve a **Complete Streets Resolution** which identifies specific and clear guiding principles related to Complete Streets and demonstrates an initial act of commitment. An example of a Complete Streets Resolution that can be adapted and applied in the City of Roswell is provided in Appendix 2. The purpose of this resolution is to provide policy support, build upon current efforts, and express a commitment to continued implementation of bicycle and pedestrian-friendly facilities in the City of Roswell.

After the Resolution has been adopted, the City of Roswell should move towards adopting a **Complete Streets Ordinance** that ensures that complete streets become an official City policy. Complete streets policies should be included in updates to the Comprehensive Plan, as well as the zoning code and subdivision regulations. Ideally, the Complete Streets Ordinance should contain dedicated funding and provide legal backing for the City to address the needs of all users. Such efforts can help achieve the City’s long-term goal of creating a balanced transportation system that improves quality of life for all residents and visitors.

Recommended Steps for Implementing Complete Streets in the City of Roswell

Step	Description	Notes/Action Items
1. Develop a Bicycle and Pedestrian Master Plan	Planning document that outlines bicycle and pedestrian improvements and roadway design principles.	In progress
2. <i>Adopt a Complete Streets Resolution</i>	A non-binding statement in support of transportation projects and plans that support complete streets and the needs of all road users.	City Council approval required
3. <i>Adopt a Complete Streets Ordinance</i>	A set of binding policies and programs that become official city policy once approved.	City Council approval required
4. Integration of Complete Streets into City Programs	Development of procedures and implementation of city programs related to complete streets design principles.	Updates to city design standards and regulatory documents

Components of a Comprehensive Complete Streets Ordinance

Communities utilize a range of techniques to implement complete streets principles. Many communities begin with a resolution declaring their intent to pursue design concepts and general policies that support multi-modal infrastructure. Such resolutions are often reinforced and expanded upon over time through an ordinance that includes formal policies and programs to implement complete streets in a systematic way.

A comprehensive commitment to complete streets ensures everyone in the community benefits from the transportation system. To achieve this, the Complete Streets Ordinance and supporting programs should include the following:

1. *Clear Vision and Intent:* Define purpose and benefits of complete streets within a community.
2. *Address Needs for Diverse Users:* Ensure all road users, including historically under-represented groups and users with disproportionate impacts are considered during project planning and design.
3. *Commitment in All Projects and Phases:* Complete streets principles should be incorporated into all new, reconstruction, maintenance, and ongoing projects.
4. *Expectations:* Set specific expectations about the purpose and intent of infrastructure projects.
5. *Collaboration:* Ensure coordination among governmental agencies responsible for complete streets implementation.
6. *Design:* Incorporate road designs based on best practices and guidelines that also set timeframes for implementation.
7. *Land Use and Context Sensitivity:* Consider the surrounding land use and development context when evaluating transportation needs.
8. *Performance measures:* Establish specific and publicly available performance standards and provide updates on progress over time.
9. *Project Selection:* Incorporate complete streets principles into criteria used for project selection.
10. *Implementation:* Set clear and specific steps for implementation.

Conclusion & Exhibits

The implementation measures contained in this memo may be pursued by the City of Roswell in order to fully pursue complete streets. These action items can connect the City's planning documents, including the Comprehensive Plan and Bicycle and Pedestrian Master Plan, to the day-to-day operations carried out by staff and City Council. Adopting complete streets policies and programs in the City of Roswell will ensure the community's stated long-term vision is successfully implemented and achieved and that all users benefit from Roswell's transportation system.

References

National Complete Streets Coalition (n.d.). What are Complete Streets? *Smart Growth America*.

National Complete Streets Coalition (2016). Complete Streets Local Policy Handbook. *Smart Growth America*.

Exhibit A: Connection between Federal, State, and Local Policies and Complete Streets

Policy	Overview/Relevance
Fixing America’s Surface Transportation (FAST) Act (2015) <i>– Federal</i>	The FAST Act is the first federal transportation bill to include Complete Streets language. Specifically, the bill requires that National Highway System roadway designs to take into consideration access for all modes of transportation
NMDOT New Mexico 2040 Plan (2015) <i>– State</i>	Sets forth actions for considerations, policies, funding, and implementation of complete streets on NMDOT-owned corridors
City of Roswell Comprehensive Master Plan (2015) <i>– City</i>	Includes a section on alternative transportation modes, recommendations to create a Safe Routes to School Program, and sets forth the goal to provide a transportation system that balances all modes
City of Roswell MainStreet Roswell Master Plan <i>– City</i>	Includes infrastructure and transportation goals which apply to all modes. As a walkable shopping district, successful MainStreet programs require transportation access for all users.
Railroad District Redevelopment Master Plan <i>– City</i>	Envisions the Railroad District to become a vibrant place where residents and visitors can bike, walk, or drive to major destinations.
The City of Roswell Bicycle and Pedestrian Master Plan (expected 2020) <i>– City</i>	Includes potential bicycle, pedestrian, and trail facilities and design guidelines to be referenced during project development and roadway reconstruction. The Master Plan aims to provide additional transportation options for Roswell residents and visitors

Exhibit B: Model Complete Streets Resolution

The purpose of this Complete Streets policy is to:

- A. State the City of Roswell’s commitment to Complete Streets principles
- B. Provide a policy foundation for the City of Roswell Bicycle and Pedestrian Master Plan
- C. Inform the City’s master project lists to include improvements for bicycle and pedestrian facilities, and trails
- D. Establish the need for improvements to the existing transportation system and the planning and design of new transportation projects

RESOLUTION NO. _____

A RESOLUTION ADOPTING COMPLETE STREETS GUIDING PRINCIPLES SO THAT TRANSPORTATION IMPROVEMENTS ARE PLANNED, FUNDED, DESIGNED, CONSTRUCTED, OPERATED, AND MAINTAINED TO INTEGRATE WALKING, BICYCLING, TRANSIT, AND MOTOR VEHICLE USE WHILE PROMOTING SAFE AND EFFICIENT OPERATIONS FOR ALL USERS.

WHEREAS, the City of Roswell wishes to ensure that all users of our transportation system are able to travel safely and conveniently on all streets and roadways in Roswell; and

WHEREAS, any roadway in the City of Roswell that will be newly constructed or completely reconstructed will be designed and constructed in a manner which considers safety and convenience of all ages and abilities including bicyclists, pedestrians, motorists, and transit users; and

WHEREAS, streets should be designed to complement and support the adjoining land uses, buildings, and community character to support an attractive environment of appropriate scale; and

WHEREAS, streets that integrate multiple transportation choices such as pedestrians, bicyclists, public transit riders, and motor vehicle drivers contribute to the quality of life of a community, sustainable economic development, and efficient movement of people and goods; and

WHEREAS, the term “Complete Streets” describes a comprehensive, integrated transportation network with infrastructure and design that allow safe and convenient travel along and across streets for all users; and

WHEREAS, Complete Streets are essential in providing safe routes to school for children

WHEREAS, Complete Streets align with the City’s goal to provide a balanced and coordinated system of pedestrian, bicycle, vehicular, and transit facilities that allows for the efficient movement of people and goods throughout and within Roswell; and

WHEREAS, Complete Streets are compatible with existing transportation policies of the City of Roswell Comprehensive Master Plan, Bicycle and Pedestrian Master Plan, and MainStreet Roswell Master Plan; and

WHEREAS, Complete Streets will be considered in the scoping, design, and construction of projects and in all future City plans; and

WHEREAS, the City of Roswell will pursue a comprehensive Complete Streets Ordinance that identify supporting policies and programs; and

WHEREAS, the City of Roswell has determined that it is in the best interest of the City for this resolution to be APPROVED.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ROSWELL, NEW MEXICO, that the City adopts the Complete Streets Guiding Principles outlined in this Resolution and is hereby approved and adopted.

