City of Goose Creek
Connectivity Master Plan

Prepared by Studio Main LLC | September 2021

Acknowledgements

Studio Main LLC would like to recognize and express appreciation for the myriad of individuals who participated in the development of this Plan. Special thanks to **Mayor Gregory Habib, City Administrator Natalie Ziegler, Assistant City Administrator Brian Cook, and Economic Development Director Matt Brady** who contributed their time and energy to the Plan and for their commitment to making Goose Creek an active community where bicycling and walking are safe, healthy, fun, and normal daily activities.

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THE CITY OF
GOOSE CREEK

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1 Introduction

1.1 Plan Overview

The City of Goose Creek is a City on the move. Recent and current projects like the Eubanks Park Master Plan, the 2021 Comprehensive Plan, and the roadway improvements along Montague Plantation Road, demonstrate the City's commitment to creating an active and attractive environment for residents, employees and visitors. Through these efforts, the importance of bicycling and walking has emerged as a high priority for the community, both as an amenity that adds to the quality of life for Goose Creek residents, and as an asset to attract tourism and stimulate economic development.

The City of Goose Creek Connectivity Master Plan creates a vision and blueprint for integrating walking and bicycling into the fabric of the community. The Plan is built on a thorough, in-depth analysis of existing conditions and priority routing to provide immediate connectivity. Through its "Six E's" framework, the Plan presents recommendations in the areas of engineering, education, encouragement, enforcement, evaluation/planning, and equity, all of which are designed to make bicycling and walking fun, daily, and normal transportation and recreation choices. By prioritizing recommended walkway and bikeway projects and including cost estimates, design guidelines, and funding opportunities, the Master Plan will guide investments in active transportation and recreation.

1.2 National Perspective

Many cities and towns across the nation are realizing the great impact that the relatively small investment in more livable transportation options and public spaces can have in their communities. While investments in active and livable communities is certainly not a panacea for the economic, health, and transportation safety issues that many communities face – it has been shown to have a significant impact on them. The sections presented below show some of the acute health, safety and economic issues many cities today face and the ways in which improved active transportation and recreation can have a positive impact on these.

1.2.1 Economy

Issues

- Traffic congestion in 2021 caused Americans in cities to travel an additional 5.5 billion hours, purchase an additional 2.9 billion gallons of fuel, and spend an additional $121 billion in gas. This means, on average, each car commuter spends roughly 40 hours and over $800 per year waiting in traffic.

Opportunities

- Reducing the number of vehicular lane-miles through road-diets and other methods decreases wear and tear from motor vehicles. Replacing these with pedestrian facilities, bicycling facilities or transit capacity increases transportation capacity with less investment.

- Reducing the dependence on personal motor vehicles decreases personal and family expenditures on autos, potentially saving thousands of dollars per family annually.
- Reports have shown that pedestrians and bicyclists spend more, on average, than motorists.
- Bikeways and trails across many regions and cities have been shown to have a major economic impact. For example, following the opening of the Greenville, SC Swamp Rabbit Trail in 2018, **most businesses along the trail saw a 30%-50% increase in sales after the trail opened, and businesses that relocated to the trail observed a 30% to 90% increase in sales.**
- **Pedestrian and bicycle infrastructure projects create 8–12 jobs per $1 million of spending.** Road infrastructure projects create 7 jobs per $1 million of expenditures (Garrett-Peltier, 2021)
- Focusing investment in Pedestrian and Bicycle Infrastructure Improvements has proven to be more cost effective than vehicular infrastructure across the board.
- Several local and regional planning efforts over the past few years have resulted in **increased investment and revitalization in Berkley, Dorchester, and Charleston Counties that has made the city a regional destination for shopping, dining, and recreation.** Recent additions within the city have resulted in increased investment and supported Goose Creek as a thriving place. This plan seeks to build upon these recent efforts to continue the city's progress and promote bicycling and walking as a means for daily transportation and recreation.

1.2.2 Health

Issues

- **"Obesity costs American companies $225.8 billion per year in health-related productivity losses."**
- **"The estimated annual health care costs of obesity-related illness are a staggering $190.2 billion or nearly 21% of annual medical spending in the United States.** Childhood obesity alone is responsible for $14 billion in direct medical costs."

Opportunities

- A recent study shows that people who live within 0.6 miles of a pedestrian and bicycle path get 45 minutes more of exercise a week, on average.
- **"A 5% increase in walkability [has been found] to be associated with a per capita 32.1% increase in time spent in physically active travel,** a 0.23-point reduction in body mass index, 6.5% fewer vehicle miles traveled, 5.6% fewer grams of oxides of nitrogen (NOx) emitted, and 5.5% fewer grams of volatile organic compounds (VOC) emitted."
- Studies have shown that increased amounts of physical exercise, including walking and bicycling, improves mental well-being.

1.2.3 Safety

Issues

- Higher traffic speeds result in reduced driver response times and increased accident severity. A chance a pedestrian would survive if hit by a car travelling at 20 mph is 95%. This percentage is reduced to 60% at 30mph and 20% at 40mph.
- Nationally, there were over 38,680 traffic fatalities reported in 2020. The Alliance for Bicycling and Walking reports that 14.9% of traffic fatalities are pedestrians or bicyclists, while only 11.4% of all trips are made either walking or bicycling.

Opportunities

- Increasing the number of pedestrians and bicyclists along a corridor, and network-wide, by itself creates a safer environment for these users. Motorists expect the presence of these users and drive more cautiously as a result.
- Complete Streets Improvements that reduce crossing distances for pedestrians and bicyclists, highlight conflict zones, create dedicated roadway space for non-motorized users, reinforce safe roadway behavior, increase visual stimulation or a sense of enclosure, and/or actively reduce speeds through geometric roadway changes foster safer speeds and behavior among all roadway users.

1.3 Planning Process

The City of Goose Creek Connectivity Master Plan was developed through an engaging planning process built on the analysis of critical data and the input and direction of Goose Creek administrative staff.

1.3.1 Data Collection and Analysis

Through aerial photography, geographic information systems (GIS) data, and on-the-ground field investigation, Studio Main identified opportunities and constraints for bicycle, pedestrian, and greenway facility development. Field research also included examining potential trail corridors, examining roadway conditions for the potential inclusion of sidewalk expansion, and preparing a photographic inventory of opportunities and constraints in the community. A review of planning documents, polices, bicycle and pedestrian access to outlets for healthy foods, and existing cultural and recreational programs supplemented the analysis of the physical environment.

1.3.2 Plan Development

The recommendations of the Connectivity Master Plan reflect the input from the City of Goose Creek staff as well as national best practices for bicycle and pedestrian planning in communities of similar size and conditions. The Plan includes network and infrastructure recommendations for a connected trail system that take into account issues such as safety, route directness, barriers, and system connectivity. In addition, the Master Plan includes non-infrastructure recommendations to promote safe bicycling and bringing about cultural change to make bicycling part of daily life in Goose Creek. The Implementation chapter outlines the project prioritization, project cost estimates, and funding recommendations as well as design guidelines and wayfinding recommendations.

1.4 Project Vision, Goals, and Objectives

The City of Goose Creek's Connectivity Master Plan will provide recommendations for priority off-street bicycle and pedestrian facilities to provide priority connections to key destinations within the City. The City has participated in a series of significant planning efforts in the last decade, including on-going recreational and open space projects. The City of Goose Creek's Connectivity Master Plan will build upon these prior plans and current efforts. The focus will be to integrate the recommendations of prior plans, identify implementable infrastructure projects to improve bicycling and walking connectivity in the city, and identify priority trail corridors that will serve as both active transportation and recreation for the City. The recommended projects will link residents and visitors in Goose Creek to parks, schools, health campuses, healthy food centers, retail, and employment destinations.

Though the City's has an existing sidewalk and trail network, the infrastructure includes significant sidewalk gaps and unsafe or uncomfortable crossings. The City bears a connection of low-volume neighborhood streets that provide a strong basis for a connected network. Goose Creek's existing trail segment (e.g. Hike/Bike Trail and Wannamaker North Trail) and natural resources present an opportunity for a scenic greenway network and the connectivity to Charleston Southern University provides opportunity for alternative transportation from campus to the City core.

These conditions present an opportunity to develop a complete, connected, and inviting bikeway and walkway network for Goose Creek with signature greenways extending linking the broader community. When combined with City's vibrant and numerous destinations, and nearby parks, Goose Creek will be on its way to becoming the Low Country's next bicycle- and walk-friendly community.

A Steering Committee, comprised of City Staff, for the City of Goose Creek Connectivity Master Plan performed initial site visits, photographic inventory, and opportunity and constraints analysis with the end goal in mind – a better connected City.

The City of Goose Creek's Connectivity Master Plan ***envisions a connected network of off-street bikeways, walkways, and trails*** *that provide* ***safe and family-friendly access*** *between neighborhoods and community destinations for* ***all ages and abilities.*** *Implementing the recommendations described in t****his Plan will compliment, connect and enhance the existing assets of the community*** *such as Hike/Bike Trail, Wannamaker County Park, Charleston Southern University, City parks, and redevelopment opportunities, among others.* ***These recommendations could also better connect Goose Creek*** *with neighboring communities such as Hannahan and Summerville.* ***When realized, this Plan will enhance the economic vitality, cultural assets, and overall health and well-being of Goose Creek and its residents.***

Specific objectives for the outcome of this Plan include:

- Create a community network of on- and off-street walkways, bikeways, and trails designed for all ages, abilities, and user groups.
    - Complete this plan's top five priority bicycle and pedestrian projects within five years of Plan adoption.
- Capitalize on existing scenic natural resources, including recreation and historical amenities, and the attractiveness of Goose Creek.

  - Focus on improving bicycle and pedestrian connectivity around the city with connectors to other neighborhoods.
  - Incorporate **non-motorized transportation friendly policies and regulations** ensuring that new development supports the bicycling and livability goals of the community.
- Improve the safety and comfort of **bicycling and walking routes to destinations such as schools and parks.**
  - Eliminate all pedestrian, bicycle, and overall traffic crash fatalities within 10 years.
- Promote bicycling, walking, and trail usage for both recreation and transportation.
  - Initiate a **local bicycle safety and courtesy educational campaign.**
  - Start a **walking and bicycle safety education/encouragement program** in all elementary and middle schools for children in grades K-8.
  - **Integrate bicycling and walking encouragement and education into existing community programs and events** such as farmers markets, local festivals, and races.
  - Plan and promote events around **Bike Month.**
- Ensure that Plan recommendations are implemented equitably.
  - In 10 years, **all households in Goose Creek will be within a half-mile of a trail or greenway.**
  - Establish a **mayoral bicycle advisory committee** with a diverse group of representatives to oversee implementation of recommendations.

1.5 The Five E's Approach

Research has shown that a comprehensive approach to improving conditions for walking and bicycling is more effective than a singular approach that would address infrastructure issues only.[1] Recognizing this, the national Bicycle Friendly Community program, administered by the League of American Bicyclists, and the Walk Friendly Community program, administered by the National Center for Walking and Bicycling, recommend a multi-faceted approach based on the following five 'E's: Engineering, Education, Encouragement, Enforcement, and Evaluation. For the purposes of this Plan, a sixth 'E', Equity, is included in order to fulfill the goals and vision of this Plan. This Plan has been developed using the "6 E's" approach as a guiding framework.

[1] Pucher, J. Dill, J. and Handy, S. (2010). Infrastructure, programs, and policies to increase bicycling: An international review. Preventative Medicine, 50. S106-S125; Krizek, K., Forsyth, A., and Baum, L. (2009). Walking and cycling international literature review. Melbourne, Victoria: Department of Transport.

1.5.1 Engineering

Designing, engineering, operating, and maintaining quality pedestrian and bicycle facilities is a critical component in creating a pedestrian-friendly and bicycle-friendly community. This category includes projects that address and impact the built environment, such as adding new bicycle and pedestrian specific infrastructure, improvements to street crossings, traffic calming, trail design, traffic management, school zones, or other related strategies.

1.5.2 Education

Educational opportunities are critical for bicycle and pedestrian safety. Education should span all age groups and include motorists as well as cyclists and pedestrians. The focus of an educational campaign can range from information about the rights and responsibilities of road users to tips for safe behavior; from awareness of the communitywide benefits of bicycling and walking to technical trainings for municipality staff.

1.5.3 Encouragement

Encouragement programs are critical for promoting and increasing walking and bicycling. These programs should address all ages and user groups from school children, to working adults, to the elderly and also address recreation and transportation users. The goal of encouragement programs is to increase the amount of bicycling and walking that occurs in a community. Programs can range from work-place commuter incentives to a "walking school bus" at an elementary school; and from bicycle- and walk-friendly route maps to a bicycle co-op.

1.5.4 Enforcement

Enforcement is critical to ensure that motorists, bicyclists, and pedestrians are obeying common laws. It serves as a means to educate and protect all users. The goal of enforcement is for bicyclists, pedestrians, and motorists to recognize and respect each other's rights on the roadway. In many cases, officers and citizens do not fully understand state and local laws for motorists, bicyclists, and pedestrians, making targeted education an important component of every enforcement effort.

1.5.5 Evaluation

Evaluation methods can include quarterly meetings, the development of an annual performance report, update of bicycle and pedestrian infrastructure databases, pedestrian and bicycle counts, assessment of new facilities, and plan updates. Monitoring implementation of this Plan on a regular basis and establishing policies that ensure long-term investment in the bikeway and walkway network are critical to effective evaluation. Monitoring progress of implementation will facilitate continued momentum and provide opportunities for updates and changes to process if necessary.

1.5.6 Equity

Equity in transportation planning refers to the distribution of impacts (benefits and costs) and whether that distribution is considered appropriate. Transportation planning decisions have significant and diverse

equity impacts. Equity in bicycle and pedestrian planning decisions should reflect community needs and values. Communities may choose to give special attention to variances in age, income, ability, gender, or other characteristics.

