CELINA
trails master plan
choose trails

Prepared By:

NORRIS DESIGN
Planning | Landscape Architecture | Branding

Adopted March 2019

CELINA
TEXAS
EST. 1876

2019 TRAILS MASTER PLAN

CELINA, TX

NORRIS DESIGN

Planning | Landscape Architecture | Branding

ACKNOWLEDGEMENTS

The following individuals contributed greatly to the preparation of the 2019 Celina Trails Master Plan. This plan would not have been possible without the leadership and guidance of Celina's citizens, elected officials and City staff.

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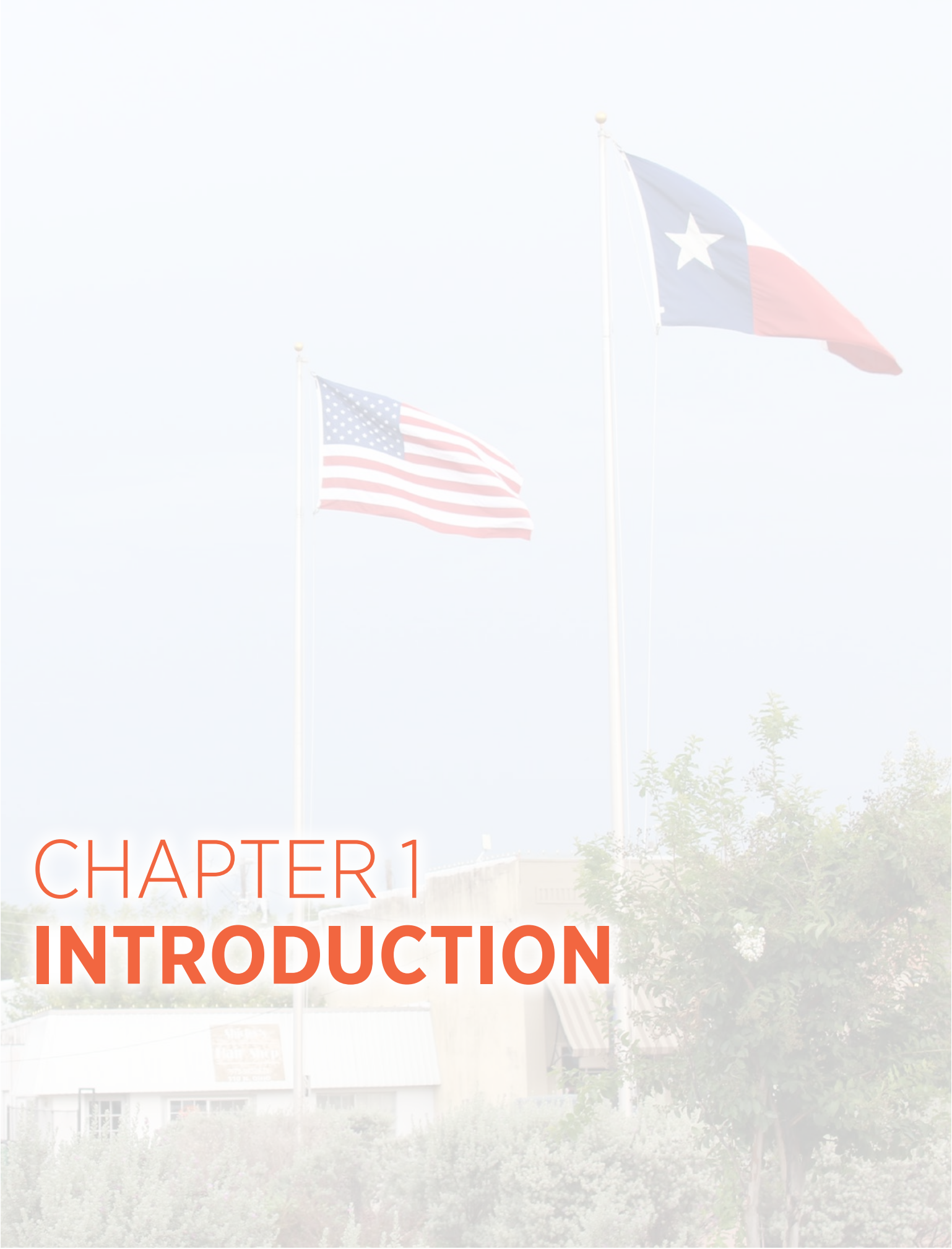


CHAPTER 1
INTRODUCTION

PURPOSE

Pictured Above: Typical rural and neighborhood views around Celina (Source: Norris Design)

This document is intended to be a guide for the future development of trails, bikeways and trail amenities in Celina – one that its citizens, city staff and city administrators can look to for an understanding of the overall "vision" for Celina trails. Coordinating the "vision" with functionality is critical for the use and successful implementation of this plan. The lines we draw on the map are a great first step towards increasing connectivity and building a network, however we seek to provide added value through a diversity of destinations, amenities and transportation options that will make Celina's trail system stand out as a premier network in the future.

"Choose Trails" is the overall guiding theme for the 2019 Celina Trails Master Plan. This phrase represents the desire to link pedestrians and cyclists to all areas of the city and do so with a comprehensive system of trails, bikeways and trail amenities that are unique to Celina.

PLANNING FOR TRAILS TODAY

In the past, many cities did not view trails as a high priority, which resulted in pedestrian facilities that were inadequately sized or perhaps were never provided at all. Now, with more importance placed on bikeability and walkability than ever before, costly retrofits are often required to provide these facilities. If only adequate space had been provided to begin with during the planning stages of design, the effort to reconstruct would be greatly reduced and quality of life would be improved.

Celina has carefully considered the needs of pedestrians in planning its major thoroughfare system by requiring bike lanes, 8' to 10' wide sidewalks and deep sidewalk and landscape setbacks. This will contribute greatly to overall walkability in the city.

A truly comprehensive trail and bikeway system, however, should consist of routes that serve all user groups; creek corridors, utility easements and minor collectors must serve as key components of the network. Thoughtful planning of the system should also tie together major destinations in the city, schools, neighborhoods and provide amenities that enrich the trail user experience through pause points, trailheads, and consistent signage. This plan will address and define these components for the City of Celina.

PLANNING PROCESS

The planning team utilized many different avenues for collecting data and information that aids the in developing the final recommendations. It is highly important that these recommendations be reflective of the needs and desires of the community.

Below is a graphic representation illustrating the step-by-step process that was followed throughout the development of the plan.

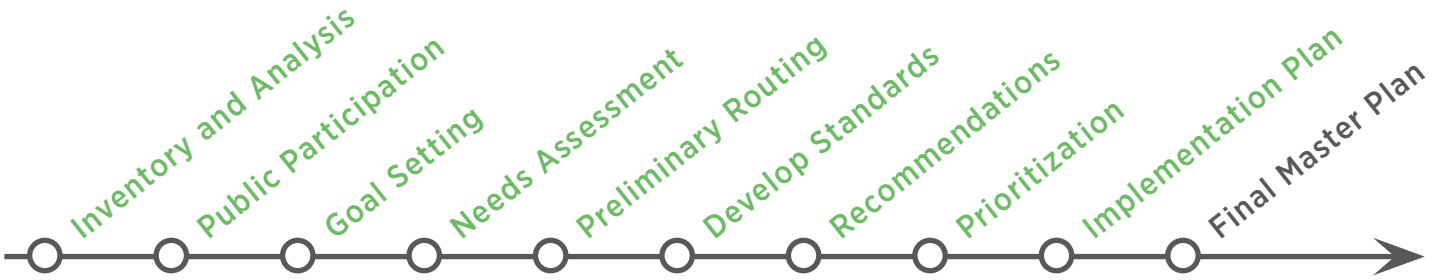


Figure 1.1: Illustration of the planning process

Pictured Above: Abundant view corridors throughout the city (Source: Norris Design)

MASTER PLAN GOALS

The goals of this master plan have been developed out of community and staff input in addition to assessing the overall character and projected growth of the city. Since Celina is largely undeveloped, the planning team recognizes a unique opportunity to implement trails in the city. Therefore, these goals place a high importance on making Celina a premier pedestrian and cyclist-friendly city of North Texas.

GOAL 1

INCORPORATE TRAILS WITH NEW GROWTH

As new growth and development takes place, provide access to trails and trail amenities. This extends to residential, commercial and infrastructure (roadway) development.

- Utilize creek corridors for trails where indicated in the trails master plan; impact as little floodplain as possible to maximize open space.
- Adhere to the guidance in Celina's Future Thoroughfare Plan roadway cross-sections and provide alternative modes of transportation through on-street bicycle facilities.
- Developments make significant accommodations for access to the trail network; design sites holistically with connections to trails a priority.
- Bridges and other roadway infrastructure can be treated to become "gateways" for trails following creeks.

GOAL 2

ENHANCE QUALITY OF LIFE

Trail features and amenities must be designed to a high standard that creates a sense of place and purpose. These features should be representative of the history, culture and character of Celina.

- The trail system should be attractive and capture important views and vistas within the city for citizens to enjoy.
- Provide a comprehensive trail and bikeway network that all citizens can use for recreation, exercise and/or transportation.
- Shade, points of refuge and landscaping should be located along trail corridors and at key destination points to provide a variety of experiences for all types of users.
- Connect the trails and bikeways to adjacent communities and destinations.
- Design trails to access natural features and spaces while preserving sensitive environmental areas.

Pictured Above: Neighborhood walkways with native landscaping. (Source: Norris Design)

GOAL 3
EASILY MAINTAINABLE TRAILS

Design trails to minimize the amount of routine maintenance required for upkeep.

- Ensure positive drainage and no pooling of runoff along trail edges.
- Provide clear points of access for maintenance vehicles and design trails to allow occasional maintenance vehicle traffic.
- Avoid placing trails in the most frequently inundated areas immediately adjacent to creeks.
- Design trails with clear zones on each side to allow for ease of mowing and clean-up.

GOAL 4
IMPROVE SAFETY

Promote safety and security of cyclists and pedestrians through the use of clear maps, signage and wayfinding that is easily comprehendible for all users. Ensure that information is provided to citizens regarding proper etiquette for trail and bikeway use and that trails are secure.

- Ensure that points of conflict are clearly signed, demarcated and visible.
- Remove any barriers for cyclists and pedestrians.
- Utilize signage to inform trail users of common etiquette so that behavior becomes more predictable as trail use increases.
- Reduce the number of roadway crossings where possible.
- Provide consistency in trail facility design through the standardization of trail widths, types, materials and design geometries.
- Provide emergency access for off-street trails and design walkways for occasional emergency vehicle use.

Pictured Above: Trails leading to a destination point overlooking a pond in Constellation Park. (Source: Norris Design)

GOAL 5

CREATE A BRAND FOR THE TRAIL NETWORK

Celina's trail network should become its own brand within the city. Trails and associated amenities should be high-quality and feature unique architectural and design elements that promote an overall theme for the city. The potential brand may express a relationship to Celina's heritage in agriculture.

- Utilize the trails network as a means for attracting new residents to Celina.
- Signage should be designed comprehensively, with a "family" of complementary features (mile markers, gateways, etc.) as the primary goal.
- Trailheads and access points should be viewed as "ceremonial" entry points to the trail system.
- Capture the opportunity to enliven roadway thoroughfares through trail design.

GOAL 6

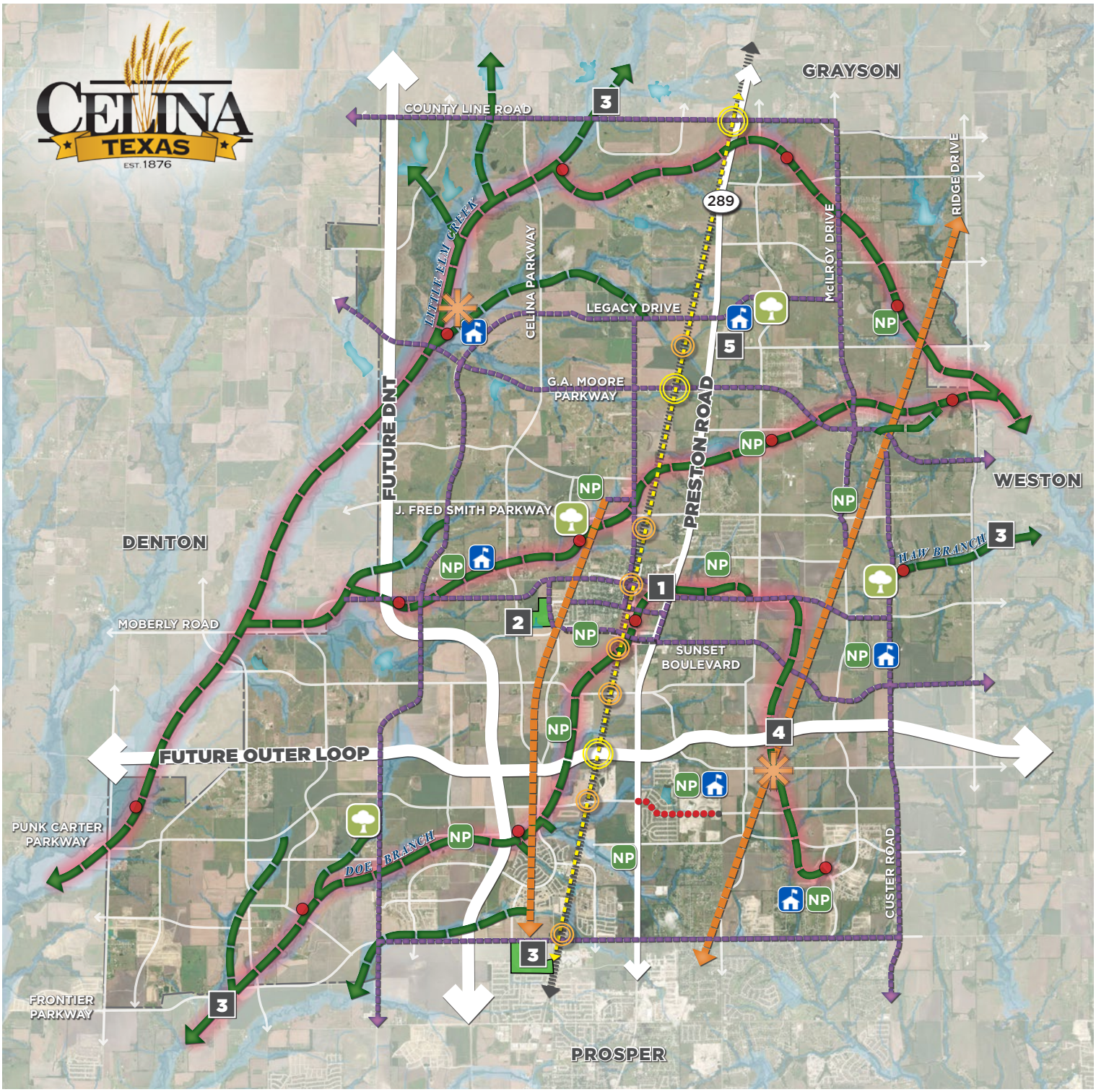
INCREASE ACCESSIBILITY

Eliminate barriers to trail access and use for all citizens in Celina. Clearly demarcate pathways, walks, trails and bikeways and ensure that crossings with all thoroughfares are highly visible and safe.

- Encourage access to natural creek corridors in the city.
- Provide access to schools, neighborhoods and other destinations.
- Place wayfinding and mile marker signage along trails where appropriate.
- Provide clear, safe walkway along all proposed major and minor thoroughfares in the city.

Pictured Above: Rural, hilly roadways with wonderful vistas. (Source: Norris Design)

OVERALL TRAILS MASTER PLAN



Greenbelt Spine Trail
Trail Access Opportunity

Easement Spine Trail
North/South Trail Access Opportunity

Thoroughfare Spine Trail
Trail Access Opportunity within Future Thoroughfares

Bike Lane
Existing On-Road Dedicated Bike Lane

Railroad Spine Trail
Along Existing BNSF Railroad

Future Parks

Regional Park

Community Park

Neighborhood Park

School Park

Collin County Regional Trails Master Plan Spine

Future Thoroughfares
Major and Minor

Creeks & Floodplain Areas
100 Year Floodplain Zones

Existing BNSF Railroad

Railroad Crossing
Grade Separated

Railroad Crossing
At Grade

Trailhead
Opportunity

1 **Downtown Celina**
Connectivity Through Downtown

2 **Old Celina Park**

3 **Regional Connections**
Connect to Neighboring Cities and Parks

4 **Future Outer Loop**
Ensure Continuous Trail Connection

5 **Celina High School**

NORTH

0 1/4 1/2 1 Mile
SCALE

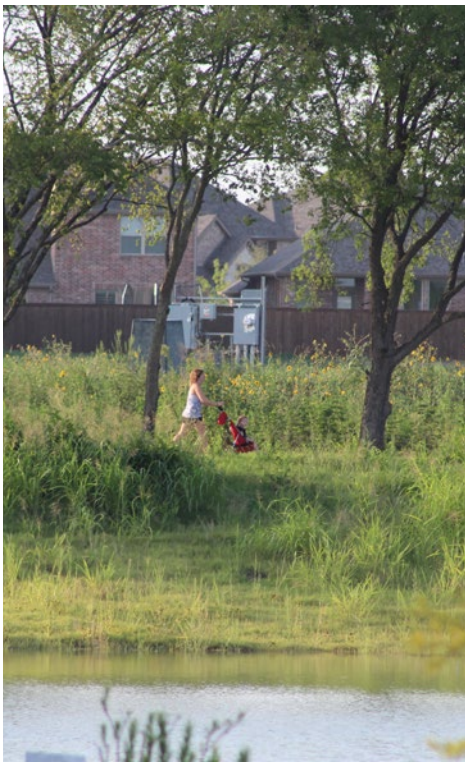
CHAPTER 2
COMMUNITY PROFILE

CELINA TODAY

Today the City of Celina is a small community on the northern outskirts of the DFW metroplex. At the core of the city its charming downtown square is made up of brick-paved streets, a central pavilion, rows of mom-and-pop stores and the smell of barbecue permeates the air. Looking down from above at the entirety of the downtown core, a simple grid street is the dominant urban form. Older homes wrap the individual blocks, and just beyond downtown large expanses of farmland seem to hold the street grid in place.

Only after expanding one's view regionally does it become clear that Celina is "next in line" for major development. As the northern edge of Frisco is gradually infilled along US380 and new neighborhoods and shopping centers spring up in Prosper, Celina will eventually follow suit. Fortunately, however, much of the city's transportation infrastructure is yet to be put in place, making now the ideal time to plan for bikeability and walkability.

Pictured Below: Picturesque imagery from around the city. (Source: Norris Design)

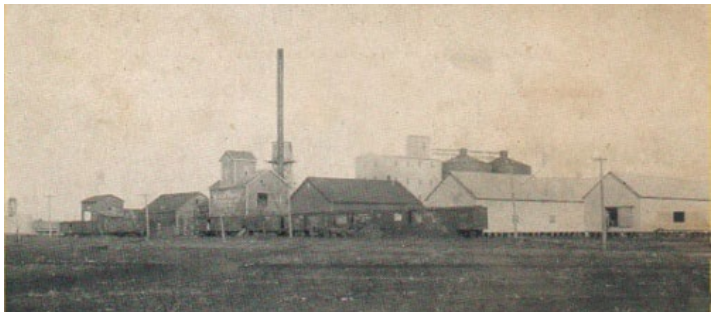


HISTORY OF CELINA

Like many cities and towns in North Texas and around the country, Celina's establishment is based primarily around railroad access. Unfortunately, residents of "Old Celina" learned the new St. Louis, San Francisco and Texas Railway was going to be extended though this part of the country and that they were a few miles southwest of where the line was going to be located. In true Texas fashion, citizens mobilized and made a plan to move the city to the railroad.

The city square began to take shape in 1911 and over the next quarter century Celina would have numerous gas stations, a dry goods store, flour mill, ice houses, cotton gins, a bank, movie theater and many other establishments. The school system began in the early 1900's with the construction of a two story brick building which currently houses CISD Administration offices.

After World War II the city grew slowly but steadily with new roads, schools and infrastructure being built to serve the population. Today, modern neighborhoods are inching their way north towards downtown and new roadways will ultimately replace rural two-lane drives seen throughout Celina.



Pictured Above: Celina Mill and Elevator Company (Source: Celina Bobcats)

Pictured Above: Local resident Leonard Wyatt attended the Celina Historic Black School just east of the Downtown square. The school was closed in 1965 when integration went into effect, and now this plaque marks its location next to a new garden area. The original walkway to the front school door remains today. (Source: Norris Design)

DEMOGRAPHIC PROFILE

Celina's population has been slowly and steadily increasing throughout the 20th century, but is now poised to make tremendous advances as the city continues to grow. As such, many changes can be expected in Celina over the next 10 to 20 years in regards to the makeup of the population.

The tables that follow are indicative of the rapid growth in Celina. The population is estimated to more than double from its current level to over 37,000 in the next five years, and median household income and home values are high. Nearly half of the population has college degrees and three-quarters have at least attended some college.

Pictured Above: Downtown Celina square (Source: Norris Design)

Community Snapshot

Celina Population (2018)

16,451

Area	2018	2019	2020	2021	2022
City of Celina	16,451	20,543	25,868	31,440	37,099
Service Area	20,410	25,076	31,306	38,025	45,285

Table 2.1: Five-year population projections (Source: City Data)

Median Age

37.5

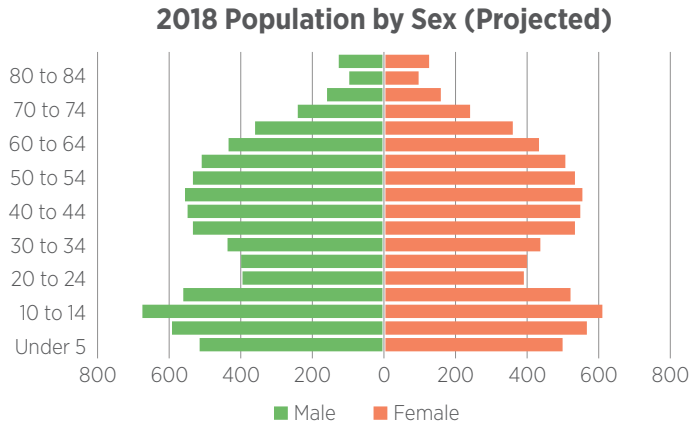


Table 2.2: 2018 Population by Sex (Source: ESRI Data)

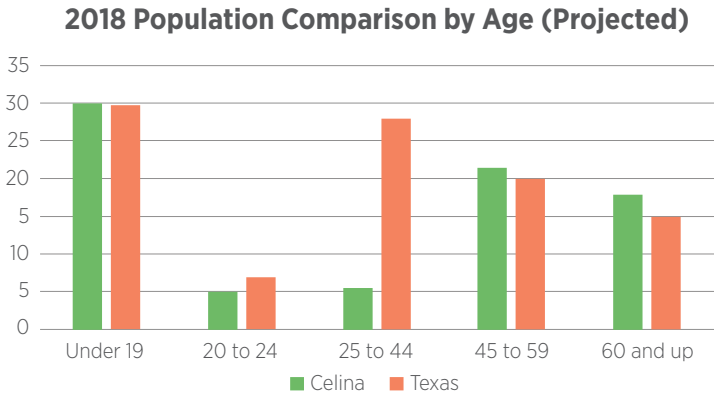


Table 2.3: 2018 Population Comparison by Age (Source: ESRI Data)

EDUCATION AND INCOME

Total Households

5,807

Median Household Income

$98,277

Average Household Size

3.2

Median Home Value

$465,000

2018 Building Permits

1,200

Educational Attainment

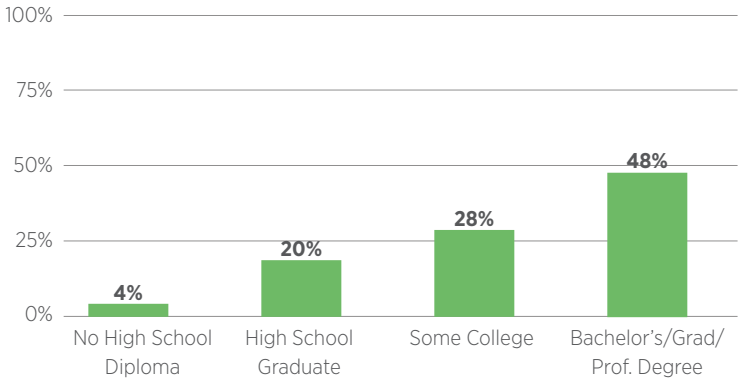


Table 2.4: 2018 Population Comparison by Age (Source: City Data)

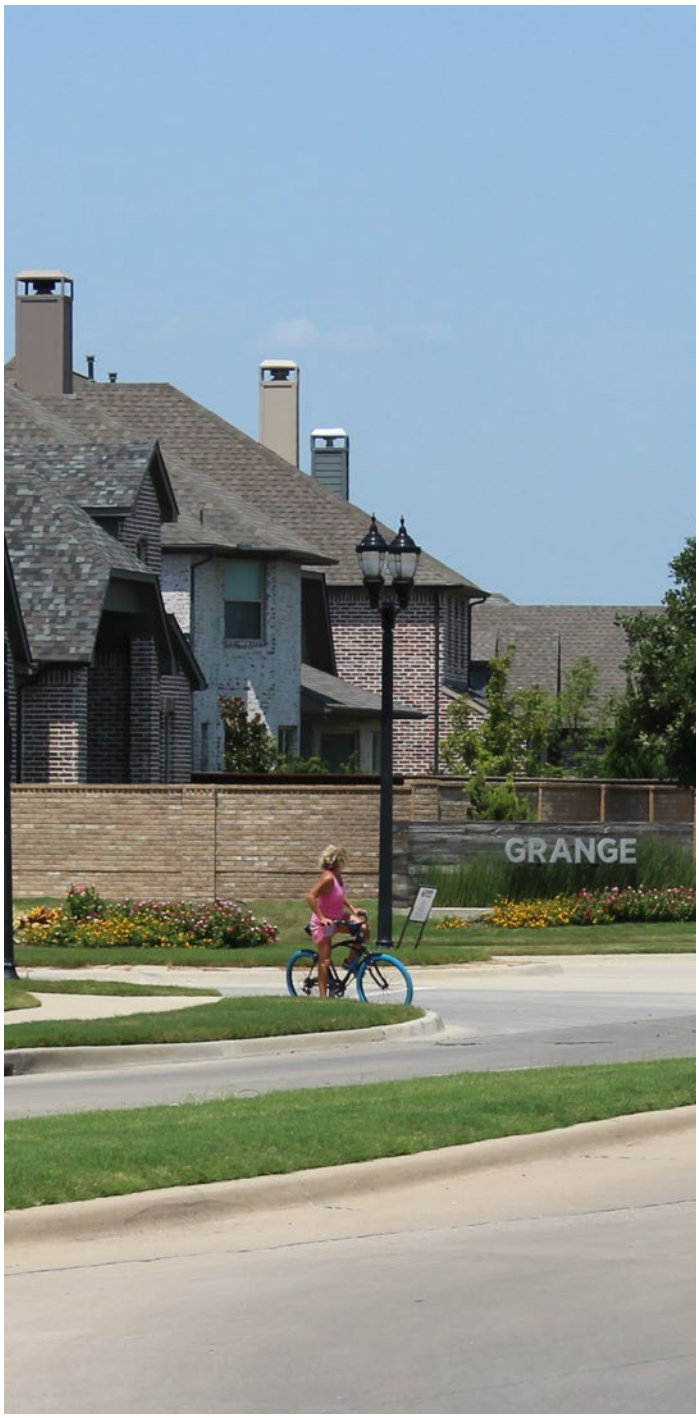
Households by Income

The largest group: $100,000 - $149,999 (23.8%)

The smallest group: $15,000 - $24,999 (3.7%)

Indicator	Value	Difference
<$15,000	4.1%	-0.7%
$15,000 - $24,999	3.7%	-1.0%
$25,000 - $34,999	5.8%	0
$35,000 - $49,999	8.7%	-0.7%
$50,000 - $74,999	16.1%	+0.3%
$75,000 - $99,999	12.4%	-0.8%
$100,000 - $149,999	23.8%	+2.3%
$150,000 - $199,999	13.6%	+2.2%
$200,000+	12.0%	-1.3%

Table 2.5: Households by Income (Source: City Data)



Pictured Above: Cyclist waits to cross the street in Light Farms neighborhood (Source: Norris Design)

REGIONAL CONNECTIONS

This trails master plan must consider the regional context of trails and the planning efforts that have been completed in the past. Plans that fall into this category establish an overall guide for connectivity in the area and should be carefully studied and addressed in Celina's trails plan.