PASSED AND APPROVED this _ day of _ , 2020.

APPENDIX D. BICYCLE LEVEL OF SERVICE

Corridor	Project Limits	Bicycle LOS
City of Roswell Streets		
Atkinson Ave	Berrendo Rd to Mescalero Rd	High
	Mescalero Rd to Country Club Rd	High
	Country Club Rd to McGaffey St	Medium
	McGaffey St to Hobbs St	High
Berrendo Rd	Atkinson Ave to Pennsylvania Ave	High
College Blvd	Atkinson Ave to Garden Ave	Low
	Garden Ave to Richardson Ave	Medium
	Richardson Ave to Washington Ave	Low
	Washington Ave to Union Ave	High
	Union Ave to Sycamore Ave	Medium
Deming St	Garden Ave to Lea Ave	Medium
	Lea Ave to Washington Ave	High
Garden Ave	19 th St to Deming St	Low
Hobbs St	Atkinson Ave to SE Main St	Low
	SE Main St to Main St	Medium
	Main St to Lea Ave	Low
	Lea Ave to Washington Ave	Medium
Jaffa St	Main St to Washington Ave	High
Montana Ave	8 th St to 4 th St	High
Sycamore Ave	Country Club Rd to College Blvd	Medium
	College Blvd to 8 th St	High
	8 th St to 2 nd St	Low
Washington Ave	Berrendo Rd to Mescalero Rd	High
	Mescalero Rd to Country Club Rd	Medium
	Country Club Rd to 19 th St	High
	19 th St to 8 th St	Medium
	8 th St to Jaffa St	High
19th St	Atkinson Ave to Washington Ave	High

Corridor	Project Limits	Bicycle LOS
NMDOT Highways		
Atkinson Ave	Berrendo Rd to McGaffey St	High
	McGaffey St to Hobbs St	High
	2 nd St to McGaffey St	Medium
	McGaffey St to E Crossroads	Low
Berrendo Rd	Atkinson Ave to Main St	High
	Main St to Washington Ave	Low
College Blvd	Atkinson Ave to Garden Ave	Low
	Garden Ave to Kentucky Ave	Low
	Kentucky Ave to Montana Ave	High
	Montana Ave to Sycamore Ave	High
Garden Ave	19 th St to Deming St	Low
Hobbs St	Atkinson Ave to Mulberry Ave	Low
	Mulberry Ave to S Main St	Low
	S Main St to Washington Ave	Medium to Low
	Washington Ave to Union Ave	High
	Union Ave to Sunset Ave	Medium
SE Main St	Relief Route to Yikama Rd/2	High
S Main St	Hobson Rd to Martin St	Medium
Martin St	Earl Cummings Loop to Earl Cummings Loop	High
McGaffey St	Sycamore Ave trail connection to Sycamore Ave	Low
Mescalero Rd	Atkinson Ave to Montana Ave	High
	Montana Ave to Wyoming Ave	Medium
	Wyoming Ave to Sycamore Ave	High
Pine Lodge Rd	US Hwy 70 to N Brown Rd	Low
	Thunder Rd to Red Bridge Rd	Medium
	Red Bridge Rd to Atkinson Ave	Medium
	Atkinson Ave to Old Clovis Hwy	Medium
	Old Clovis Hwy to Main St	Low
Red Bridge Rd	Pine Lodge Rd to 2 nd St	Low
Relief Route	US Hwy 70 to US Hwy 285	High

Corridor	Project Limits	Bicycle LOS
	US 285 to SE Main St	High
Sunset Ave	Hobbs St to Poe St	Low
	Poe St to Jaffa St	Low
	Jaffa St to Brasher Rd	Low
	Brasher Rd to Grand Plains Rd	Low
	Grand Plains Rd to Hobson Rd	Low
	Sunset Pl to Martin St	Medium
	Sycamore Ave	Relief Route to Country Club Rd
	2 nd St to McGaffey St	Low
Union Ave	Mescalero Rd to Country Club Rd	Low
	Country Club Rd to 19 th St	Low
	19 th St to College Blvd	Low
University Blvd	Martin St to Earl Cummings Lop	High
2 nd St	White Mill Rd to Atkinson Ave	High
	Atkinson Ave to Montana Ave	Low
	Montana Ave to Loma Vista Rd	High
	Sycamore Ave to past Relief Route	Medium
19 th St	Atkinson Ave to Washington Ave	High

APPENDIX E. PROPOSED BIKEWAY NETWORK

Corridor	Termini	Existing Conditions	Proposed Facility Type	Paved Travel Area
2 nd St	Red Bridge Rd to Atkinson Ave	Paved Shoulders	Bike Lanes	40-42'
2 nd St	Sunset Ave to Loma Vista Rd	Paved Shoulders	Bike Lanes	84-86'
2 nd St	Atkinson Ave to Sunset Ave	Shared Roadway	Bike Lanes	50-60'
5 th St	Atkinson Ave to Richardson Ave	Shared Roadway	Bicycle Boulevard	30'
8 th St	Virginia Ave to Montana Ave	Shared Roadway	Bicycle Boulevard	26'
13 th St	Richardson Ave to Montana Ave	Shared Roadway	Bicycle Boulevard	26'
19 th St	Atkinson Ave to Washington Ave	Shared Roadway	Bike Route	40-46'
2 nd St	Red Bridge Rd to Atkinson Ave	Paved Shoulders	Bike Lanes	40-42'
2 nd St	Sunset Ave to Loma Vista Rd	Paved Shoulders	Bike Lanes	84-86'
2 nd St	Atkinson Ave to Sunset Ave	Shared Roadway	Bike Lanes	50-60'
5 th St	Atkinson Ave to Richardson Ave	Shared Roadway	Bicycle Boulevard	30'
8 th St	Virginia Ave to Montana Ave	Shared Roadway	Bicycle Boulevard	26'
Atkinson Ave	McGaffey St to Hobbs St	Shared Roadway	Bike Route	34'
Atkinson Ave	Berrendo Rd to McGaffey St	Paved Shoulders	Bike Lanes	42'
Berrendo Rd	Atkinson Ave to Main St	Paved Shoulders	Bike Route	44'
Berrendo Rd	Main St to Washington Ave	Shared Roadway	Bike Route	24'
Brasher Rd	Main St to Sunset Ave	Shared Roadway	Bike Route	44'
College Blvd	Montana Ave to US 285 Relief Route	Paved Shoulders	Bike Route	58'
College Blvd	Atkinson Ave to Montana Ave	Shared Roadway	Bike Lanes	40-48'
Deming St	Garden Ave to Washington Ave	Shared Roadway	Bicycle Boulevard	24-30'
Earl Cummings Loop	Hobson Rd to Martin St	Shared Roadway	Bike Route	42-44'
Garden Ave	19 th St to Deming St	Shared Roadway	Bike Lanes	42-46'
Hobbs St	Main St to Union Ave	Paved Shoulders	Bike Lanes	82-84'