2 Existing Conditions

2.1 Goose Creek Characteristics and Demographics

The City of Goose Creek of roughly 42,000 is situated in south Berkley County, South Carolina along Interstate 26. Located only 30 minutes north of Charleston, Goose Creek is ideally positioned as a community for people that live, work and play in the Lowcountry, as well as a tourist destination for those attracted to the region's rich history and character and the area's diverse recreation activities.

While only a small fraction of Goose Creek residents walk or bike to work (an estimated 0.2%), a number of demographic indicators point to the need for bicycling and walking infrastructure. Population segments like seniors (65 and older), which represent an estimated 10% of the population, drive less frequently and often choose to walk to nearby destinations. **Children (age 18 and younger) account for 29% of the Goose Creek's population and rely heavily on walking and bicycling to travel to school, parks, friends' houses, and other local destinations.**[2]

As Berkley, Charleston, and Dorchester Counties continue to grow and Lowcountry South Carolina continues to attract new residents, businesses and visitors, **Goose Creek has continued to position itself as an attractive, and inviting community to *live, work, learn and play.*** This Plan represents another important step in enriching the character of Goose Creek, improving the quality of life for residents, and enhancing the visitor experience for tourists and other guests.

2.2 Review of Existing Planning Efforts

Numerous planning efforts, studies, and other documents have been developed in recent years that may have an impact on bicycle and pedestrian facility development in the City of Goose Creek. In order to better understand the planning and policy context in which this plan is being developed, these plans and documents have been reviewed and summarized, with particular focus on bicycle and pedestrian elements.

Documents Reviewed

Document	Year	Description
Goose Creek Comprehensive Plan	2021	Long-range plan to guide growth, development and investment in Goose Creek over a 10-year period.
Park & Recreation Master Plan	2021	Inventories city-owned and leased facilities and proposes improvements.
Walk-Bike BCDCOG: Planning for a Walkable and Bikeable Region	2016	Provides the regional framework for investment in transportation facilities based on technical data analysis and public input and involvement.
Hiker-Biker Trail Master Plan	2012	Established priority routing for trails and greenways throughout the City.

2.2.1 Goose Creek Comprehensive Plan (2021)

The 2021 Goose Creek Comprehensive Plan serves as a guiding policy document to direct growth and development over a 10-year period, with focus on nine distinct elements: population and demographics, land use, natural resources, cultural resources, transportation, economic development, affordable housing, community facilities, and priority investments. The Plan notes that there is "a significant need for biking trails and/or lanes, Safe Routes (walk to school initiative), 'Share the Road', ADA accessibility and sidewalks". Goose Creek Comprehensive Plan identified objectives and goals that should be implemented to increase quality of life for all residents.

Population

- Goose Creek will support its diverse and growing population by continuing to provide access to community services.

Land Use

- Goose Creek will plan for inevitable growth via the use of Smart Growth principles.

Conservation and Open Space

- "Development in these areas should be limited to support any recreational uses and should minimize impacts to these natural features and assets.

Transportation

- Goose Creek will continue to promote its Hiker-Biker Trail System to residents and visitors.
- Goose Creek will encourage a multi-modal transportation system that promotes community and economic development and provides a safe and sustainable balance between pedestrian, bicycle, and automobile traffic.

Community Facilities

- Goose Creek will continue to seek out opportunities to create and program new green space and recreational facilities.

Natural Resources

- Goose Creek will support preservation of green space.
- Goose Creek will continue to develop its trail systems.

2.2.2 Parks and Rec Master Plan (2021)

Completed in 2012, the city park and recreation master plan provides an assessment of the city's recreation facilities. The City of Goose Creek has identified the following priorities related to existing parks projects that complement the Connectivity Master Plan.

Pond at City Hall

- Install outdoor workout stations around the backside of pond and existing trail.

Foster Creek Water Access

- Install boardwalk and water access

St James

- Concrete pathway to form a connection

2.2.3 Walk-Bike BCDCOG: Planning for a Walkable and Bikeable Region (2016)

In 2016, the Berkeley-Charleston-Dorchester Council of Governments (BCDCOG) commissioned a Regional Bicycle and Pedestrian Plan. The purpose of the plan, called Walk Bike BCD, is to guide short and long-term land-use and transportation planning decisions for a safer, more accessible region for people on foot and bike. The central goal of this plan is to develop a connected network of enjoyable walking and biking routes that link residents and visitors to destinations. Walk + Bike BCD will serve as a working plan to guide regional active transportation priorities while also providing action-oriented guidance for improving walkability and bikeability in local communities.

Chapter 3: The Action Plan

- Consider coordination with BCDCOG on proposed programs and policies

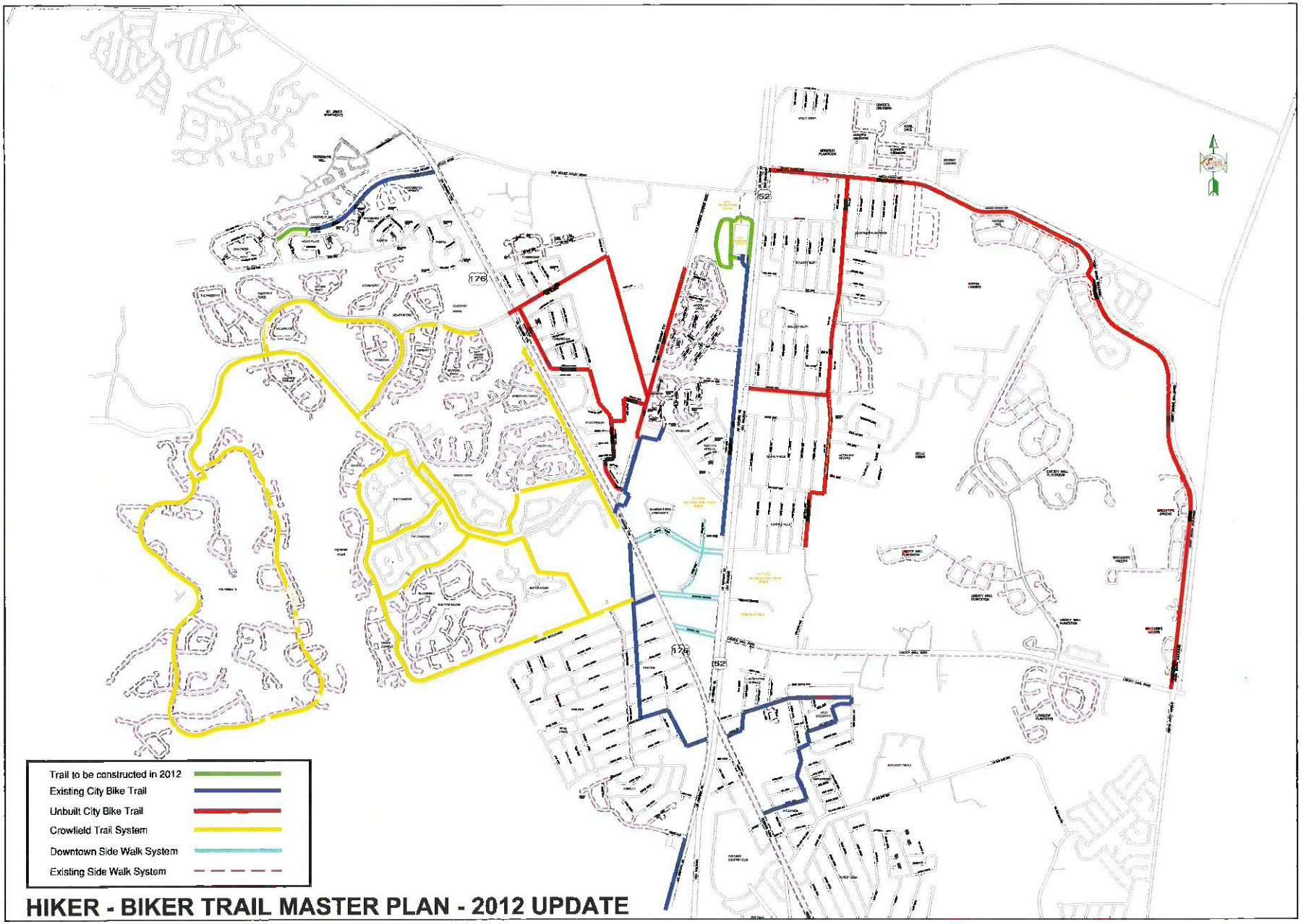
Chapter 6: Let's Do This

- Phased priorities align with 2013 Hiker-Biker Trail Master Plan (developed by the City of Goose Creek), identifying Highway 52 and St. James Avenue as priority corridors for bicycle and pedestrian improvements.

2.2.4 Hiker-Biker Trail Master Plan (2012)

The City of Goose Creek has updated the Hiker-Biker Trail Master Plan in 2012 to include existing and proposed greenway connections. This mapping exercise included Home Owner Association trails

(Crowfield Trail System) and existing sidewalks. This Master Plan was used as a basis for Opportunities and Constraints Analysis and field work.



HIKER - BIKER TRAIL MASTER PLAN - 2012 UPDATE

NO. | REVISIONS | BY | DATE

DEPARTMENT OF PUBLIC WORKS

CITY OF GOOSE CREEK

220 BENCHMARK BLVD · PO DRAWER 1768 · GOOSE CREEK, SC 29445-1768 · (843)863-5000

HIKER/ BIKER TRAIL
CITY OF GOOSE CREEK MASTER PLAN
GOOSE CREEK, SOUTH CAROLINA
OVERALL PLAN SHEET

JOB NO. NONE
DATE: 11-29-2011
DRAWN: KDR
CHECKED: CED
SCALE: 1" = 1000'

SHEET 1 OF 1

2.3 Opportunities and Constraints Analysis

2.3.1 City-wide Opportunities and Constraints

Goose Creek has a great foundation for walking and bicycling with its existing Hiker-Biker Trail and many park areas, and residential street-network. However, there are also several constraints that will have to be addressed as the city and its partners work to implement the recommendations in this Plan. The following list presents overarching opportunities and constraints for walking and bicycling in Goose Creek:

Opportunities

- There is a healthy active recreation culture in Goose Creek with many people walking for exercise on the Hiker-Biker Trail. This will provide a good basis of support for additional bicycling and walking improvements.
- The Goose Creek community is engaged in making their city a better place. There are many community groups (eg. Home Owner Associations) that could be potential partners in program or infrastructure recommendations.
- Safe Routes to School efforts in Goose Creek have not been utilized since 2013 (Marrington Elementary) and are available through SCDOT.
- Many major corridors already have a walkable character with street lighting, landscaping, and crosswalks. Future development along major corridors and throughout City should strive to encourage bicycle-friendly design.
- Many major roadway corridors are wider than needed for the traffic volumes they serve. This presents an opportunity to reconfigure and "resize" roadways to add on-street bicycle facilities.
- There may be the opportunity to tie in new bikeways or pedestrian ways with Charleston Southern University and Wannamaker County Park.

Constraints

- Some intersections in Goose Creek, especially those along Red Bank Road, St. James Avenue, and Highway 52, can be barriers to bicyclists and pedestrians. These intersections could benefit from reduced turning radii, high-visibility crossing markings, shorter crossing distances for pedestrians, and improved signalization for pedestrians and bicyclists.
- Many key roadways in Goose Creek are SCDOT jurisdiction roads. Changes to SCDOT roadways will require additional coordination with SCDOT.
- The roadway network connecting across Highway 52 is somewhat disconnected reducing opportunities for alternative parallel bikeway connections utilizing low-volume streets. This increases the importance of improving major roadways for bicycle and pedestrian transportation.
- There are few people currently bicycling for transportation in Goose Creek, it will likely take some time to build a culture where bicycle transportation is normalized.

- Some areas of existing sidewalks are poorly maintained, or don't meet current safety and ADA accessibility standards.

The following maps present an overview of existing conditions in Goose Creek, noting existing greenways data collected from aerial imagery and previously planned bicycle and pedestrian projects. This data was provided by the City of Goose Creek.

THE CITY OF GOOSE CREEK

City of Goose Creek Hike/Bike Master Plan

Overall Map

LEGEND

- GC_Schools
- GC_Parks

GC_Walkability

TYPE

- CARNES TRAIL
- CCPRC TRAIL
- CITY TRAIL
- CROWFIELD TRAIL
- SIDEWALK CITY
- SIDEWALKS NEIGHBORHOOD
- PROPOSED CITY TRAIL
- OUTSIDE CITY TRAIL
- FUTURE CITY TRAIL
- <all other values>