COLLIN COUNTY REGIONAL TRAILS MASTER PLAN (2012)

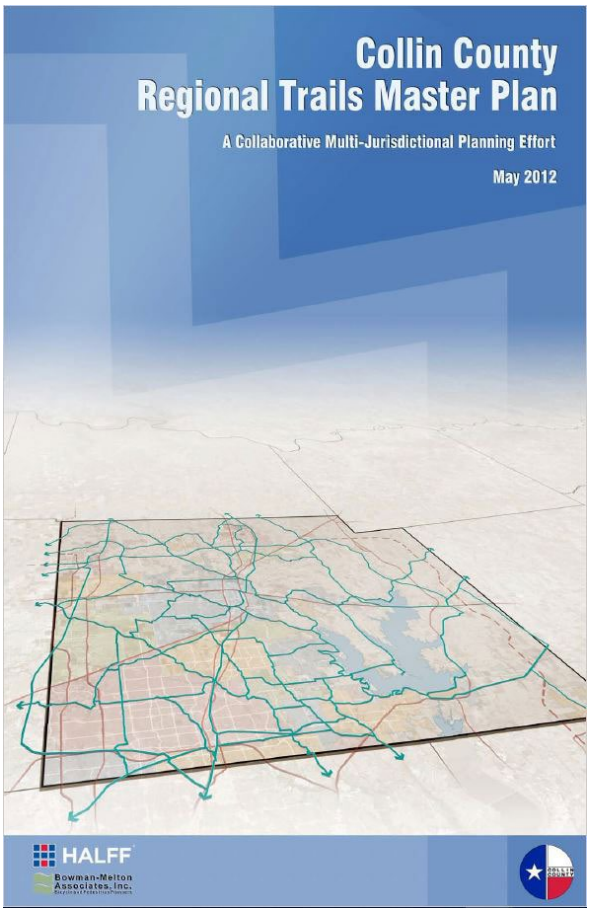
The Collin County Regional Trails Master Plan (RTMP) was completed in 2012 and was a multi-jurisdictional planning effort between a total of 31 municipalities and five agencies. This plan maps intercity connection points, defines high-priority trail corridors and identifies gaps and barriers to trail connections on a regional scale. Municipalities can now use this plan to aid in more detailed future trail development.

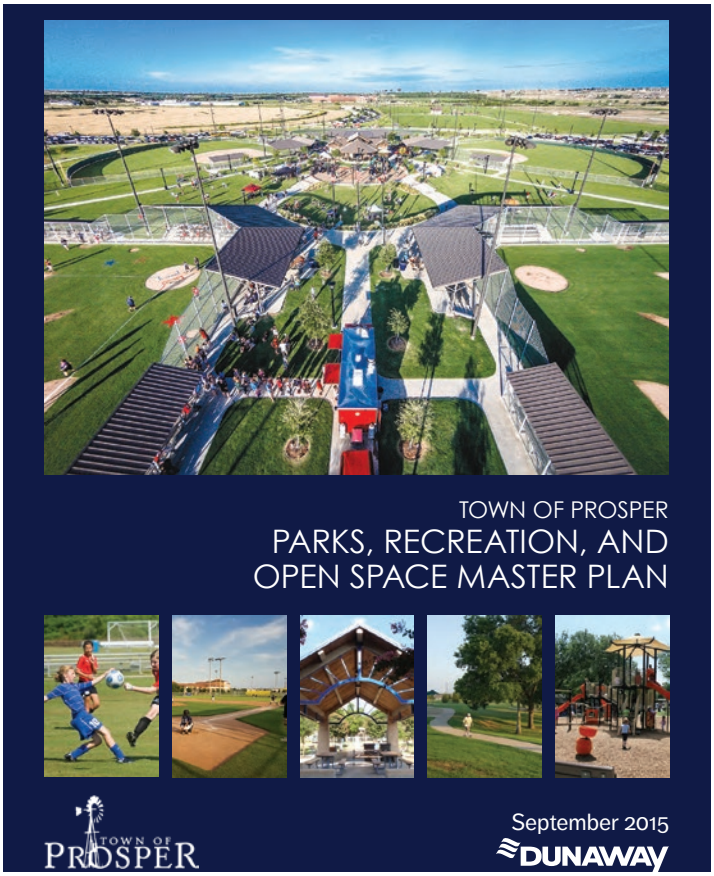
Regional trails in the RTMP are primarily located along creek corridors with a long-term proposed trail along the Railroad ROW. Of these alignments there are two important points of intercity connections identified – along the Railroad and at Wilson Creek.

Note: The recommendations in this plan have a more detailed focus on specific trail alignments, so some routes may vary from the RTMP.

PROSPER PARKS, RECREATION AND OPEN SPACE MASTER PLAN (2015)

The border between Celina and Prosper has numerous points of connection between the two cities as identified in the 2015 plan. The majority of these occur at future planned thoroughfares and some creeks in the western half of the cities. The Celina Trails Plan seeks to reinforce these trail connection points to ensure pedestrian access where possible. It is worth noting that the 2015 Prosper Hike and Bike Trails Plan mapping omits a regional spine corridor trail connection from the RTMP through Wilson Creek and ultimately north to Celina.





EXISTING TRAIL NETWORK

Celina's existing trail network consists entirely of private trails and sidewalks within neighborhood developments. Many of these pedestrian routes offer only internal circulation within the neighborhoods themselves and are often wide enough to support walkers and joggers, but do not provide the widths and turning radii required to meet minimum AASHTO standards. Linking these networks together is a major goal of the Trails Master Plan.

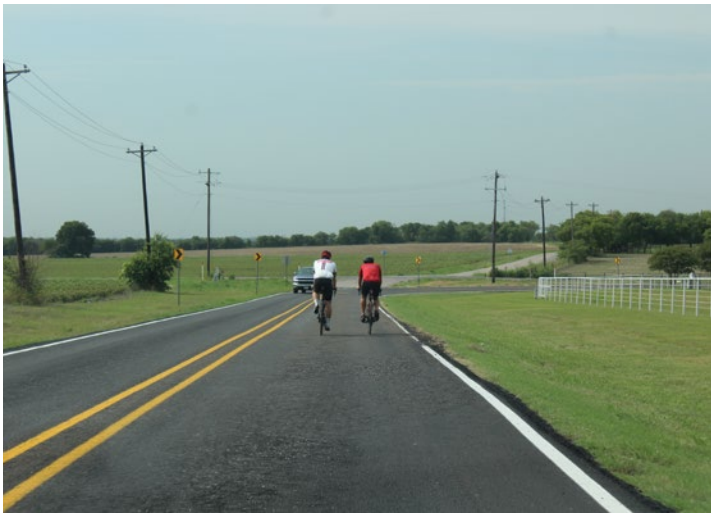
The city has begun to provide on-street bike lane facilities as shown on Punk Carter Parkway within Carter Ranch Neighborhood

Note: AASHTO standards provide minimum geometrical design guidelines for trails and bikeway facilities.

Picture 3: Quality infrastructure in place at Constellation Park in the Light Farms Development (Source: Norris Design)

Picture 1: New neighborhoods often have ample parkway widths with landscaping and sidewalks. (Source: Norris Design)

Picture 4: A jogger using neighborhood trails. (Source: Norris Design)



Picture 2: Cyclists use the many two-lane rural roads throughout Celina. (Source: Norris Design)

Picture 5: Excess pavement on Punk Carter Parkway has been re-striped to implement the first bike lane in the city. (Source: Norris Design)

FUTURE THOROUGHFARES

Celina's future thoroughfares will re-shape the city in a dramatic way. Many of the roads today simple two-lane country roads, but will ultimately be widened to four and six-lane divided arterials that carry much larger volumes of traffic. The graphic below is the city's adopted thoroughfare plan from 2018.

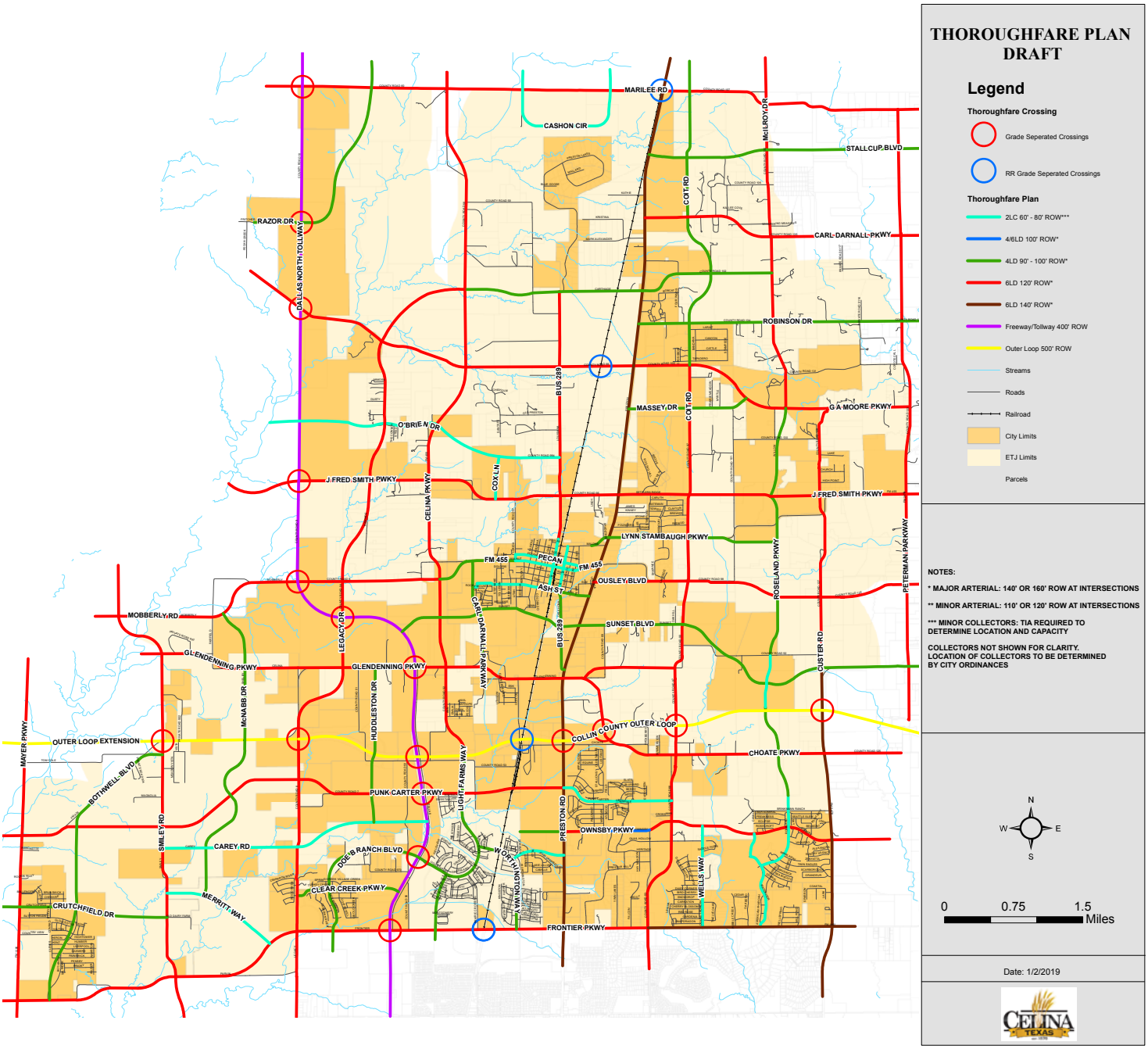


Figure 2.1, Future Thoroughfare Plan. Continuation of roads north from Prosper, establishing east-west routes and the addition of major expressways like the Outer Loop and Dallas North Tollway lay the foundation for connectivity in Celina. As described in the following chapters, these roadways will also contribute greatly to pedestrian access throughout the entire city. (Source: City of Celina).

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CHAPTER 3
THE NEED FOR TRAILS

BACKGROUND

No city-wide plan can be complete without the on-the-ground input of the public and city staff. They are, after all, the end users and have a thorough understanding of their city. Cities also differ from place to place, and likewise, so do the needs and wants of residents.

It is important to reach out to the community and gain insight into how they would like to shape the city over time. When people take time out of their schedules to voice their opinions on matters such as trails it shows that a community is actively interested in its future.

The planning team was able to capture this feedback through a variety of methods including a steering committee, attending the first annual Oktoberfest event on the square and an online survey.

STEERING COMMITTEE

The Celina Parks Board acted as the steering committee for the master plan. Their role was to provide guidance to the planning team and assist in establishing the vision and goals for the plan.

A kickoff meeting was held with the committee on September 19, 2018 where the planning team presented an overview of the planning process and conducted a brief visioning exercise. Each Committee was two questions: first, "Why do you think trails are and/or will be important for Celina?" A selection of quotes are provided below.

The Committee was also asked "20 years from now, how would you like visitors to describe Celina?" Consistent themes emerges from the responses including **family-friendly, well-planned community** and a **"big city with a small-town feel."**

Pictured Below: The iconic water tower above rooftops on a summer morning. (Source: Norris Design)

"Trails are becoming a vital piece of what residents expect. They also help people connect, recreate and exercise."

"...being able to keep open spaces would keep us with the rural feel."

"Celina can encourage a healthy atmosphere."

"As Celina becomes more dense, it is important for its residents to be able to feel as if they are still in an open and natural environment."

"Being able to move from one part of the community to another without a motorized vehicle"

PUBLIC AND COMMUNITY INPUT

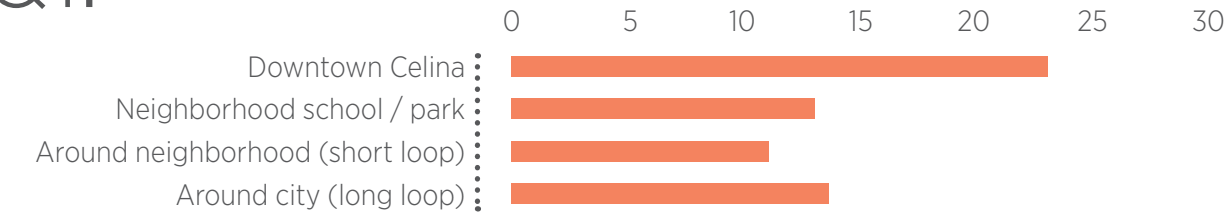
INITIAL MEETINGS

On June 22, 2018 the Trails Master Plan was officially kicked off with the planning team attending an early public meeting for the Downtown Master Plan. This was an ideal opportunity to go out into the community and solicit feedback for trails.

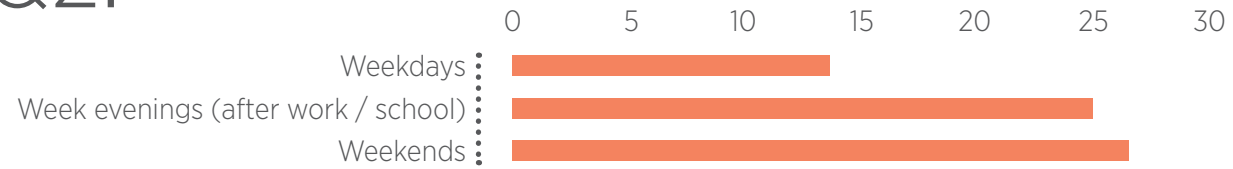
At the meeting, a brief survey was handed out to attendees which asked three basic questions that began to help define the wants and needs of Celina citizens. In total, 35 surveys were filled out and the results are shown below.

Pictured Above: Mayor Sean Terry speaks at the Downtown Master Plan public meeting. (Source: Norris Design)

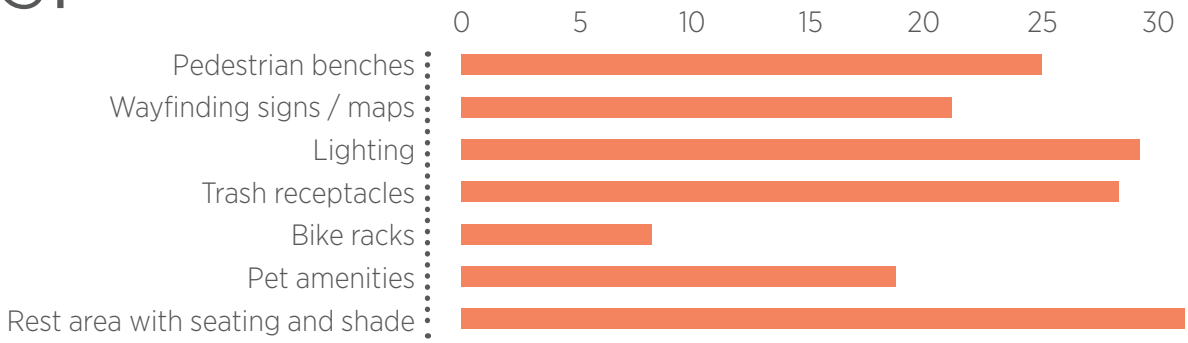
Q1: Where are you going or plan to go as you use the future pedestrian trail network in Celina?



Q2: When do you feel is the primary time for you to use these pedestrian trails?



Q3: What are the trail features that you feel would be most important to include in the construction of pedestrian trails in Celina? Please check all that apply to you.



OKTOBERFEST

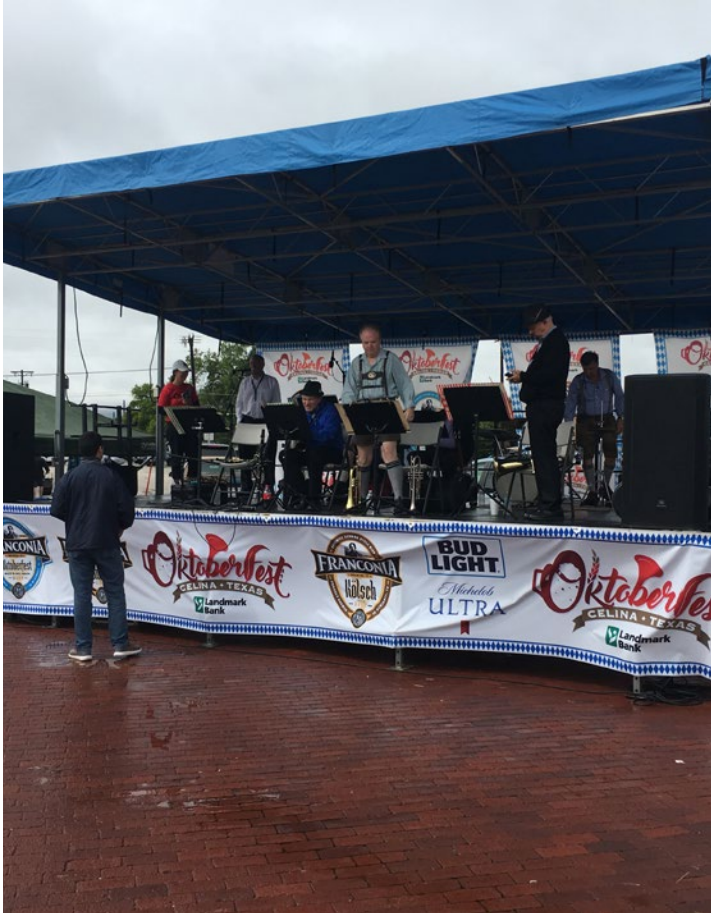
The planning team attended Oktoberfest on Saturday October 13 to greet citizens, learn more about the community and encourage people to participate in the plan by taking the online survey. Aligning with the theme of trails and bikeways, a local hardware store donated a bicycle which was raffled off at the end of the event.

Despite the rainy weather over 100 people came by the trails plan booth and over 50 participated in the raffle.

Pictured Above: Attendees at Oktoberfest. (Source: Norris Design)

Pictured Above: The planning team engaged the public by encouraging them to take the online survey and raffling off a bicycle. (Source: Norris Design)

Pictured Above: Tapping the keg to kick off a rainy Oktoberfest. (Source: Norris Design)

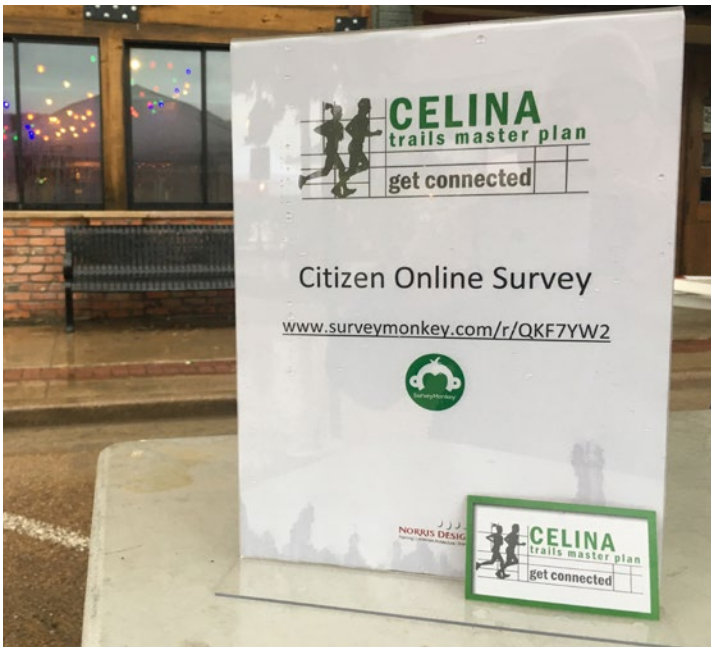


Pictured Above: The polka band sets up to play. (Source: Norris Design)

WEB-BASED SURVEY

A web-based survey hosted through SurveyMonkey was administered over a period of just over two months from late September through November of 2018. There were a total of 21 questions on the survey that typically took respondents less than 10 minutes to complete. In total, 277 people provided their input on the survey.

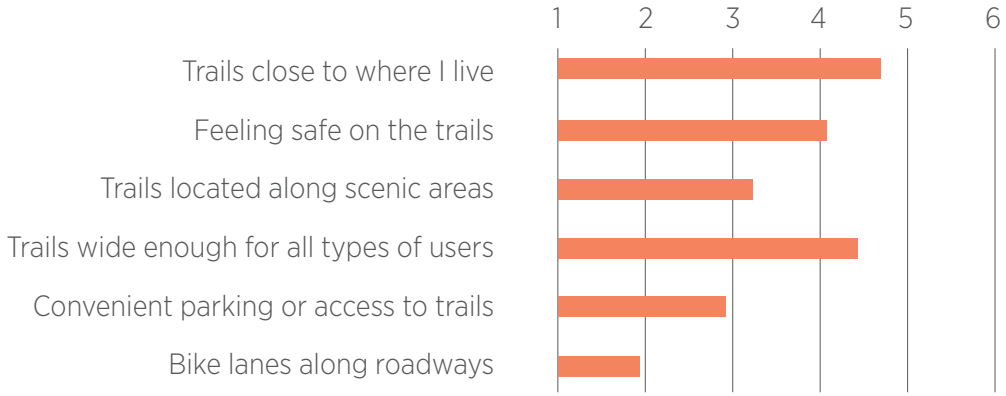
Questions ranged from basic data on where residents live and work to multi-part questions which rank users' priorities for trail types and locations.



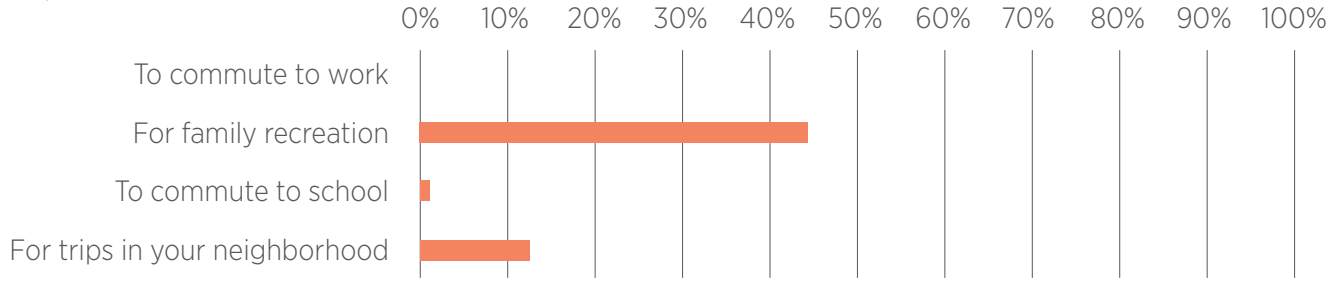
SURVEY RESULTS

The following is a snapshot of information collected from survey respondents that captures some of the high points related to trails planning. These are presented in no specific order.

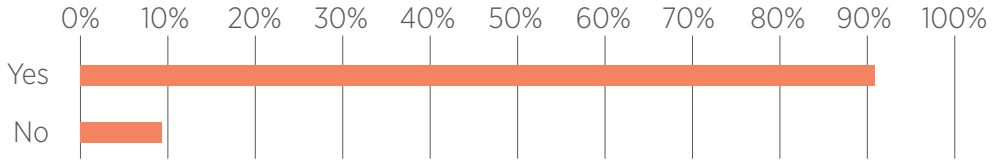
Q1: Please rank your choice for the following in order of priority (1 = Least Important; 6 = Most Important)



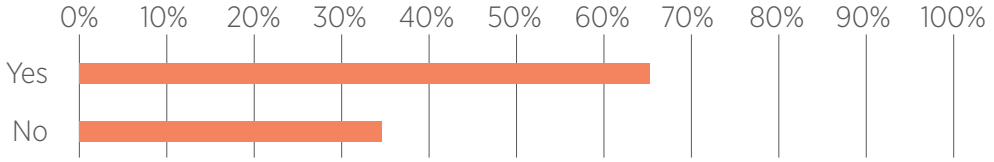
Q2: What is your main purpose for cycling?



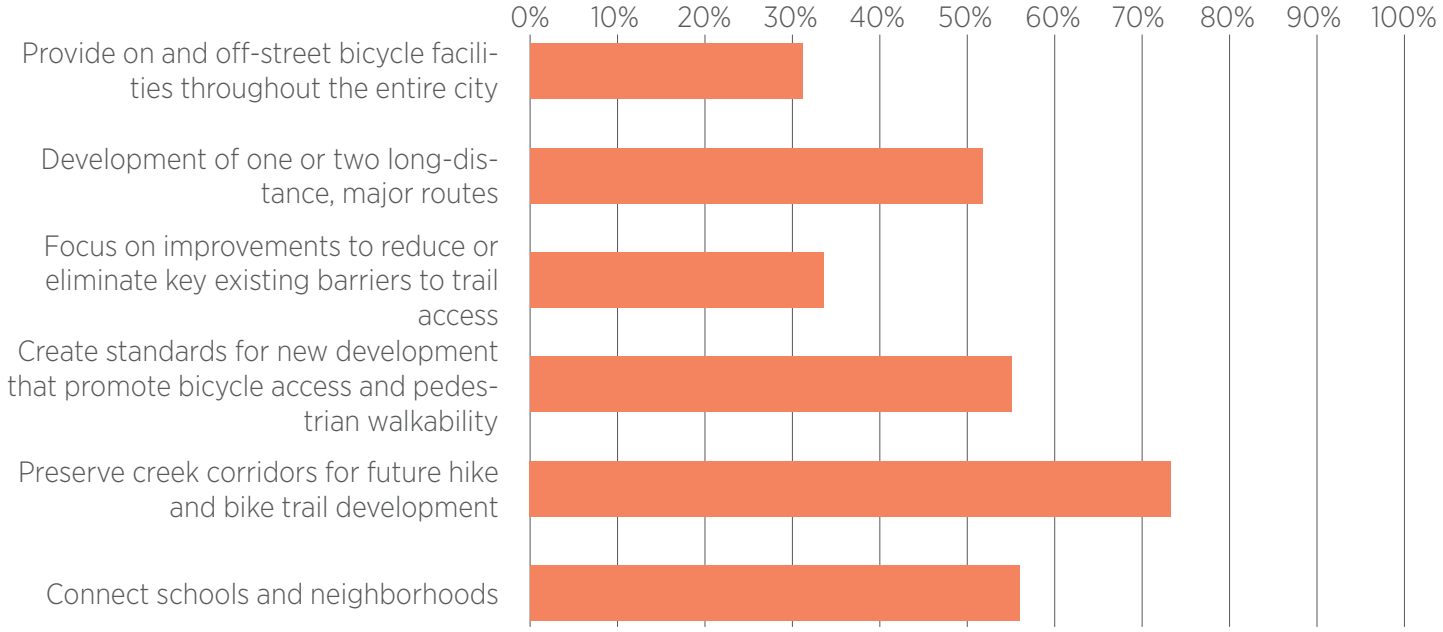
Q3: If Celina had safe off-street pedestrian/bicycle trails (e.g. sidewalks, creek trails) connecting neighborhoods, schools, recreation and civic uses, would you use them instead of driving sometime?