Corridor	Termini	Existing Conditions	Proposed Facility Type	Paved Travel Area
Hobbs St	Atkinson Ave to Main St	Shared Roadway	Bike Route	42'
Hobbs St	Union Ave to Sunset Ave*	Shared Roadway	Bike Lanes	44-46'
Jaffa St	Main St to Sunset Ave	Bike Route	Bicycle Boulevard	28-32'
Main St	Hobson Rd to Martin St	Paved Shoulders	Bike Route	106-108'
Main St	US 285 Relief Route to Hobson Rd	Shared Roadway	Bike Route	80'
Martin St	Earl Cummings Loop to Earl Cummings Loop	Shared Roadway	Bike Route	26-28'
McGaffey St	CO Rd 188 to S Sycamore Ave	Shared Roadway	Bike Route	22-24'
Mescalero Rd	Atkinson Ave to Sycamore Ave	Shared Roadway	Bike Route	24-38'
Montana Ave	College Blvd to 2 nd St	Shared Roadway	Bicycle Boulevard	26'
Montana Ave/Union Ave*	19th St to College Blvd	Paved Shoulders	Bike Lanes	56-58'
Montana Ave/Union Ave	Mescalero Rd to 19th St	Shared Roadway	Bike Route	22-24'
Pine Lodge Rd	Hickman Rd to Main St	Shared Roadway	Bike Route	20-22'
Red Bridge Rd	Pine Lodge Rd to 2 nd St	Shared Roadway	Bike Route	24-26'
Richardson Ave	College Blvd to Summit St	Shared Roadway	Bicycle Boulevard	28-30'
SE Main St	Hobbs St to US 285	Paved Shoulders	Bike Route	60-66'
Sunset Ave / Sunset Pl*	US 285 Relief Route to Hobson St	Paved Shoulders	Bike Route	56-58'
Sunset Ave / Sunset Pl*	McGaffey St to US 285 Relief Route	Shared Roadway	Bike Route	40-44'
Sunset Ave / Sunset Pl*	Hobson St to Martin St	Shared Roadway	Bike Route	40-42'
Sycamore Ave	Relief Route to McGaffey St	Shared Roadway	Bike Route	22-44'
University Blvd	Martin St to Earl Cummings Loop	Shared Roadway	Bike Route	36-38'
US 285 Relief Route	N Main St to S Main St	Paved Shoulders	Bike Route	44-46'
Virginia Ave	8 th St to 2 nd St	Shared Roadway	Bicycle Boulevard	36-40'
Washington Ave	Berrendo Rd to Jaffa St	Bike Route	Bike Route	30-40'

*Indicates candidate for road diet, including conversion of four-lane roadway to three-lane facility with center turn lane and bike lanes.

APPENDIX F. TRAIL EVALUATION

Purpose

The purpose of this evaluation is to better understand existing conditions of existing trails in Roswell. Findings from this evaluation can help determine maintenance needs, network gaps, necessary improvements, and the potential for trail expansion to ensure trail facilities are in good condition and adequate for all types of users. Consistent evaluation of trails is recommended to inform trail planning investments and decisions and maintenance activities overtime.

Definitions and Evaluation of Trail Conditions

Pavement Conditions

Pavement conditions include the type and severity of distress observed on the pavement surface. Pavement conditions are assessed using a good, fair, or poor rating system based on observation.

Trail Width

The trail width refers to the unpaved or paved surface area of the trail from one side to the other. The width of the trail is assessed based on observation and documented in feet.

Signage

Signage provides users with access to information such as trail direction or location and can connect trail users to nearby destinations. Signage can be located along the trail itself, at intersections for safe street crossing, or at decision points where users can connect to off-trail facilities. Signage can be displayed as mile markers or interpretive signs, or for wayfinding and directional purposes. Signage is assessed in terms of type and frequency using observation and documented with field notes.

Pavement Markings

Pavement markings include any markings located on the paved surface area of the trail used to indicate potential users and relay important messages to trail users, including which part of the trail to use or where different modes should be situated. Pavement markings are assessed in terms of type and frequency using observation and documented with field notes.

Obstructions

An obstruction is any vertical element that impedes or prevents passage along the trail and creates an unsafe environment for users. Obstructions can include objects such as utility poles, signs in the trail, plants or shrubs, etc. Obstructions are assessed based on field observation and locations should be documented accordingly.

Erosion

Erosion is the transport of soil by water, wind, or gravity, usually in a manner that degrades the preexisting soil condition. Erosion is evaluated at the trail edges using field observations and locations should be documented accordingly.

Sediment Deposits

Sediment deposits are the deposition of sediment; and can be carried by wind, water, or ice. Sediment can be in the form of pebbles, sand, or mud. Sediment deposits are evaluated at the trail edges using field observations. Locations where this occurs should be documented accordingly.

Cross Slope

The cross slope is the percentage of the rise to length when measuring the trail tread from edge to edge perpendicular to the direction of travel. The cross slope is measured by using a level and measuring the trail every 1/8th or 1/10th of a mile.

Maintenance Required									
Cross Slope									
Pavement Markings									
Signage									
Trail Width (feet)									
Pavement Conditions Notes									
Pavement Condition Rating (Good / Fair / Poor)									
Total Distance (miles)									
Distance (miles)									
Location									
Trail									

APPENDIX G. ONLINE INTERACTIVE MAP RESPONSES

Comment	Location
Bike Parking Location	
Bike racks and restrooms needed	Skatepark off of College Blvd. Recreational area/building off of College Blvd (same area as above)
Bike racks needed	US Marshal Services at N Richardson Ave and W 5th St Post office at N Pennsylvania Ave and W 5th St
Bike racks	Roswell City Hall
Baseball	Berrendo Park located at E Berrendo Rd and N Atkinson Ave
Art destination	Located on E Walnut St between E 1st St and S Grand Ave
Would be great place to lock up your bike	Cahoon Plc next to Spring River Prkwy at Cahoon Park
Bikes could be stored here while family enjoys golfing	Nancy Lopez Golf Course at Spring River off of W 8th St
Would be a great spot for a bike rack so that people can ride their bike to this spot lock it up and take a walk down the pond	Spring River Prkway - pond behind the J Kenneth Smith Bird Sanctuary and Nature Center
I have no place to park my bike!	Assumption Catholic Church off of N Kentucky Avenue and Mescalero Rd
Trail Improvements	
Trail/route extension needed	W Jaffa St between S Main St and S Lea Ave
Adding more trail here so that it continues to the west and/or maybe goes into the ENMUR Campus	S Richardson Ave between W Albuquerque St and W Hendricks St
This Hondo Trail needs to connect to something both ends, otherwise it is isolated.	Hondo River Trail
Expand trail to north Roswell through old airport property.	N Sycamore Ave near Gateway Church International
Trail or route extension needed.	S Main St and E Jaffa St