Parcels_GCArea

GC_MunicipalBoundary

N

0 0.25 0.5 1 Miles

THE CITY OF GOOSE CREEK

City of Goose Creek Hike/Bike Master Plan

Enlargement 1

LEGEND

- GC_Schools
- GC_Parks

GC_Walkability

TYPE

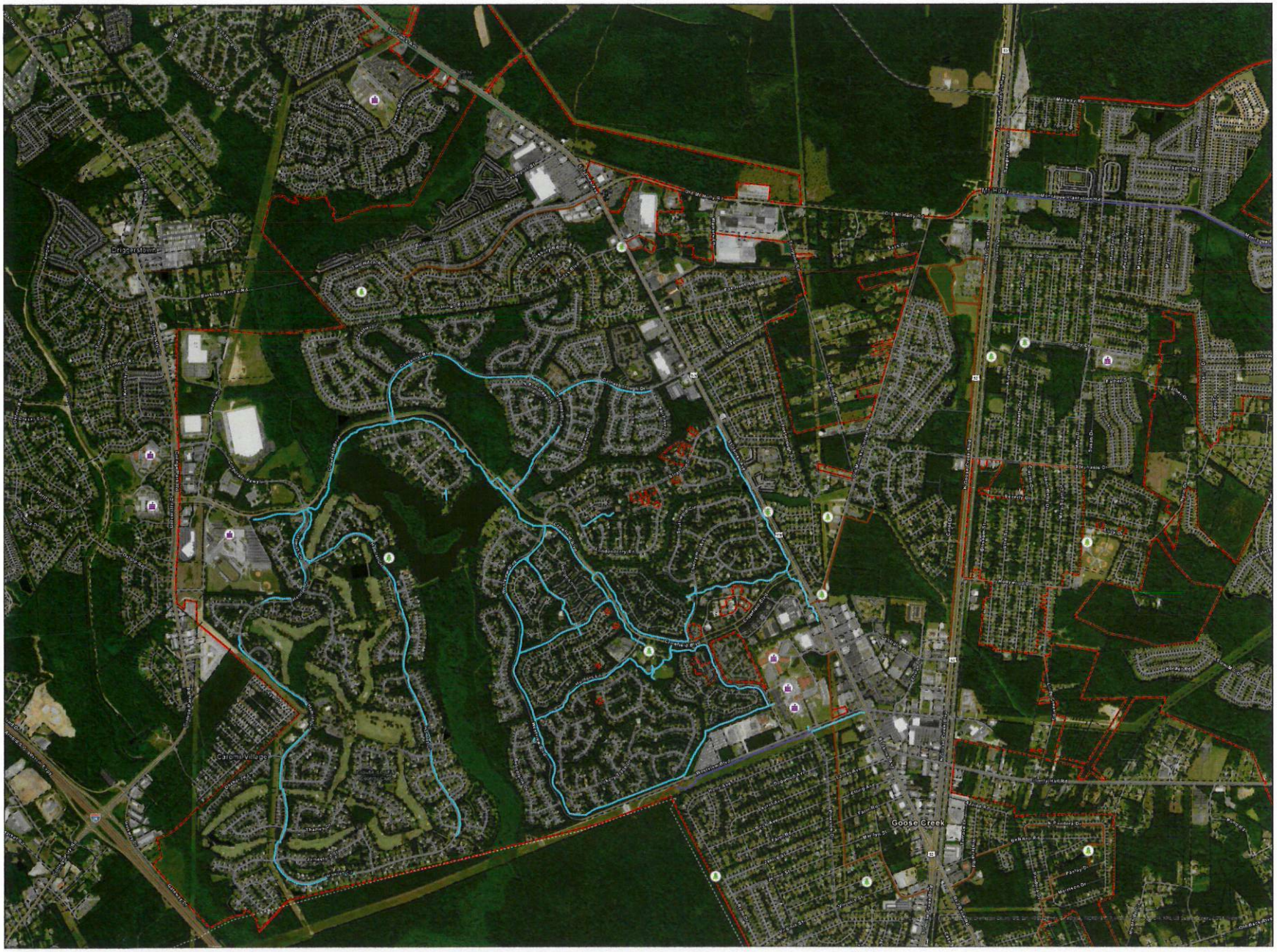
- CARNES TRAIL
- CLPRC TRAIL
- CITY TRAIL
- CROWFIELD TRAIL
- SIDEWALK CITY
- SIDEWALKS NEIGHBORHOOD
- PROPOSED CITY TRAIL
- OUTSIDE CITY TRAIL
- FUTURE CITY TRAIL
- <all other values>

Parcels_dOAmd

GC_MunicipalBoundary

N

0 0.1 0.2 0.4 Miles



THE CITY OF GOOSE CREEK

City of Goose Creek Hike/Bike Master Plan

Enlargement 2

LEGEND

- GC_Schools
- GC_Parks

GC_Walkability

TYPE

- CARNES TRAIL
- CORE TRAIL
- CITY TRAIL
- CROWFIELD TRAIL
- SIDEWALK CITY
- SIDEWALKS NEIGHBORHOOD
- PROPOSED CITY TRAIL
- OUTSIDE CITY TRAIL
- FUTURE CITY TRAIL
- <all other values>

Parcels_GCAtlas

GC_MunicipalBoundary

0 0.1 0.2 0.4 Miles

THE CITY OF GOOSE CREEK

City of Goose Creek Hike/Bike Master Plan

Enlargement 3

LEGEND

- GC_Schools
- GC_Parks

GC_Walkability

TYPE

- CARNES TRAIL
- CCPRC TRAIL
- CITY TRAIL
- CROWFIELD TRAIL
- SIDEWALK CITY
- SIDEWALKS NEIGHBORHOOD
- PROPOSED CITY TRAIL
- OUTSIDE CITY TRAIL
- FUTURE CITY TRAIL
- <all other values>

- Parcels_GCArea
- GC_MunicipalBoundary

0 0.1 0.2 0.4 Miles

THE CITY OF GOOSE CREEK

City of Goose Creek Hike/Bike Master Plan

Enlargement 4

LEGEND

- GC_Schools
- GC_Parks

GC_Walkability

TYPE

- CARNES TRAIL
- CCPRC TRAIL
- CITY TRAIL
- CROWFIELD TRAIL
- SIDEWALK CITY
- SIDEWALKS NEIGHBORHOOD
- PROPOSED CITY TRAIL
- OUTSIDE CITY TRAIL
- FUTURE CITY TRAIL
- <all other values>

Parcels_GOOSE

GC_MunicipalBoundary

N

0 0.1 0.2 0.4 Miles

Site Specific Opportunities and Constraints

The following photo inventory presents opportunities and constraints identified during field work. Observed opportunities are shown in GREEN and constraints in RED.

1.) Planned road improvements along Montague Plantation Road include a shared-use path. Opportunity to connect across Highway 52 to existing Hiker-Biker Trail.

2.) Existing conditions along Old Mount Holly Road include utility rights-of-way. Century Aluminum owned property is adjacent and the fence cannot be relocated to accommodate bicycle/pedestrian use without extensive coordination.

3.) Existing crosswalks throughout the City are not high-visibility and many do not meet ADA requirements. Opportunity does exist to improve conditions without significant SCDOT coordination.

4.) Existing trail network along St. James Avenue in Crowfield is used by residents. While this trail is parallel to SCDOT rights-of-way, it is considered private and would require HOA approval to be included as part of the Hiker-Biker Trail system network.

5.) Existing unpaved trails connect Crowfield Plantation Trail to Wannamaker North Trailhead. Opportunities exist to surface this trail with asphalt or concrete and extend the connection to St. James Avenue

6.) Utility easements and an existing trail connect the intersection of Central Road and St. James Avenue to Francis Street.

7.) Existing trails connecting Central Road and St. James Avenue can be resurfaced to 12' in width to accommodate additional users and meet FHWA requirements for shared-use paths.

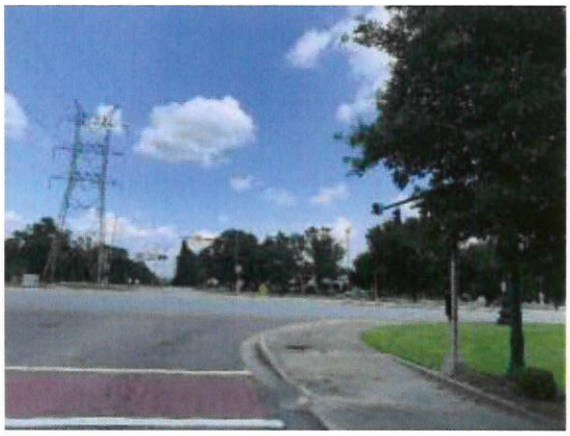
8.) Rights-of-way width along Red Bank Road could accommodate an expanded sidewalk to 10-12'. Additional landscape and pedestrian lighting improvements could reduce speed and provide additional safety.

9.) The eastern side of Highway 52 (North Goose Creek Boulevard) is restricted by decreased rights-of-way and an active railroad. Trail accommodations on this side would require extensive coordination with multiple transportation agencies.

10.) Existing trails around City Hall and the Pond could easily be extended to Old Moncks Corner Road.

11.) Existing trails along Old Moncks Corner Road connect Eubanks Park and Braemoor subdivision to St. James Avenue.

12.) Signage exist along the Hiker-Biker Trail to navigate users to destinations. Additional signage, trailhead markers, and amenities could increase usage on the existing system network.



13.) There are expansive crossings across Highway 52 at each intersection. Consideration should be given to increased pedestrian crossing timing with signalization, pedestrian refuges, and other pedestrian safety measures.

14.) The Hiker-Biker Trail parallels Highway 52; however, it stops once constraints are present. Opportunities exist to extend this trail network to Liberty Hall Road.

15.) Existing trails along University Boulevard connect to restaurant and commercial destinations. Additional amenities and signage could be added to attract trail users (eg. outdoor dining, signage, landscaping, etc.)

3 Policy Recommendations

Studio Main conducted a plan and policy review as part of the existing conditions analysis. In order to advance the recommendations in this plan, the City could benefit from adopting ordinances that are more appropriate for the local land use context and that support more bicycle and walk-friendly development.

This plan presents a table of potential policy examples to be considered for adoption in Goose Creek. The development resulting from such policies will help to support Goose Creek's community connectivity aspirations, as well as potentially implement some of the infrastructure recommendations as part of new development.

The following bullets present policy and regulatory recommendations for the City of Goose Creek and its partners to pursue.

- Require bicycle and/or pedestrian facilities (greenways, sidewalks, bike lanes, shoulders, on-street parking, etc.) with new development
- Reduce vehicle parking minimums and maximums
- Require off-street automobile parking behind or to side of buildings in pedestrian-oriented districts
- Require sidewalk minimums to be increased to 60" in residential neighborhoods and 120" along major corridors (Red Bank Road, St. James Avenue, Highway 52)
- Establish bicycle parking requirements
- Increase limitations on curb cuts
- Adopt a Complete Streets Policy

4 Program Recommendations

Bicycle and walking education, encouragement, and enforcement programs are a key part of building support for infrastructure recommendations. These programs educate residents on how to use bicycle and pedestrian facilities, communicate why they are important to the success of the community, and ensure that all users of the transportation network are safe and feel comfortable whether they're walking, biking, or driving.

While there are almost a countless number of programs that could be implemented to support walking and bicycling, a few are very well-established and have proven successful in communities throughout South Carolina, and the country. A number of resources and funding sources exist for nationally-recognized programs such as Safe Routes to School, Bike to School Day/Week, National Bike Month, and the Bicycle and Walk-Friendly Community Programs. Based on community input and existing issues and opportunities, this plan recommends that Goose Creek and its partners establish or expand the following programs in the community:

4.1 Safe Routes to School

Safe Routes to School programs use a "5 Es" approach (Engineering, Education, Encouragement, Enforcement, and Evaluation) to improve safety and encourage children to walk and bicycle to school. The programs are usually run by a partnership of municipal government, school and school district officials and teachers, parents and students, and neighbors.

For example, in a **Park and Walk campaign**, children are dropped off at a pre-determined location (such as a park) near the school, and then walk with parent volunteers and/or school staff the remaining distance to school. The Parks & Recreation Department of Columbia, SC currently promotes its parks as Park and Walk locations for the first day of school and the City grants employees two-hours off of work on the first day of school to encourage parent participation. Park and Walk campaigns can reduce congestion and improve traffic safety near schools while increasing youth physical activity. Teachers also report that children who walk to school arrive awake and "ready to learn." Likewise, a **Safe Routes to Bus Stops** program can help children safely access bus transportation by walking.

International Walk to School Day in October can be an excellent annual event that offers all families and children the opportunity to participate in healthy school transportation. Spartanburg County, SC has one of the highest Walk to School Day participation rates in the state and offers a local "Golden Shoe Award" for schools that create a model Walk to School Day event that promotes year-round physical activity. The campaign is led by an ongoing partnership between a public health nonprofit, school districts, PTAs, and other agencies.

Youth bicycle and pedestrian safety education can be taught in schools or as after-school programs. One South Carolina resource is the Palmetto Cycling Coalition, which can provide recommendations for League-Certified Instructors (LCIs), who can offer the League of American Bicyclists Kids I and Kids II training courses.

Local schools, including Marrington Elementary and Goose Creek Elementary, have made great strides in supporting **Safe Routes to School** with their recently completed project and projects underway (Amy Drive sidewalk extension). The South Carolina Safe Routes to School Resource Center offers support services such as trainings, consulting, and print-ready materials for interested schools.

The South Carolina Safe Routes to School website is the best resource for more information about this program in South Carolina: http://www.scsaferoutes.org/

4.2 National Bike Month

National Bike Month is a program established by the League of American Bicyclists and recognized in towns and cities across the US. It takes place yearly in May and includes Bike to Work Week, which encourages employees to commute, or partially commute, to work by bike, as well as Bike to School Day.

There are numerous resources on program ideas, promotional materials, and sponsorship ideas on the league of American Bicyclists website: http://bikeleague.org/bikemonth

4.3 Bicycle and Walk Friendly Community Programs

The League of American Bicyclists started the Bicycle Friendly Community (BFC) program to encourage American cities to incorporate the "Five Es" of bicycle planning within their jurisdictions: engineering, education, encouragement, evaluation, and enforcement. The process of completing the application can be a useful benchmarking tool, while obtaining the designation separates a city from rivals, earns media attention, and can be used in city branding materials to attract visitors and residents.