Q4: If Celina had safe on-street pedestrian/bicycle trails (e.g. dedicated bike lanes along roadways) connecting neighborhoods, schools, recreation and civic uses, would you use them instead of driving sometime?



Q5: What should Celina's trail and bicycle system priorities be over the next five to ten years? (Check all that apply)



BENCHMARK CITIES

One measure for determining a city's need for trails is to compare the level of service provided by its trails to that of comparable cities. In the case of Celina, it has only begun to experience significant growth in the past 10 to 15 years, so its trail system consists entirely of private developer trails within neighborhoods. Nevertheless, it is important to understand Celina's current trail level of service to establish a baseline which will increase over time as more trails are constructed.

Five benchmark cities were selected for comparison to Celina's existing trail system – all within the DFW Metroplex. These cities were selected based on several factors including size, proximity and available land for future growth. Both hard-surface and soft-surface trails are included in the following comparisons.

The methodology for determining trail level of service is to compare the number of miles of trail to each city's current population, resulting in a population-per-trail mile benchmark. A low population-per-trail mile number is preferable – indicating that the population is well-served by trails. A high population-per-trail mile number is less preferable. Of course, this is only one metric. A specific community's demand for trails, average trail widths and/or quality of the facilities also factor into how well-served the community might be.

Level of Service Comparison

City Name	City Area (Square Miles)	Population	Existing Trail Mileage	Trail Level of Service
Celina	78.0	15,041	+/-10.0 (Private)	1,504
The Colony	16.1	41,325	26.18	1,578
Melissa	21.0	10,500	0.81	10,500
Argyle	11.4	4,000	0.0	N/A (Planned only)
Little Elm	18.6	34,355	7.63	4,502
Prosper	27.0	22,650	14.88	1,522

Table 3.1: Level of Service Comparison (Source: Individual city data)

2022 Target Level of Service for Trails

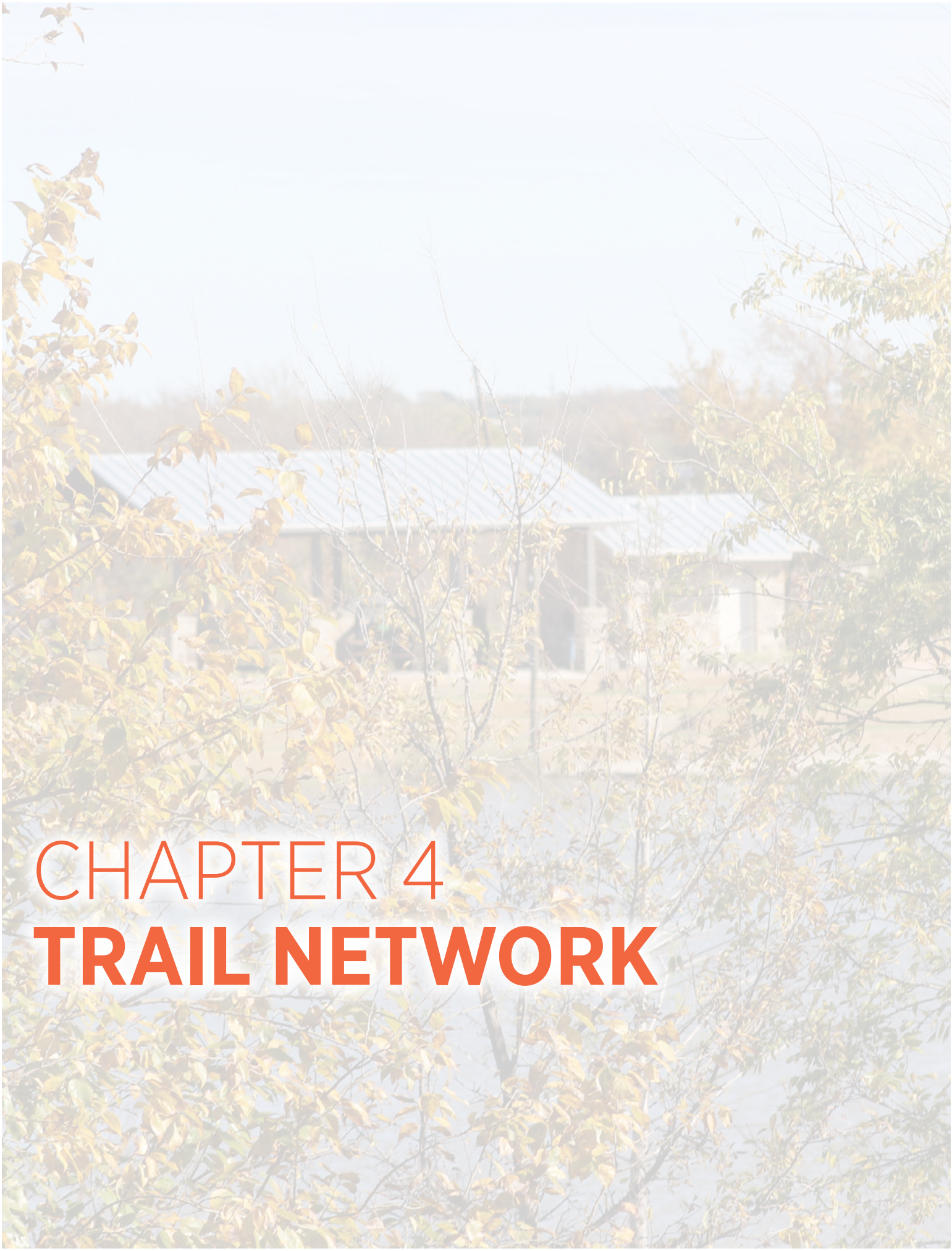
1,800

(Population per trail mile)

Estimated population: 37,099

Trail mileage needed: 20 (+/-10 existing miles + 11.6 proposed miles)

City Area: 78 square miles (Total service area)



CHAPTER 4
TRAIL NETWORK

This chapter identifies and describes the particular trail alignments for various user groups in Celina and discusses opportunities and constraints found in the city. The selection of these trail routes is based on the need to provide access to a wide range of diverse users in conjunction with current best practice and city and staff input.

USER GROUPS

Celina's trail network is made up of three general categories:

- Off-street trails
- Sidewalks and sidepaths
- On-street bikeways

Each of these components serves individuals differently. Off-street trails within the limits of a creek floodplain may be highly desirable for families with small children who are mostly concerned with recreation in a safe environment, but they may not be as desirable for a cyclist whose goal is to commute to work. The cyclist is more likely to prioritize the speed and efficiency of a route along a roadway while accepting the risk posed by riding alongside vehicular traffic. These two user groups are very different, but it is important that to the greatest extent possible, the network of trails and bikeways addresses all users' needs for the greatest level of service to the community.

Based on the public input from the online survey and interaction with citizens of Celina, the following three user groups have been identified.

1. Transportation-Focused

Transportation-focused trail and bikeway users may either walk or ride a bike to their destination points, consisting of schools or places of employment, for example.

Pictured Above: Cycling as an alternate mode of transportation. (Source: PIXNIO.com)

2. Recreation-Focused

These trail and bikeway users may consist of walkers and cyclists of various levels of experience whose main purpose is to use trails casually for recreational enjoyment.

Pictured Above: Families walking for recreation along sidewalks.

3. Exercise-Focused

Exercise-focused trail and bikeway users tend to be walkers, joggers, runners and cyclists who find it useful and practical to exercise outdoors.

Pictured Above: One of the many Celina residents who run along neighborhood sidewalks. (Source: Norris Design)

OPPORTUNITIES AND CONSTRAINTS

STREET NETWORK

Perhaps the single most important opportunity for bike and pedestrian mobility in Celina is through the planned roadway system. These roadway standards are uniquely accommodating for multiple modes of transportation. The graphics below illustrate these future roadway typologies.

8' Sidewalk

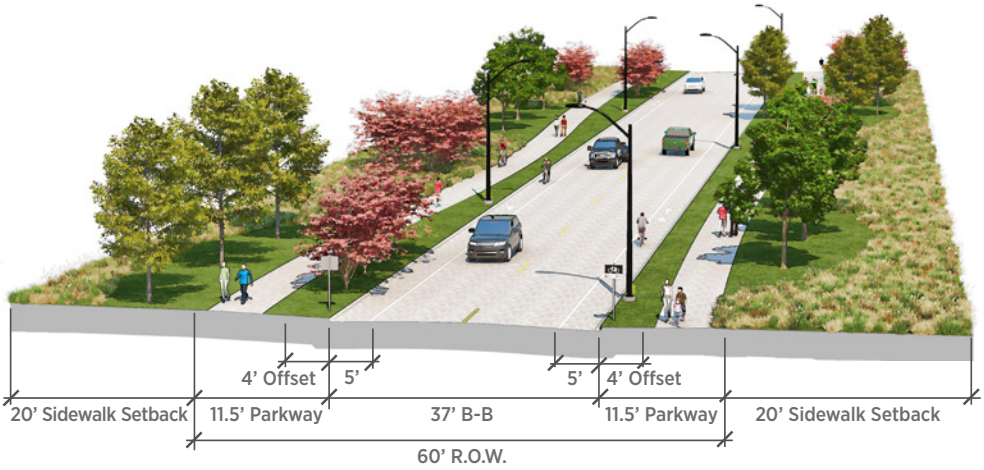


Figure 4.1, Collector Street with Bike Lanes; C2U. (Source: Norris Design)

10' Sidewalk

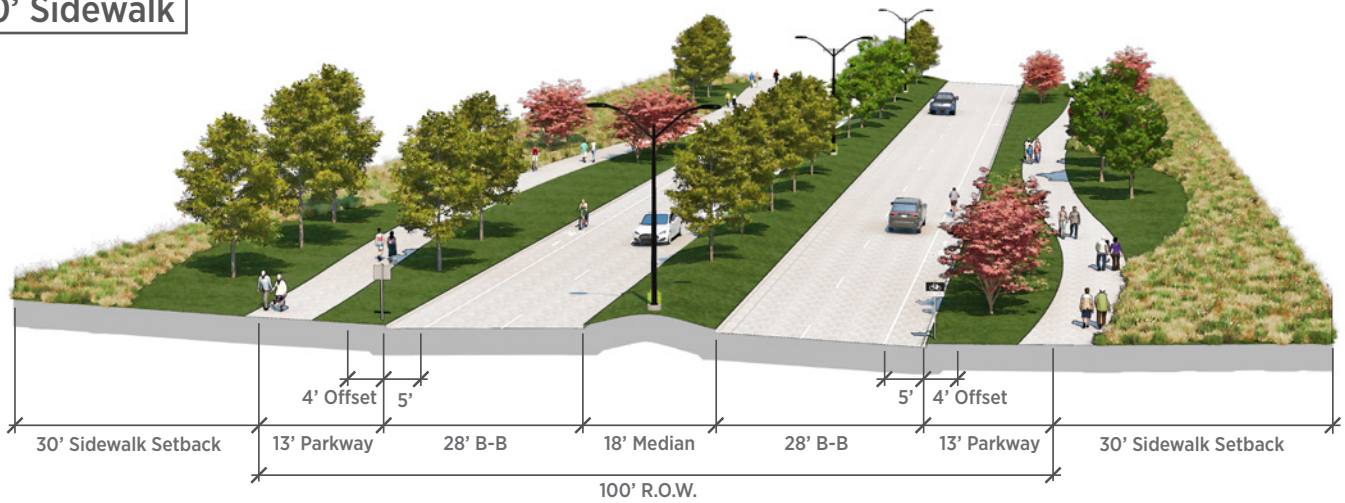


Figure 4.2, Minor Thoroughfare; M4D. (Source: Norris Design)

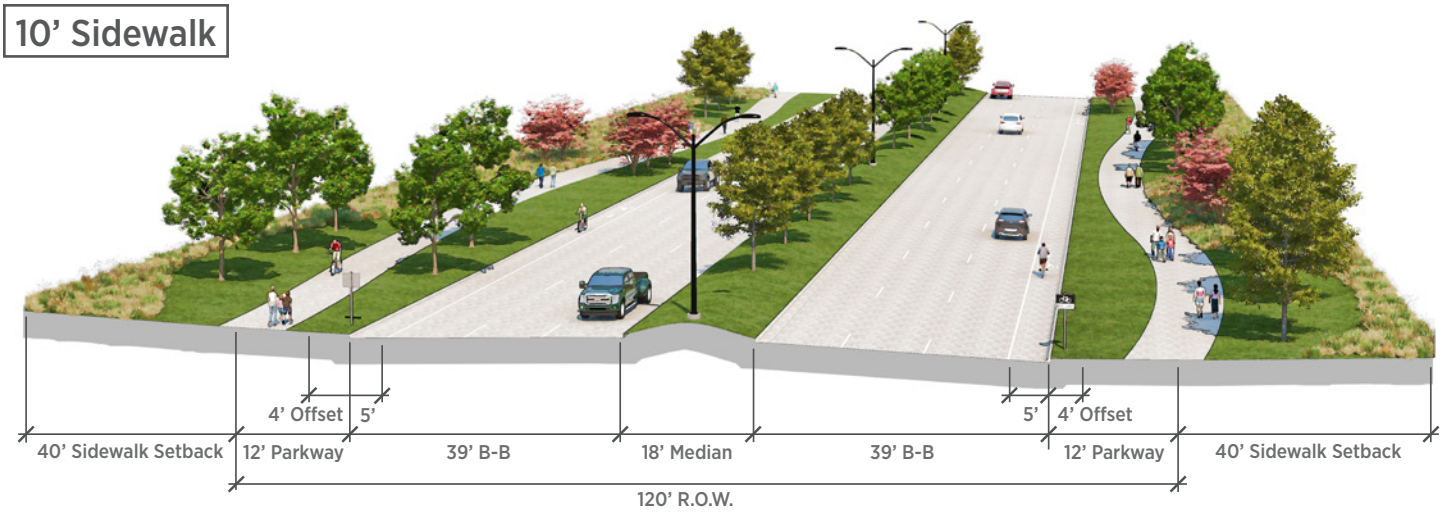


Figure 4.3, Major Thoroughfare; P6D. (Source: Norris Design)

Figure 4.4, Typical Street Edge Condition. (Source: Norris Design)

CITY-WIDE CONNECTIVITY

A network of creeks, historic downtown, high-quality neighborhood development, select elevated railroad crossings and continuous utility easements also factor into the many opportunities for trails in Celina.

A major constraint to the development of trails include the north-south railroad running the entire length of the city and passing through the heart of downtown. Railroads have the effect of limiting the number of crossings for vehicles and pedestrians, so it is important to ensure that the crossings that do occur are of a high quality and designed to provide safe, comfortable access for all users. Celina will be the intersecting point of two major highways in the region – the Dallas North Tollway extension and the future Outer Loop. Once constructed, these roadways will have a lifespan of many decades, so ensuring pedestrian connectivity at creeks, overpasses and underpasses is critical to trail and bikeway continuity in the city.

The following page and Figure 4.5 illustrates these opportunities and constraints.

OPPORTUNITIES

Connections along utility corridors

Downtown Celina destination point

Existing creek network

New, high-quality development

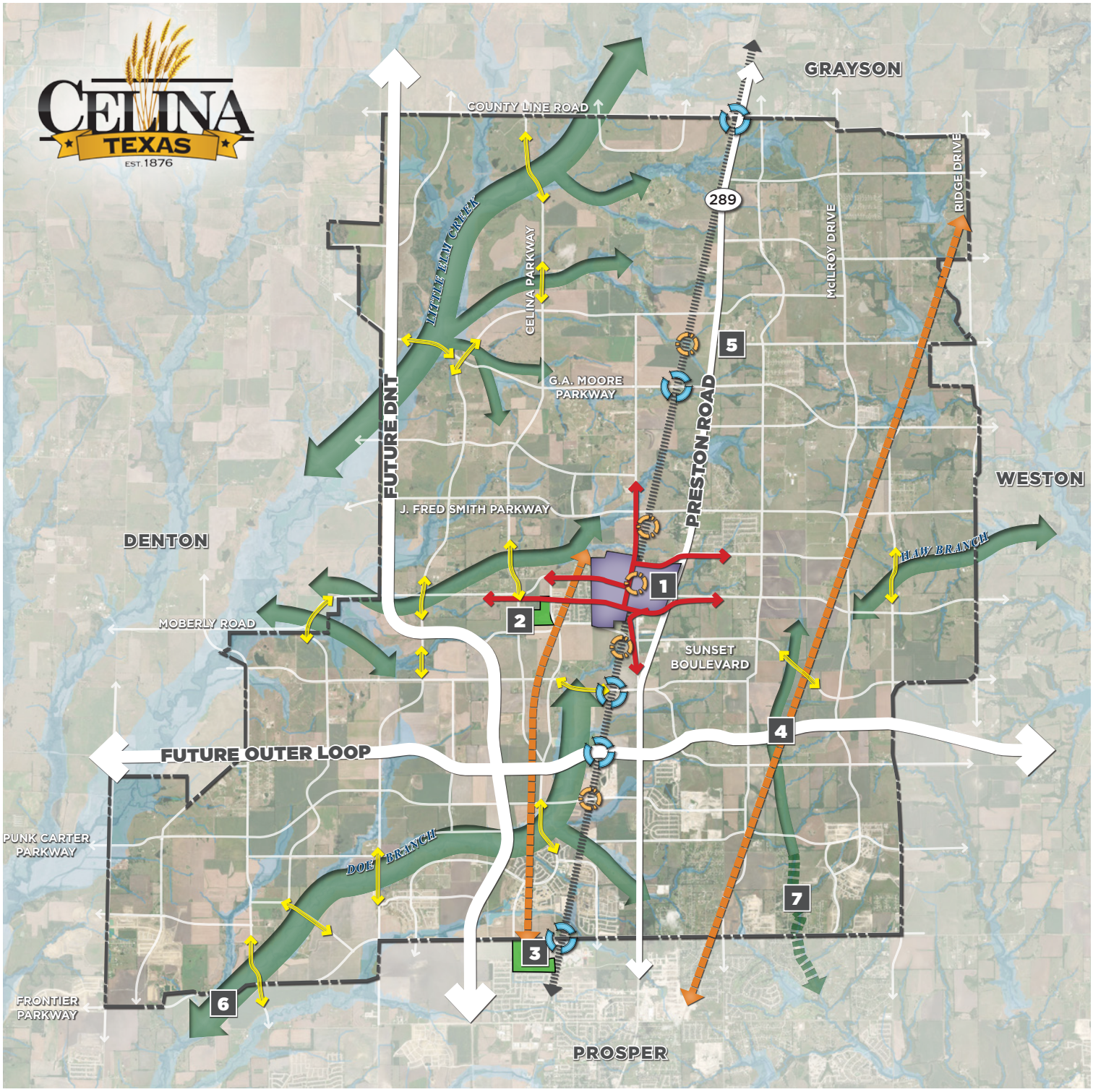
CONSTRAINTS

North-south railroad through the city

Congestion with current infrastructure

Large private landowners

Trails not to current AASHTO standards



Major Creek Corridor
Trail Access Opportunity

Utility Easement ROW
North/South Trail Access Opportunity

Future Thoroughfares
Major and Minor

Creek Corridor Crossing
Potential Bridge Location

Downtown Celina
Connectivity Through Downtown

Existing BNSF Railroad

Railroad Crossing
Grade Separated

Railroad Crossing
At Grade

1 **Downtown Celina**
Connectivity Through Downtown

2 **Old Celina Park**

3 **Frontier Park**
Connect to Neighboring Cities and Parks

4 **Future Outer Loop**
Ensure Continuous Trail Connection

5 **Celina High School**

6 **Regional Connections**
Connect to Neighboring Cities and Parks

7 **Estate Lots**
Limited Trail Access

NORTH

0 1/4 1/2 1 Mile
SCALE

Figure 4.5, Opportunities and Constraints. This graphic illustrates the many opportunities and constraints related to trails in Celina. Numerous creek corridors, roadways, easements and grade separated crossings will provide ideal access for the trail network. Connecting across major expressways and at-grade railroad intersections are two issues that will require extensive coordination to provide seamless trail continuity. (Source: Norris Design)

FACILITY TYPES

There are five primary pedestrian facilities referenced in this master plan. The following pages describe these and provide basic design standards for them.

Pictured Above: A shared-use path winds through natural corridor with many opportunities for shade. (Source: Norris Design)

TYPE 1: SHARED-USE PATHS

The Federal Highway Association (FHWA) describes shared-use paths as "physically separated facilities...to encourage more walking and bicycling." Most commonly, these are found along drainage areas such as creeks, within railroad rights-of-way and utility easements and are quite often used for recreational purposes. Sidepaths follow alongside streets within the street right-of-way and provide a safe corridor for walking.

Pictured Above: Tree-lined streets with ample landscape buffer and wide sidewalks create ideal walking conditions. (Source: Norris Design)

TYPE 2: SIDEPATHS

Sidepaths follow alongside streets within the street right-of-way and provide a safe corridor for walking. The City of Celina has developed guidelines for sidepath design including recommendations for minimum offset from the street edge, horizontal radii and widths. Generous space for sidewalks is planned in the thoroughfare standards.

Pictured Above: A cyclist riding in a bike lane on a low traffic volume street. (Source: BikeArlington.com)

TYPE 3: BICYCLE LANE

Bicycle lanes are four-foot to six-foot wide facilities adjacent to motor vehicle travel lanes that are designated by their white painted stripe, bicycle symbol and signage. Typically, riders with a higher level of confidence would be most likely to use bike lanes. They are most appropriate on moderate-volume roadways and create conditions where motorists can reliably predict the movements of cyclists for better safety.

Pictured Above: A group of cyclists using a buffered bike lane on a road where the outside lane has been repurposed. (Source: Norris Design)

TYPE 4: BUFFERED BICYCLE LANE

Buffered bicycle lanes provide additional separation from traffic through a two-foot to three-foot striped buffer. The added separation provides riders with a more comfortable experience and is attractive to those with a lower level of confidence who may wish to ride on the street.

Pictured Above: Shared-lane markings identify where cyclists may commonly ride on a low-speed, low traffic volume street. (Source: Norris Design)

TYPE 5: SHARED-USE LANE

Shared-use lanes are typically provided along low-traffic collector roadways or neighborhood streets with speed limits of 35 mph or less and consist of "shared-lane markings" (formerly referred to as "sharrows") and signage. The pavement markings are intended to draw additional attention to cyclists for their safety, and these types of bike routes are most often used by those cyclists who have relatively high confidence.

Pictured Above: Simple signage demarcates a bike route for experienced and confident riders. (Source: Norris Design)

MISCELLANEOUS: SIGNED BIKEWAYS

Signed bikeways are the simplest of bike route facilities to construct and are the least expensive. The purpose of a signed bikeway is to direct bicycle and pedestrian traffic to less-utilized roadways with fewer hazards for users to contend with, so they are generally located on smaller collector and/or residential streets parallel to major arterial thoroughfares. Signage is typically placed at ¼ to ½ mile intervals and at turns in the route. Pavement markings and additional pavement width is typically not required for this type of route.

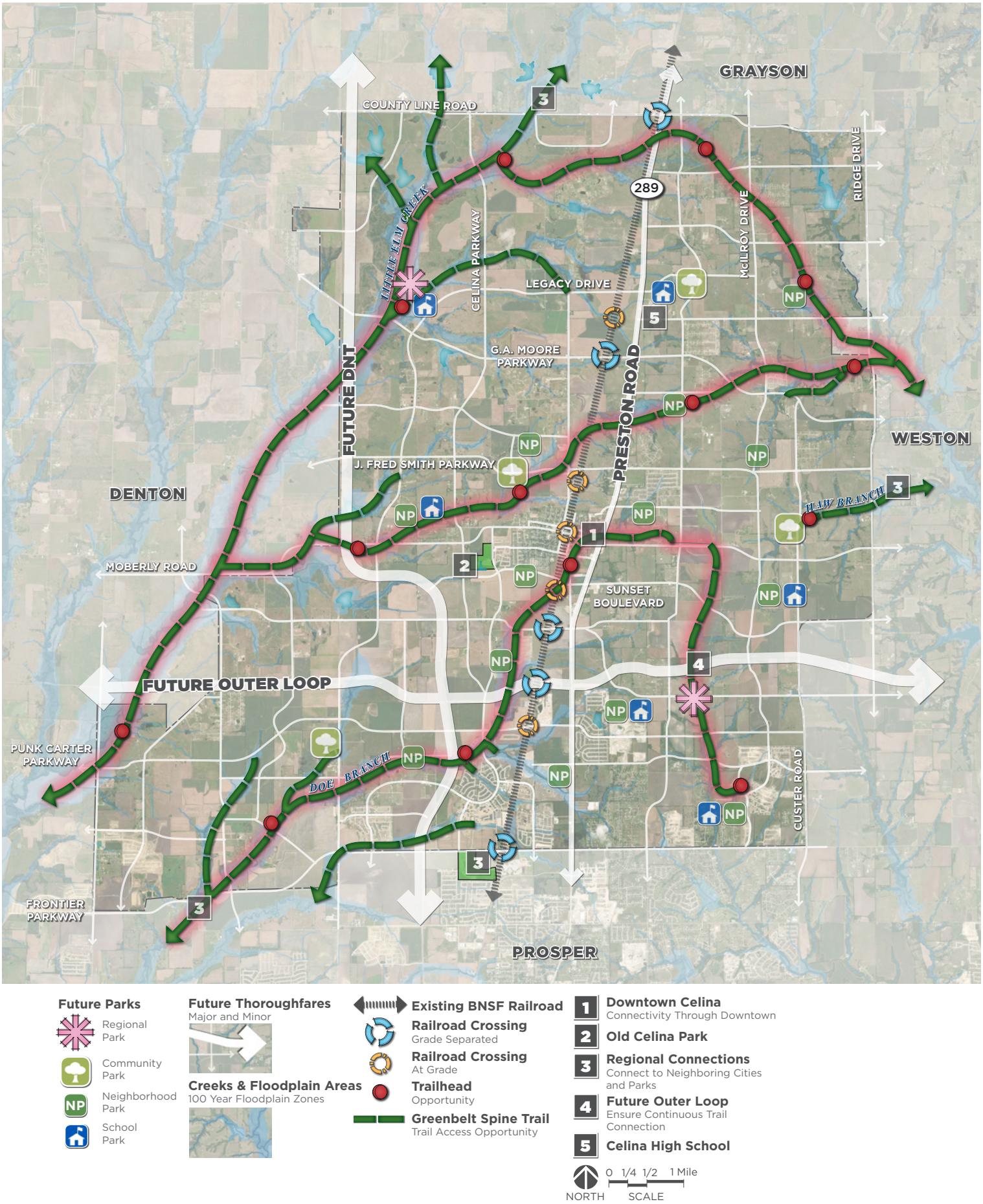


Figure 4.6, Greenbelt Spine Trails. (Source: Norris Design)

FOCUS: GREENBELT SPINE TRAILS

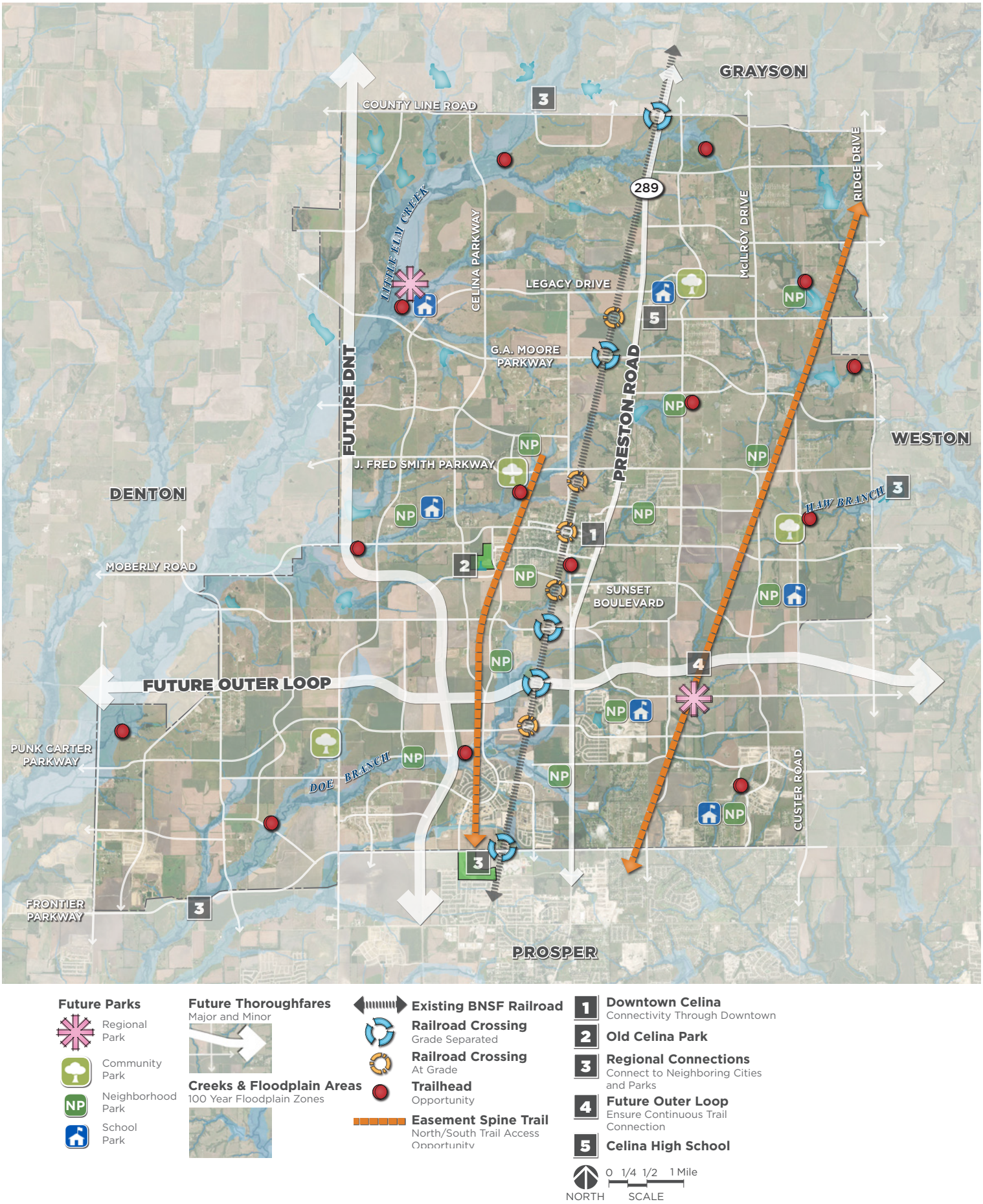


Figure 4.7, Easement Spine Trails. (Source: Norris Design)