Comment	Location
Drinking fountain for trail users. Also include art and bench for bus stop. Drainage runs over trail...need water drainage addressed.	Spring River Pkwy at N Garden Ave
Plant additional landscape with irrigation. Need artwork along trail.	Spring River Pkwy at N Garden Ave
We need more water fountains all along the trail, including fountains for dogs.	Spring River Pkwy adjacent to W 3rd St near N Nevada Ave
No more trail east	N Atkinson Ave and E Berrendo Rd
Enhance trail in this alley connecting Cielo Grande to Riverside Dr route. Also needs barrier for safety from errant golf balls.	Alley west of N Wyoming Ave between Riverside Dr and Highland Rd
This could be a great shady rest area. The trail is bad here and needs mending. Roots from trees are making the trail split and bulge.	Spring River Pkwy adjacent to W 4th St near N Nevada Ave
Excessive drainage causes damage to area property and trail. Need to address drainage.	Petro Dr near Spring River Pkwy
Landscape needed. Erosion causing damage	Spring River Pkwy near N Garden Ave
People would definitely use this proposed trail extending the Hondo! It needs to extend through the city and not just be one isolated section. Great idea.	Proposed bike route/trail near McGaffey St and S Union Ave
errrosion causing damage to trail	Spring River Pkwy near N Garden Ave
Needs widening in this area.	Spring River Pkwy and Cahoon Plc near N Union Ave
Close road to through traffic. Trail needs signage, markings, cleaning, maintenance.	W 9th St between N Kentucky Ave and N Lea Ave
errrosion causing damage to trail	Spring River Pkwy near N Garden Ave
Glass often found	Spring River Pkwy and W 8th St
Glass often found	Spring River Pkwy and N Washington Ave
Periodic maintenance required...	Spring River Pkwy and W 7th St and Park Rd
The existing Hondo Trail east of Main St has trash, broken glass, loose dogs, poor trail surface, falling down fence. Not at all safe appearing. I went once and never went back.	Hondo River Trail east of Main St
Pedestrian Facility Improvements	
New ramp sidewalk corner was placed with no actual sidewalk to connect to. Trying to get a	W McGaffey St and S Kentucky Ave

Comment	Location
wheelchair out of the dirt onto the lip of the concrete was difficult.	
no sidewalk around roswell high	S Pennsylvania Ave near W Lewis Ct
no sidewalk down brasher	W Brasher Rd between S Washington Ave and Post Office
no sidewalk down s.e. main street	SE Main St and E Frazier St
no sidewalk down McGaffey street	W McGaffey St between S Missouri Ave and S Lea Ave
no sidewalk around stiles field	Stiles Field at Stiles Park
no sidewalk down most of sunset	S Sunset Ave
no sideway down most of sunset,	S Sunset Ave
From Margot purdy park down 9th street the trail has a gap in the sidewalk.	Margot Purdy Park down 9th St
Sidewalk ends. You have to cross the street to continue on a sidewalk.	Country Club Rd near Eastern New Mexico Medical Center - Medical Arts Complex 1 Emergency Entrance
Another concern about 13th St. is crossing N. Main to continue east....Maybe having a turn to the north on the sidewalk, proceed to College, then cross with the controls at that intersection.	13th St and N Main
There's no bike lane or side walks to speak of south of here on Garden. Sidewalks aren't ideal for bikes but it's safer than nothing at all. I can't count how many times I've almost been hit by oncoming traffic. I ride daily as my mode of transportation. The city is NOT bicycle friendly unless it's on designated trails. Which isn't ideal for people who are riding to specific places. Garden and Union are busy roads that need literally anything to make it safe.	N Garden Ave and E Country Club Rd
Garden has high traffic, a cross walk and traffic light like the Union st. cross walk would provide a safer crossing for public.	Spring River Pkwy at N Garden Ave
Sidewalks we do have are in need of repairs down grand!! Also sidewalk on both sides all the way from Poe to Hobbs would be nice!!	S Grand Ave S Grand Ave from Poe St to Hobbs St
When underpass (under N. Main) is closed, as it is periodically, there is no safe crossing (traffic light or marked pedestrian crossing path) for many blocks north or south, causing jaywalking safety concerns. This affects both trail walkers and convention	US Hwy 285 and Spring River Pkwy crossing near E 10th St

Comment	Location
center user who often wish to cross to restaurants on East side of Main.	
Have a sidewalk connect through the old pool area so people do not have to walk or bike in the parking lot.	Spring River Pkwy adjacent to W 5th St and N Delaware Ave
not safe walking in the river from Main to the zoo. homeless trash etc.	Spring River Pkwy near N Virginia Avenue
H/C access needed	W 5th St and N Kentucky Ave
No light signal for people to cross safely. Very busy intersection	E Country Club Rd and US Hwy 285
This area is poorly or often not lit at night and is dangerous during periods of darkness.	Spring River Pkwy near MIA-Pow Park
Need sidewalks and signage. Traffic on Lea is often fast and dangerous.	W 9th St and N Lea Ave
Crosswalk with signage needed	Spring River Pkwy and N Kentucky Ave and W 9th St
No sidewalk	S Union Ave between W Poe St and Ivy Dr
No sidewalk, glass everywhere	S Union Ave between Ivy Dr and Fern Dr
The sidewalk is coming apart	Spring River Pkwy adjacent to W 4th St
no sidewalk down sunset most of way to second street, cannot ride down sunset	S Sunset Ave from Auburn Dr to 2nd St
Trees have lifted side walk walk so much that not even a bike could get through.	S Kentucky Ave between W Chisum St and W Wildy St
I believe that after picking up my children from Military Heights and walking down W. 19th Street and crossing the four stop intersection there should be sidewalk for the kids. It feels unsafe for us, and I've noticed some people driving don't respect the school speed limit after passing the four stop intersection. I don't know if it's because of how the limit signs and school signs are posted or if it just doesn't apply. I strongly believe sidewalk is required to be continued down this street.	W 19th St and N Union Ave
It is difficult to walk on west Mescalero Rd.	W Mescalero Rd
Bikeway Facility Improvements	
There is no need for a 4 lane road here. Look at all this wasted space and NO bike lanes	Hall Dr and W College Blvd

Comment	Location
Brand new road and NO bike Lanes. 4 lanes not needed.	Positano Loop and Alicia Ln
Safe bike lanes to all major shopping and schools.	Albertsons Market
N. Washington is a great connecting road between south & north, but it's narrow and I am not overly comfortable riding on it unless it's very early in the morning or after 7pm	N Washington Avenue
The idea of 13th being a substitute for riding on College makes sense. I have been on it in a car and see where it could work....people who live along there would need to be sure that their dogs are contained (not wandering free) particularly between Washington & Montana. Also @ 13th & Virginia it would be wise to figure out a way where a person on a bike wouldn't have to ride to the congested Virginia & College to proceed farther east. Maybe a trail that parallels the train track going NE??	13th St 13th and Virginia
Would like a bike path to the Hondo and Pecos rivers but I believe most of the rivers are in the county	Spring River Park
People are forced to use the street on this section of the trail. There are no trail markings along this road.	W 9th St between N Lea Ave and N Kentucky Ave
I bike this every day. Has lots of glass and debris on the side of the road.	Godfrey Athletic Center off of N Kentucky Ave
Would like to see Sunset become more bicycle friendly	S Sunset Ave
W College extension a great place to bike, except for between Moore and Mullis when you put in the stupid turn lane and pushed the vehicular traffic to the curbs where we cyclists ride.	W College Blvd between Moore Ave and Mullis Ave
This part of Sycamore is difficult bicycling because the middle turn lane pushes traffic to the curb where cyclists are. If I'm by myself, I sometimes just ride my bike down the middle lane feeling safer, but that is obviously against traffic regulations.	N Sycamore Ave near W 2nd St
A bike lane is needed on North Garden Ave. There are multiple schools on this street.	N Garden Ave
Bike routes need maintenance, i.e. strips, lanes, markings, signage, policing	N Washington Avenue near W 2nd St