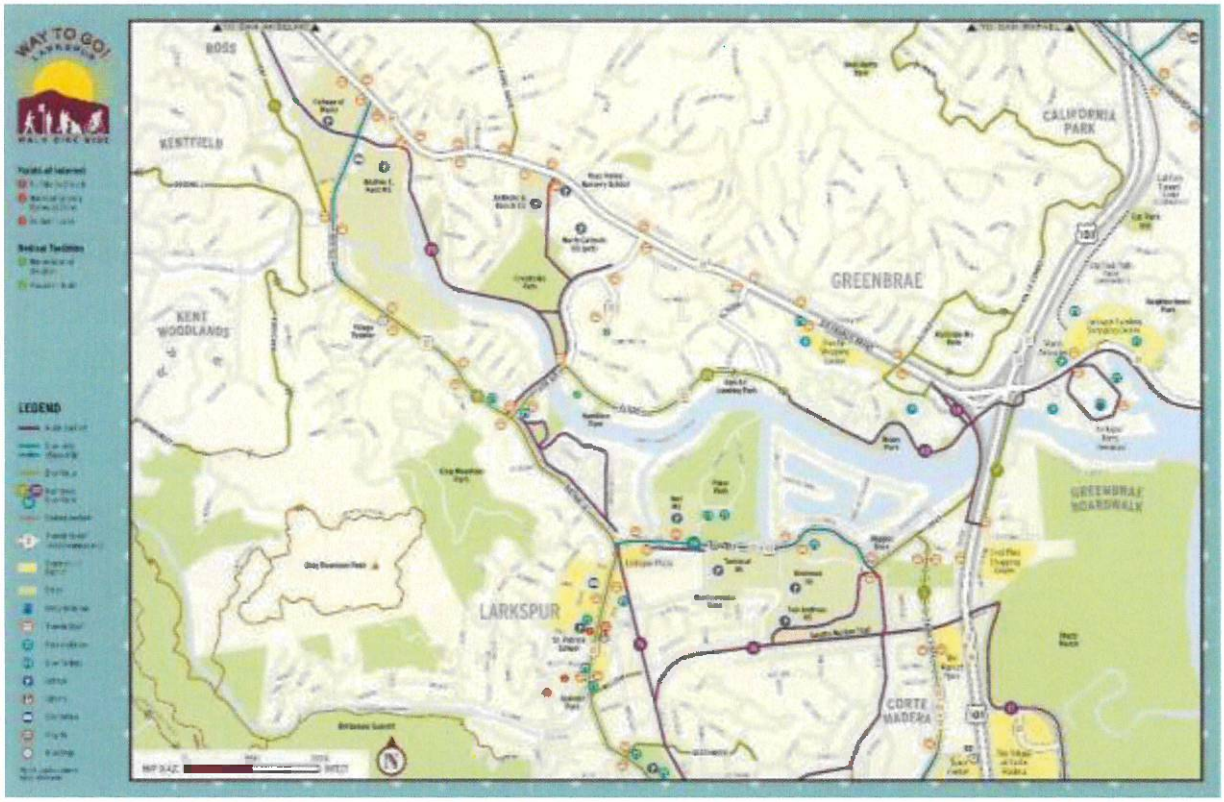
The Walk Friendly Communities (WFC) program is a separate program sponsored by FedEx and the FHWA. Similar to the BFC program, WFC-designated communities make efforts to increase the ease and enjoyment of moving through a city or town on foot. Each program rates communities from Bronze through Diamond levels. Moving through the levels helps gradually increase the city's bicycle and pedestrian friendliness.

Information on the Bicycle Friendly Community Program can be found here:
http://bikeleague.org/community

Information on the Walk Friendly Community Program can be found here:
http://www.walkfriendly.org/

4.4 Community Bicycling and Walking Map

Community biking and walking maps introduce residents to comfortable bikeways and walkways that they may not otherwise know about. Partnering with local groups to distribute print versions of the maps is usually effective, as is posting the map online. It can also be helpful to have such maps permanently displayed in popular walking and bicycling destinations such as Eubanks Park and at the existing Hiker-Biker Trail at the Goose Creek Community Center. Maps can spotlight local businesses such as restaurants and convenience stores. They can also identify civic buildings, public art, community gardens, recreation areas, and other features the community holds dear.



The local bicycling and walking map above educates citizens how to reach community points of interest by foot or bike. Map sponsored by Walk/Bike Marin (http://www.walkbikemarin.org/)

4.5 Active Older Adults Walking Program

Group walks for older adults should leave and arrive at the same location such as near senior living centers. The walks should occur routinely so senior citizens can build relationships with other participants and organizers. The walks could also include trips to free events or could incorporate stopping for coffee or snacks.

4.6 Bicycle and Pedestrian Advisory Committee

Bicycle and pedestrian advocacy committees are made up of advocates and local bike/walking enthusiasts as well as municipal staff from a variety of departments. The committees meet on a set schedule and discuss upcoming infrastructure and non-infrastructure initiatives. The groups can function as a sounding board, an advisory group, and as a way to bridge connections between the city and residents. Such a committee can also help spread the word about upcoming and current projects and organize events. Since advisory committees are made up of knowledgeable locals who frequently bike and walk, they are able to alert city staff to local issues or concerns and provide input on local projects.

5 Network Recommendations

The final chapters of this Master Plan present bicycle and pedestrian non-infrastructure and infrastructure recommendations for the City of Goose Creek. Recommendations are representative of the project vision, goals and objectives, and community needs discovered in the existing conditions analysis. These recommendations present a long-term vision for the community that, when implemented, will achieve the goals presented in Chapter 1.

Both the project team and community realize that the complete list of recommendations presented here will not be achieved overnight. **It will take several years and require new partnerships, creative fundraising strategies, and political will.** However, the community will begin to see the benefits of these improvements as soon as top priority projects are implemented, building support and paving the way for subsequent improvements. **Chapter 5** presents a comprehensive long-term vision for a Goose Creek pedestrian and bicycle network. These recommendations are intended to reflect the needs pedestrians and bicyclists of all ages and abilities, whether it is a child walking to school, a wheelchair-bound individual fulfilling their daily needs, an employee bicycling to their job, a family out for a leisurely bike ride or a recreational cyclist taking long-distance ride across the county. The Implementation Plan in **Chapter 6** provides a road map for executing the plan infrastructure recommendations, with those projects with the highest impact and return on investment being carried out first.

5.1 Bicycle and Pedestrian Facility Types

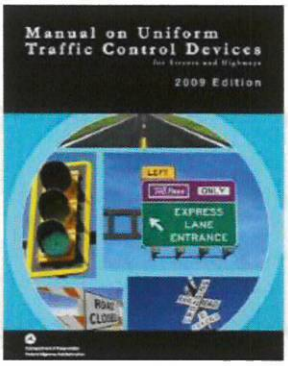
5.1.1 Bicycle and Pedestrian Design Resources

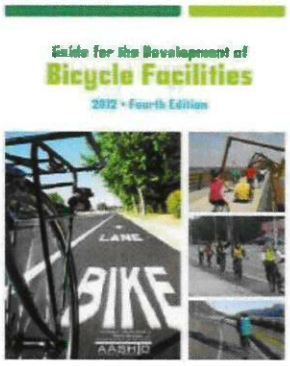
There are a number of state and national design resources that provide more detailed information on the design of the facilities recommended in this Plan. An overview of these is presented below:

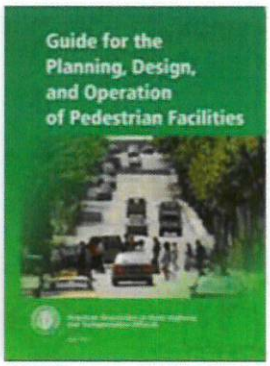
- *Manual on Uniform Traffic Control Devices* (MUTCD): defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. The MUTCD is the primary source for guidance on lane striping requirements, signal warrants, and recommended signage and pavement markings. To clarify guidance on bicycle facilities, FHWA has set up the following website as a resource: *http://www.fhwa.dot.gov/environment/bikeped/mutcd_bike.htm*
- American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities*, updated in June 2012 provides guidance on dimensions, use, and layout of specific bicycle facilities. The standards and guidelines presented by AASHTO provide basic information, such as minimum sidewalk widths, bicycle lane dimensions, detailed striping requirements and recommended signage and pavement markings.
- The National Association of City Transportation Officials' (NACTO) 2012 *Urban Bikeway Design Guide* is the newest publication of nationally recognized bicycle-specific design guidelines, and offers guidance on the current state of the practice designs. The NACTO Urban Bikeway Design Guide is based on current practices in the best cycling cities in the world. The intent of the guide is to offer substantive guidance for cities seeking to improve bicycle

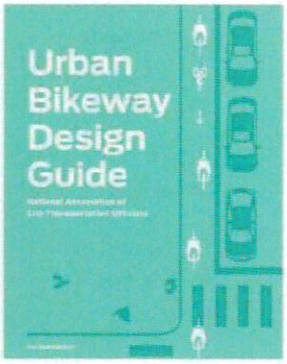
transportation in places where competing demands for the use of the right of way present unique challenges. All of the NACTO Urban Bikeway Design Guide treatments are in use in many cities around the US and internationally.

- The 2004 AASHTO *Guide for the Planning, Design and Operation of Pedestrian Facilities* provides comprehensive guidance on planning and designing for people on foot.

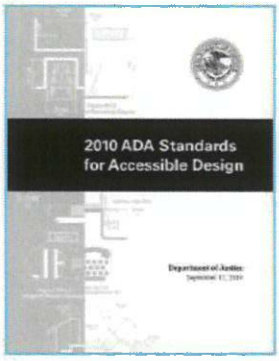


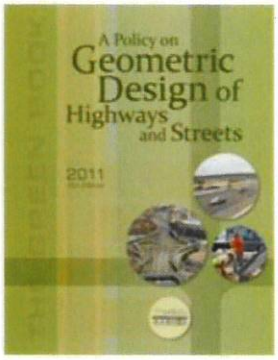






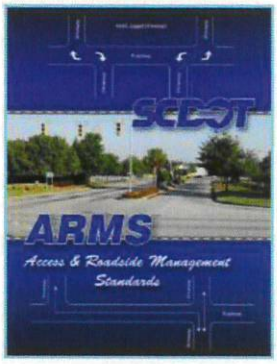
- The United States Access Board's proposed *Public Rights-of-Way Accessibility Guide*lines (PROWAG) and the 2010 ADA Standards for Accessible Design (2010 Standards) contain standards and guidance for the construction of accessible facilities. This includes requirements for sidewalk curb ramps, slope requirements, and pedestrian railings along stairs. Meeting the requirements of the Americans with Disabilities Act (ADA) is an important part of any bicycle and pedestrian facility project.
- The 2011 *AASHTO: A Policy on Geometric Design of Highways and Streets* commonly referred to as the "Green Book," contains the current design research and practices for highway and street geometric design.





- The South Carolina Department of Transportation has published a variety of additional resources for designing bicycle and pedestrian facilities. These include the SCDOT Highway Design Manual, SCDOT Traffic Calming Design Guidelines, SCDOT Traffic Signal Design Guidelines and SCDOT Access and Roadside Management Standards. In recent years, SCDOT has also issued several Traffic Engineering Guidelines and Engineering Directive Memorandums for

such treatments as pedestrian hybrid beacons, shared lane markings, rumble strips and other complete streets treatments.



5.1.2 Design for Pedestrians

The transportation network should accommodate pedestrians with a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing.

The *Manual of Uniform Traffic Control Devices* (MUTCD) recommends a normal walking speed of three and a half feet per second when calculating the pedestrian clearance interval at traffic signals. Typical walking speeds can drop to three feet per second in areas with older populations and persons with mobility impairments. While the type and degree of mobility impairment varies greatly across the population, the transportation system should accommodate these users to the greatest reasonable extent.

Sidewalks

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel that is separated from vehicle traffic. **Sidewalks should be provided on both sides of major roadways and on at least one side of collectors and minor arterials or residential streets with at least 3 dwelling units per acre.** Sidewalks are typically constructed of concrete and are separated from the roadway by a curb and gutter and preferably a landscaped planting strip area. Sidewalks are a common application in both urban and suburban environments. Attributes of well-designed sidewalks include the following:

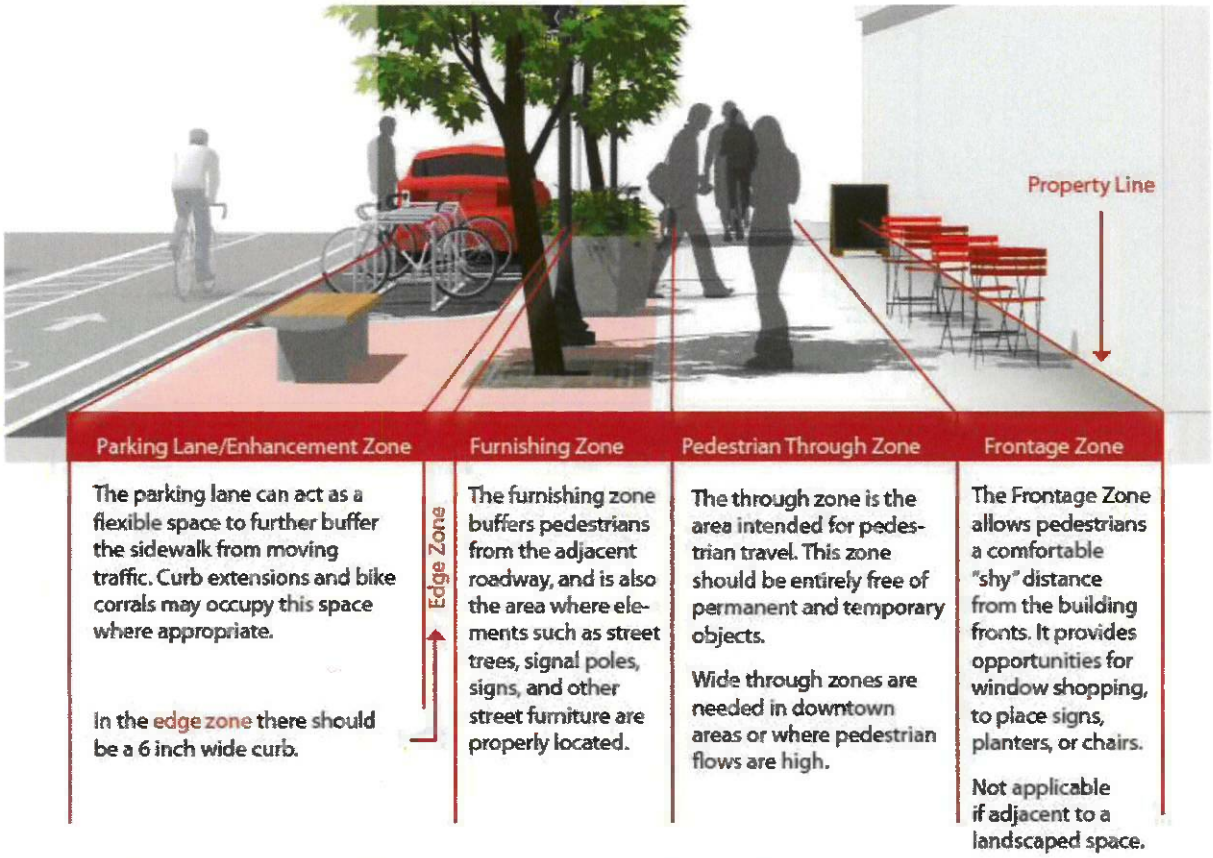
- **Accessibility:** A network of sidewalks should be accessible to all users. Roadway crossing distances and distances between crossings should be minimized to accommodate and encourage pedestrian travel.
- **Adequate width:** Two people should be able to walk side-by-side. Different walking speeds should be possible. In areas of intense pedestrian use, sidewalks should accommodate the high volume of walkers.