FOCUS: EASEMENT SPINE TRAILS

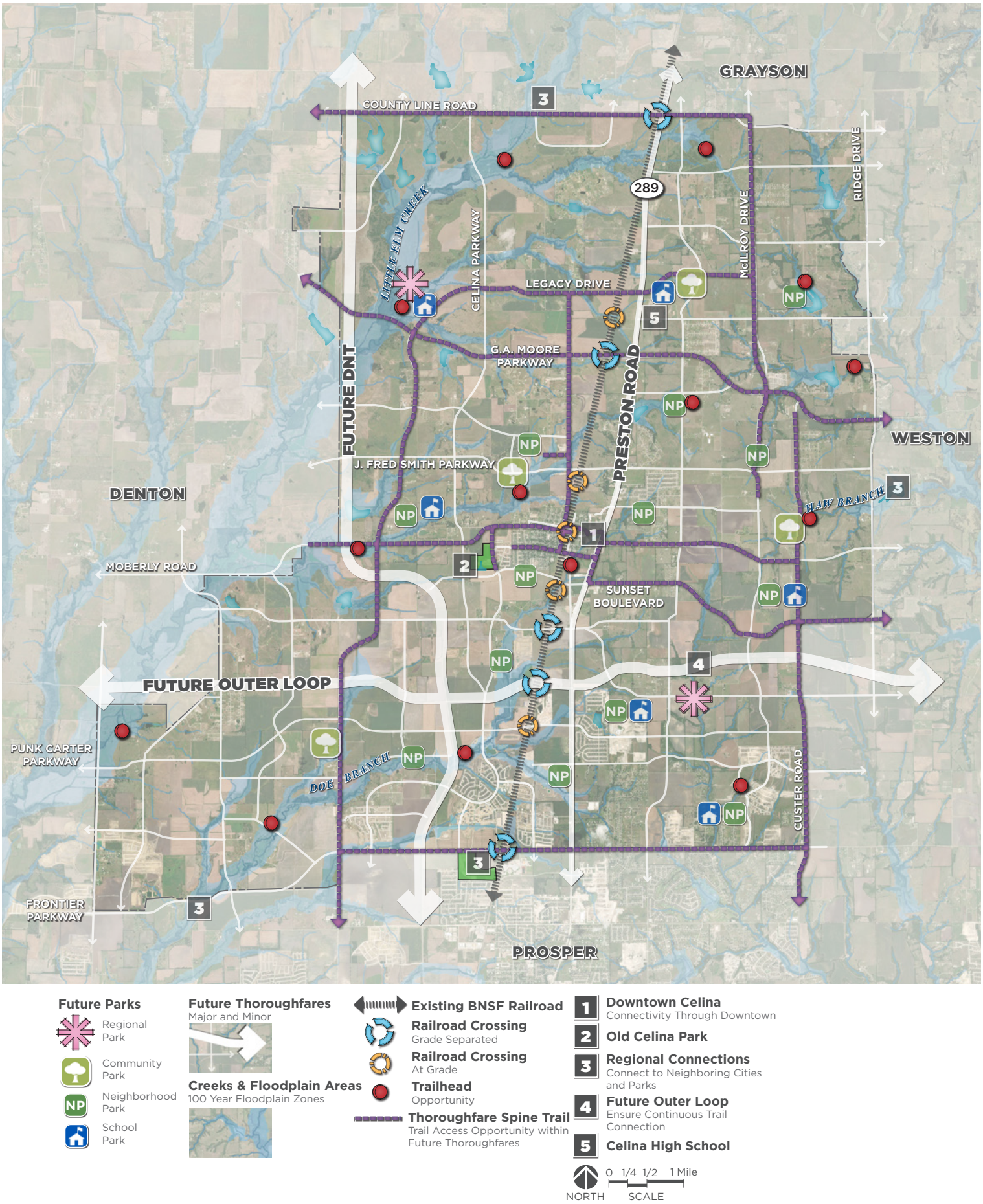
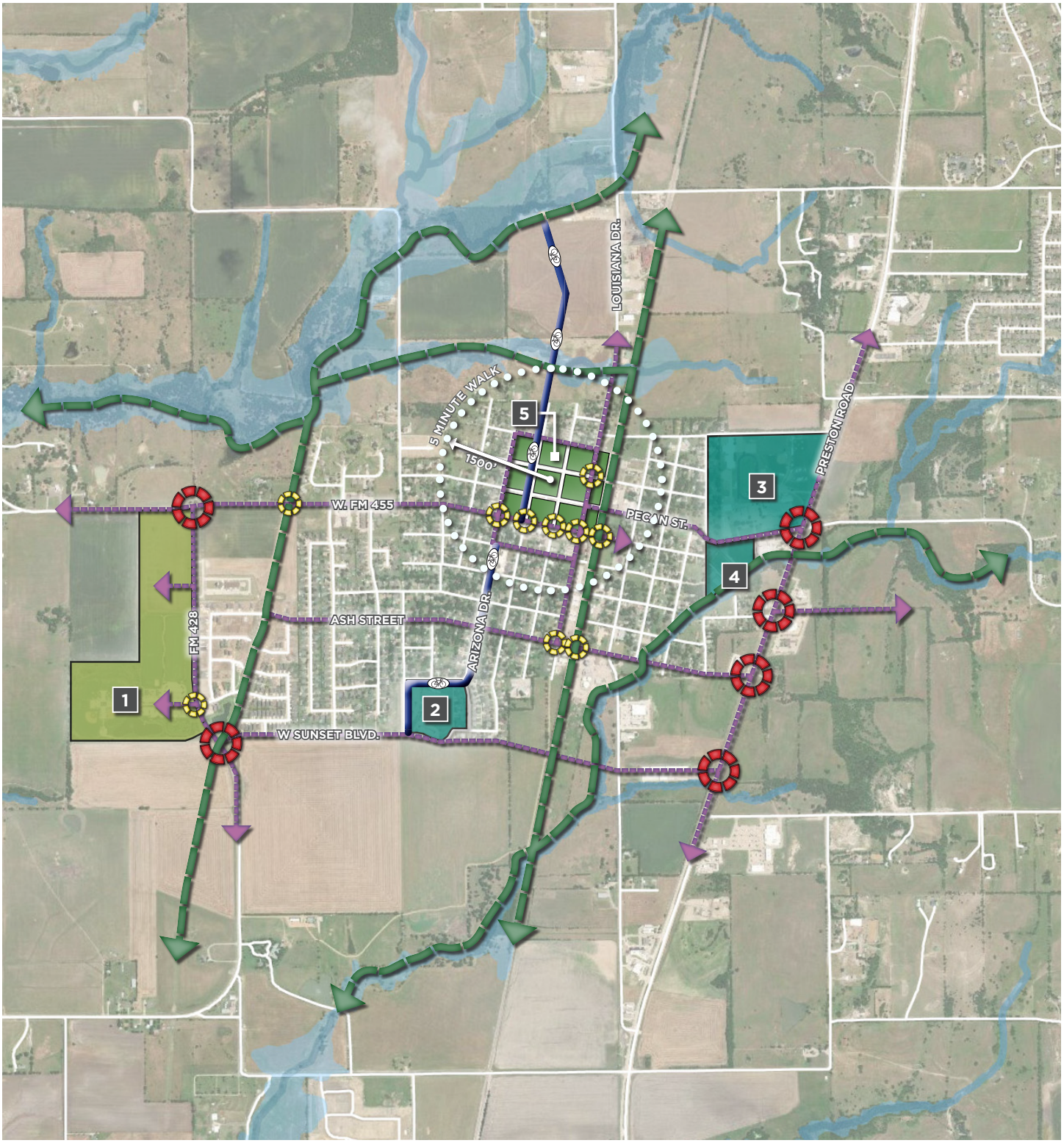


Figure 4.8, Thoroughfare Spine Trails. (Source: Norris Design)

FOCUS: THOROUGHFARE SPINE TRAILS



Off Street Trail

Sidepath + Bike Trail

On Street Bikeway

Primary Node

Secondary Node

1 Old Celina Park

2 Celina Elementary School

3 Celina Junior High School

4 Stadium

5 New City Hall

NORTH
NTS

Figure 4.9, Downtown Connectivity Diagram. Ensuring a high level of pedestrian connectivity through downtown will help create an environment ideal for new residential, office and retail development. This area should also link to the larger trail network connecting the rest of Celina. (Source: Norris Design)

CELINA
TEXAS
EST. 1876

CHAPTER 5
TRAIL DESIGN STANDARDS

PURPOSE

Implementing and adhering to design standards for trails in Celina will result in a safe, cohesive trail system that requires less maintenance and is enjoyable for residents. These standards are in addition to mandated national and state standards (AASHTO, NACTO, ADAAG/TAS, ITE and TMUTCD).

SPINE TRAILS

OBJECTIVES

Spine trails are the most signature trails in the system and are found in wooded floodplains within creek corridors. The following objectives apply to their design:

- Alignments should closely follow the existing topography and limit the amount of fill material required
- Elongated, smooth horizontal radii should be used where possible with limited straight segments; 60' is the minimum centerline radius per AASHTO guidelines and should only be used where avoiding existing obstacles and hazards; minimum 90' centerline radius is preferred
- Spine trails should connect to street sidepaths, neighborhoods and commercial centers where possible

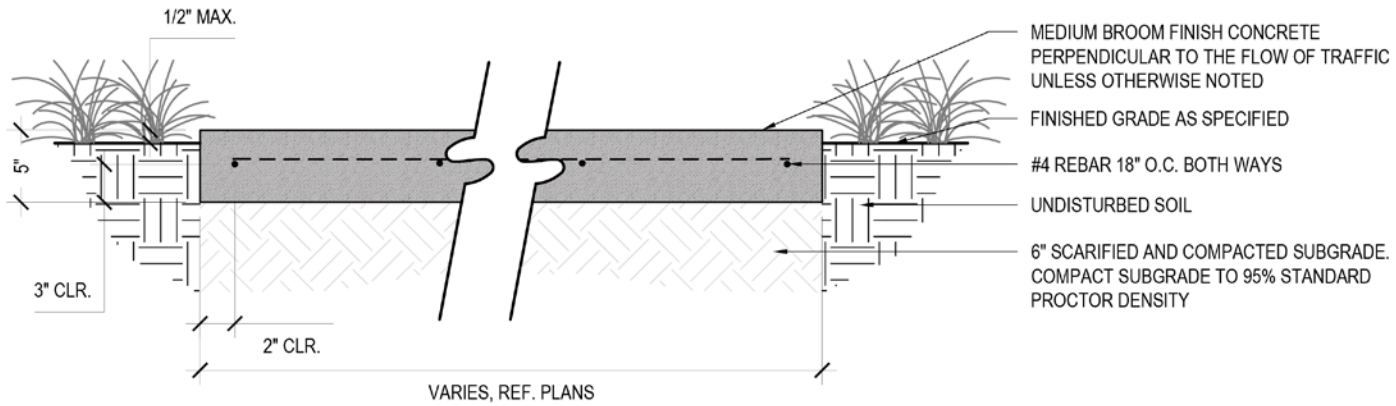


Figure 5.1, Typical Trail Pavement Section (Source: Norris Design)

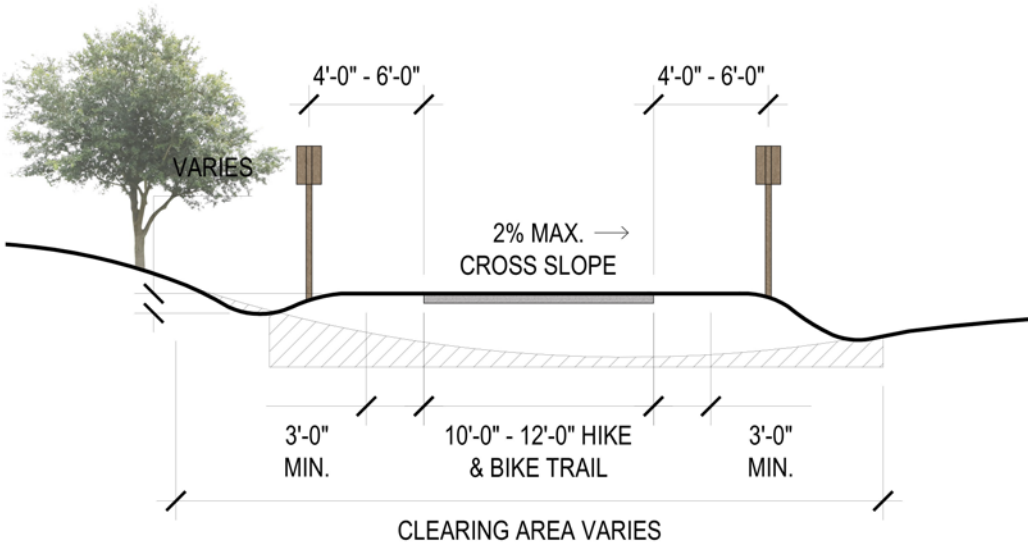


Figure 5.2, Typical Trail Section (Source: Norris Design)

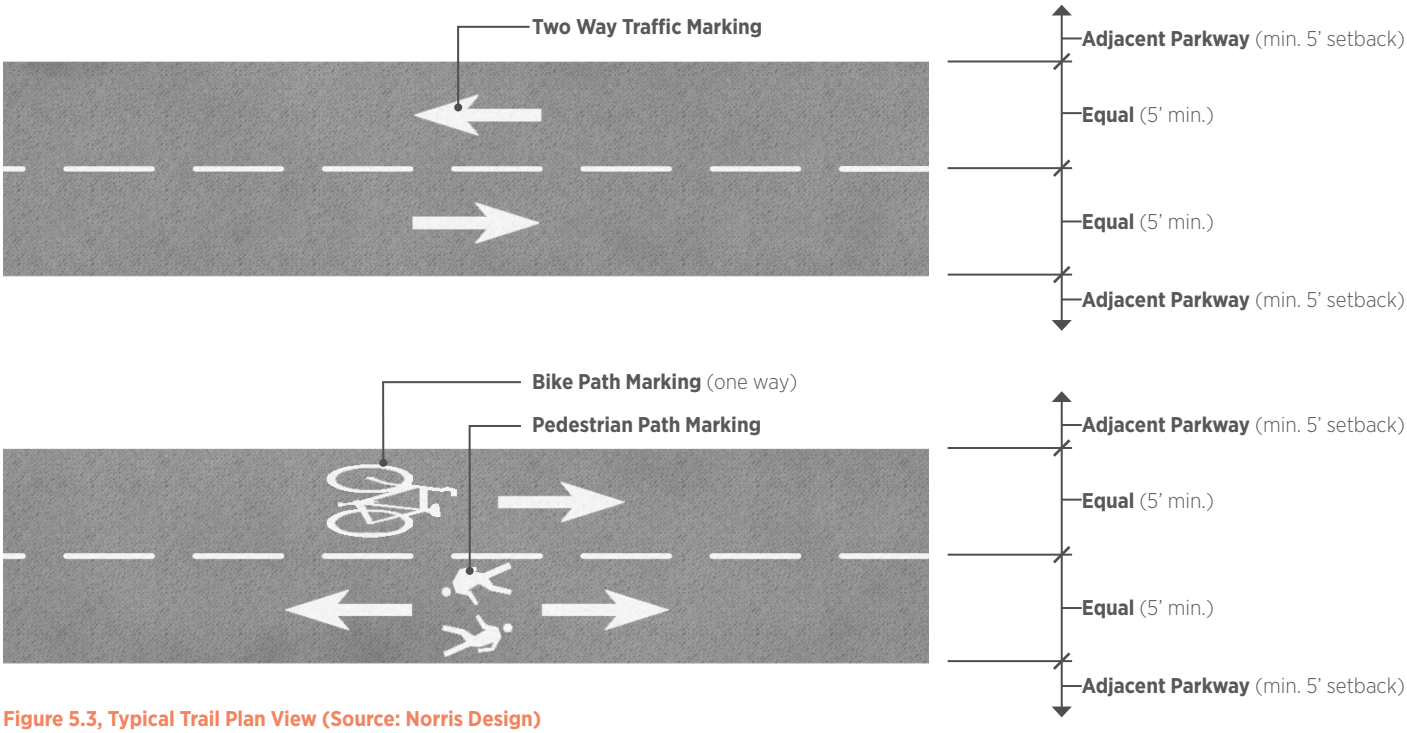


Figure 5.3, Typical Trail Plan View (Source: Norris Design)

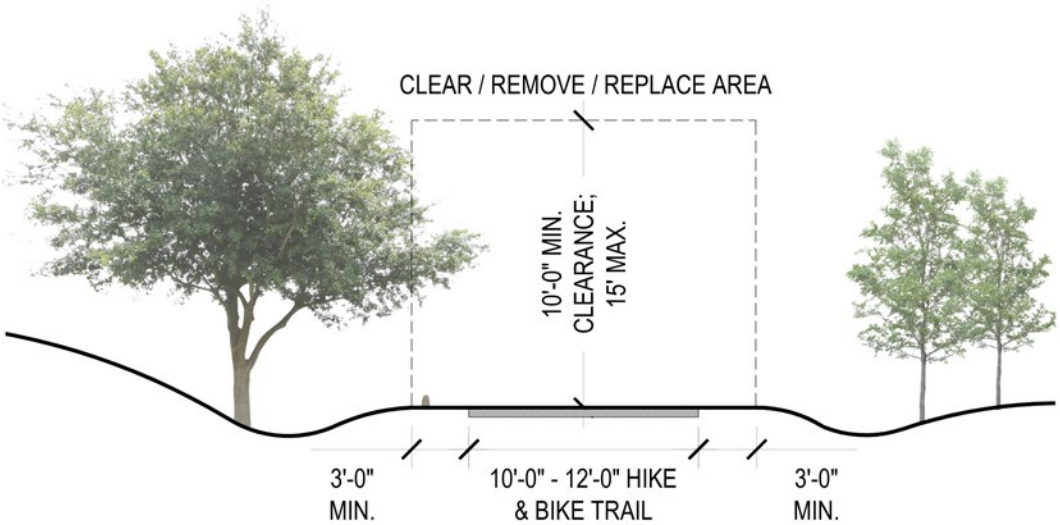


Figure 5.4, Typical Trail Clear Zone (Source: Norris Design)

SIDEPATHS/SIDEWALKS

OBJECTIVES

Sidepaths are located adjacent to roadways and typically fall within the limits of the street right-of-way. Celina's future thoroughfare plan has reserved a "sidewalk easement" in addition to the street right-of-way, which will allow sidepaths to move away from the street edge. The following objectives apply to their design:

- Alignments should maintain a minimum 4' clearance from back of curb (8' preferred) and meander through the right-of-way and sidewalk easement with elongated, smooth horizontal radii
- At roadway and driveway intersections the alignment should straighten and approach the cross street at a 90 degree angle
- Street trees should be planted in natural clusters around sidepaths, no closer than 4' from the edge

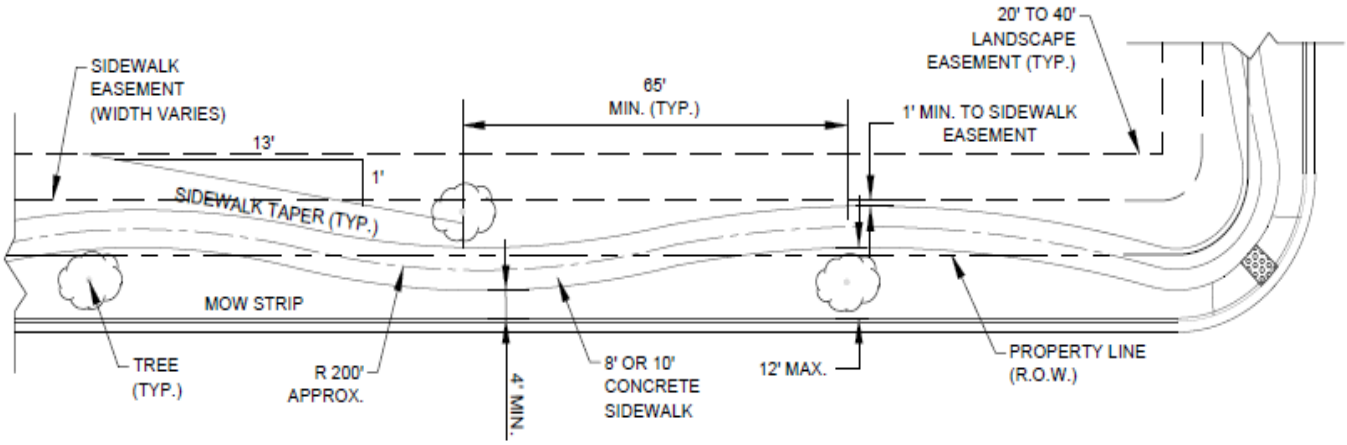


Figure 5.5, Meandering Sidepath Detail. This excerpt from "City of Celina, Texas Engineering Standards" shows typical design guidelines for sidepaths along streets. These standards are comprehensive and should be followed unless otherwise recommended and approved based on this master plan (Source: City of Celina Engineering Standards).

BICYCLE LANES

OBJECTIVES

Bicycle lanes will be commonplace throughout Celina as thoroughfares are developed in the future. Major thoroughfares, minor thoroughfares and collector streets all have bicycle lanes proposed in their typical street sections found in the Celina Engineering Standards document. The following objectives apply to their design:

- Bicycle lanes should receive painted markings and signage according to AASHTO and MUTCD guidelines
- If appropriate in future urban-style developments, enhancements should be incorporated to the design, such as bike boxes, colored pavement and bicycle signals

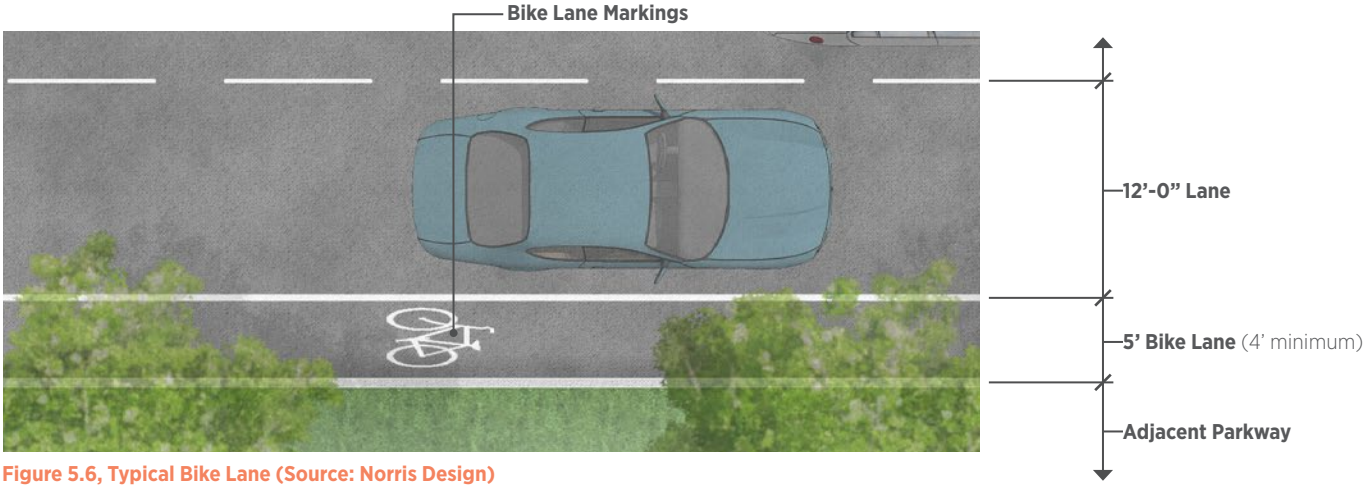


Figure 5.6, Typical Bike Lane (Source: Norris Design)

BUFFERED BICYCLE LANES

OBJECTIVES

Buffered bicycle lanes, while not specifically called for in the City's future thoroughfare plan, may potentially be implemented in certain instances where there is excess pavement width. These facilities could provide enhanced connectivity from neighborhoods to planned thoroughfares through a re-striping of collector roads. The following objectives apply to their design:

- Buffered bicycle lanes should receive painted markings and signage according to AASHTO and MUTCD guidelines
- If appropriate in future urban-style developments, enhancements should be incorporated to the design, such as bike boxes, colored pavement and bicycle signals

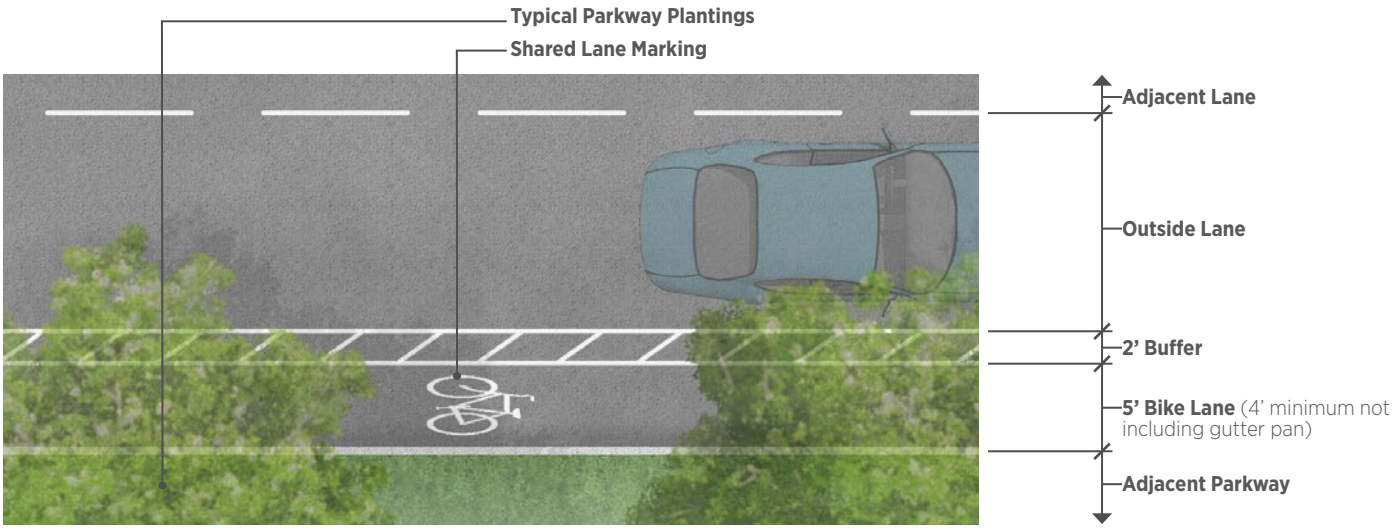


Figure 5.7, Typical Buffered Bike Lane (Source: Norris Design)

SHARED LANES

OBJECTIVES

Shared lanes are simple, cost-effective measures taken that promote awareness of cyclists by adding striping and signage to the roadway. The following objectives apply to their design:

- Shared lanes should receive painted markings and signage according to AASHTO and MUTCD guidelines
- Shared lanes should be added to select neighborhood streets and connect to destinations such as parks, schools and trailheads

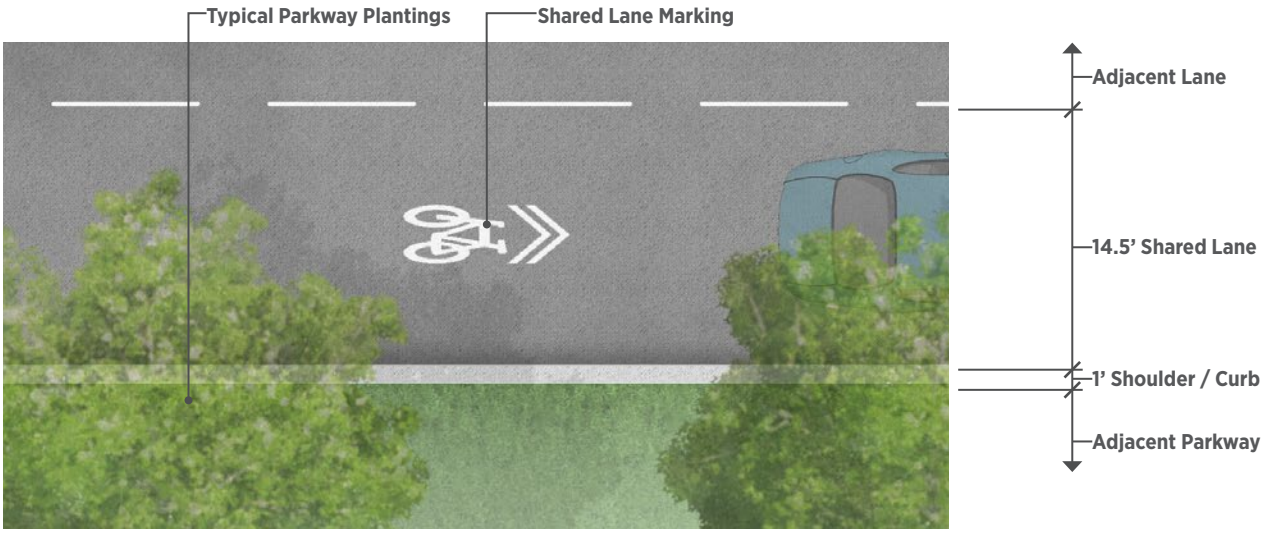


Figure 5.8, Typical Shared Lane Marking (Source: Norris Design)

POTENTIAL BIKE FACILITY COSTS

Facility Type	Typical Cost Range	Average Cost for Planning Purposes
Spine Trails	**$750,000 to $1.5 million per mile** Description: The low range applies to a 10' concrete trail with little grading and no drainage way crossings; the high range is for a 12' concrete trail with boardwalks, bridges and other trail amenities.	**$1 million per mile**
Sidepaths/Sidewalks	**$500,000 to $1.25 million per mile** Descriptions: The cost may range from simple sidepath additions in existing clear R.O.W. to more complicated areas with utility relocations, crosswalks and intersection improvements.	**$750,000 per mile**
Bicycle Lanes	**$60,000 to $75,000 per mile** Bicycle lanes may vary slightly in width and size of painted stripe which affects cost. Alignments that pass through multiple intersections and include enhanced treatments for crossings would be subject to a higher cost per mile.	**$60,000 per mile**
Buffered Bicycle Lanes	**$100,000 to $150,000 per mile** Buffered bike lane design may be as simple as dual parallel stripes along one edge of the lane or include diagonal striping to reinforce the buffer zone. Additional striping will result in a higher cost.	**$125,000 per mile**
Shared Lanes	**$25,000 to $40,000 per mile** Standard shared lanes may only have painted symbols and regulatory signage for a low range cost. The frequency of symbols, signage and intersection crossing treatments can increase cost to a higher range.	**$25,000 per mile**

Pictured Above: A trail intersection in the Light Farms neighborhood (Source: Norris Design)

REGULATORY SIGNAGE AND TRAFFIC CONTROL

All pedestrian and bicycle facilities are subject to regulatory signage. The type, location and criteria for placement is identified in the TMUTCD guidelines. Adequate warning distance is based on vehicle speeds and line of sight. Signage should be highly visible; capturing the attention of motorists accustomed to roadway signs may require additional alerting devices such as flashing warning beacons, roadway striping, or changes in pavement texture. Signing for trail users must include a standard stop sign and pavement marking; these traffic control devices are sometimes combined with other features such as bollards or chicanes in the trail to slow cyclists. Care must be taken not to place too many signs or other traffic control devices at crossings as they tend to overwhelm the user and lose their impact.

Directional signing may be useful for trail users and motorists alike. For motorists, a sign reading "Bicycle Trail Xing" along with a Celina trail emblem or logo helps both warn motorists and promote use of the trail. For trail users, directional signs and street names at crossings help direct people to their destinations. A number of striping patterns have emerged over the years to delineate trail crossings. A median stripe on the trail approach will help to organize and warn trail users of an approaching intersection.

BIKE ROUTES

Bike route signs should be used on streets with bike routes, shared lanes, bike lanes, and cycle tracks as well as on shared-use trails where applicable. Route signs should include route number and destination information yet be legible to moving cyclists. Route signs should be located at all intersections where the bike route changes direction. Additional route signs should be placed in accordance with AASHTO and TMUTCD standards.

Pictured Above: Cyclists ride along a road that has been retrofitted to include a buffered bike lane. (Source: Norris Design)

Pictured Above: Broadway Street in Seattle, WA; A multitude of transportation options within the street right-of-way. (Source: Norris Design)

INTERSECTION TREATMENTS

Trail intersections are important to delineate as these are potential areas of traffic conflict and decision points for changing routes. The design should be aesthetically pleasing and also provide advance warning with a change of pavement type. Radii at the intersections should typically be 15' where possible, although larger and/or smaller radii may be more appropriate in certain circumstances such as at non-right-angle intersections, where planting beds are present or other focal points.

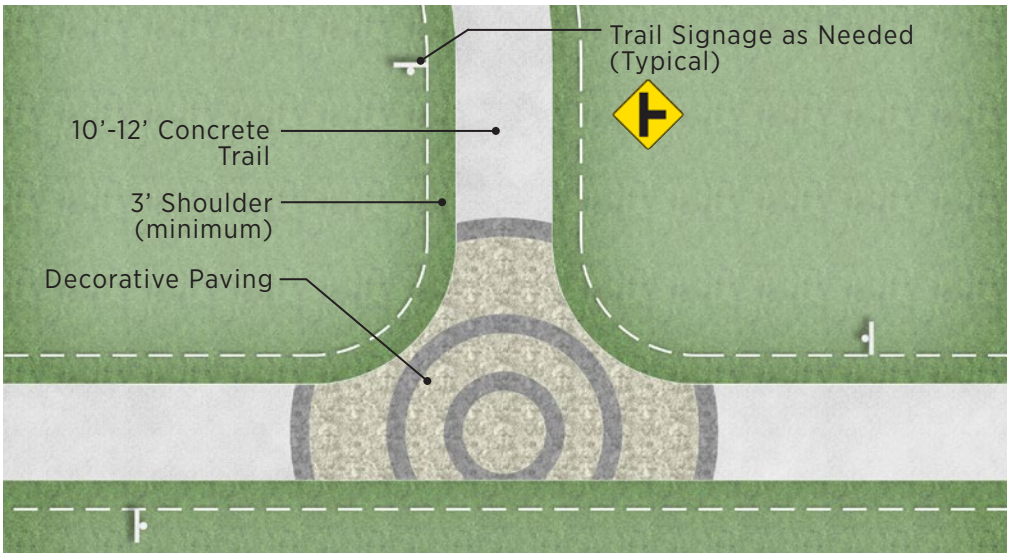


Figure 5.9, Trail Intersection. Trail intersections should be functional, safe and aesthetically pleasing. 3' shoulders should be provided on all trails designed to AASHTO standards with appropriate regulatory signage. Enhanced paving with concrete or brick pavers may also be provided as indicated above. (Source: Norris Design)

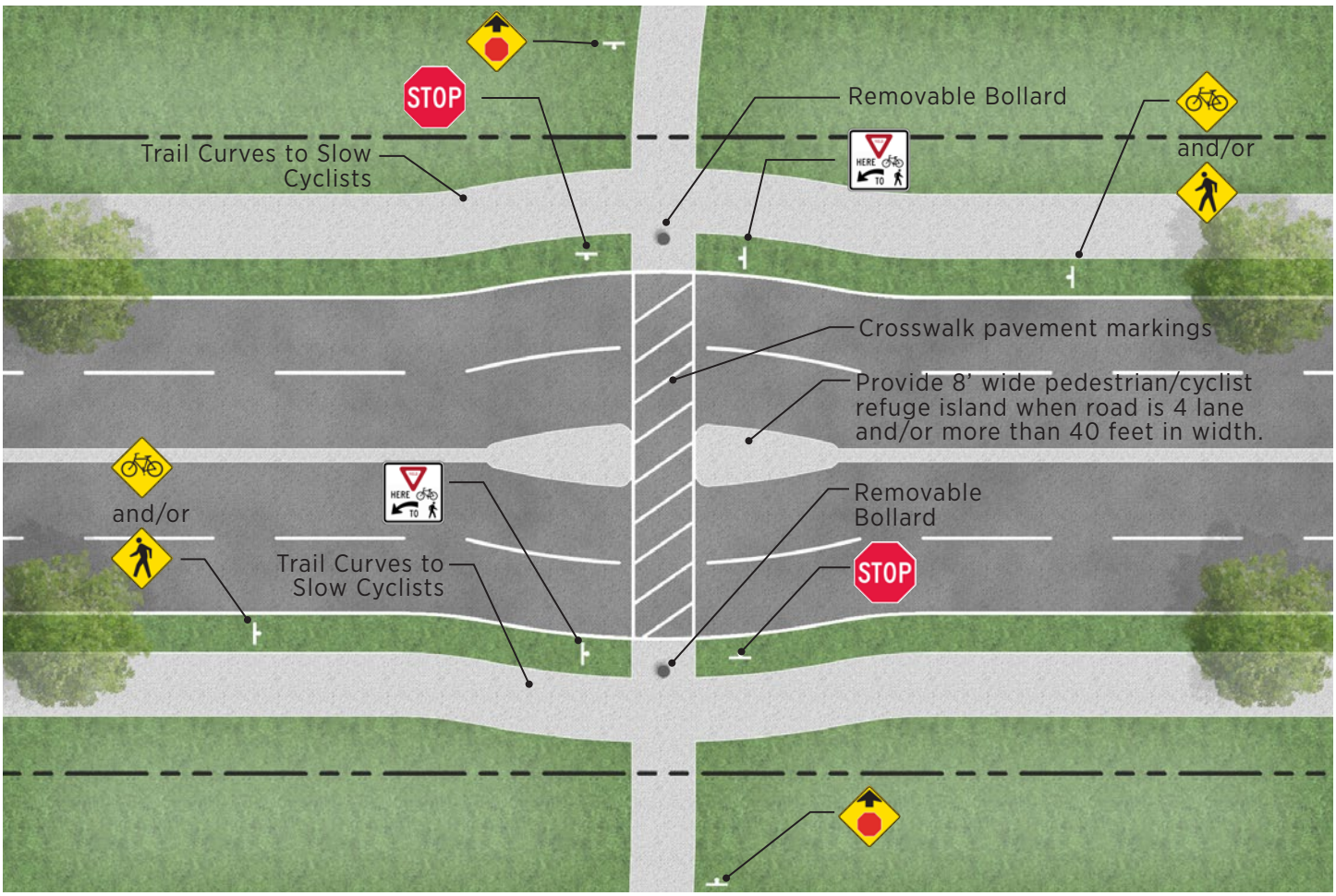


Figure 5.10, Mid-Block Crossing. Safe crossings at thoroughfares should include advanced warning signage, striping and points of refuge for pedestrians. (Source: Norris Design)

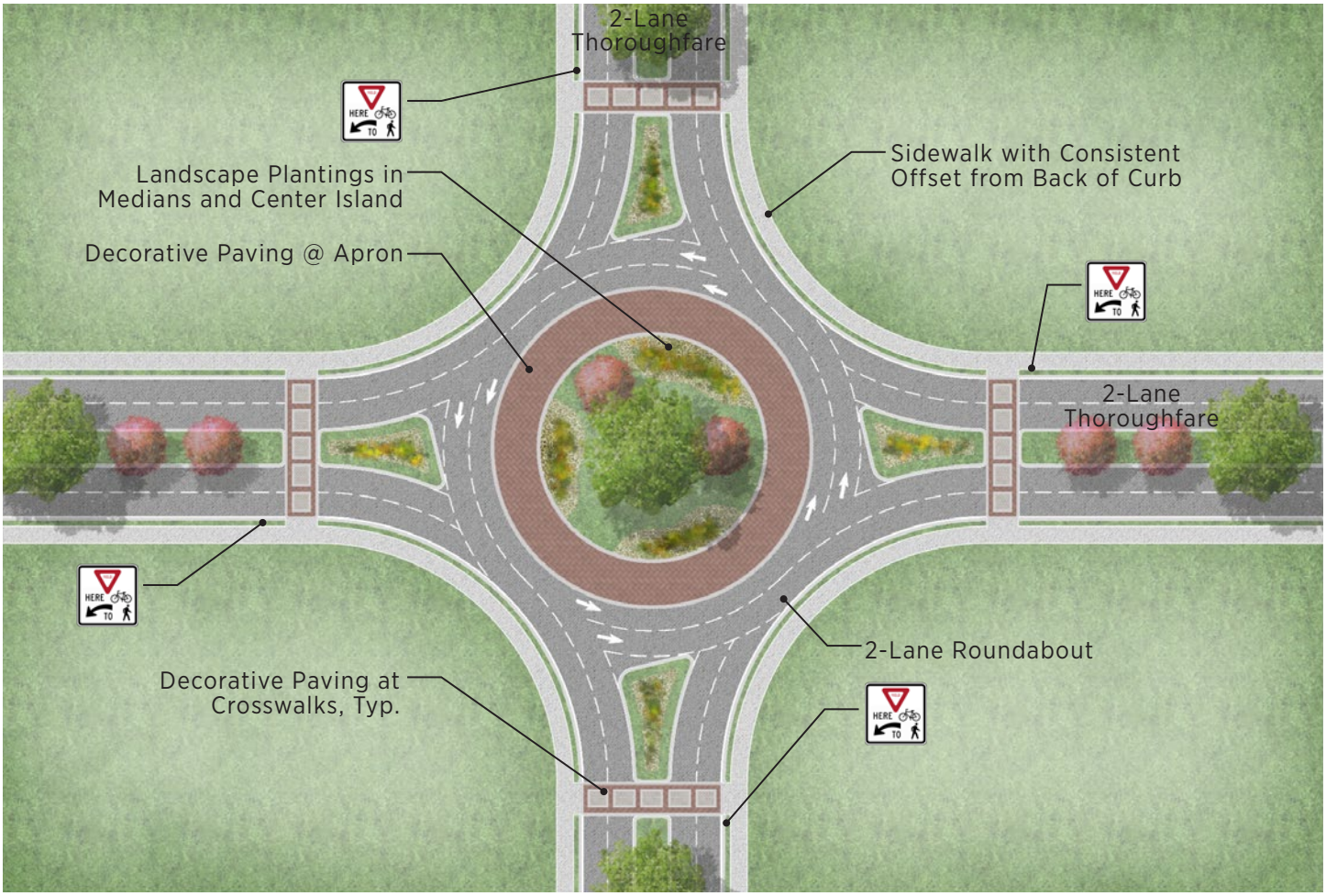


Figure 5.11, Roundabout Crossing. Roundabouts should have ample warning signage for motorists where trail crossings occur. Crossings should consist of decorative concrete or brick pavers and landscaping should be provided. (Source: Norris Design)

TRAIL WIDTH SUMMARY

Spine Trails	**12'**
Sidepaths/Sidewalks	**8' to 10' (refer to typical sections)**
Bicycle Lanes	**5' (4' minimum)**
Buffered Bicycle Lanes	**5' lane (4' minimum) + 2-0" buffer**
Shared Lanes	**Varies**

ENHANCED TRAIL SIGNAGE

In addition to physical trails, bikeways and regulatory signage, a fully-developed trail system should consider the use of "placemaking" elements to add richness and interest along routes. These components include:

- Trail mile markers
- Major trail gateways
- Minor trail gateways
- Wayfinding signage
- Kiosks

This should be a family of architectural features designed to complement each other and promote a "brand" for trails in Celina. It is recommended for the City to develop these standards in a short-term time frame so that they may be added in conjunction with new trail construction.

In a city with numerous neighborhoods, all having their own signage standards, it is important that Celina's trail signage be unique among the other styles found close by.

Examples of how this signage could potentially be placed in relationship to trails and help reinforce the brand of the network are shown in Figures 5.12 to 5.14 below. These examples illustrate signage designed with a theme based around the history of the city, with elements derived from the grain silos in downtown Celina and the railroad.

POTENTIAL DESIGN CONCEPTS

TRAIL MILE MARKERS

Figure 5.12, Potential Trail Mile Markers. Distinct trail markers should be provided along the trail network to aid in orienting users with their locations. Decorative paving may also be provided to enhance the design further.

TRAIL KIOSK/WAYFINDING SIGN

Figure 5.13, Potential Trail Kiosk/Wayfinding Sign. This type of signage may provide a "You are Here" map of the overall system of trails, indicate destinations or may also be utilized as an educational feature.

TRAIL GATEWAY SIGNAGE

Figure 5.14, Potential Trail Gateway Signage. Certain locations, such as trailheads, are ideal for trail gateway signs. This type of signage would be placed only at major trail entry points, but would help to set a standard that carries through to other architectural components.

STANDARD TRAIL AND BIKEWAY SIGNAGE

R9-7
Shared Use Path Restriction
Location: Placed along facilities that are shared by pedestrians and cyclists

D4-3
Bicycle Parking Area
Location: Placed to give direction towards a nearby bicycle parking area

R9-5
Use Pedestrian Signal
Location: Placed at crosswalks

R9-6
Bicycle Yield to Pedestrian
Location: At crosswalks and intersection conflict points

D11-1
Bike Route
Location: Placed at the beginning of routes and at intersections

R3-17
Bike Lane
Location: Placed along bike lanes; spacing determined based on speeds, block size and other factors

R3-17a
Ahead
Location: Mounted below a R3-17 sign in advance of the beginning of a dedicated bicycle lane

R3-17b
Ends
Location: Mounted below a R3-17 sign in at the end of a dedicated bicycle lane

M4-11, 12, 13, M7-1 to M7-7
Bike Route Supplemental Plaques
Location: Placed where bike lanes begin, end and/or change direction.

Bikes May Use Full Lane
Location: Placed in conjunction with shared-lane markings and/or independently along low-traffic roadways

R5-3
No Motor Vehicles
Location: Placed at entrances to off-street trails

W16-1
Share the Road
Location: Placed where supplemental warnings to motorists are needed due to bicycle traffic

W11-1
Bicycle Warning
Location: Placed on roadways at trail crossings

W11-2
Pedestrian Warning
Location: Placed on roadways at trail crossings

R1-1
Stop
Location: Placed at trail intersections and crossings

R1-2
Yield
Location: Placed at trail intersections and crossings

W3-1
Stop Ahead
Location: Placed in advance of a trail intersection or crossing where stop sign visibility is obscured or additional warning is necessary

W3-2
Stop Ahead
Location: Placed in advance of a trail intersection or crossing where yield sign visibility is obscured or additional warning is necessary

W3-3
Signal Ahead
Location: Placed where traffic signal visibility is obscured

W1-1 to W1-5
Turn and Curve Warning
Location: Placed in advance of turns and curving trail sections whose

W2-1 to W2-5
Trail Intersection Warning
Location: Placed where trails intersect and no stop or yield sign is required; and areas with limited sight distances

Trail Regulations and Rules
Location: Placed at trail entrances and at trailheads.

DESTINATIONS

Having alternative modes of transportation through trails and bikeways is a wonderful way to connect a community together. Celina is unique in that the majority of destinations that trails will ultimately provide access to are yet to be built. There are, however, several key points of interest in the city that should be taken advantage of – including the downtown area, high points, schools and nature corridors. Over time, new commercial centers, neighborhoods, schools, parks and civic buildings will become established and should all be linked through the trail system.

Schools

Key destinations around Celina are as follows:

Pedestrian Nodes

Vistas/High Points

Amenity Centers

Historic Downtown

Overlook Points

Neighborhoods

ADDITIONAL TRAIL FEATURES AND AMENITIES

BIKE RACKS, TRASH RECEPTACLES AND DRINKING FOUNTAINS

The vision for Celina's trail system is one in which cyclists have safe, comfortable connections all over the city with convenient storage for bicycles at destinations. The City should determine a design aesthetic for bike racks (potentially based on character districts) and require new development to install them through a revision to the city's development ordinance.

Trash receptacles and drinking fountains are also site furnishings that can tie-in to the overall design aesthetic. Receptacles should be placed periodically along trails at seating areas with ease of access for maintenance crews. Drinking fountains are appropriate at trail gateways, trailheads and in gathering spaces at parks.

LIGHTING

Trail lighting is important from a visibility standpoint and increases safety. Lighting should be provided at select points along the trail, underpasses and to enhance architectural features and amenities along trail routes.

FITNESS STATIONS

Many people use trails for fitness through running, jogging, walking and cycling, and fitness stations provide an additional means for exercise. These stations should be located in parks and at trailheads for high visibility, access and ease of maintenance.

BIKE REPAIR STATIONS

Bike repair stations give cyclists a convenient place to stop and make adjustments or repairs to their bikes while out on a ride. These should be provided as part of the amenities found in a typical trailhead.

INFORMATIONAL SIGNAGE

Informational or educational signage added to a trail enhances the experience of riding or walking outdoors. This type of signage may describe a neighboring feature such as a creek, river, native wildlife and/or vegetation.

PET AMENITIES

Many trail users will bring their dogs along for a walk, so it is important for cities to provide amenities for our four-legged friends. This includes selecting drinking fountains with a dog drinking fountain component and providing pet waste disposal stations regularly where neighborhoods are in close proximity to the trail.

PARKING

Trailheads should offer five to ten parking spaces, but other parking spaces should be provided for trail access as well. Single-loaded streets may have opportunities for designated on-street parking spaces and where trails approach commercial areas, businesses may provide a handful of shared parking spaces for cyclists and walkers.

REST AREA/SHADE

Providing points of refuge along trails greatly contributes to their accessibility and use. Simple measures like placing a bench under trees or more elaborate ones such as small shade canopies with seating allow users to experience the trail system for longer periods of time. Benches should be located in clusters at a maximum spacing of 1 mile and shade canopies at each trailhead. Concrete or brick pavers should be provided at bench locations and be consistent with those provided at pedestrian bridge approaches.

TREES AND PLANTING

At major trail entry points and trailheads, native and adaptive planting should be provided to soften entries and make the trail system more aesthetically pleasing. Vegetation should be watered through drip irrigation and tree bubblers rather than sprays to conserve water use. Opportunities for wetland plantings, native grasses and wildflowers should be capitalized upon to provide habitat for wildlife.

VEHICULAR BRIDGES

Bridges in Celina should be considered as opportunities for architectural enhancements and also as points where pedestrian access is treated with a high level of importance. The potential bridge crossings shown on the opportunities and constraints map should, first and foremost, allow a minimum 10' clearance below the bridge girders to allow a trail to pass unobstructed.
Wide (10' to 12') connecting walkways from the creek below to roadway level should maintain a maximum 5% grade and the walkways along the bridge structure should be protected from vehicular traffic, have decorative pedestrian railing, monumentation and lighting.

PEDESTRIAN BRIDGES

Pedestrian bridges should be a minimum of 2' wider than the adjoining walkway and be of a truss design painted bronze. Stone accent columns should be designed at the abutments for bridge ornamentation and may consist of inset light features. Decorative paving accents should be provided at the bridge approaches and consist of either concrete or brick unit pavers.

CULVERT OUTFALL STRUCTURES

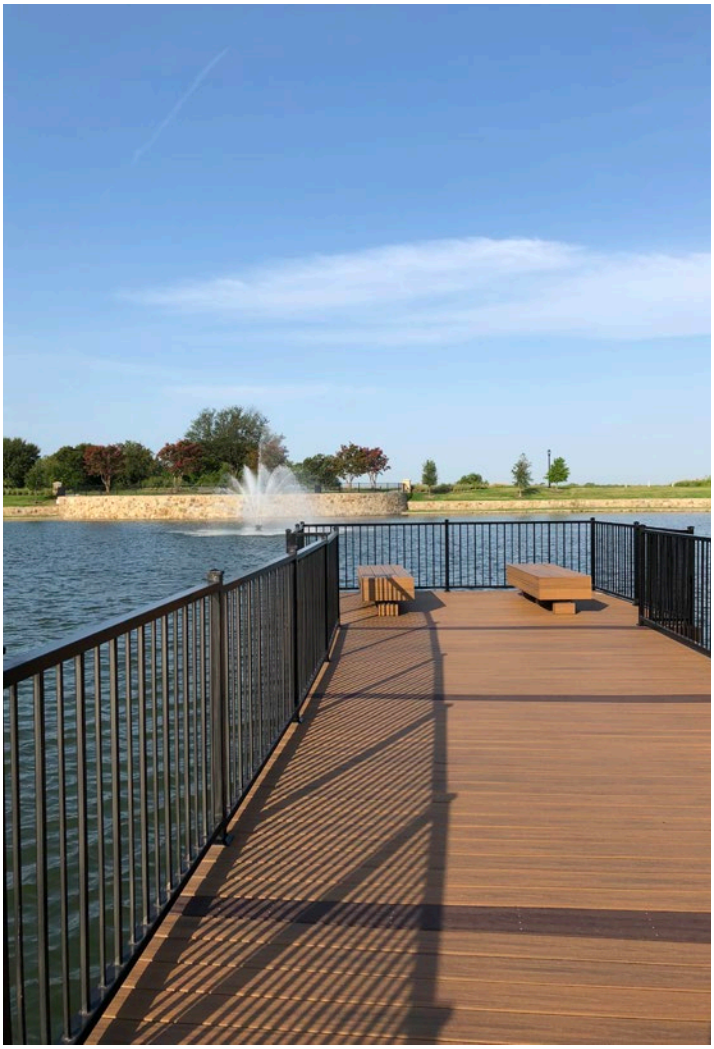
Where culverts outfall into creeks or are placed for trail drainage, the exposed concrete faces of the structures should receive a limestone veneer. A minimum 5' wide clear zone on each side of the trail should be provided and be free of any obstructions with a maximum 2% slope. Railing may be added to the structures as required on a case by case basis.

SAFETY RAILING

Safety railing is commonly found at overlooks, walls adjacent to the trail and to protect cyclists from hazards alongside the trail. Railing should be painted bronze to match pedestrian bridge coloring and meet minimum ADA standards for openings and height.

ROAD INTERSECTIONS

Where trails approach roadway intersections, decorative concrete or brick pavers should be provided on the corners for visual appeal. Treatments should consist of a light color interior field of paving with a darker band around the perimeter.



TRAILHEAD DESIGN STANDARDS

Trailheads give walkers and cyclists opportunities to access major trails at formalized entry points and serve as stopping points along stretches of trail. Celina has the opportunity to implement trailheads with a high level of design quality that will add to the character of the city.

LOCATION AND SPACING

Placement of trailheads should generally occur at two to three mile intervals along creek corridors, preferably near or inside neighborhoods and/or active commercial areas.

AMENITIES

Standard amenities for trailheads are intended to make them inviting places to meet others, rest and/or prepare for biking and walking. Shaded seating, either through mature trees or shade canopies should be provided here. Additional amenities include trash receptacles, drinking fountains with dog fountains attached, wayfinding signage, trail gateway signage and landscape plantings. LED pedestrian lighting may also be provided at the trailhead for safety and visibility where appropriate.

PARKING

Each trailhead should offer five to ten parking spaces, preferably off-street where adequate space is available for a drive aisle and parking spaces. Parking should include landscaping with native and adaptive plant materials, shade trees and parking lot lighting.

Pictured Above: Parks can serve as defacto trailheads for Celina, as shown in Constellation Park. (Source: Norris Design)

TRAILS IN SENSITIVE AREAS

Trails within floodplains and near creeks fulfill a vital recreational and transportation need in many cities. Celina has many miles of these corridors within its city limits and should take advantage of them where possible. However, trail planning and development must consider the impact of construction on environmentally sensitive areas such as:

- Wetlands
- Native grasslands
- Areas with dramatic topography

Whenever possible, the recommended approach for trail design in proximity to these features is avoidance first. Wetlands and native grasslands provide valuable ecosystem services which designers should strive to preserve. All trail implementation projects should undergo a thorough inventory and assessment of existing natural features prior to detailed construction plans.