Comment	Location
<p>The area where the pool use to be has some good potential; I think the existing bike path should circle to the north then east (I believe there is a sidewalk there or on part of it) so that it misses the traffic in the parking area. I like that the gate has been left open just north of that area; it use to be closed all the time - crossing that park road on a bike could be tricky if many start using that portion of the road (in the park) with cars going to fast.</p>	<p>Spring River Pkwy and W 5th St</p>
<p>I've ridden on the new sidewalks along N. Union between 19th & Country Club, they are lovely. Now if the bike lanes on N. Union south of this area could be kept cleaner (less debris) and maybe even highlighted somehow).</p>	<p>N Union Ave south of Crescent Dr</p>
<p>Need bike access here. No gap in curb.</p>	<p>Spring River Pkwy adjacent to N Missouri Ave between Margot Purdy Park and W 9th St</p>
<p>I would love it if there was a way to connect this ball field with the rest of the biking routes in the town. Sunset is probably the worst biking road in the city. Having a safe way to connect with the rest of the bike trails would be fantastic!</p>	<p>Randy Willis Ball Fields near S Sunset Ave</p>
<p>The separate bike bath is terrible, please don't build any more of these. Cyclists are safer on the road with the traffic where the traffic expects and can deal with bicycles. Vehicular traffic don't expect bicycles that are off street to be crossing the road or driveway that they just turned onto or when they are coming up to S. Main expecting cycling cross traffic before the intersection</p>	<p>S Main St between E Charleston Rd and E Burkett Rd</p>
<p>Very crowded roadway, This needs a road diet. Take out the 4 lanes and make it two or three lanes with a shoulder</p>	<p>S Sunset Ave near W Deming St</p>
<p>The underpass is meant for safety but riding under Main can be perilous, as someone else mentioned (trash, homeless...also puddles and would be dark at night). From Main to Atkinson it feels pretty isolated, what with all the fences connected to businesses. Even walking my dogs from Garden to Atkinson makes me a bit nervous due to that dilapidated building with all the gang signs.</p>	<p>Between Spring River Pkwy and E 10th St</p>

Comment	Location
What makes city streets like this a "bike route"? There are no dedicated bike lanes. I don't understand what makes this a bike route.	S Washington Avenue between Gary Dr and New Mexico Dr
There's no bike lane or side walks to speak of south of here on Garden. Sidewalks aren't ideal for bikes but it's safer than nothing at all. I can't count how many times I've almost been hit by oncoming traffic. I ride daily as my mode of transportation. The city is NOT bicycle friendly unless it's on designated trails. Which isn't ideal for people who are riding to specific places. Garden and Union are busy roads that need literally anything to make it safe.	N Garden Ave and E Country Club Rd
Destinations	
Being able to ride nearer the zoo would be nice	Spring River Park across from the zoo
Gym	Elite Fitness and Tanning off of N Atkinson Ave
Stellar coffee co and bike shop	Stellar Coffee and Bike Shop off of US Hwy 285 between E 4th St and E 3rd St
Other Comments	
Turn right and see the beautiful Anderson household (sign)	N Atkinson Ave and E Berrendo Rd
Need for gap	N Virginia Avenue between E 10th St and E 11th St - Ice Company N Virginia Avenue and E 8th St - Electric Supply Company, Inc N Virginia Avenue near E 3rd St - Bingo Roswell Sertoma Club S Virginia Avenue - Mayes Lumber
Start of connection to spring river trail	E Tilden St and S Virginia Ave
Tight space	Riverside Dr near N Ohio Ave
Posted through way	Riverside Dr and N Montana Ave W 8th St and Nancy Lopez Golf Course at Spring River
Posted sign for through way.	Dead end of Riverside Dr near N Wyoming Ave
Beautiful flower garden	Riverside and Cahoon Plc
Future hotel	E 8th St and N Virginia Ave

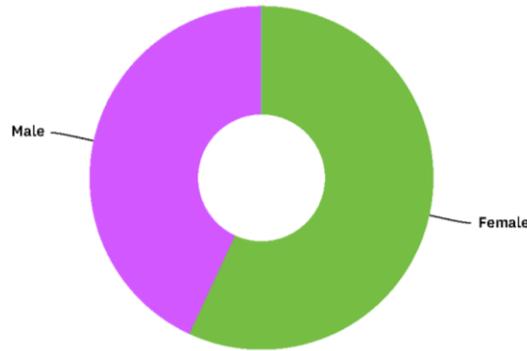


Comment	Location
I'm happy to see this proposed route. I have used it for almost 40 years and have seen many other people walking this trail.	Proposed bike route/trail adjacent/connecting to W 8th St near N Sycamore Ave
Budget to include funding for trail/route maintenance. Support from City Hall required.	Roswell City Hall
Relief Route a great North/South route to bicycle	Relief Route
I have encountered stray dogs on more than one occasion at this location.	Rosemary Ln between Bay Meadows Dr and N Washington Ave
cars going way to fast. bikers and walkers threatened.	Cielo Grande Recreation Area
Move fence south 10 feet and the route off the street. stripe, mark, sign, etc.	Riverside Dr and N Wyoming Ave
Bump in the road	Riverside Dr between N Wyoming Ave and N Louisiana Ave
Loos gravel is here and can be cleaned up.	Alley west of N Wyoming Ave between W 7th St and Highland Rd
Blew a tire from the amount of broken glass along this road.	W 19th St and N Missouri Ave

APPENDIX H. QUESTIONNAIRE RESPONSES

Q1 What best describes your gender?

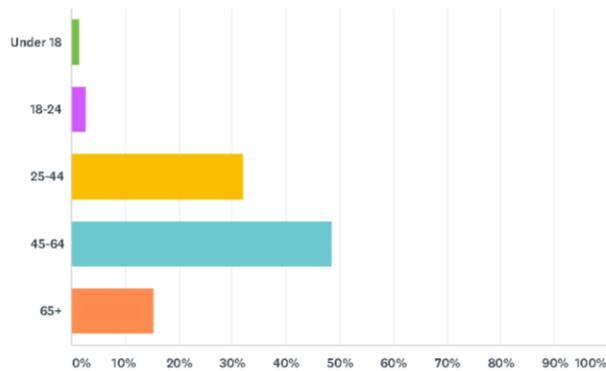
Answered: 72 Skipped: 2



ANSWER CHOICES	RESPONSES	
Female	56.94%	41
Male	43.06%	31
Other	0.00%	0
Choose not to answer	0.00%	0
TOTAL		72

Q2 How old are you?