- **Safety:** Design features of the sidewalk should allow pedestrians to have a sense of security and predictability. Sidewalk users should not feel they are at risk due to the presence of adjacent traffic.
- **Continuity:** Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.
- **Lighting:** Good lighting is an important aspect of visibility, safety, and accessibility.
- **Landscaping:** Plantings and street trees contribute to the overall psychological and comfort of sidewalk users, and should be designed in a manner that contribute to the safety of people and provide shade.
- **Drainage:** Sidewalks and curb ramps should be designed so that standing water is minimized.
- **Social space:** There should be places for standing, visiting, and sitting. The sidewalk area should be a place where adults and children can safely participate in public life.
- **Quality of place:** Sidewalks should contribute to the character of neighborhoods and business districts.

Sidewalk Zones

The sidewalk area can be broken down into four distinct zones as seen in the figure below. The concept of sidewalk zones should be strictly followed for a sidewalk to function properly and provide safe passage for all users. This is especially important for users with visual or physical impairments to be able to effectively navigate the corridor.

Other considerations such as sidewalk obstructions, driveways, width and access through construction areas are important to consider as well. The following figure includes important considerations for sidewalk design.



Street Classification	Parking Lane/Enhancement Zone	Furnishing/Green Zone	Pedestrian Through Zone	Frontage Zone	Total Sidewalk Area
Local Streets	7 feet	4-8 feet	5-6 feet	N/A	9-12 feet
Commercial Areas	8-10 feet	6-8 feet	6-12 feet	2-8 feet	14-28 feet
Arterials and Collectors	8-10 feet	6-8 feet	5-12 feet	2-4 feet	12-24 feet
Notes			Six feet enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably		Total sidewalk area excludes parking area

Intersections

Intersections are also an important piece of the pedestrian realm. Attributes of pedestrian-friendly intersection design include:

- **Clear Space:** Corners should be clear of obstructions. They should also have enough room for curb ramps, for transit stops where appropriate, and for street conversations where pedestrians might congregate.
- **Visibility:** It is critical that pedestrians on the corner have a good view of vehicle travel lanes and that motorists in the travel lanes can easily see waiting pedestrians.
- **Legibility:** Symbols, markings, and signs used at corners should clearly indicate what actions the pedestrian should take.
- **Accessibility:** All corner features, such as curb ramps, landings, call buttons, signs, symbols, markings, and textures, should meet accessibility standards and follow universal design principles.
- **Separation from Traffic:** Corner design and construction should be effective in discouraging turning vehicles from driving over the pedestrian area. Crossing distances should be minimized.
- **Lighting:** Good lighting is an important aspect of visibility, legibility, and accessibility.

These attributes will vary with context but should be considered in all design processes. For example, more remote intersections may have limited or no signing. However, legibility regarding appropriate pedestrian movements should still be taken into account during design.

5.1.3 Design for Bicyclists

Bicyclists, by nature, are much more affected by poor facility design, construction and maintenance practices than motor vehicle drivers. Bicyclists lack the protection from the elements and roadway hazards provided by an automobile's structure and safety features. By understanding the unique characteristics and needs of bicyclists, a facility designer can provide quality facilities and minimize user risk.

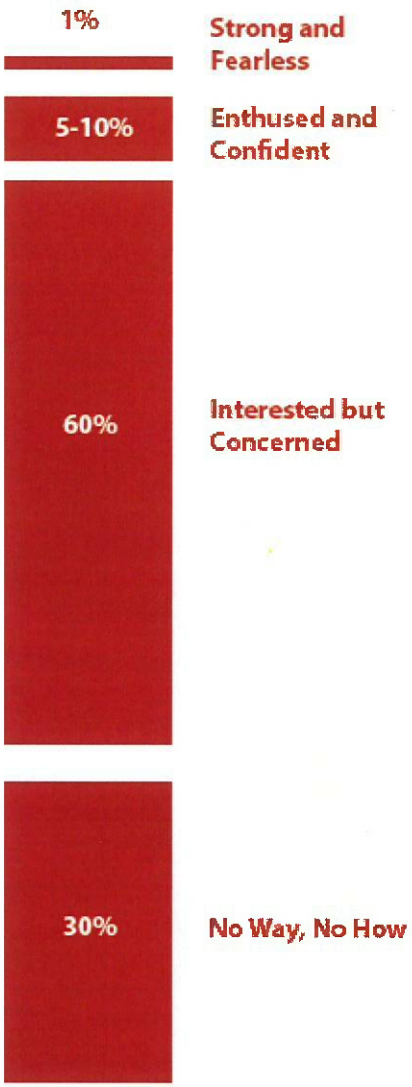
Similar to motor vehicles, bicyclists and their bicycles exist in a variety of sizes and configurations. These variations occur in the types of vehicles (such as a conventional bicycle, a recumbent bicycle or a tricycle), and behavioral characteristics (such as the comfort level of the bicyclist). The design of a bikeway should consider reasonably expected bicycle types on the facility and utilize the appropriate dimensions.

It is important to consider bicyclists of all skill levels when creating an active transportation or complete street plan or project. Bicyclist skill level greatly influences expected speeds and behavior, both in separated bikeways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people.

The planning and engineering professions currently use several systems to classify the cycling population, which can assist in understanding the characteristics and infrastructure preferences of different bicyclists. The most conventional framework classifies the "design cyclist" as Advanced, Basic, or Child. A more detailed understanding of the US population as a whole is illustrated in the following figure. Developed by

planners in Portland, OR and supported by data collected nationally since 2005, this classification provides the following alternative categories to address varying attitudes towards bicycling in the US:

- **Strong and Fearless (approximately 1% of population)** – Characterized by bicyclists that will typically ride anywhere regardless of roadway conditions or weather. These bicyclists can ride faster than other user types, prefer direct routes and will typically choose roadway connections - even if shared with vehicles - over separate bicycle facilities such as shared use paths.
- **Enthused and Confident (5-10% of population)** - This user group encompasses bicyclists who are fairly comfortable riding on all types of bikeways but usually choose low traffic streets or shared use paths when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type. This group includes all kinds of bicyclists such as commuters, recreationalists, racers and utilitarian bicyclists.
- **Interested but Concerned (approximately 60% of population)** – This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or multi-use trails under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically traffic and other safety issues. These people may become "Enthused & Confident" with encouragement, education and experience and higher-level facilities, such as buffered and protected bike lanes.
- **No Way, No How (approximately 30% of population)** – Persons in this category are not bicyclists, and perceive severe safety issues with riding in traffic. Some people in this group may eventually become regular cyclists with time and education. A significant portion of these people will not ride a bicycle under any circumstances.



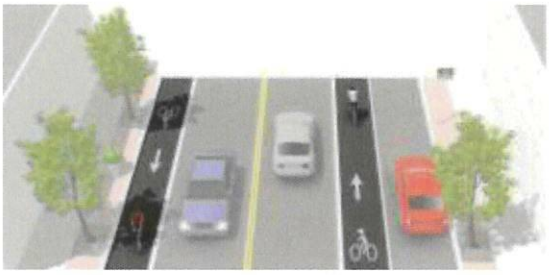
Typical Distribution of Bicyclist Types

Bicycle Facility Types

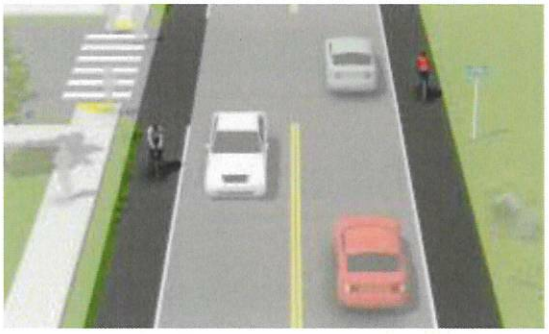
Consistent with bicycle facility classifications throughout the nation, the facility types presented in the figures below identify classes of facilities by degree of separation from motor vehicle traffic. In general, the wider the roadway, the higher the traffic volume, and the greater the traffic speed, the more separation is necessary to provide safe and comfortable riding conditions for bicyclists. This Plan recommends the following facility types for implementation in Goose Creek:

- **Bicycle Boulevards** are enhanced bike routes on local street networks. They are minimally designated by pavement markings and bicycle wayfinding signage. Traffic calming devices to reduce vehicle speeds and volumes while maintaining bicycle access such as traffic diverters, chicanes and chokers may also be used in conjunction with bicycle boulevards.

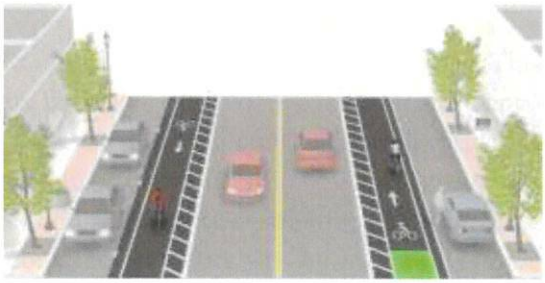
- **Bike Lanes** use striping and optionally signage to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movements by both bicyclists and motorists.



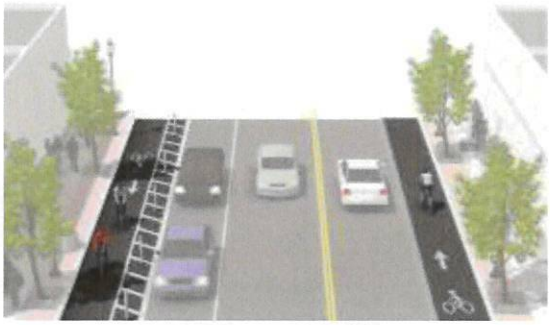
- **Paved Shoulders** Typically found in more rural areas, shoulder bikeways are paved roadways with striped shoulders (4'+) wide enough for bicycle travel. Shoulder bikeways often, but not always, include signage alerting motorists to expect bicycle travel along the roadway. In rural areas shoulders also provide an area for pedestrian travel where traffic volumes or development may not warrant sidewalks or sidepaths.



- **Buffered bike lanes** are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes are designed to increase the space between the bike lane and the travel lane and/or parked cars.



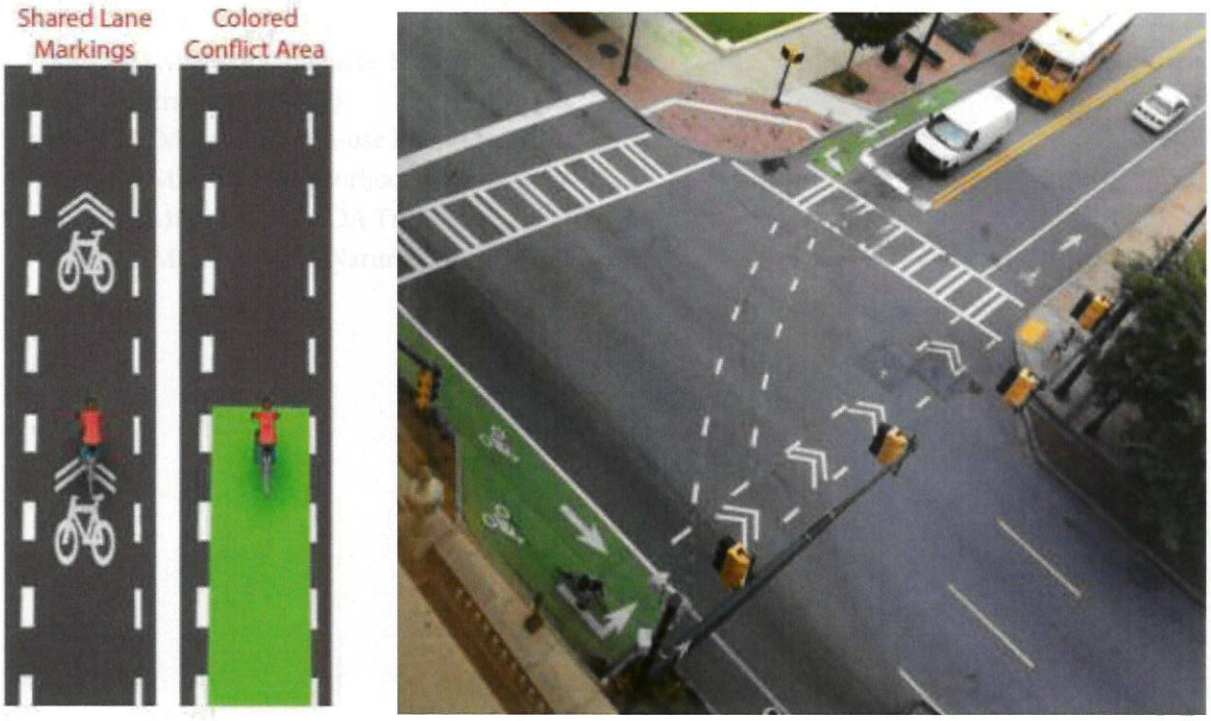
- **Cycle Tracks** are exclusive bike facilities that combine the user experience of a separated path with the on-street infrastructure of conventional bike lanes. These are also referred to as protected bicycle lanes. Cycle tracks are either raised or at street level and use a variety of elements for physical protection from passing traffic.



- **Shared Use Paths** are facilities separated from roadways for use by bicyclists and pedestrians. Sidepaths usually refer to shared use paths immediately adjacent to the roadway. Greenways refer to shared-use paths that don't necessarily follow a roadway alignment. Greenways typically follow other features such as railroads, utility lines, or streams.

- **Separation from Traffic:** Intersection designs should strive to segregate bicycle and vehicular traffic as much as possible. Designs that allow bicyclists to locate at the front of the intersection when traffic is stopped are preferred.
- **Lighting:** Good lighting is an important aspect of visibility, legibility, and accessibility.