CREEKS AND FLOODPLAINS

Creeks and associated floodplains also require special attention with regards to trail development. Due to maintenance required with repeated inundation, trails should be designed with a surface elevation above the 2-year flood elevation where possible. These are general recommendations and may not be possible to achieve in all instances.

Additionally, all proposed trails within floodplains should be designed such that they do not cause a rise in the 100 year flood elevation above acceptable limits per the city floodplain ordinance.

Pictured Above: One of many creeks in Celina providing a continuous linear route ideal for trails. (Source: Norris Design)

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CHAPTER 6
IMPLEMENTATION

OVERVIEW

This chapter provides the city with guidance on the physical implementation of trails over the next 10 years. The recommendations that follow are a measured approach to designing and constructing trails and should simply act as a "road map". A variety of factors can influence cities' ability to carry out an implementation plan such as economic health, available funding and development trends. Over time, as more projects are executed, the implementation plan should be revised to address the changing needs of the City.

ROADWAY INFRASTRUCTURE DEVELOPMENT

As stated in previous chapters, proposed thoroughfares constitute a large portion of the pedestrian and cyclist facilities to be provided in Celina. In some cases, a complete roadway section will be built in one project. However, growing communities such as Celina may elect to build only part of the roadway in the initial phase of construction, granting vehicular access to a new or planned commercial development or neighborhood and opening a large swath of the city for supplemental development. At a later stage as infill development occurs, the remaining lanes and pedestrian facilities are constructed as part of the city's capital improvements budget.

The City should explore options for obtaining grant funding for these facilities along roadways as a separate source of funding for roadway projects. A list of potential grants is included in the following paragraphs.

FLOODPLAIN DEVELOPMENT AND PRESERVATION

Chapter 5 outlined trail design strategies within floodplains and near creeks, but an important aspect of creating inviting trails in these areas is centered on the development of the floodplain itself. Ideally, floodplains should be entirely preserved and left to be naturalized with only minimally impactful pedestrian amenities. The following measures are recommended for incorporation into the city's ordinances and guidelines for floodplains:

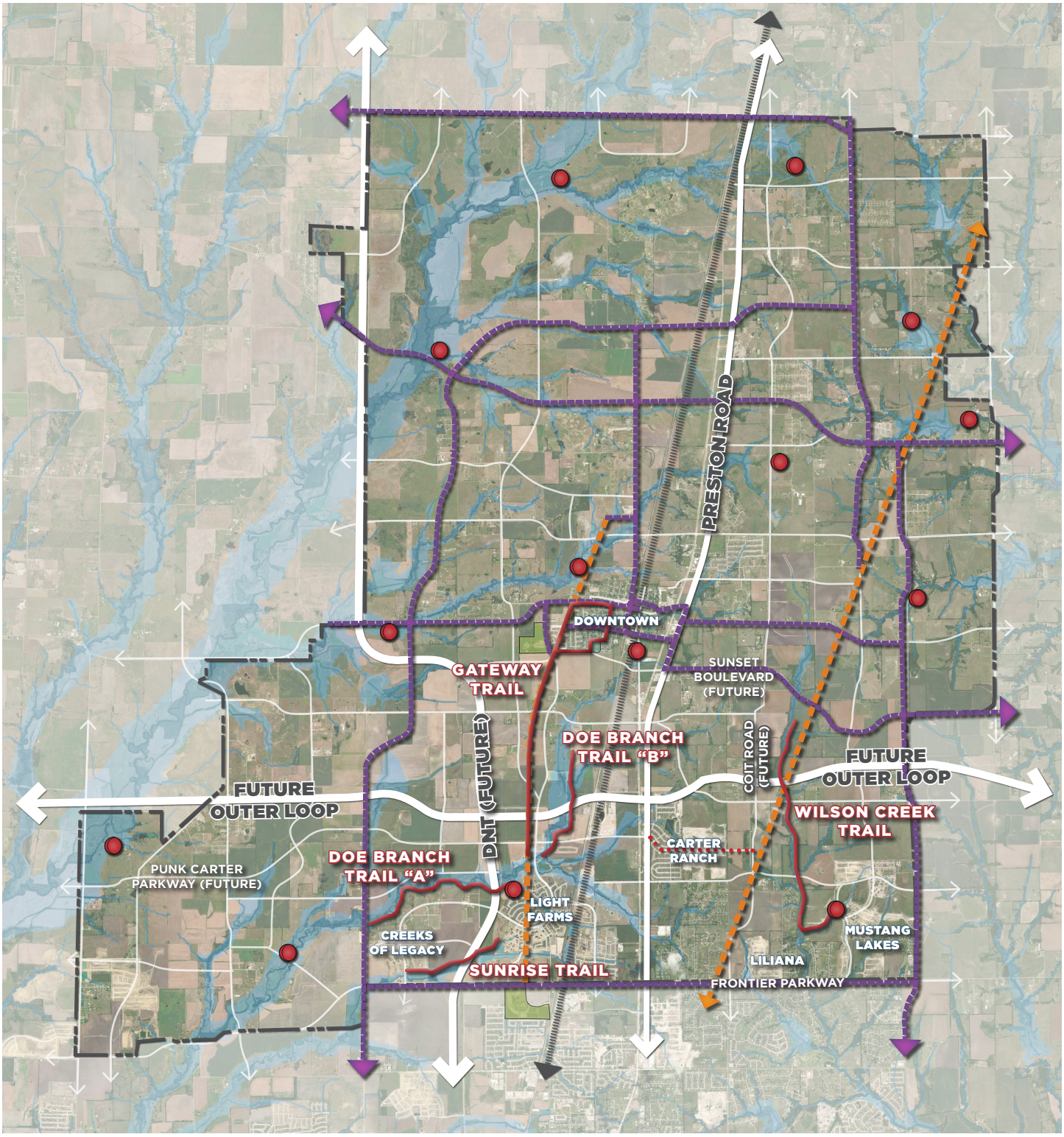
- All water bodies and water resources within 200 feet of the trail system should be mapped
- The number of channel crossings should be minimized
- Existing vegetation should be mapped and avoided where trail alignments are proposed
- Limit trail and trail amenity encroachment onto streams, water bodies and other environmentally sensitive areas
- Avoid operating heavy equipment and maintenance vehicles on trails while they are wet
- Establish "riparian management zones" between trails and creeks where impacts to existing conditions is minimized
- Prohibit the use of natural surface trails by mountain bikes and horses during wet or saturated conditions

SINGLE-LOADED ROADS

The city should enact subdivision development guidelines that require single-loaded roads in residential areas where adjacent to a creek or floodplain. This ensures that the fronts of houses face creeks, which creates more "trail-friendly" conditions than when backyard fences line the edges of these corridors.

ACTION PLAN

The five alignments defined below represent the initial priority projects for Celina to undertake in the first 10 year period following the adoption of this Master Plan. These connections are important for linking together some of the existing and proposed neighborhoods, schools, parks and other destinations in the city's southern area.



OVERALL LEGEND

- Existing Railroad
- Proposed Segment
- Proposed Easement Spine Trail
- Proposed Thoroughfare Spine Trail
- Proposed Bike Trail
- Proposed Trailhead

NORTH 0 1/4 1/2 1 Mile SCALE

Figure 6.1, Overall Phasing Plan. (Source: Norris Design)

SUNRISE TRAIL

SUNRISE TRAIL LEGEND

- Highlighted Segment
- Proposed Easement Spine Trail
- Proposed Thoroughfare Spine Trail
- 1/2 Mile Marker
- Major Roadway Crossing
- Future Neighborhood Park
- Proposed Trailhead
- Proposed Trail Gateway

Figure 6.2, Sunrise Trail (Source: Norris Design)

NORTH
NTS

TRAIL SEGMENT DATA

Description: This trail segment links the neighborhoods of Creeks of Legacy and Light Farms with a trail connection along the unnamed tributary of Doe Branch. The dense network of existing developer trails in Light Farms is made more accessible by this trail and provides residents of both neighborhoods a greatly expanded network.

Trail Width: 12'-0"

Trail Length: 1.0 Mile

Item	Quantity	Cost
Concrete Trail ($1M/mi)	1 (mi)	$1,000,000
Trail Gateway ($10k/ea)	2 (ea)	$20,000
Mile Markers ($15k/ea)	1 (ea)	$15,000
Total		**$1,035,000**

DOE BRANCH TRAIL "A"

DOE BRANCH TRAIL "A" LEGEND

- Highlighted Segment
- Proposed Easement Spine Trail
- Proposed Thoroughfare Spine Trail
- 1/2 Mile Marker
- Major Roadway Crossing
- Future Neighborhood Park
- Proposed Trailhead
- Proposed Trail Gateway

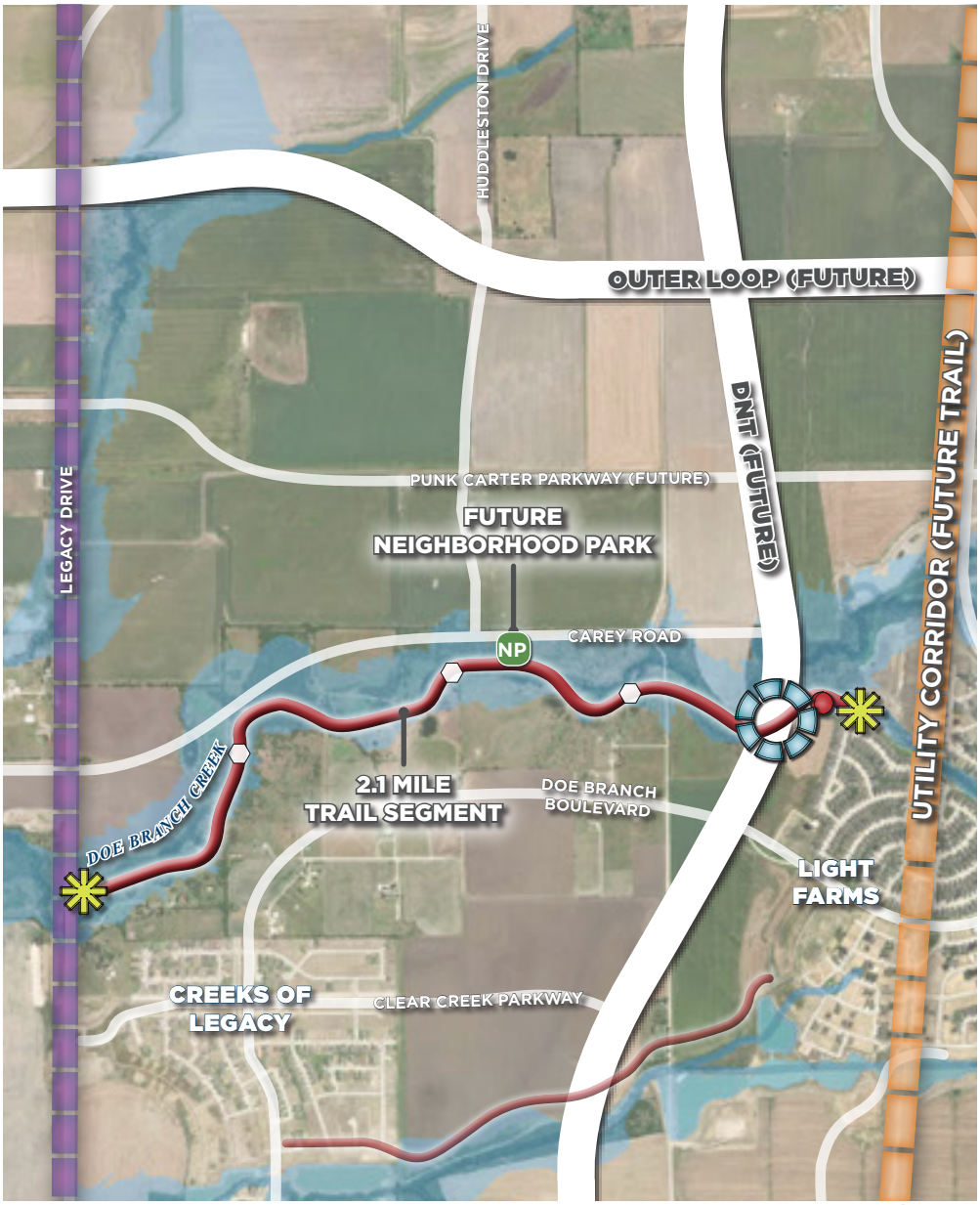


Figure 6.3, Doe Branch Trail "A"
(Source: Norris Design)

NORTH
NTS

TRAIL SEGMENT DATA

Description: This trail segment links the neighborhoods of Creeks of Legacy and Light Farms with a trail connection along Doe Branch and the western terminus of the trail takes users to future Legacy Drive. The segment features a trailhead adjacent to Light Farms for increased accessibility as well as a potential future neighborhood park along the route.

Trail Width: 12'-0"

Trail Length: 2.1 Miles

Item	Quantity	Cost
Concrete Trail ($1M/mi)	2.1 (mi)	$2,100,000
Trail Gateway ($10k/ea)	2 (ea)	$20,000
Mile Markers ($15k/ea)	3 (ea)	$45,000
Trailhead	1 (ea)	$160,000
Total		**$2,325,000**

GATEWAY TRAIL

GATEWAY TRAIL LEGEND

- Highlighted Segment
- Existing Railroad
- Proposed Easement Spine Trail
- Proposed Thoroughfare Spine Trail
- Proposed Bike Trail
- Proposed On-Street Shared-Use Bike Path
- 1/2 Mile Marker
- Major Roadway Crossing
- Minor Roadway Crossing
- Future Neighborhood Park
- Proposed Trailhead
- Proposed Trail Gateway

Figure 6.4, Gateway Trail
(Source: Norris Design)

NORTH
NTS

TRAIL SEGMENT DATA

Description: This trail segment links Light Farms with Downtown through a gas easement and on-street bike facilities. The route is intersected by three major roadways and the future Outer Loop, which requires safe crossings at the closest intersections. The on-street bikeway provides access to Celina Elementary School and downtown destinations.

Trail Width: 12'-0"

Trail Length: 4.4 Miles

Item	Quantity	Cost
Concrete Trail ($1M/mi)	2.8 (mi)	$2,800,000
On-Street Bikeway ($40k/mi)	1.6 (mi)	$64,000
Trail Gateway ($10k/ea)	2 (ea)	$20,000
Total		**$2,884,000**

DOE BRANCH TRAIL "B"

DOE BRANCH TRAIL "B"

- Highlighted Segment
- Existing Railroad
- Proposed Easement
- Spine Trail
- 1/2 Mile Marker
- Major Roadway Crossing
- Minor Roadway Crossing
- Future Neighborhood Park
- Proposed Trailhead
- Proposed Trail Gateway

Figure 6.5, Doe Branch Trail "B"
(Source: Norris Design)

NORTH
NTS

TRAIL SEGMENT DATA

Description: This trail segment connects Light Farms to Glen Crossing along Doe Branch. The route begins at Constellation Park which acts as a defacto trailhead and crosses under Punk Carter Parkway and the future Outer Loop. Connections should be made from the roadway bridge down to the trail to link into the thoroughfare sidewalk network.

Trail Width: 12'-0"

Trail Length: 1.5 Miles

Item	Quantity	Cost
Concrete Trail ($1M/mi)	1.5 (mi)	$1,500,000
Trail Gateway ($10k/ea)	2 (ea)	$20,000
Mile Markers ($15k/ea)	2 (ea)	$30,000
Total		**$1,550,000**

WILSON CREEK TRAIL

WILSON CREEK TRAIL

- Highlighted Segment
- Proposed Easement Spine Trail
- Proposed Thoroughfare Spine Trail
- Proposed Bike Trail
- 1/2 Mile Marker
- Major Roadway Crossing
- Minor Roadway Crossing
- Future Neighborhood Park
- Proposed Trailhead
- Proposed Trail Gateway

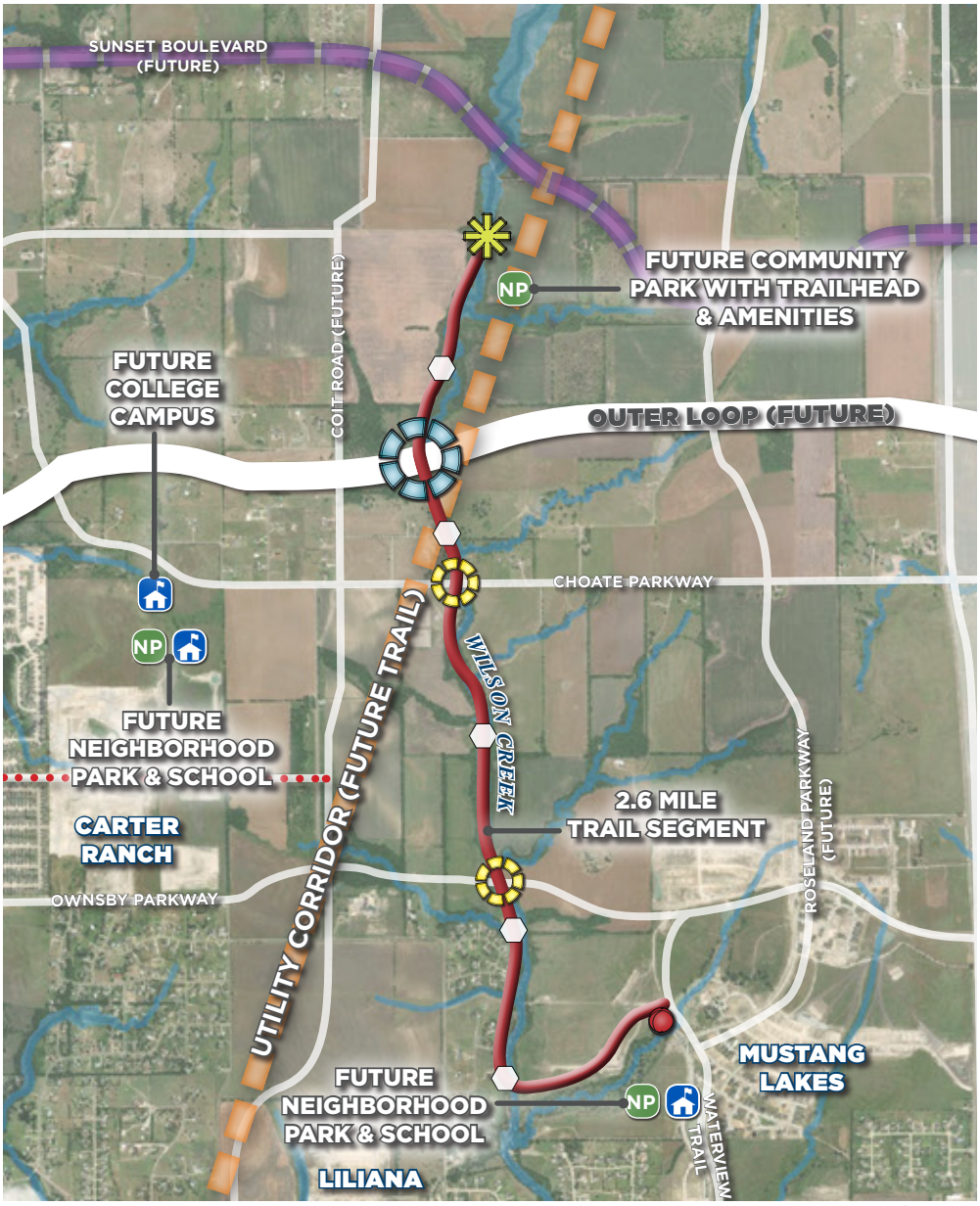


Figure 6.6, Gateway Trail
(Source: Norris Design)

NORTH
NTS

TRAIL SEGMENT DATA

Description: This trail segment connects Mustang Lakes to the future community park near Sunset Boulevard. The route follows Wilson Creek and crosses under 3 major roads and the future Outer Loop. Connections should be made from the roadway bridges to the trail below.

Trail Width: 12'-0"

Trail Length: 2.6 Miles

Item	Quantity	Cost
Concrete Trail ($1M/mi)	2.6 (mi)	$2,600,000
Trail Gateway ($10k/ea)	2 (ea)	$20,000
Mile Markers ($15k/ea)	4 (ea)	$60,000
Total		**$2,680,000**

PHASE 1 TRAIL CONSTRUCTION (10 YEAR PLAN)

	Trail Segment	Length	Time Frame	Potential Cost
1	Sunrise Trail	1.0 Mile	Year 1 to 5	$1,035,000
2	Doe Branch Trail "A"	2.1 Miles	Year 6 to 10	$2,325,000
3	Gateway Trail	4.4 Miles	Year 6 to 10	$2,884,000
4	Doe Branch Trail "B"	1.5 Miles	Year 1 to 5	$1,550,000
5	Wilson Creek Trail	2.6 Miles	Year 6 to 10	$2,680,000

FUNDING OPPORTUNITIES

There are many opportunities for obtaining funding to assist in building trails and bikeway facilities either through grants or reimbursement programs. The following section details a number of these potential sources of construction funds.

BETTER UTILIZING INVESTMENTS TO LEVERAGE DEVELOPMENT (BUILD)

The BUILD grant program was announced in April 2018 and replaces the existing TIGER grant program. FY 2018 BUILD Transportation grants are for investments in surface transportation infrastructure and are to be awarded on a competitive basis for projects that will have a significant local or regional impact. BUILD funding can support roads, bridges, transit, rail, ports or intermodal transportation.

The program is increasing its emphasis on projects located in rural areas, so more funding will be allocated for locales outside of metropolitan areas. For urbanized areas, however, project sizes are encouraged to be larger with a $5 million minimum for funding opportunities. Evaluation considerations include project alignment with the program's merit criteria, project readiness, cost-benefit analysis and ability to obligate funds by September 30, 2020.

FEDERAL TRANSIT ADMINISTRATION (FTA)

The FTA has multiple grant programs to help cities, towns and rural areas invest in bicycle infrastructure, which improves personal mobility and helps more people access public transportation. The current list of programs includes funding for multimodal transportation planning, access to transit-oriented development, bicycle amenities such as bike racks and shelters and bicycle routes to transit.

CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT PROGRAM (CMAQ)

CMAQ-eligible projects must demonstrate emissions reduction and benefit air quality. Several activities may be eligible for CMAQ funds as part of a bicycle and pedestrian-related project, but not as a highway project. CMAQ funds may be used for shared use paths but may not be used for trails that are primarily for recreational use.

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

HSIP projects must be consistent with a State's Strategic Highway Safety Plan and (1) correct or improve a hazardous road location or feature, or (2) address a highway safety problem. Funds are dedicated to projects that reduce conflicts between pedestrian/bicycles and automobiles. As part of the HSIP, a performance-based approach is used to determine funding projects. HSIP funds are administered through TxDOT.

TRANSPORTATION ALTERNATIVES SET-ASIDE PROGRAM (TA SET-ASIDE)

The TA Set-aside, formerly TAP, is under the Surface Transportation Block Grant (STBG) program, which provides state and local transportation officials a high degree of flexibility for determining use of funds. TA Set-aside funds are awarded on a competitive basis. The NCTCOG Metropolitan Planning Organization allocates funds for these projects, most recently in the 2017 call for projects. Typical projects include off-road pedestrian trails, on-street bike facilities and amenities. Landscaping, signage and other aesthetic treatments may also be included in the scope of these types of projects.

RECREATIONAL TRAILS PROGRAM (RTP)

The RTP provides funds to the States to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The RTP is an assistance program of the Department of Transportation's Federal Highway Administration (FHWA). Federal transportation funds benefit recreation including hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles.

FEDERAL LANDS ACCESS PROGRAM (FLAP)

The FLAP was established to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The Access Program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. State DOTs, Tribes, and/or local governments may apply for grant funding. Project applications require coordination and approval by the Federal or tribal property owner(s).

RECREATIONAL TRAIL GRANTS

TPWD administers the National Recreational Trails Fund in Texas under the approval of the Federal Highway Administration (FHWA). This federally funded program receives its funding from a portion of federal gas taxes paid on fuel used in non-highway recreational vehicles. The reimbursable grants can be up to 80% of project cost with a maximum of $200,000 for non-motorized trail grants and a maximum award of $400,000 for motorized (off-highway vehicle) trail grants. Funds can be spent on both motorized and non-motorized recreational trail projects such as the construction of new recreational trails, to improve existing trails, to develop trailheads or trailside facilities, and to acquire trail corridors.

LOCAL-LEVEL FUNDING

There are many other options for funding trails and bike facilities at the local level, and it is possible to use multiple sources of funding to construct infrastructure projects. Potential other funding sources include:

- Local bond programs
- Capital Improvements Program (CIP)
- City 4-B sales tax revenue
- Impact fees
- Development requirement to construct trails
- Project Improvement Districts (PID)
- Tax Increment Financing District (TIF)
- Public-private partnerships
- Private sponsorship programs
- Volunteer organizations through support of a "Friends of..." group that assists in fundraising

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APPENDICES

APPENDIX A - SURVEY SUMMARY

Total number of respondents	**277**
Survey active	**9/19/2018 - 11/16/2018 (8 weeks)**
Number of questions	**21**
Average response time	**Less than 10 minutes**

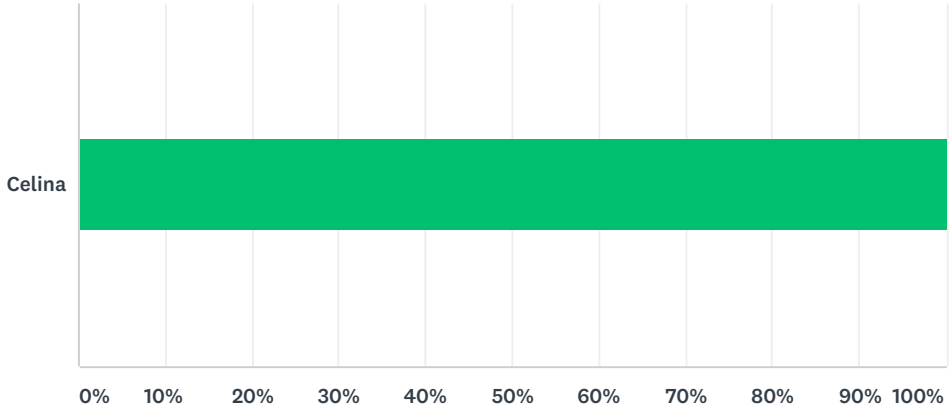
Survey Platform:

SurveyMonkey

QUESTION 1

In what city do you live?

Answered: 270 Skipped: 7



ANSWER CHOICES	RESPONSES	
Celina	100.00%	270
Total Respondents: 270		

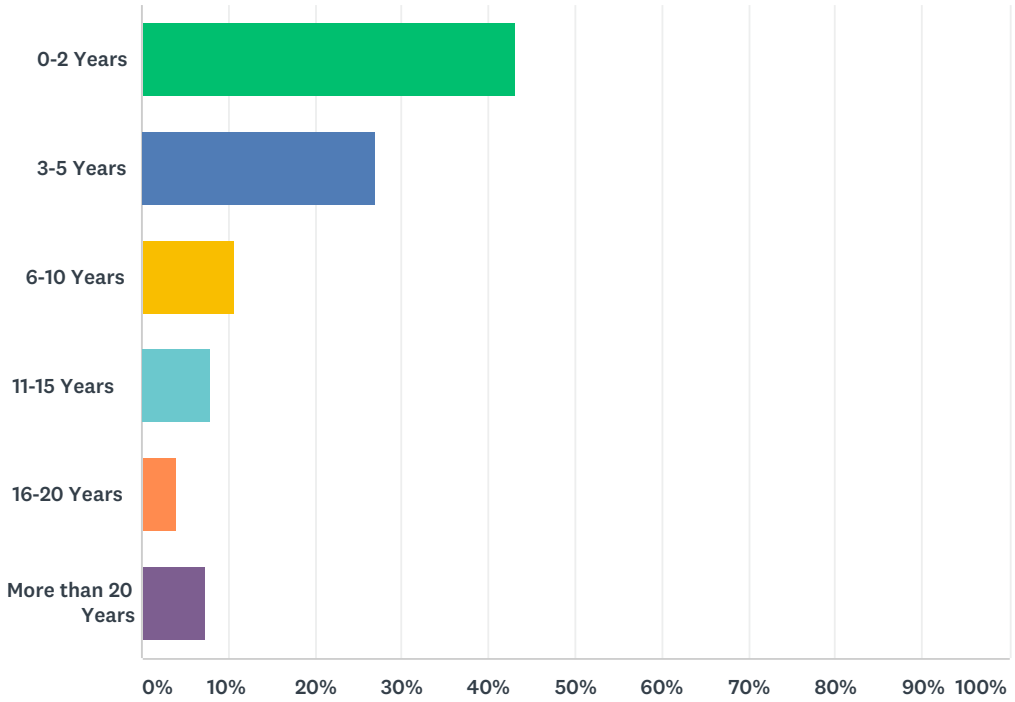
Analysis Notes

All survey respondents are residents of Celina.