Answered: 72 Skipped: 2

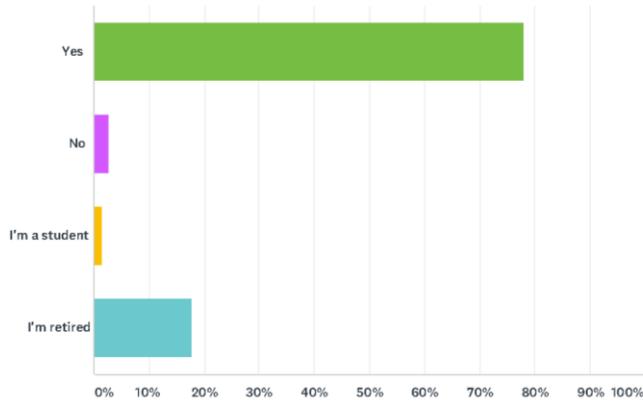


ANSWER CHOICES	RESPONSES	
Under 18	1.39%	1
18-24	2.78%	2
25-44	31.94%	23
45-64	48.61%	35
65+	15.28%	11
TOTAL		72



Q3 Are you currently employed?

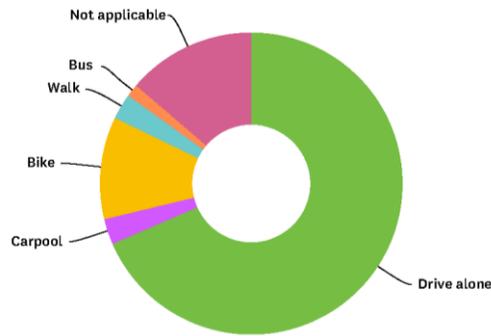
Answered: 73 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	78.08%	57
No	2.74%	2
I'm a student	1.37%	1
I'm retired	17.81%	13
TOTAL		73

Q4 How do you typically travel to work/school?

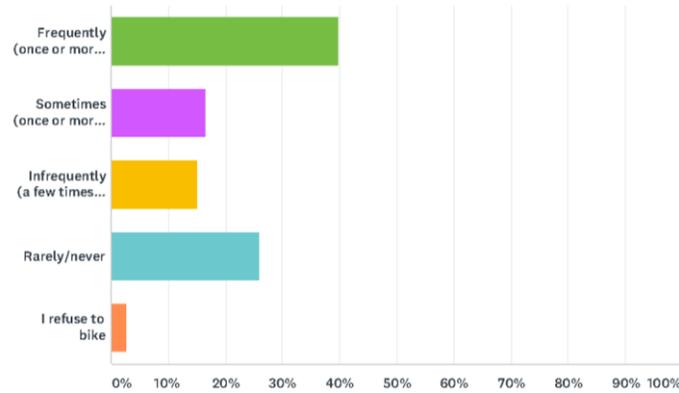
Answered: 73 Skipped: 1



ANSWER CHOICES	RESPONSES	
Drive alone	68.49%	50
Carpool	2.74%	2
Bike	10.96%	8
Walk	2.74%	2
Bus	1.37%	1
Other	0.00%	0
Not applicable	13.70%	10
TOTAL		73

Q5 How often do you typically bike?

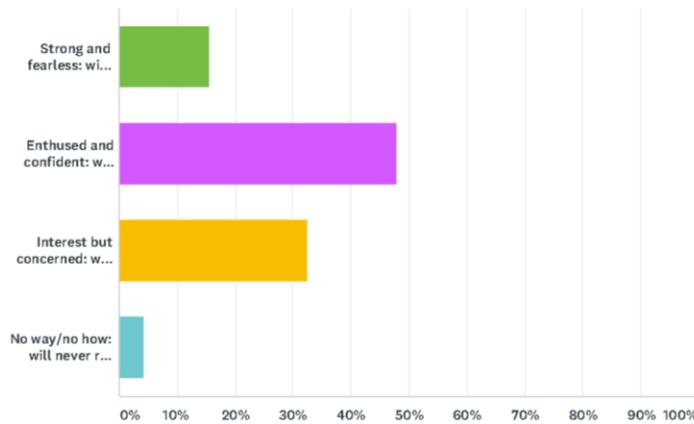
Answered: 73 Skipped: 1



ANSWER CHOICES	RESPONSES	
Frequently (once or more per week)	39.73%	29
Sometimes (once or more per month)	16.44%	12
Infrequently (a few times a year)	15.07%	11
Rarely/never	26.03%	19
I refuse to bike	2.74%	2
TOTAL		73

Q7 What is your comfort level for biking?

Answered: 71 Skipped: 3

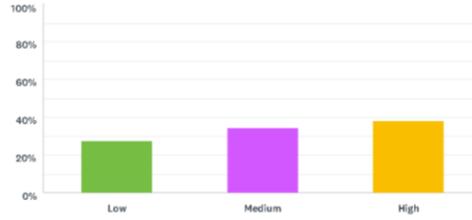


ANSWER CHOICES	RESPONSES	
Strong and fearless: will ride regardless of challenging traffic conditions	15.49%	11
Enthused and confident: will ride in most traffic conditions but prefer dedicated bikeway facilities	47.89%	34
Interest but concerned: will ride only if there are comfortable bikeway facilities provided	32.39%	23
No way/no how: will never ride for personal or physical reasons	4.23%	3
TOTAL		71



Q8 Please state your comfort level for the given bicycle facility

Answered: 73 Skipped: 1

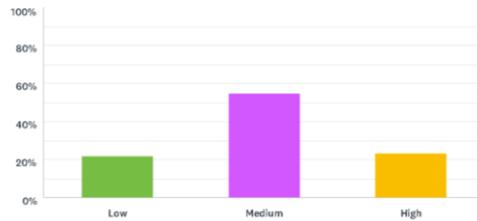


ANSWER CHOICES	RESPONSES	
Low	27.40%	20
Medium	34.25%	25
High	38.36%	28
TOTAL		73



Q9 Please state your comfort level for the given bicycle facility

Answered: 73 Skipped: 1

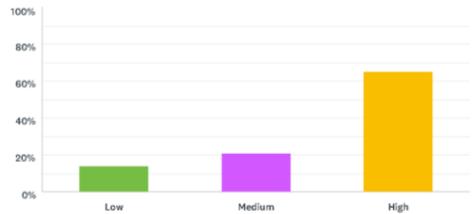


ANSWER CHOICES	RESPONSES	
Low	21.92%	16
Medium	54.79%	40
High	23.29%	17
TOTAL		73