These attributes will vary with context but should be considered in all design processes. For example, more remote intersections may have limited or no signing. However, legibility regarding appropriate bicycle movements should still be taken into account during design.



Examples of different pavement markings and signals for bicyclists at intersections (Photo: W. Peachtree St., Atlanta)

DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-028 PROJECT NO.	09-05-21 DATE
1"=2500'-0" SCALE	

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P. 864.617.0347
E. blake@studiomain.com

THE CITY OF
GOOSE CREEK

NORTH

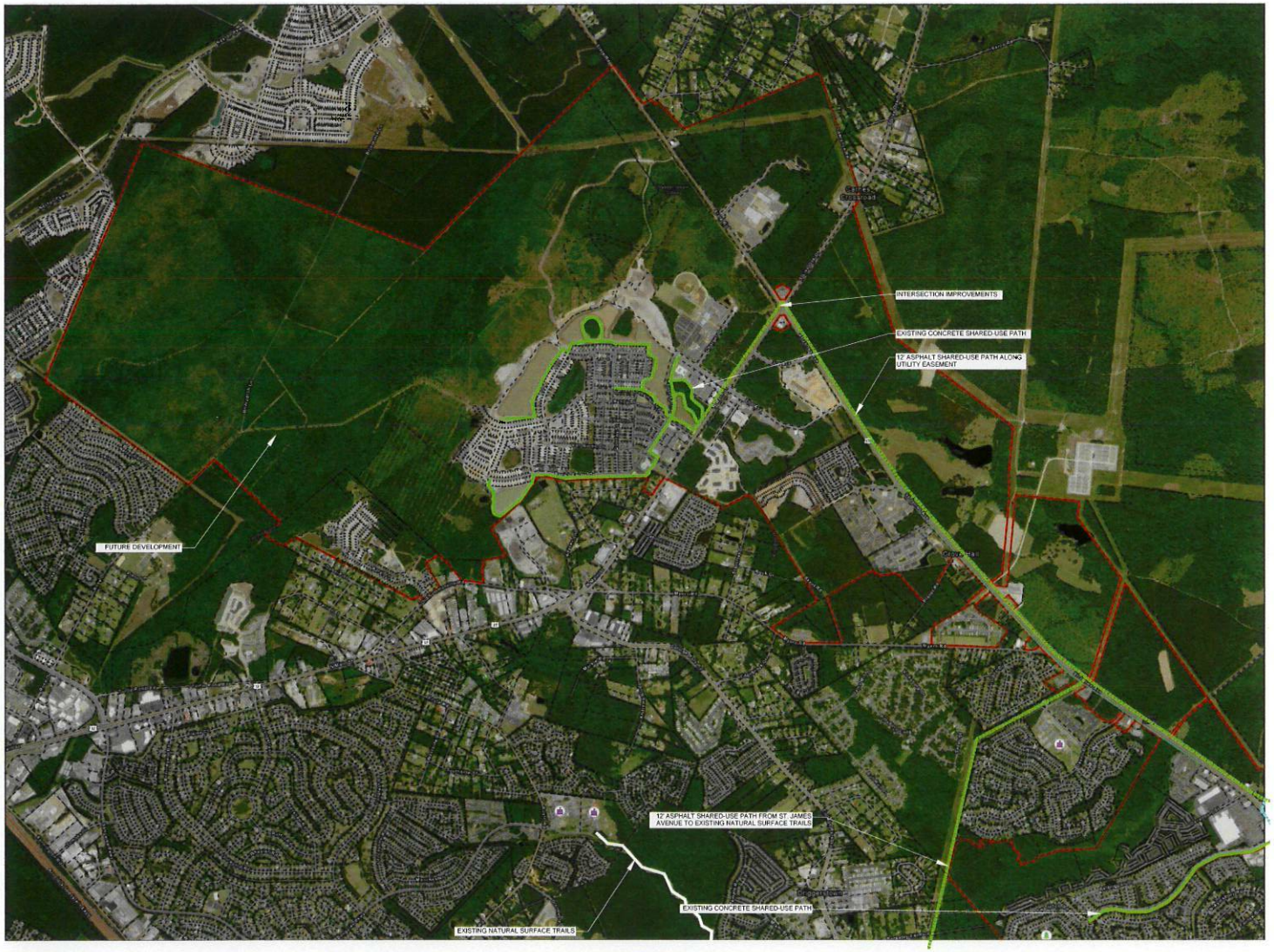
0' 2500' 5000' 7500'
GRAPHIC SCALE: 1"=2500'

CONNECTIVITY MASTER PLAN

CITY OF GOOSE CREEK
SOUTH CAROLINA

OVERALL NETWORK RECOMMENDATIONS

SHEET NO.
1.0



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DRAWN:	BS
2021-028 PROJECT NO.	09-05-21 DATE
1"=1000'-0" SCALE	

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THE CITY OF GOOSE CREEK

NORTH

0' 1000' 2000' 3000'

GRAPHIC SCALE: 1"=1000'

CONNECTIVITY MASTER PLAN

CITY OF GOOSE CREEK
SOUTH CAROLINA

ENLARGEMENT 1
RECOMMENDATIONS

SHEET NO.
2.0

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REVIEWED:	BS
DRAWN:	BS
2021-028 PROJECT NO.	09-03-21 DATE
1"=1000'-0" SCALE	

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THE CITY OF GOOSE CREEK

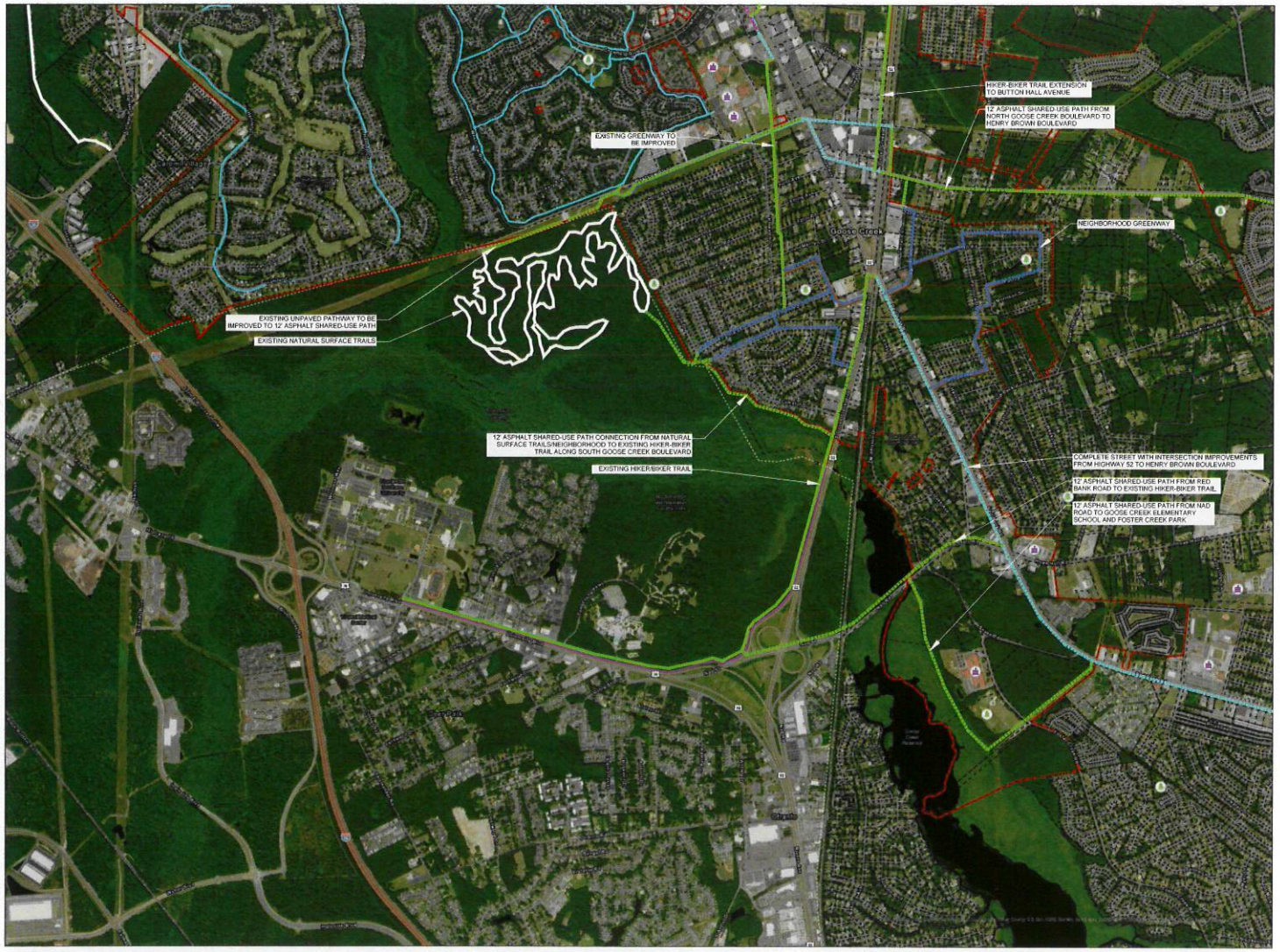
0' 1000' 2000' 3000'
GRAPHIC SCALE: 1"=1000'

CONNECTIVITY MASTER PLAN

CITY OF GOOSE CREEK
SOUTH CAROLINA

ENLARGEMENT 2
RECOMMENDATIONS

SHEET NO.
3.0



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2021-028 09-05-21
PROJECT NO. DATE
1"=1000'-0"
SCALE

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THE CITY OF GOOSE CREEK

0' 1000' 2000' 3000'
GRAPHIC SCALE: 1"=1000'

CONNECTIVITY MASTER PLAN

CITY OF GOOSE CREEK
SOUTH CAROLINA

ENLARGEMENT 3
RECOMMENDATIONS

SHEET NO.
4.0

DESIGNED: BS
REVIEWED: BS
DRAWN: BS
2021-028 PROJECT NO.
09-05-21 DATE
1"=1000'-0" SCALE

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Pelzer, SC 29669
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E. blake@studiomainllc.com

THE CITY OF GOOSE CREEK

NORTH

0' 1000' 2000' 3000'
GRAPHIC SCALE: 1"=1000'

CONNECTIVITY MASTER PLAN
CITY OF GOOSE CREEK
SOUTH CAROLINA

ENLARGEMENT 4
RECOMMENDATIONS

SHEET NO.
5.0

6 Implementation Plan

Even among cities most committed to improving street conditions, realizing a long-term community-wide vision for bicycling and pedestrian infrastructure improvements can take decades. This is why a thoughtful implementation plan is a must for ensuring that the most impactful and cost-effective projects are prioritized first.

This Implementation Plan identifies priority projects from the project recommendations and provides cost estimates for these improvements. Expanded priority project descriptions provide more detail on these top recommendations including photosimulations to help convey what some of these improvements might look like.

6.1 Cost Estimates

Cost estimates for projects were generated from a variety of sources including regional implementation experience. While these costs represent averages for pedestrian and bicycle projects in 2021 dollars, note that individual project costs can vary widely based on a number of conditions including, but not limited to:

- Facility design (width, frequency of material placement, demolition)
- Temporary traffic control requirements
- Environmental requirements
- Utility relocation
- Required right of way acquisition
- Contractor experience and material availability
- Project length or grouping (projects of longer length are typically less expensive than short projects)

Cost estimates and assumptions are presented in the following table. Project costs will vary due to conditions such as physical constraints, rights-of-way purchase, frequency of pavement markings, intersection design, etc. These costs do not include additional considerations such as project design or contingency costs.

Cost Estimates and Assumptions

Facility Type	Cost Estimate	Assumptions
Bicycle Boulevards and Bicycle Routes	$45,000 per mile	Includes signage and pavement markings only
Bike Lanes	$75,000 per mile	Pavement Restriping Costs Only
Buffered Bike Lanes	$150,000 per mile	Pavement Restriping Costs Only
Cycle Tracks	$250,000 per mile	Pavement Restriping Costs Only
Greenway or Sidepath (Shared-use path)	$600,000 - $1,000,000 per mile	12' asphalt path and no ROW purchase required.
Intersection Improvements	$100,000 - $250,000	$50,000 for pavement markings only. $100,000 for pavement marking and signal improvements.
Sidewalks without curb construction	$120 per linear foot	No ROW purchase required
Sidewalks with curb construction	$400 per linear foot	No ROW purchase required; includes the installation of storm sewers.