QUESTION 2

If Celina, how many years have you lived here?

Answered: 274 Skipped: 3



ANSWER CHOICES	RESPONSES	
0-2 Years	43.07%	118
3-5 Years	27.01%	74
6-10 Years	10.58%	29
11-15 Years	8.03%	22
16-20 Years	4.01%	11
More than 20 Years	7.30%	20
Total Respondents: 274		

Analysis Notes

Over half of all respondents have only lived in Celina for 5 years or less, indicating a growing, young community.

QUESTION 3

What neighborhood do you live in?

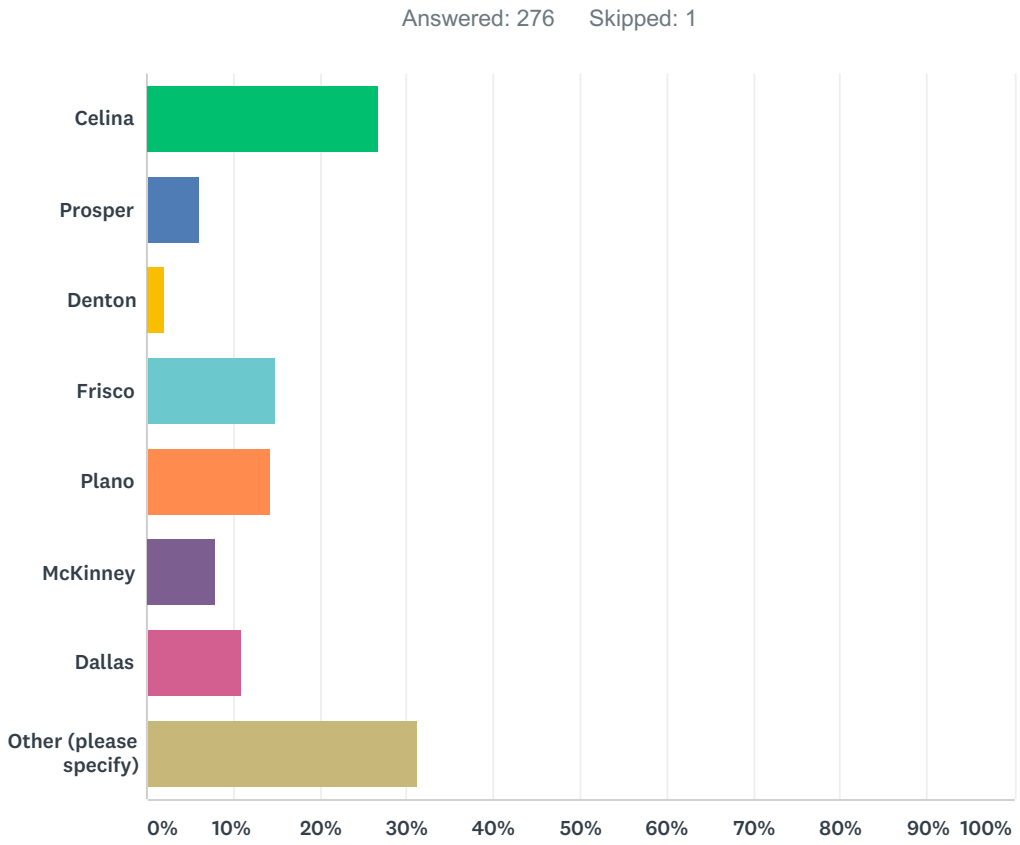
(The word cloud provided below shows the most common responses as larger words, giving a general indication of the input received. Word clouds are useful when feedback is broad.)

Analysis Notes

Most respondents live in the newer neighborhoods in Celina such as Light Farms and Carter Ranch.

QUESTION 4

In what city do you work?



ANSWER CHOICES	RESPONSES	
Celina	26.81%	74
Prosper	6.16%	17
Denton	2.17%	6
Frisco	14.86%	41
Plano	14.13%	39
McKinney	7.97%	22
Dallas	10.87%	30
Other (please specify)	31.16%	86
Total Respondents: 276		

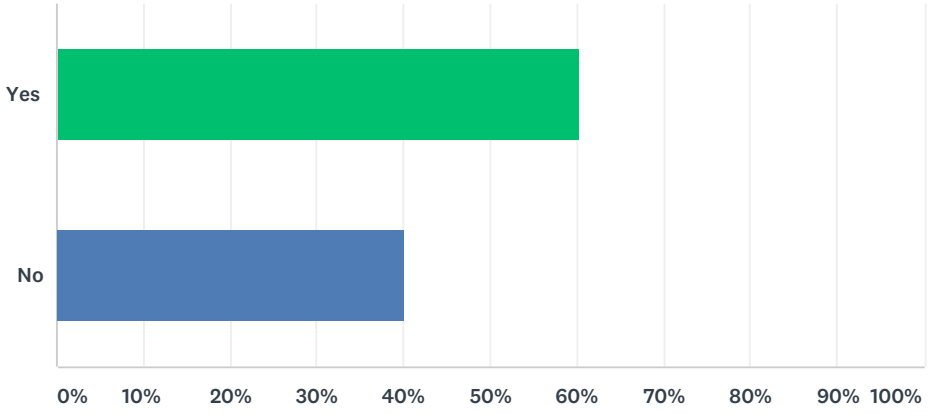
Analysis Notes

Over 1/4 of respondents work in Celina, while many work in the neighboring cities around Celina.

QUESTION 5

Do you currently walk on any pedestrian trails or ride a bike around Celina?

Answered: 277 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	60.29%	167
No	40.07%	111
Total Respondents: 277		

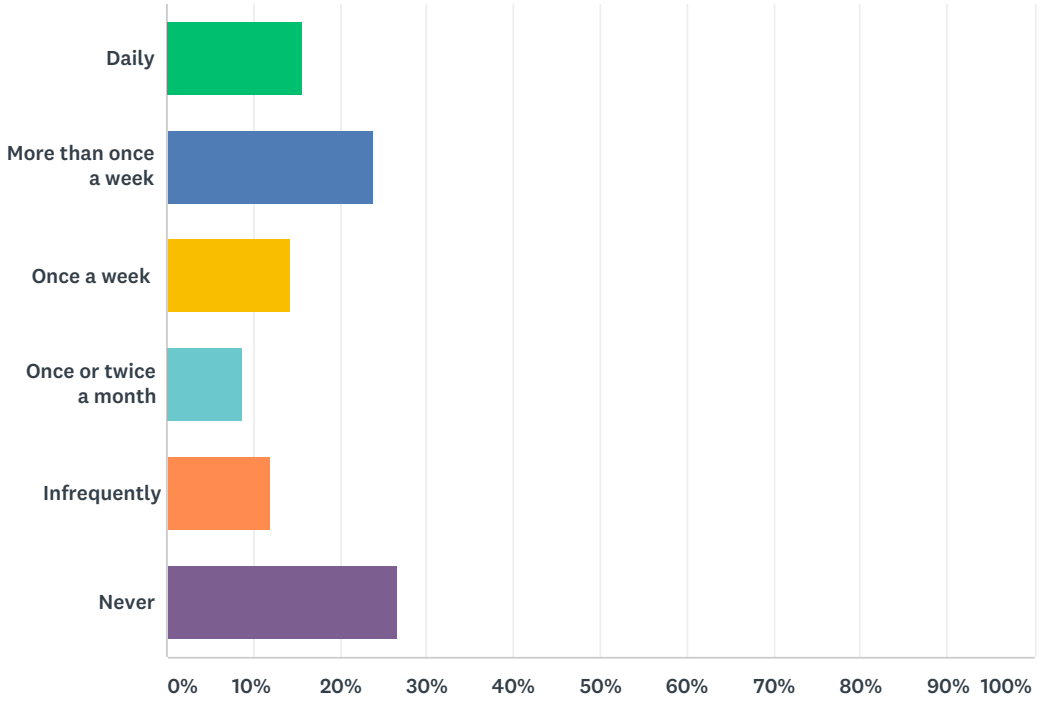
Analysis Notes

Many residents walk and ride on trails in Celina, even without a large, interconnected network of city trails.

QUESTION 6

If yes, how frequently? (Please check one only)

Answered: 260 Skipped: 17



ANSWER CHOICES	RESPONSES	
Daily	15.77%	41
More than once a week	23.85%	62
Once a week	14.23%	37
Once or twice a month	8.85%	23
Infrequently	11.92%	31
Never	26.54%	69
Total Respondents: 260		

Analysis Notes

Of the respondents that use trails, nearly 40% do so at least once a week, however there is still over 25% that never use trails.

QUESTION 7

What trails (including those within your neighborhood) do you like to use in the region?

(The word cloud provided below shows the most common responses as larger words, giving a general indication of the input received. Word clouds are useful when feedback is broad.)

Analysis Notes

Most respondents who use trails do so in their own neighborhoods or downtown Celina. Some residents go to other nearby cities to access their trail networks such as Plano or Frisco, and some residents prefer scenic parks and destinations around the metroplex.

QUESTION 8

What do you like about these trails you use and why?

(The word cloud provided below shows the most common responses as larger words, giving a general indication of the input received. Word clouds are useful when feedback is broad.)

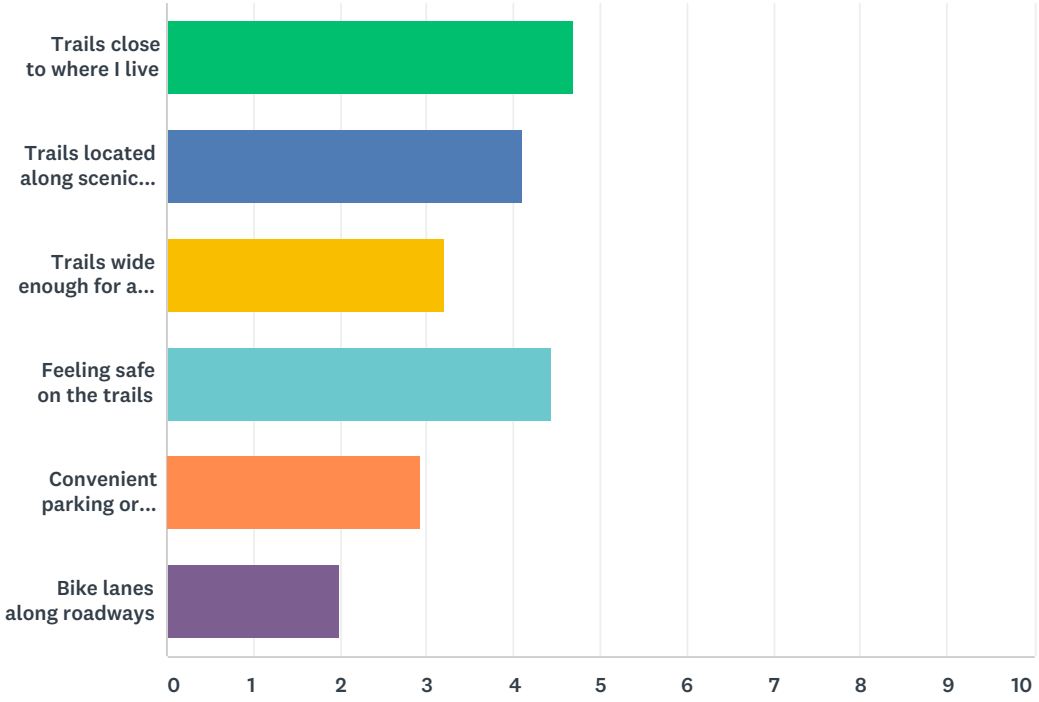
Analysis Notes

Common themes seen from responses include ease of access to these trails, a feeling of safety, they have quiet settings in nature, are family-friendly and wide enough to support riding, jogging and walking.

QUESTION 9

Please rank your choice for the following in order of priority. (1 = Least Important; 6 = Most Important)

Answered: 276 Skipped: 1



	1	2	3	4	5	6	TOTAL	SCORE
Trails close to where I live	42.11% 104	18.62% 46	17.81% 44	10.93% 27	8.10% 20	2.43% 6	247	4.68
Trails located along scenic areas	17.32% 44	27.95% 71	20.47% 52	20.47% 52	8.66% 22	5.12% 13	254	4.09
Trails wide enough for all types of users	3.54% 9	16.93% 43	22.44% 57	21.65% 55	24.41% 62	11.02% 28	254	3.20
Feeling safe on the trails	33.08% 86	21.15% 55	17.31% 45	16.92% 44	8.46% 22	3.08% 8	260	4.44
Convenient parking or access to trails	3.72% 10	11.90% 32	16.73% 45	21.93% 59	32.71% 88	13.01% 35	269	2.93
Bike lanes along roadways	6.55% 18	4.00% 11	6.91% 19	7.27% 20	15.27% 42	60.00% 165	275	1.99

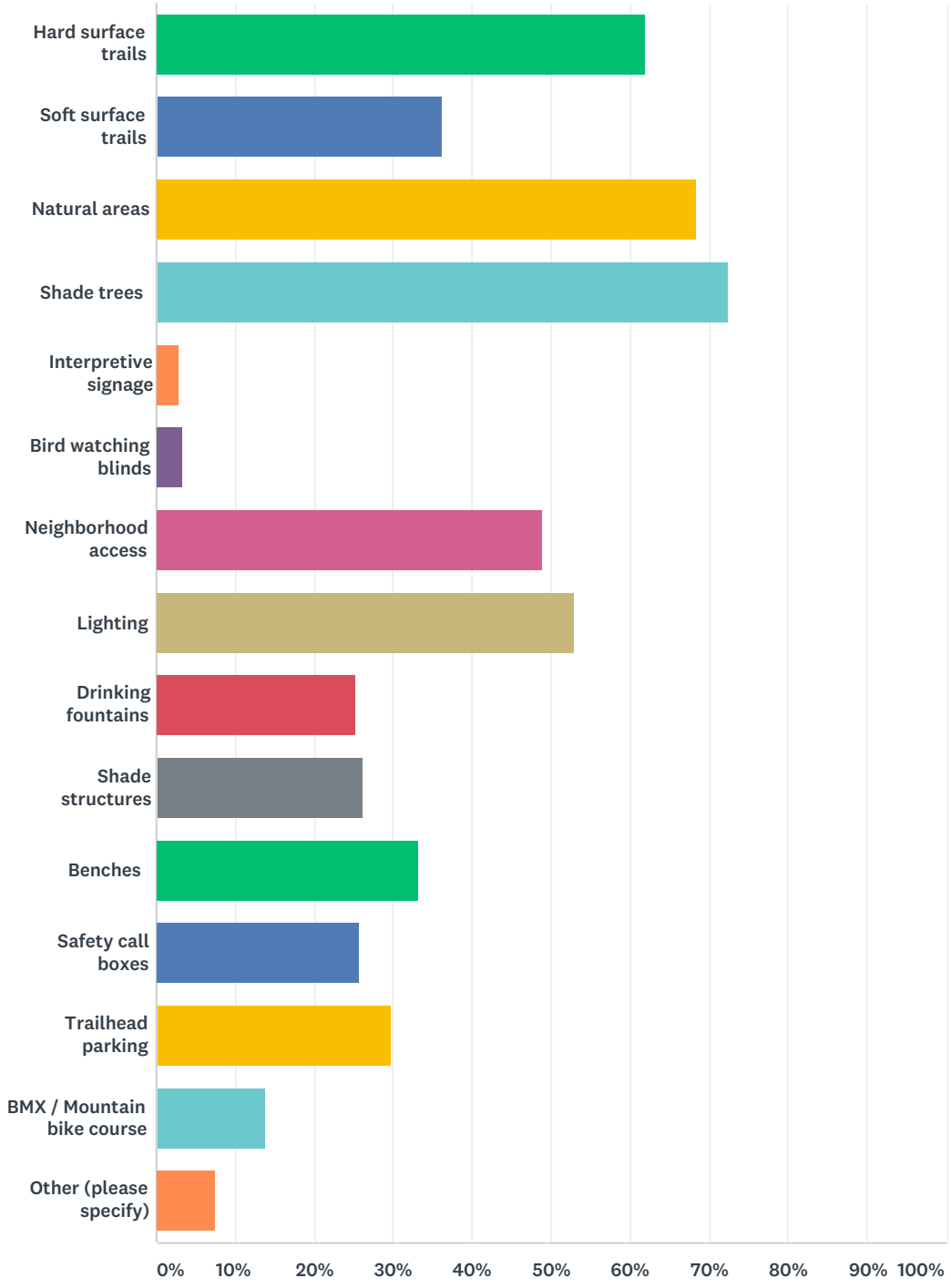
Analysis Notes

These results closely mirror those found on question 8, which asked what respondents find most appealing about the trails they use.

QUESTION 10

Please mark the five (5) recreational trail amenities that are most important to you and your family.

Answered: 276 Skipped: 1



QUESTION 10 (CONT'D.)

Please mark the five (5) recreational trail amenities that are most important to you and your family.

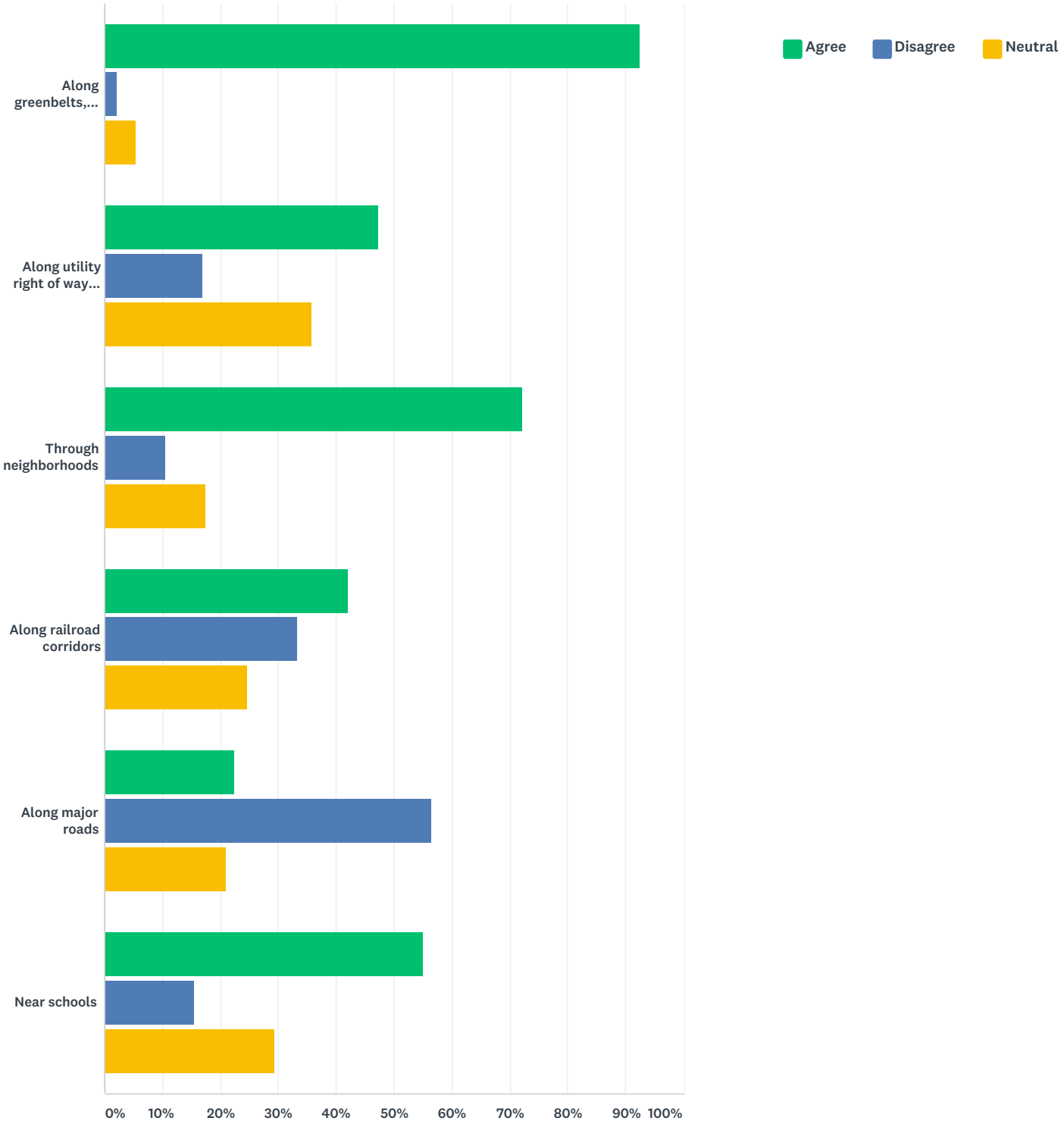
Natural areas	68.48%	189
Shade trees	72.46%	200
Interpretive signage	2.90%	8
Bird watching blinds	3.26%	9
Neighborhood access	48.91%	135
Lighting	52.90%	146
Drinking fountains	25.36%	70
Shade structures	26.09%	72
Benches	33.33%	92
Safety call boxes	25.72%	71
Trailhead parking	29.71%	82
BMX / Mountain bike course	13.77%	38
Other (please specify)	7.61%	21
Total Respondents: 276		

Analysis Notes

The top amenities that respondents prefer are centered on access to nature, hard surface trails, ease of access from their neighborhoods and safety measures such as lighting.

QUESTION 11

Do you agree with developing additional trails in the following areas? (A = Agree; D = Disagree; N = Neutral)



QUESTION 11 (CONT'D.)

	AGREE	DISAGREE	NEUTRAL	TOTAL
Along greenbelts, creek and drainage ways	92.42% 256	2.17% 6	5.42% 15	277
Along utility right of way corridors (i.e. Electric, Water)	47.29% 131	16.97% 47	35.74% 99	277
Through neighborhoods	72.10% 199	10.51% 29	17.39% 48	276
Along railroad corridors	42.03% 116	33.33% 92	24.64% 68	276
Along major roads	22.46% 62	56.52% 156	21.01% 58	276
Near schools	55.07% 152	15.58% 43	29.35% 81	276

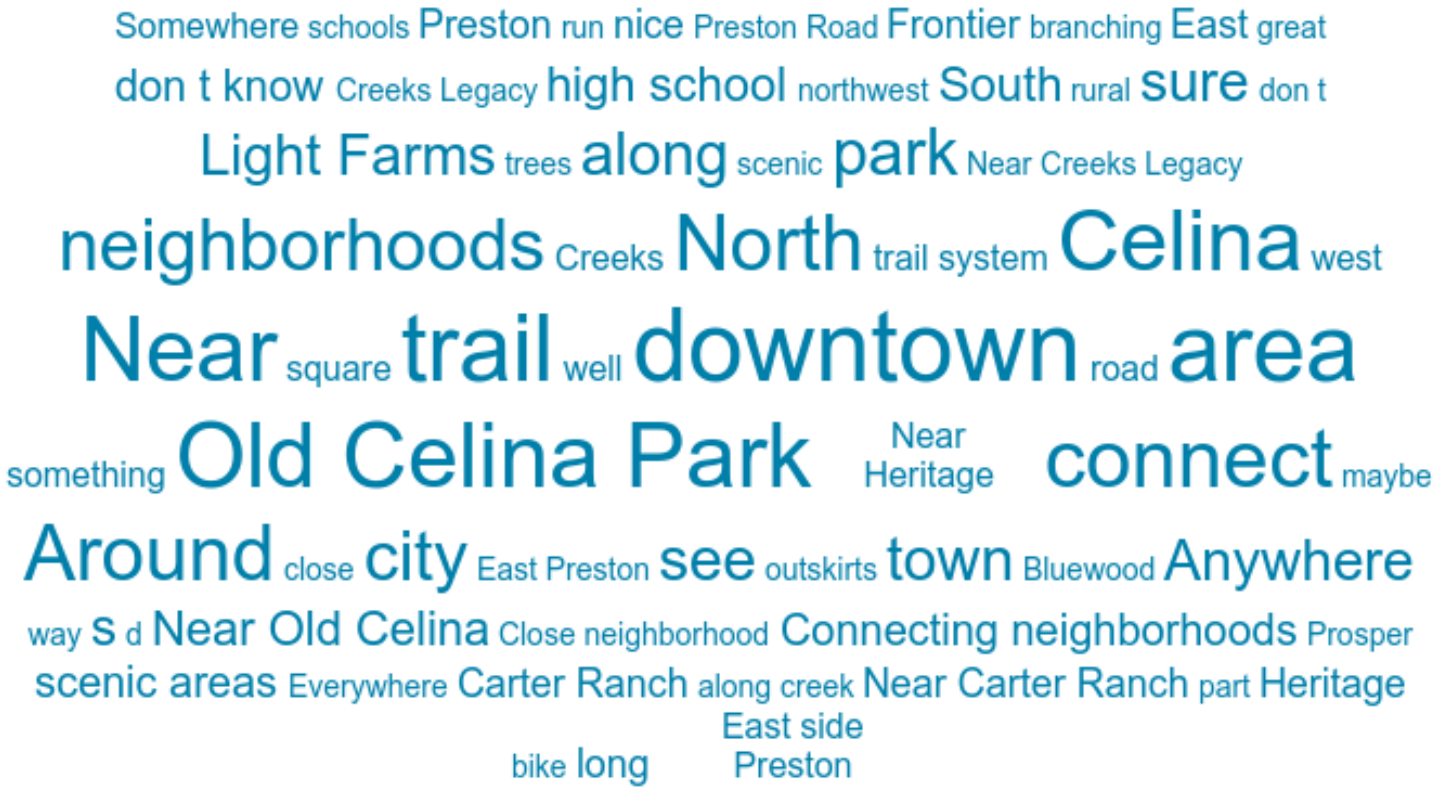
Analysis Notes

Greenbelts, neighborhoods and schools all scored high on areas for new trails. A relatively high percentage of respondents were not in favor of trails along major roads, perhaps due to the lower number of cyclists.

QUESTION 12

In what one part of the city, or specific area, would you like to see the City develop a trail?

(The word cloud provided below shows the most common responses as larger words, giving a general indication of the input received. Word clouds are useful when feedback is broad.)

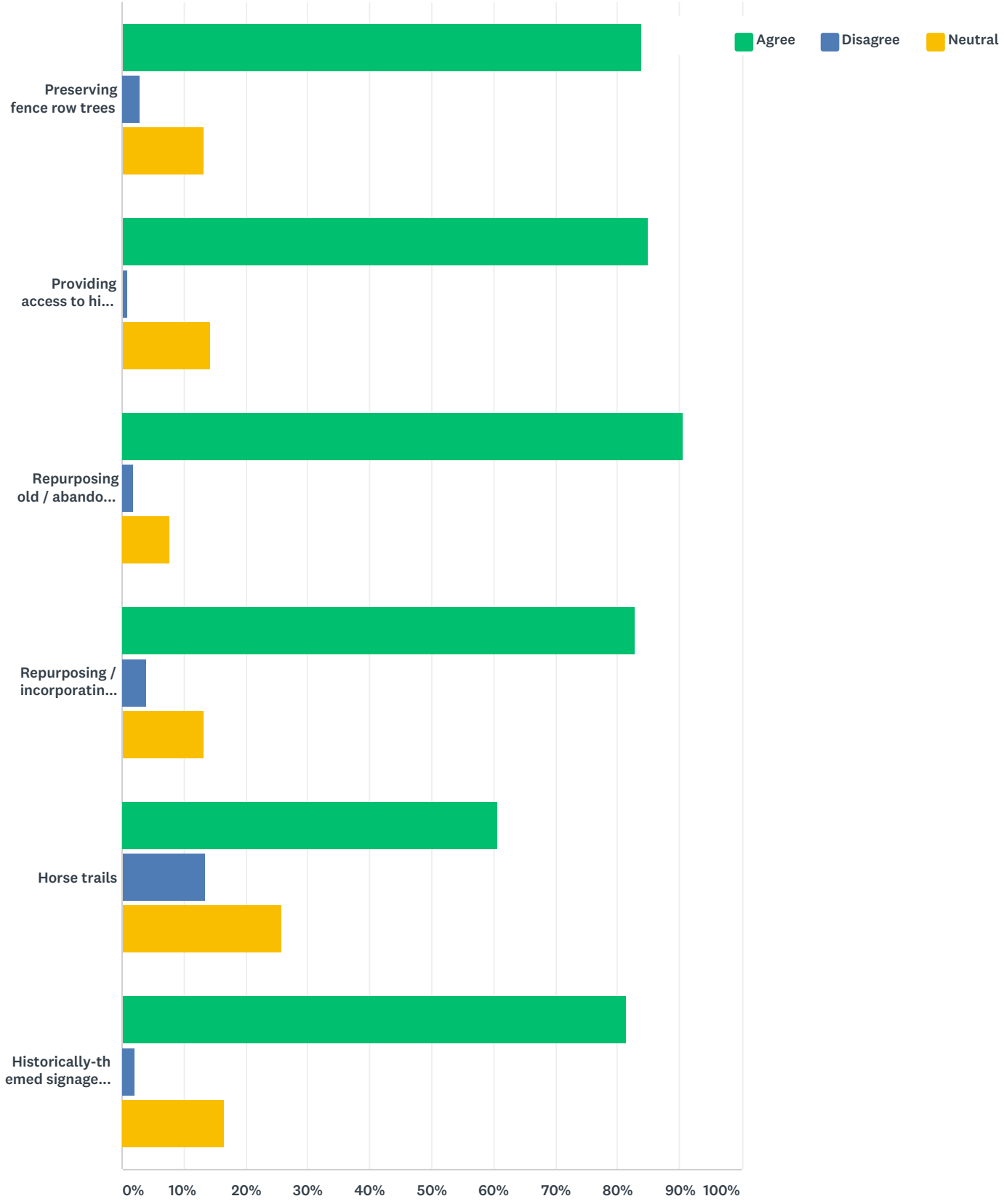


Analysis Notes

Common responses for areas where people may like to see trails developed included scenic areas and creeks, the neighborhoods developing in the southern area of the city, Old Celina Park and downtown.