Q10 Please state your comfort level for the given bicycle facility

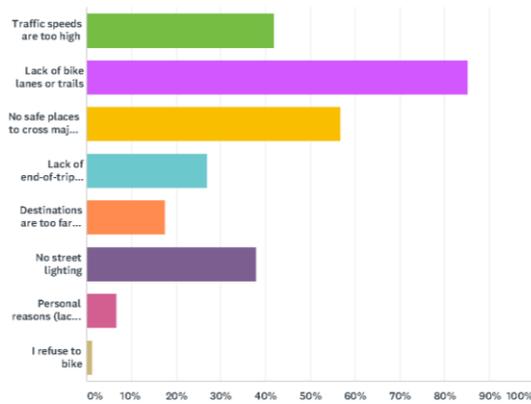
Answered: 72 Skipped: 2



ANSWER CHOICES	RESPONSES	
Low	13.89%	10
Medium	20.83%	15
High	65.28%	47
TOTAL		72

Q11 What factors make it difficult or unpleasant for you to bike? (please check all that apply)

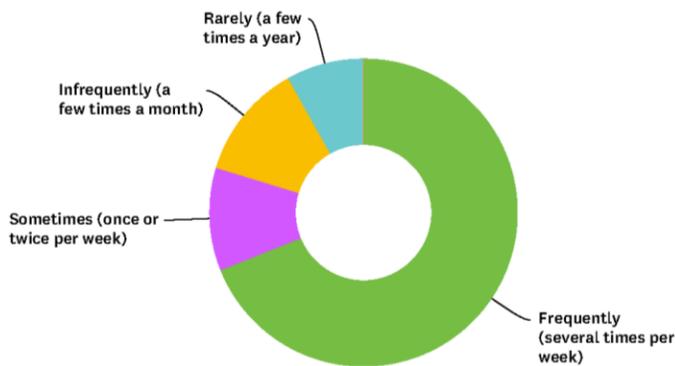
Answered: 74 Skipped: 0



ANSWER CHOICES	RESPONSES
Traffic speeds are too high	41.89% 31
Lack of bike lanes or trails	85.14% 63
No safe places to cross major streets	56.76% 42
Lack of end-of-trip facilities (bike parking, showers, lockers, etc.)	27.03% 20
Destinations are too far away	17.57% 13
No street lighting	37.84% 28
Personal reasons (lack of motivation, do not have access to a bike, etc.)	6.76% 5
I refuse to bike	1.35% 1
Total Respondents: 74	

Q12 How often do you typically walk outside?

Answered: 74 Skipped: 0



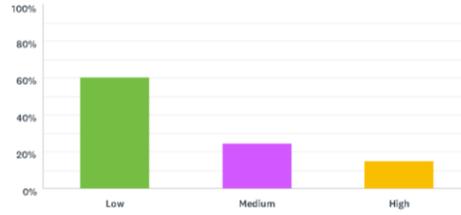
ANSWER CHOICES	RESPONSES
Frequently (several times per week)	68.92% 51
Sometimes (once or twice per week)	10.81% 8
Infrequently (a few times a month)	12.16% 9
Rarely (a few times a year)	8.11% 6
I refuse to walk	0.00% 0
TOTAL	74





Q14 Please state your comfort level with the given pedestrian facility

Answered: 73 Skipped: 1

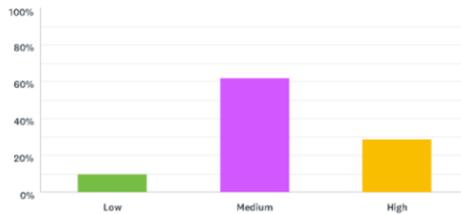


ANSWER CHOICES	RESPONSES	
Low	60.27%	44
Medium	24.66%	18
High	15.07%	11
TOTAL		73



Q15 Please state your comfort level with the given pedestrian facility

Answered: 73 Skipped: 1

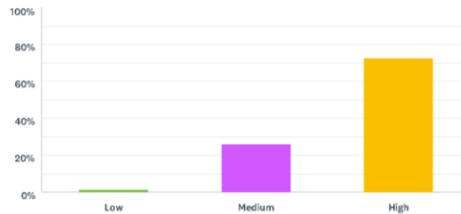


ANSWER CHOICES	RESPONSES	
Low	9.59%	7
Medium	61.64%	45
High	28.77%	21
TOTAL		73



Q16 Please state your comfort level with the given pedestrian facility

Answered: 73 Skipped: 1

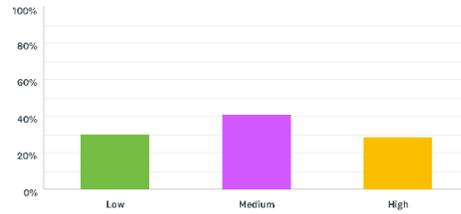


ANSWER CHOICES	RESPONSES	
Low	1.37%	1
Medium	26.03%	19
High	72.60%	53
TOTAL		73



Q17 Please state your comfort level with the given pedestrian facility

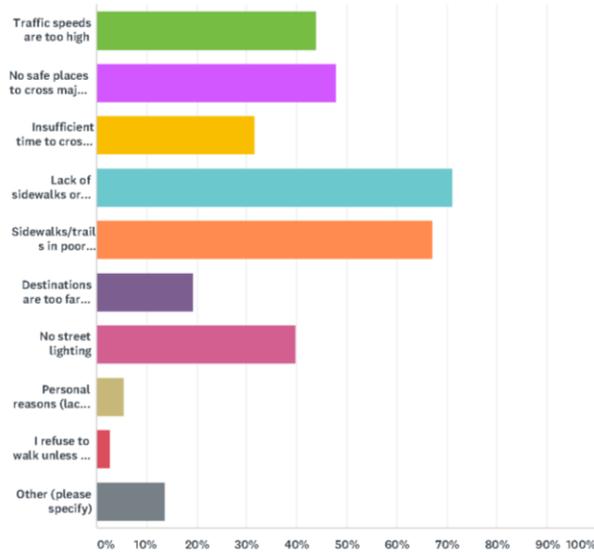
Answered: 73 Skipped: 1



ANSWER CHOICES	RESPONSES	
Low	30.14%	22
Medium	41.10%	30
High	28.77%	21
TOTAL		73

Q18 What factors make it difficult or unpleasant for you to walk? (check all that apply)

Answered: 73 Skipped: 1



ANSWER CHOICES	RESPONSES	
Traffic speeds are too high	43.84%	32
No safe places to cross major streets	47.95%	35
Insufficient time to cross the street	31.51%	23
Lack of sidewalks or trails	71.23%	52
Sidewalks/trails in poor condition	67.12%	49
Destinations are too far away	19.18%	14
No street lighting	39.73%	29
Personal reasons (lack of motivation, health issues, do not have access to a bike, etc.)	5.48%	4
I refuse to walk unless I have to	2.74%	2
Other (please specify)	13.70%	10

APPENDIX I. MICRO-MOBILITY AND PREPARING FOR EMERGING MODES

Transportation is becoming increasingly diverse with the continuous rise in technological advancements and the emergence of new modes, including e-scooters. These innovations provide more options for people to get around than ever before, particularly in urbanized areas. However, these advancements can sometimes be disruptive and may result in new types of conflicts and safety concerns. Cities around the US are developing policies and investing in infrastructure to accommodate new technologies and respond to these challenges. This white paper takes a deeper dive into micro-mobility and emerging modes, placing particular emphasis on e-scooters. More specifically, it outlines broader micro-mobility trends across the nation and accommodation of emerging modes as they relate to transportation planning, discusses overall benefits and challenges communities have faced thus far, identifies the role the City of Roswell can play in responding to these phenomena, and establishes recommendations to help City leaders better regulate micro-mobility to mitigate harms and capture the most benefits.