6.2 Goose Creek Priority Projects

No.	Corridor	From	To	Miles	Cost Est.
1.	Hiker-Biker Trail Extension #1	Montague Plantation Road	Recreation Center	0.29 miles	$290,000
2.	St. James Road Shared-Use Path	Carnes/North Main Street	Old Mount Holly Road	3.28 miles	$3,280,000
3.	Old Mount Holly Road Shared-Use Path	North Goose Creek Boulevard (Hwy 52)	St. James Avenue	1.56 miles	$1,560,000
4.	Pineview Trail	North Wannamaker Trailhead/Natural Surface Trails	St. James Avenue	1.36 miles	$680,000
5.	Hiker-Biker Trail Extension #2	Eubanks Park	City Hall Complex	1.26 miles	$1,260,000
6.	Hiker-Biker Trail Extension #3	Existing Hiker-Biker Trail at Nad Street	Red Bank Road	1.15 miles	$1,150,000
7.	Wannamaker County Park Connector	Existing North Wannamaker Trails	Existing Hiker-Biker Trail along Rivers Avenue	0.93 miles	$1,860,000
8.	Shared Use Path Connector (Foster Creek Park and Goose Creek Elementary School)	Proposed Shared-Use Path along Nad Road	Red Bank Road	1.29 miles	Shared Use Path Connector (Foster Creek Park and Goose Creek Elementary School)
9.	Liberty Hall Shared-Use Path	North Goose Creek Boulevard	Henry Brown Boulevard	2.13 miles	$2,130,000
10.	Red Bank Road Complete Street	St. James Avenue	Henry Brown Boulevard	2.87 miles	$5,740,000

No.	Corridor	From	To	Miles	Cost Est.
11.	Button Hall Road Shared-Use Path	St. James Avenue	North Goose Creek Boulevard	0.35 miles	$700,000
12.	St. James Avenue Complete Street	Old Mount Holly Road	Red Bank Road	1.31 miles	$2,620,000

6.2.1 Priority Project Descriptions and Photosimulations

1. St. James Avenue Shared-Use Path

Facility Type: Asphalt Shared-Use Path, Landscape

Pineview Trail Improvements

Facility Type: Asphalt Shared-Use Path

Hiker-Biker Trail Improvements

Facility Type: Asphalt Shared-Use Path, Landscape

Red Bank Road Complete Street

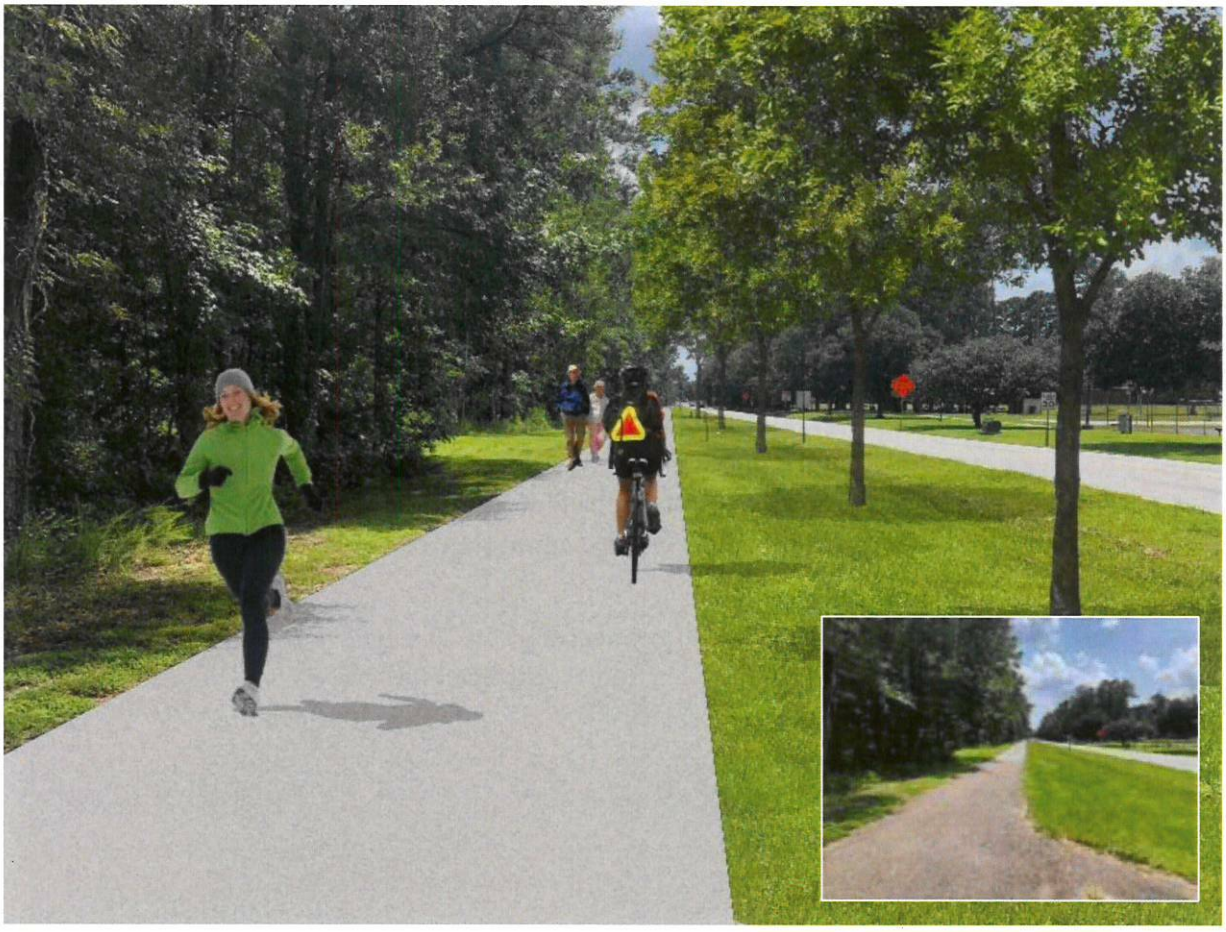
Facility Type: Concrete Shared-Use Path, Landscape, Safety Lighting

Hiker-Biker Trail Extension

Facility Type: Asphalt Shared-Use Path

Hiker-Biker Trail Improvements

Facility Type: Asphalt Shared-Use Path, Landscape, Safety Lighting



DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-028 PROJECT NO.	09-21-21 DATE
1"=1000'-0" SCALE	

Studio Main LLC
Blake Sanders, PLA
1 Kindmon Street
Paiser, SC 29669
P. 864.617.0547
E. blake@studiomainllc.com

THE CITY OF GOOSE CREEK

0' 1000' 2000' 3000'
GRAPHIC SCALE: 1"=1000'

ST JAMES TRAIL
CITY OF GOOSE CREEK
SOUTH CAROLINA

OVERALL MAP
PRIORITY PROJECTS

SHEET NO.
2.0

DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-028 PROJECT NO.	09-21-21 DATE
1"=50'-0" SCALE	

Studio Main LLC
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THE CITY OF GOOSE CREEK

0' 50' 100' 200'

GRAPHIC SCALE: 1"=50'

ST JAMES TRAIL

CITY OF GOOSE CREEK
SOUTH CAROLINA

PRIORITY PROJECT NO. 1

SHEET NO.

3.0

DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-025 PROJECT NO.	09-21-21 DATE
1"=50'-0" SCALE	

Studio Main LLC
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E. blake@studiomainllc.com

THE CITY OF GOOSE CREEK

0' 50' 100' 200'

GRAPHIC SCALE: 1"=50'

ST JAMES TRAIL

CITY OF GOOSE CREEK
SOUTH CAROLINA

PRIORITY PROJECT
NO. 2

SHEET NO.
4.0

DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-048 PROJECT NO.	09-21-21 DATE
1"=50'-0" SCALE	

Studio Main LLC
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THE CITY OF GOOSE CREEK

0' 50' 100' 200'
GRAPHIC SCALE: 1"=50'

ST JAMES TRAIL

CITY OF GOOSE CREEK
SOUTH CAROLINA

PRIORITY PROJECT
NO. 2

SHEET NO.
4.1

DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-028 PROJECT NO.	09-21-21 DATE
1"=50'-0" SCALE	

Studio Main LLC
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Peizer, SC 29669
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E. blake@studiomainllc.com

THE CITY OF GOOSE CREEK

NORTH

0' 50' 100' 200'

GRAPHIC SCALE: 1"=50'

ST JAMES TRAIL

CITY OF GOOSE CREEK
SOUTH CAROLINA

PRIORITY PROJECT
NO. 2

SHEET NO.
4.2

DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-029 PROJECT NO.	09-21-21 DATE
1"=50'-0" SCALE	

Studio Main LLC
Blake Sanders, PLA
1 Hudmon Street
Pelzer, SC 29669
P. 864.617.0347
E. blake@studiomainllc.com

THE CITY OF
GOOSE CREEK

0' 50' 100' 200'
GRAPHIC SCALE: 1"=50'

ST JAMES TRAIL

CITY OF GOOSE CREEK
SOUTH CAROLINA

PRIORITY PROJECT
NO. 2

SHEET NO.
4.3

DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-028 PROJECT NO.	09-21-21 DATE
1"=30'-0" SCALE	

Studio Main LLC
Blake Sanders, PLA
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Pelzer, SC 29669
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E. blake@studiomainllc.com

THE CITY OF GOOSE CREEK

0' 30' 60' 90'

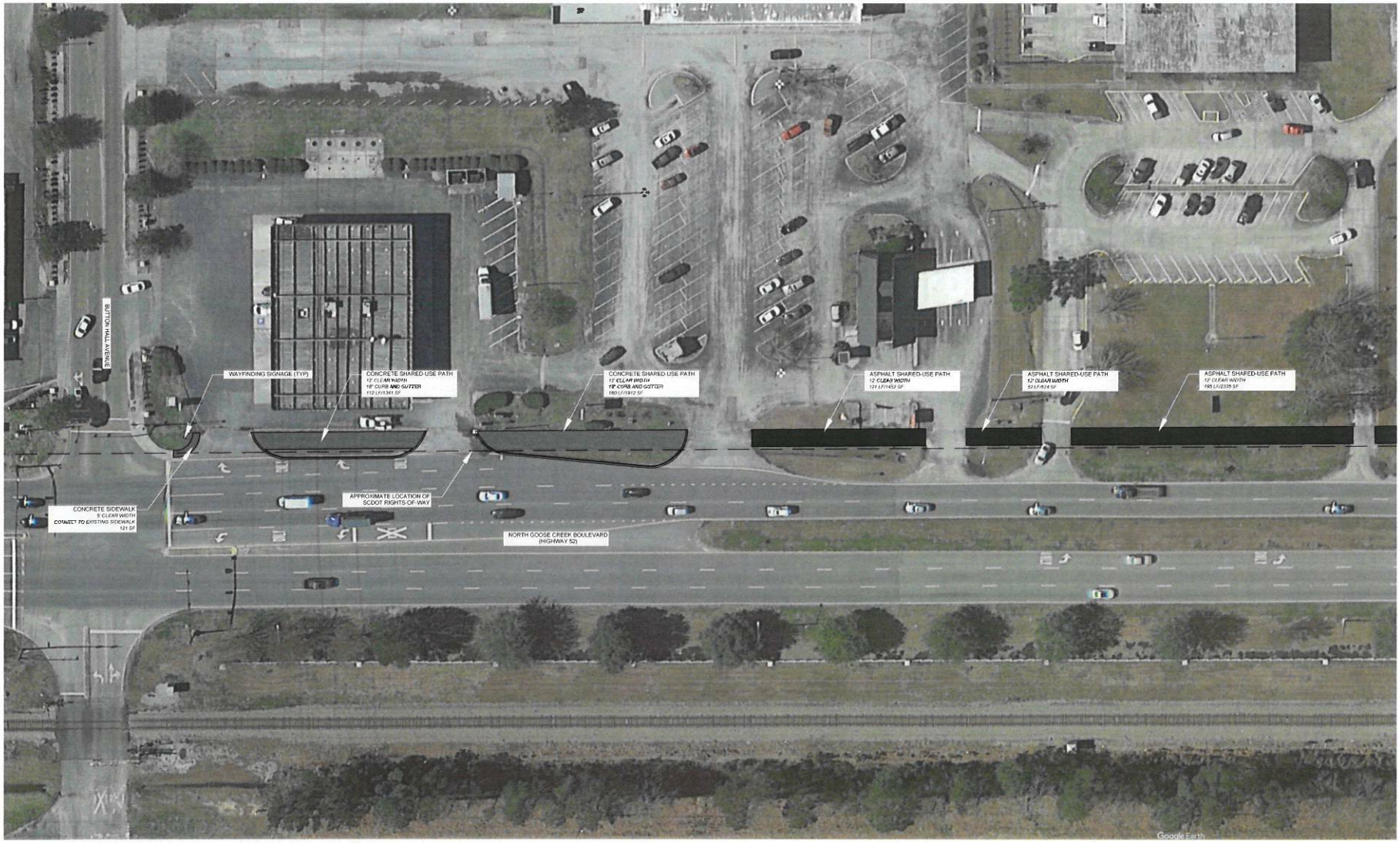
GRAPHIC SCALE: 1"=30'

ST JAMES TRAIL

CITY OF GOOSE CREEK
SOUTH CAROLINA

PRIORITY PROJECT NO. 3

SHEET NO.
5.0



DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-028 PROJECT NO.	09-21-21 DATE
1"=30'-0" SCALE	

Studio Main LLC
Blake Sanders, PLA
1 Mindmon Street
Fetzer, SC 29569
P. 864.617.0547
E. blake@studiomainllc.com

THE CITY OF GOOSE CREEK

0' 30' 60' 90'