QUESTION 13

To preserve or enhance the rural/historical character found in much of Celina today, would you be in favor any of the following as they relate to trails? (A = Agree; D = Disagree; N = Neutral)



QUESTION 13 (CONT'D.)

	AGREE	DISAGREE	NEUTRAL	TOTAL
Preserving fence row trees	83.94% 230	2.92% 8	13.14% 36	274
Providing access to high points for views	84.98% 232	0.73% 2	14.29% 39	273
Repurposing old / abandoned roadways	90.51% 248	1.82% 5	7.66% 21	274
Repurposing / incorporating railroad artifacts	82.85% 227	4.01% 11	13.14% 36	274
Horse trails	60.73% 167	13.45% 37	25.82% 71	275
Historically-themed signage and structures	81.39% 223	2.19% 6	16.42% 45	274

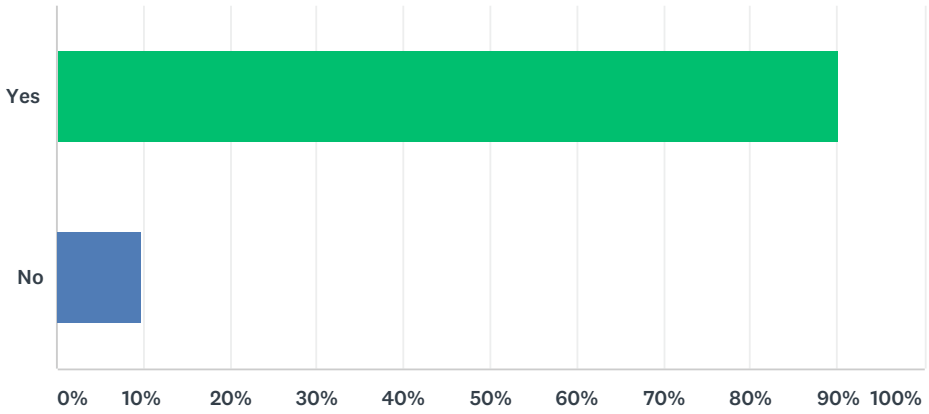
Analysis Notes

Preserving rural and historical character in Celina is highly important to respondents.

QUESTION 14

If Celina had safe **off-street** pedestrian/bicycle trails (e.g. sidewalks, creek trails) connecting neighborhoods, schools, recreation and civic uses, would you use them instead of driving sometime?

Answered: 277 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	90.25%	250
No	9.75%	27
TOTAL		277

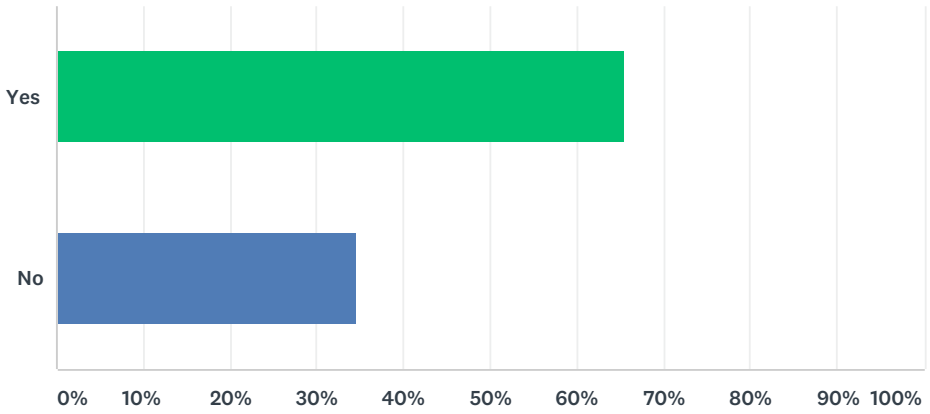
Analysis Notes

A very high percentage of respondents would use off-street bicycle and pedestrian trails instead of driving.

QUESTION 15

If Celina had safe **on-street** pedestrian/bicycle trails (e.g. dedicated bike lanes along roadways) connecting neighborhoods, schools, recreation and civic uses, would you use them instead of driving sometime?

Answered: 276 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	65.58%	181
No	34.42%	95
TOTAL		276

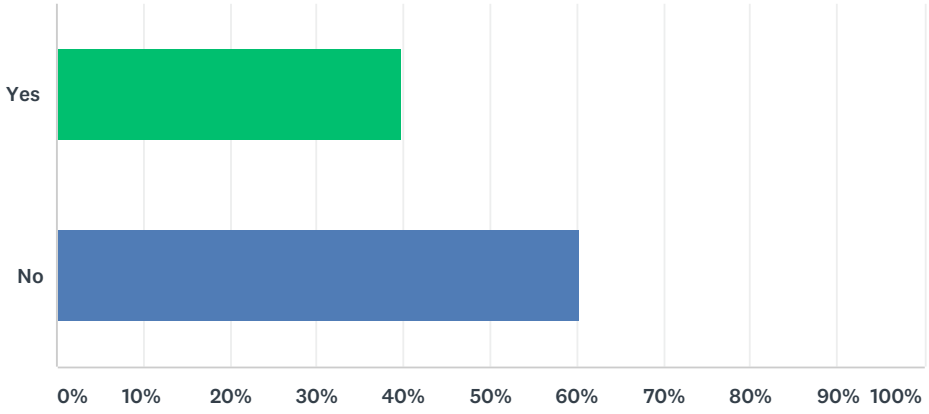
Analysis Notes

While not as enthusiastic as the previous question, still, more than 60% of respondents answered "yes" that they would use bike lanes along roadways instead of driving.

QUESTION 16

If an existing street had excess vehicular capacity, would you be in favor of the city modifying the street to include bike lanes if that means removing one or more vehicular lanes?

Answered: 277 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	39.71%	110
No	60.29%	167
TOTAL		277

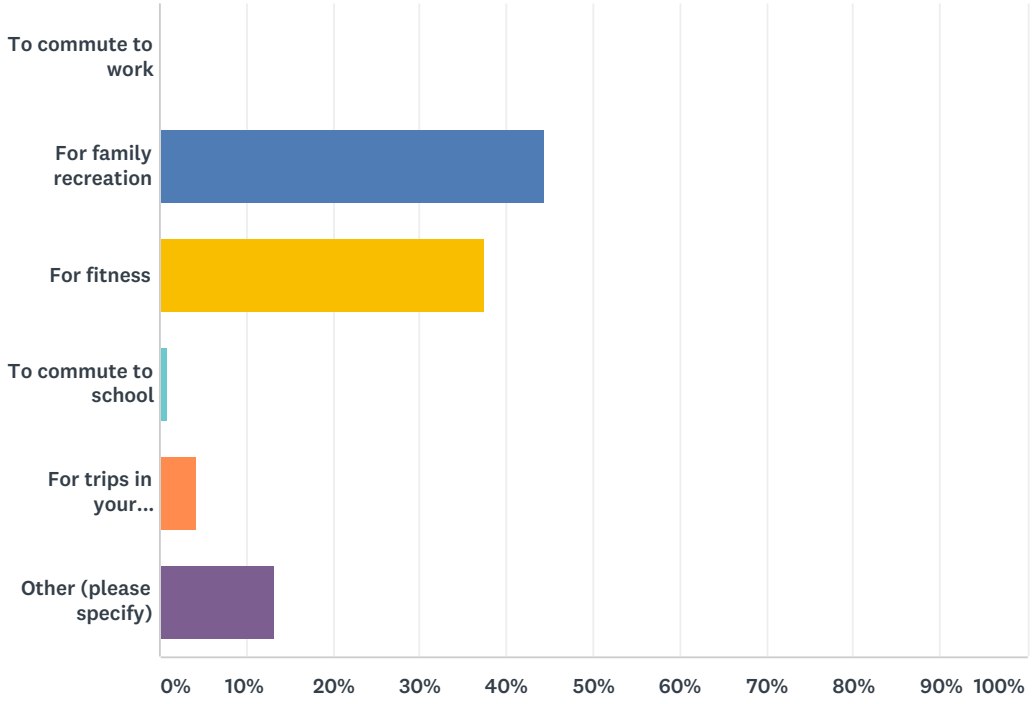
Analysis Notes

A significantly higher percentage of respondents would not be in favor of modifying roadways to include bike lanes than those who would.

QUESTION 17

What is your main purpose for cycling?

Answered: 259 Skipped: 18



ANSWER CHOICES	RESPONSES	
To commute to work	0.00%	0
For family recreation	44.40%	115
For fitness	37.45%	97
To commute to school	0.77%	2
For trips in your neighborhood	4.25%	11
Other (please specify)	13.13%	34
TOTAL		259

Analysis Notes

Most respondents cycle for recreation and fitness as opposed to commuting to work or to a destination.

QUESTION 18

Please tell us what specific off-street pedestrian/bicycle trails, areas of the city or destinations should be added to Celina's bicycle system?

(The word cloud provided below shows the most common responses as larger words, giving a general indication of the input received. Word clouds are useful when feedback is broad.)

Analysis Notes

Destinations that respondents prefer include downtown Celina, parks, schools and neighborhoods.

QUESTION 19

Please tell us what specific on-street bicycle routes, areas of the city or destinations should be added to Celina's bicycle system?

(The word cloud provided below shows the most common responses as larger words, giving a general indication of the input received. Word clouds are useful when feedback is broad.)

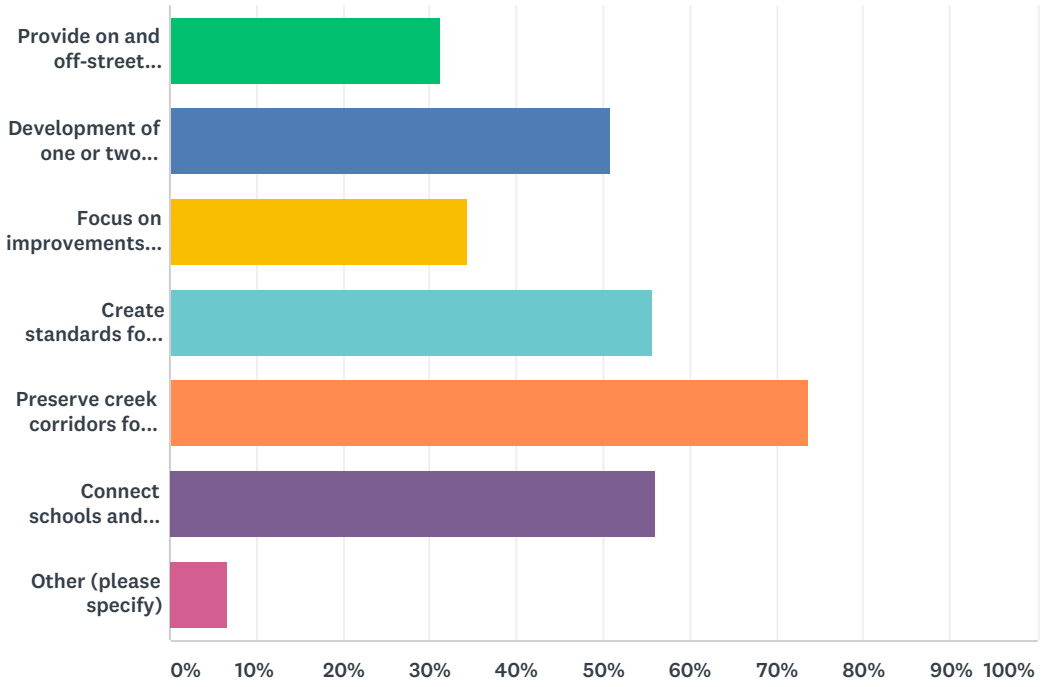
Analysis Notes

As with the previous question, destinations that respondents prefer include downtown Celina, parks, schools and neighborhoods.

QUESTION 20

What should Celina's trail and bicycle system priorities be over the next five to ten years? (Check all that apply)

Answered: 266 Skipped: 11



ANSWER CHOICES	RESPONSES	
Provide on and off-street bicycle facilities throughout the entire city	31.20%	83
Development of one or two long-distance, major routes	50.75%	135
Focus on improvements to reduce or eliminate key existing barriers to trail access	34.21%	91
Create standards for new development that promote bicycle access and pedestrian walkability	55.64%	148
Preserve creek corridors for future hike and bike trail development	73.68%	196
Connect schools and neighborhoods	56.02%	149
Other (please specify)	6.77%	18
Total Respondents: 266		

Analysis Notes

In line with previous responses, the top priority for trail development is preserving creek corridors followed by connecting schools and neighborhoods with major trails that are easy to access.

QUESTION 21

What cities and towns have you seen that have pedestrian trail and bicycle networks that we should look to review as it relates to Celina's future trail and bicycle network?)

(The word cloud provided below shows the most common responses as larger words, giving a general indication of the input received. Word clouds are useful when feedback is broad.)

Analysis Notes

Many neighborhing and nearby cities such as McKinney, Plano, Frisco and Little Elm have trail systems and features that Celina may consider using as a model for future development.

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TEXAS
EST. 1876

APPENDIX B - GLOSSARY OF TERMS

In this document, certain terminology is used to describe various bicycle and pedestrian facilities. The following defines these terms.

WALKING AND PEDESTRIAN-ORIENTED TERMS

Accessible Pedestrian Signal (APS): A device that communicates information about pedestrian signal timing in non-visual format, through the use of audible tones (or verbal messages) and vibrating surfaces.

Americans with Disabilities Act (ADA): 1990 Federal law establishing the civil rights of people with disabilities. Prohibits discrimination against people with disabilities and requires common places used by the public to provide an equal opportunity for access.

Buffer: That portion of a highway, road or street between the curb-face or edge of the pavement and the sidewalk that provides a spatial buffer between vehicular traffic and pedestrians on sidewalks. Buffers often include landscape plantings such as grass, trees or shrubs, or utility poles, and may also be referred to as the "planting strip," "landscape buffer," "tree buffer" or "tree boxes." Buffers can also include barriers such as highway guide rails (guardrails) or bollards. In rural or suburban areas the buffer may be a grassy swale or drainage ditch. In urban areas, downtowns, the buffer may also include street furniture, street signs, fire hydrants, vending boxes, lighting poles, etc.

Cross-slope: Defined as the slope measured perpendicular to the direction of travel. Cross-slope must be measured at specific points. The average cross-slope is the average of cross-slopes measured at regular intervals along the trail. Running cross-slope is defined as the average cross-slope of a contiguous section of trail. The running cross-slope can be determined by taking periodic measurements throughout a section of trail and then averaging the values.

Crosswalk: The horizontal portion of roadways, usually at intersections, reserved for pedestrian crossing; it may be marked or unmarked. Three marking patterns using white striping are most common: 1) Double Parallel lines, 2) "Zebra Stripes:" white cross hatches perpendicular to the pedestrian direction of travel, or 3) "Ladder:" perpendicular white cross hatches combined with double parallel lines on the outside edges.

Curb Ramp: A combined ramp and landing to provide access between street level and sidewalk level, usually at intersections or designated crosswalks. ADA accessible ramps must achieve particular design requirements including a running grade no steeper than 1:20. Curb ramps are intended to provide street/sidewalk access to all types of pedestrians, as well as bicyclists who may be legally using the sidewalk or crosswalk.

Detectable Warning: A standardized surface feature built in or applied to walking surfaces or other elements to warn people who are blind or visually impaired of specified hazards.

Median Refuge: An area within an island or median that is intended for pedestrians to wait safely away from travel lanes for an opportunity to continue crossing the roadway.

Midblock Crosswalk: A legally established crosswalk that is not at an intersection.

Passing Space: Passing space is defined as a section of path wide enough to allow two wheelchair users to pass one another or travel abreast. Passing space interval is defined as the distance between passing spaces. Accessible passing spaces allow two wheelchairs to pass one another, or for one wheelchair user to turn in a complete circle. Passing spaces are recommended at regular intervals when the trail is narrow for long distances.

Pedestrian: A person walking or traveling by means of a wheelchair, electric scooter, crutches or other walking devices or mobility aids. Use of the term pedestrian is meant to include all disabled individuals regardless of which equipment they may use to assist their self-directed locomotion (unless they are using a bicycle). It also includes runners, joggers, those pulling or pushing strollers, carriages, carts and wagons, and those walking bicycles.

Pedestrian Access Route: A corridor of accessible travel through the public right-of-way that has, among other properties, a specified minimum width and cross slope.

Pedestrian Crossing Interval: The combined phases of a traffic signal cycle provided for a pedestrian crossing in a crosswalk, after leaving the top of a curb ramp or flush landing, to travel to the far side of the vehicular way or to a median, usually consisting of the WALK interval plus the pedestrian clearance interval.

Pedestrian Signal Indication: The illuminated WALK/DON'T WALK message (or walking person/hand symbols) that communicates the pedestrian phase of a traffic signal, and their audible and tactile equivalents.

Sidewalk: That portion of a highway, road or street specifically constructed for the use of pedestrians on the outside edge of the vehicular travel way. Sidewalks

are typically, but not always, curb-separated from the roadway and made of concrete, brick, asphalt or another hard surface materials.

Rest Area: Defined as level portions of a trail wide enough to provide wheelchair users and others a place to rest and gain relief from prevailing grade and cross-slope demands. Users can benefit from rest stops on steep or very exposed trails to pause from their exertions and enjoy the environment. Rest areas are most effective when placed at intermediate points, scenic lookouts, or near trail amenities. Rest areas located off the trail allow stopped trail users to move out of the way of continuing traffic (Figure 5-4). The most inviting rest areas have a bench, shade, a place to rest bicycles, and a trash receptacle.

BICYCLING AND PATHWAY-ORIENTED TERMS

Bicycle: Every vehicle propelled solely by human power upon which any person may ride, having two tandem wheels, except scooters and similar devices. The term "bicycle" in this planning process also includes three and four-wheeled human-powered vehicles, but not tricycles for children.

Bicycle Facilities: A general term denoting a variety of improvements and provisions that are made by public agencies to accommodate or encourage bicycling, including bike lanes, shared-use pathways, signed bike routes and bicycle parking and storage facilities.

Bicycle Network: A system of public bicycle facilities that can be mapped and used by bicyclists for transportation and recreational purposes.

Bike Lane: A portion of a roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Bikeway: A generic term for any road, street, path, trail or way, that in some manner, is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Shared Roadway: A roadway that is open to both bicycle and motor vehicle travel. Unless bicycle travel is explicitly prohibited, all highways, roads and streets are "Shared Roadways." Some Shared Roadways may have wide curb lanes or paved shoulders, to increase comfort for bicyclists; however in most cases these roads do not have sufficient width to accommodate a Designated Bike Lane.

Shared Use Path (or Pathway): A bicycle and pedestrian path separated from motorized vehicular traffic by an open space, barrier or curb. Shared-Use Paths may be within the highway right-of-way (often termed "side-path") or within an independent right-of-way, such as on an abandoned railroad bed or along a stream valley park. Shared use paths typically accommodate two-way travel and are open to pedestrians, in-line skaters, wheelchair users, joggers and other non-motorized path users. They are typically surfaced in asphalt or concrete, but may have hard-packed/all-weather gravel or dirt surfaces as well.

Shoulder: Any portion of a roadway to the right of the right-most travel lane, but not including curbs, planting buffers and sidewalks. Shoulders can have a variety of surface treatments including pavement, gravel or grass. Depending on their width and surface, they serve a variety of purposes, including providing space for vehicles to slow and turn right, accommodation of stopped or broken-down vehicles, to allow emergency vehicles to pass, for structural support of the roadbed, or for bicycle and pedestrian travel.

Signed Shared Roadway (Signed Bike Route): A shared roadway that has been designated by signs as a preferred route for bicycle use.

Trail: The word "trail" has come to mean a wide variety of facilities types, including everything from a "marked or beaten path, as through woods or wilderness" to a paved "multi-use trail". For this reason, this planning process will not use the word "trail" to reference a facility intended for bicycle transportation. We urge use of the term Shared Use Path in place of Multi-Use Trail. Note: Several of these definitions are taken from the American Association of State Highway and Transportation Officials (AASHTO) "Guide for the Development of Bicycle Facilities," 1999 Edition.

FUNDING AND IMPLEMENTATION

Annual Appropriation/Leasehold Financing: This is a more complex financing structure which requires use of a third party to act as issuer of the bonds, construct the facility, and retain title until the bonds are retired. The city enters into a lease agreement with the third party, with annual lease payments equal to the debt service requirements. The bonds issued by the third party are considered less secure than general obligation bonds of the city, and therefore more costly. Since a separate corporation issues these bonds, they do not impact the city's debt limitations and do not require a vote. However, they also do not entitle the city to levy property taxes to service the debt. The annual lease payments must be

appropriated from existing revenues.

Capital Improvement Fees: These fees are on top of the set user rate for accessing facilities such as golf courses, recreation centers, and pool facilities to support capital improvements that benefit the user of the facility.

Easements: This revenue source is available when the city allows utility companies, businesses or individuals to develop some type of an improvement above or below ground on their property for a set period of time and a set dollar amount to be received by the city on an annual basis.

General Obligation Bonds: Bonded indebtedness issued with the approval of the electorate for capital improvements and general public improvements.

Greenway Utility: Greenway utilities are used to finance acquisition and development of the greenways by selling the development rights underground for the fiber optic types of businesses.

Inter-local Agreements: Contractual relationships entered into between two or more local units of government and/ or between a local unit of government and a non-profit organization for the joint usage/development of sports fields, regional parks, or other facilities.

Park Dedication and Development Fees: These fees, as currently assessed by The Colony, are for the development of residential properties with the proceeds to be used for parks and recreation purposes, neighborhood park acquisition, and development.

Public Improvement District (PID): New developments can establish a PID when authorized by the City Council and legally set up according to state law. This taxing district provides funds especially for the operation and maintenance of public amenities such as parks and major boulevards.

Recreation Service Fees: This is a dedicated user fee, which can be established by a local ordinance or other government procedures for the purpose of constructing and maintaining recreation facilities. The fee can apply to all organized activities, which require a reservation of some type or other purposes, as defined by the local government. Examples of such activities include adult basketball, volleyball, tennis, and softball leagues, youth baseball, soccer, football and softball leagues, and special interest classes. The fee allows participants an opportunity to contribute toward the upkeep of the facilities being used.

Revenue Bonds: Bonds used for capital projects that will generate revenue for debt service where fees can be set aside to support repayment of the bond.

Tax Increment Finance (TIF) District: Tax Increment Finance districts (TIF's) are established to provide funds for certain types of public improvements that benefit a defined area of affected properties. Revenue is generated through the incremental increase in property tax revenue above a specified threshold being applied to accounts for use in improvements that may include most public infrastructure improvements including parks and landscaping.

User Fees/Charges: User fees are primarily established to cover operational costs, but can be used for debt service on revenue bonds.

EXTERNAL FUNDING

Community Development Block Grant (CDBG): Funding received in accordance with the CDBG Programs national objectives as established by the U.S Department of Housing and Urban Development. Funding may be applied to such programs as infrastructure improvements, public facility and park improvements, human service enhancements, lead-based paint education and reduction, housing education assistance, and economic development and anti-poverty strategies.

Grants: Grants for parks and recreation are typically administered through the state and are competed for by municipalities. These grants require some level of local funding. They also generally have a long lead time due to funding cycles and application requirements. Following is a list of those currently funded or anticipated to be funded:

Indoor Recreation Facility Grants: This program provides 50% matching grant funds to municipalities, counties, MUDs, and other local units of government with a population less than 500,000 to construct recreation centers, community centers, nature centers and other facilities (buildings). The grant maximum will increase to $750,000 per application. The application deadline will be July 31st each year (with master plan submission deadline 60 days prior to application deadline). Award notifications occur the following January.

Outdoor Recreation Grants: This program provides 50% matching grant funds to municipalities, counties, Municipal Utility Districts (MUDs) and other local units of government with a population less than 500,000 to acquire and develop parkland or to renovate existing public recreation areas. There are two funding cycles per year with a maximum award of $500,000. Projects must be completed within three years of approval. Beginning in 2009, deadlines are January 31st and July 31st each year thereafter (with master plans submission deadline

60 days prior to application deadline).

Shade Structure Program: The American Academy of Dermatology's Shade Structure Program awards funds for the purchase for permanent shade structures to nonprofit organizations in need of shade for outdoor locations. These locations include any areas where children and adults gather and are exposed to the harmful ultraviolet (UV) rays of the sun, such as playgrounds, pools, bleachers, eating areas and other recreation areas. The deadline is typically April of each year and is open to 501(c) (3) organizations.

OTHER FUNDING

Advertising Sales: This revenue source is for the sale of tasteful and appropriate advertising on park and recreation related items such as in the city's program guide, on scoreboards, dasher boards and other visible products or services that are consumable or permanent that exposes the product or service to many people.

Catering Permits and Services: Similar to user fees, this is a license to allow caterers to work in the park system on a permit basis with a set fee or a percentage of food sales returning to the city. Also, many cities have their own catering service and receive a percentage of dollars off the sale of their food. These funds can be used to offset debt service

Concession Management: Concession management is from retail sales or rentals of soft goods, hard goods, or consumable items. The city either contracts for the service or receives a set amount of the gross percentage or the full revenue dollars that incorporates a profit after expenses. or fund a dedicated capital improvement budget.

Corporate Sponsorships: This revenue funding source allows corporations to invest in the development or enhancement of new or existing facilities in park systems. Sponsorships are also highly used for programs and events.

Friends Associations: These groups are formed to raise money typically for a single focus purpose that could include a park facility or program that will better the community as a whole and their special interest.

Irrevocable Remainder Trusts: These trusts are set up with individuals who typically have more than a million dollars in wealth. They will leave a portion of their wealth to the city in a trust fund that allows the fund to grow over a period of time and then is available for the city to use a portion of the interest to support specific park and recreation facilities or programs that are designated by the trustee.

Naming Rights: Many cities and counties have turned to selling the naming rights for new trails, buildings or renovation of existing buildings and parks for the development cost associated with the improvement.

Pouring Rights: Private soft drink companies that execute agreements with the city for exclusive pouring rights within park facilities. A portion of the gross sales goes back to the city to off-set debt service or fund a dedicated capital improvement budget.

Public/Private Partnerships (PPP): Partnerships are a very effective method for leveraging The Colony's resources to the greatest extent possible. These partnerships should be based on formal agreements and supported by a policy approved by the Parks and Recreation Board and City Council. Partnerships are joint development funding sources or operational funding sources between two separate agencies, such as two government entities, a non-profit and a city department, or a private business and a city agency. Two partners jointly develop revenue producing park and recreation facilities and share risk, operational costs, responsibilities and asset management, based on the strengths and weaknesses of each partner.

Private Concessionaires: Contract with a private business to provide and operate desirable recreational activities financed, constructed, and operated by the private sector, with additional compensation paid to the city.

Private Developers: These developers lease space from city owned land through a subordinate lease that pays out a set dollar amount plus a percentage of gross dollars for recreation enhancements. These could include a golf course, marina, restaurants, driving ranges, sports complexes, equestrian facilities, recreation centers and arenas.

Private Donations: Private Donations may also be received in the form of funds, land, facilities, recreation equipment, art or in-kind services. Donations from local and regional businesses as sponsors for events or facilities should be pursued.

NORRIS DESIGN

Planning | Landscape Architecture | Branding