Relevance

Emerging technologies are outpacing the ability for US cities to manage them and as a result, community safety and quality of life can be jeopardized when a city fails to create thoughtful and intentional plans prior to deployment of these devices. Yet, cities are more successful and are better able to minimize risk while maximizing benefits when they work collaboratively to create clear and specific plans for their community and between private vendors. The City of Roswell is in a position to proactively respond to and regulate emerging technologies in order to improve safety and mobility and expand recreational opportunities that create a more welcoming environment for all residents and tourists.

The emergence of micro-mobility in addition to the rapid and widespread change in transportation preferences has shifted conversations to include how to serve, design, and manage transportation systems to accommodate all users. Micro-mobility encompasses a wide spectrum of transportation modes including fully or partially human-powered small vehicles such as skateboards and shared mobility devices such as electric scooters (e-scooters). A study conducted by the National Association of City Transportation Officials (NACTO) found that shared mobility increased more than two-fold from 35 million in 2017 to 84 million in 2018.⁷ Among shared mobility devices, scooters are now one of the most popular forms. In 2018, more than 85,000 e-scooters were available and surpassed bikes as the preferred vehicle for dockless vendors.

In Roswell, the most likely device that could arise in the community in the nearer-term is the e-scooter. E-scooters can be implemented either through interest from scooter share companies or simply by individuals and Roswell must be prepared to accommodate both. Users of e-scooters can typically travel up to 15 mph and can use them for short- and medium-length one-way or round trips. E-scooters can provide flexible, short-term sharing opportunities between users and sometimes use app-based technology on smartphones or other devices that usually includes a fee. At some point, the City may want to pursue bikeshare. In this instance, it is always better to plan ahead by having the necessary tools in place to prioritize safety and quality of life.

⁷ <https://nacto.org/shared-micromobility-2018/>

Benefits

Micro-mobility provides people with flexible and additional options to get to and from places besides just a motor vehicle. There is currently no strong, consistent evidence indicating the totality of and the specific amount of benefits e-scooters might provide. What is known, however, is that deployment of e-scooters has the potential to impact modal choice and reduce vehicle miles traveled (VMT), help close first and last mile gaps within the transportation network, increase transportation options in areas with limited or no access to transit, reduce parking demand and household transportation costs, and improve air quality and sustainability if people are choosing to drive less and use scooters more.^{8,9,10} Users also report utilizing e-scooters for social and recreational/exercise purposes, which can help enhance economic development.

Some of the main **benefits** of micro-mobility include the following:

- Providing last mile access, particularly for transit riders
- Drawing tourists to the area
- Increasing transportation options to provide people with more choices for getting to and from places

Challenges and Concerns

Safety is one of the highest concerns for cities that have implemented e-scooters. One pilot program in Portland, Oregon found that scooter related injuries increased from less than one to about 10 following deployment.¹¹ There are also considerable challenges for determining where these devices should operate and where they should be parked or stored. Other challenges include conflicts with pedestrians, right-of-way crowding, blocking of pedestrian pathways and entrances, clutter, damage to scooters, helmet usage, illegal sidewalk riding and incorrect parking, and insufficient awareness/education. One solution is to provide infrastructure and dedicated space for users to safely operate and park devices, which may help minimize conflicts with pedestrians and motor vehicles.

Several major **challenges** associated with the deployment of e-scooters across the US include:

- Misuse of scooters including drinking and riding scooters and attempting various “stunts”
- Injuries
- Enforcement and regulation

Guidance

Rules and regulations regarding skateboards and e-scooters tend to vary by state and city but there is still some agreement on their usage.

Skateboards

Skateboards are typically grouped together with bicyclists within regulatory practices, so they are usually required to follow the same laws. Generally, those who use skateboards are allowed to

⁸ https://www.nlc.org/sites/default/files/2019-04/CSAR_MicromobilityReport_FINAL.pdf

⁹ <https://sharedusemobilitycenter.org/wp-content/uploads/2016/10/Reference-Guide-Editsweb-version-10.24.2016.pdf>

¹⁰ <https://escholarship.org/content/qt0dk3h89p/qt0dk3h89p.pdf?t=p67zt1>

¹¹ <https://www.portlandoregon.gov/transportation/article/709719>

travel along designated areas such as shared-use trails. In New Mexico, skateboards are not allowed on any street except to cross the street, at which point they are then considered pedestrians.¹²

E-Scooters

Most cities are not allowing e-scooters on sidewalks due to potential conflicts with pedestrians. E-scooters are typically not allowed to park in vehicle lanes, bicycle lanes, seating areas, in crosswalks, or at bus stops/shelters. To help with enforcement of these policies, cities are allowing users to travel along streets with lower posted speeds (ie. 40 mph or less), and some of the space in public right-of-ways are being dedicated towards scooter parking to avoid blocking of pedestrian pathways and entrances to businesses. Additionally, e-scooters are encouraged to utilize bicycle parking to further mitigate illegal e-scooter parking. Users are sometimes required to have lights to increase visibility and helmets to increase safety. In some areas, pilot programs allowing e-scooters to travel on paved trails and shared-use paths are being implemented to evaluate the effects.

Best Practices and Next Steps

A review was conducted on best practices for shared- and micro-mobility to help inform next steps for the City of Roswell.^{13,14,15} These best practices will help ensure safety is a top priority and allow the City of Roswell to address issues proactively. Key recommendations based on this review are provided below.

Infrastructure and Regulations

- Update the traffic code to clarify where e-scooters may operate. Develop general provisions as the legal framework for operation of these devices, including maximum speeds for devices.
- Update street design guidelines to include micro-mobility
- Provide sufficient infrastructure for users to safely operate all transportation devices
- Identify in the traffic code where scooters may be parked. If scooter or related vehicle use grows, create dedicated areas in the public right-of-way to allow for parking.
- Establish a resolution stating the requirements for an e-scooter program operator.
- For proposed bike share or scooter share programs, complete a public engagement plan to determine how operators will engage with the local community

Data Collection

- Conduct a pilot program to test the feasibility and acceptability of e-scooters and other shared mobility devices to determine long-term solutions
- Survey community members to determine interests and concerns related to implementation of shared- and micro-mobility
- Collect scooter and skateboard counts in addition to bicycle and pedestrian counts to determine future priorities

¹² http://www.townofsilvercity.org/ordinances/2012_UTO_as%20amended_thru_July_2012.pdf

¹³ <https://playbook.t4america.org/parking-street-design/>

¹⁴ <https://ops.fhwa.dot.gov/publications/fhwahop16022/fhwahop16022.pdf>

¹⁵ <https://nacto.org/wp-content/uploads/2018/07/NACTO-Shared-Active-Transportation-Guidelines.pdf>

Education and Outreach

- Partner with agencies to establish a comprehensive pedestrian, bicycle, scooter, and skateboard safety education program
- Create easily accessible communication and feedback opportunities using social media and a website in appropriate languages
- Conduct evaluation to determine impacts and improve future strategies