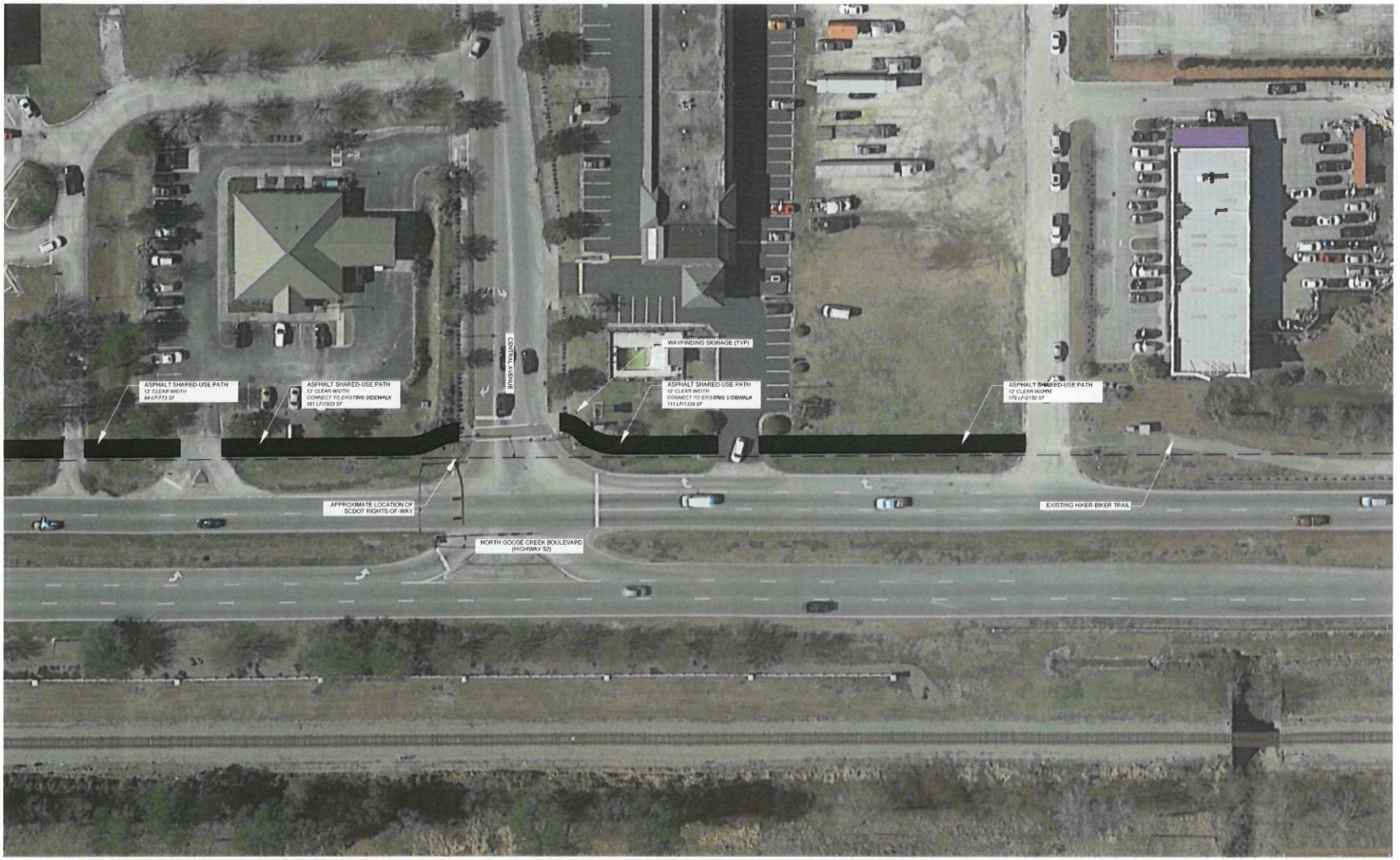
GRAPHIC SCALE: 1"=30'

ST JAMES TRAIL

CITY OF GOOSE CREEK
SOUTH CAROLINA

PRIORITY PROJECT
NO. 4

SHEET NO.
6.0



DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2021-028 PROJECT NO.	09-21-21 DATE
1"=30'-0" SCALE	

Studio Molla LLC
Blake Sanders, PLA
1 Hindmon Street
Pelzer, SC 29669
P. 864.617.0047
E. blake@studiomollallc.com

THE CITY OF GOOSE CREEK

North

0' 30' 60' 90'

GRAPHIC SCALE: 1"=30'

ST JAMES TRAIL

CITY OF GOOSE CREEK
SOUTH CAROLINA

PRIORITY PROJECT
NO. 4

SHEET NO.
6.1

ORDER OF MAGNITUDE OPINION OF COST	
PROJECT: St James Trail Priority Alignment No. 1	DATE PREPARED: September 20, 2021
LOCATION: City of Goose Creek, South Carolina	
DESCRIPTION: Montague Plantation Road/Highway 52 to City of Goose Creek Community Center	
PROJECT NO.: 2021-028	PREPARED BY: STUDIO MAIN LLC

Since Studio Main LLC has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor(s') methods of determining prices, or over competitive bidding or market conditions, Studio Main LLC's opinion of probable Total Project Costs and Construction Cost are made on the basis of our experience and qualifications and represent Studio Main LLC's best judgment as an experienced and qualified professional landscape architect, familiar with the construction industry; but Studio Main LLC cannot and does not guarantee that proposals, bids, or actual Total Project or Construction Costs will not vary from opinions of probable cost.

Item	Est. Quant.	Unit	Unit Price	Total
ROADWAY ITEMS				
EROSION CONTROL	1530	L.FT.	$5.00	$7,650
CURB & GUTTER	0	L.FT.	$30.00	$0
FINE GRADING	5100	S.YD.	$4.00	$20,400
CONCRETE SIDEWALK	0	S.YD.	$140.00	$0
ASPHALT	344	TONS	$160.00	$55,040
ADA PAVERS	48	S.FT.	$22.00	$1,056
THERMO. STRIPING (CROSSWALK)	290	S.FT.	$15.00	$4,350
COLLAPSIBLE BOLLARD	2	EACH	$1,000.00	$2,000
LANDSCAPE ALLOWANCE	1	L.SUM	$10,000.00	$10,000
STORMWATER ALLOWANCE	1	L.SUM	$12,500.00	$12,500
SIGNAGE (WAYFINDING AND REGULATORY)	5	EACH	$300.00	$1,500
Contract Items			**SUBTOTAL**	$114,496
MOBILIZATION		8.0%		$9,160
CLEARING AND GRUBBING		3.0%		$3,435
CONSTRUCTION STAKING		1.0%		$1,145
TRAFFIC CONTROL		5.0%		$5,725
			CONSTRUCTION TOTALS	$133,960
CONTINGENCIES		15.0%		$20,094
UTILITIES		8.0%		$11,000
DESIGN AND ENGINEERING		12.0%		$16,000
			TOTAL ESTIMATED COST	**$181,054**

ORDER OF MAGNITUDE OPINION OF COST

PROJECT: St James Trail Priority Alignment No. 2	DATE PREPARED: September 20, 2021
LOCATION: City of Goose Creek, South Carolina	
DESCRIPTION: Eubanks Park/existing Hiker-Biker Trail to City of Goose Creek Community Center	
PROJECT NO.: 2021-028	PREPARED BY: STUDIO MAIN LLC

Since Studio Main LLC has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor(s') methods of determining prices, or over competitive bidding or market conditions, Studio Main LLC's opinion of probable Total Project Costs and Construction Cost are made on the basis of our experience and qualifications and represent Studio Main LLC's best judgment as an experienced and qualified professional landscape architect, familiar with the construction industry; but Studio Main LLC cannot and does not guarantee that proposals, bids, or actual Total Project or Construction Costs will not vary from opinions of probable cost.

Item	Est. Quant.	Unit	Unit Price	Total
ROADWAY ITEMS				
EROSION CONTROL	5580	L.FT.	$5.00	$27,900
CURB & GUTTER	5545	L.FT.	$30.00	$166,350
FINE GRADING	9300	S.YD.	$4.00	$37,200
CONCRETE SIDEWALK	6898	S.YD.	$140.00	$965,720
ASPHALT	98	TONS	$160.00	$15,680
ADA PAVERS	144	S.FT.	$22.00	$3,168
THERMO. STRIPING (CROSSWALK)	1455	S.FT.	$15.00	$21,825
COLLAPSIBLE BOLLARD	2	EACH	$1,000.00	$2,000
LANDSCAPE ALLOWANCE	1	L.SUM	$25,000.00	$25,000
STORMWATER ALLOWANCE	1	L.SUM	$125,000.00	$125,000
SIGNAGE (WAYFINDING AND REGULATORY)	6	EACH	$300.00	$1,800
Contract Items			**SUBTOTAL**	$1,391,643
MOBILIZATION		8.0%		$111,331
CLEARING AND GRUBBING		3.0%		$41,749
CONSTRUCTION STAKING		1.0%		$13,916
TRAFFIC CONTROL		5.0%		$69,582
			CONSTRUCTION TOTALS	$1,628,222
CONTINGENCIES		15.0%		$244,233
UTILITIES		8.0%		$130,000
DESIGN AND ENGINEERING		12.0%		$195,000
			TOTAL ESTIMATED COST	**$2,197,456**

ORDER OF MAGNITUDE OPINION OF COST	
PROJECT: St James Trail Priority Alignment No. 4	DATE PREPARED: September 20, 2021
LOCATION: City of Goose Creek, South Carolina	
DESCRIPTION: Existing Hiker-Biker Trail to Liberty Hall Road	
PROJECT NO.: 2021-028	PREPARED BY: STUDIO MAIN LLC

Since Studio Main LLC has no control over the cost of labor, materials, equipment or services furnished by others, or over the Contractor(s') methods of determining prices, or over competitive bidding or market conditions, Studio Main LLC's opinion of probable Total Project Costs and Construction Cost are made on the basis of our experience and qualifications and represent Studio Main LLC's best judgment as an experienced and qualified professional landscape architect, familiar with the construction industry; but Studio Main LLC cannot and does not guarantee that proposals, bids, or actual Total Project or Construction Costs will not vary from opinions of probable cost.

Item	Est. Quant.	Unit	Unit Price	Total
ROADWAY ITEMS				
EROSION CONTROL	1520	L.FT.	$5.00	$7,600
CURB & GUTTER	310	L.FT.	$30.00	$9,300
FINE GRADING	5066	S.YD.	$4.00	$20,264
CONCRETE SIDEWALK	398	S.YD.	$140.00	$55,720
ASPHALT	202	TONS	$160.00	$32,320
ADA PAVERS	0	S.FT.	$22.00	$0
THERMO. STRIPING (CROSSWALK)	0	S.FT.	$15.00	$0
COLLAPSIBLE BOLLARD	2	EACH	$1,000.00	$2,000
LANDSCAPE ALLOWANCE	1	L.SUM	$25,000.00	$25,000
STORMWATER ALLOWANCE	1	L.SUM	$45,000.00	$45,000
SIGNAGE (WAYFINDING AND REGULATORY)	3	EACH	$300.00	$900
Contract Items			**SUBTOTAL**	$198,104
MOBILIZATION		8.0%		$15,848
CLEARING AND GRUBBING		3.0%		$5,943
CONSTRUCTION STAKING		1.0%		$1,981
TRAFFIC CONTROL		5.0%		$9,905
		CONSTRUCTION TOTALS		$231,782
CONTINGENCIES		15.0%		$34,767
UTILITIES		8.0%		$19,000
DESIGN AND ENGINEERING		12.0%		$28,000
		TOTAL ESTIMATED COST		**$313,549**

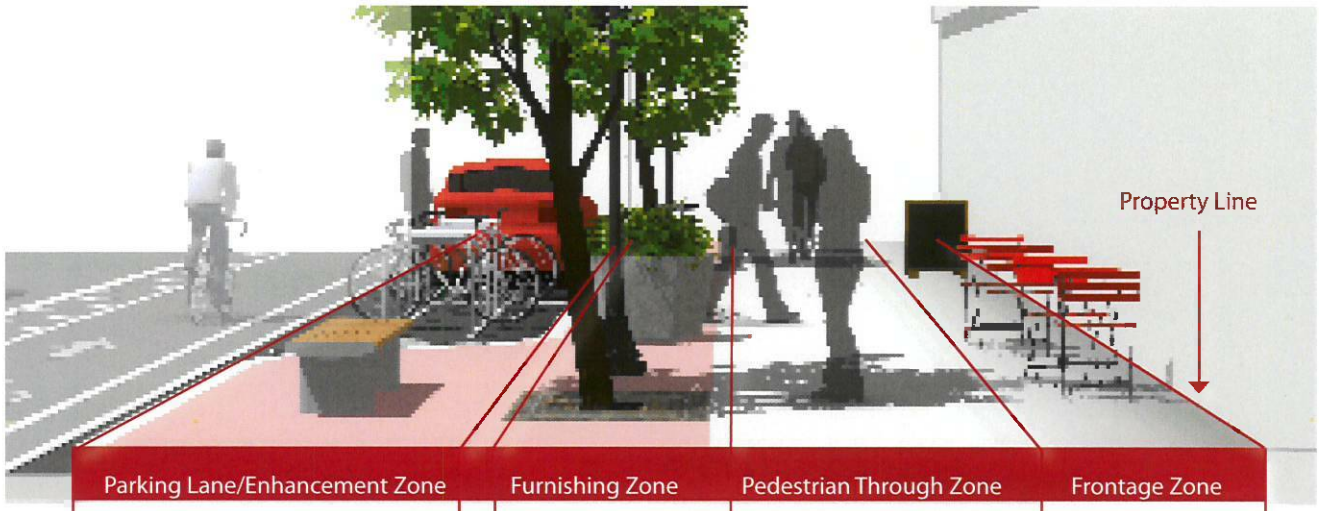
CITY OF GOOSE CREEK, SC

BICYCLE AND PEDESTRIAN INFRASTRUCTURE DESIGN GUIDELINES

ZONES IN THE SIDEWALK CORRIDOR

Description

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. A variety of considerations are important in sidewalk design. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved safety, and the creation of social space.



Parking Lane/Enhancement Zone	Edge Zone	Furnishing Zone	Pedestrian Through Zone	Frontage Zone
The parking lane can act as a flexible space to further buffer the sidewalk from moving traffic. Curb extensions and bike corrals may occupy this space where appropriate. In the edge zone there should be a 6 inch wide curb.		The furnishing zone buffers pedestrians from the adjacent roadway, and is also the area where elements such as street trees, signal poles, signs, and other street furniture are properly located.	The through zone is the area intended for pedestrian travel. This zone should be entirely free of permanent and temporary objects. Wide through zones are needed in downtown areas or where pedestrian flows are high.	The Frontage Zone allows pedestrians a comfortable "shy" distance from the building fronts. It provides opportunities for window shopping, to place signs, planters, or chairs. Not applicable if adjacent to a landscaped space.

Discussion

Sidewalks should be more than areas to travel; they should provide places for people to interact. There should be places for standing, visiting, and sitting. Sidewalks should contribute to the character of neighborhoods and business districts, strengthen their identity, and be an area where adults and children can safely participate in public life.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped space. Colored, patterned, or stamped concrete can add distinctive visual appeal.

SIDEWALK WIDTHS

Description

The width and design of sidewalks will vary depending on street context, functional classification, and pedestrian demand. Below are preferred widths of each sidewalk zone according to general street type. Standardizing sidewalk guidelines for different areas of the city, dependent on the above listed factors, ensures a minimum level of quality for all sidewalks.

Guidance

Sidewalk width should be determined based on desired user comfort. While a 3 foot wide through zone may accommodate a single person walking, it is inadequate for two people to walk side-by-side or comfortably pass other users. Designers should strive for sidewalk conditions that allow for side-by-side walking and comfortable passing.

Street Classification	Parking Lane/ Enhancement Zone	Furnishing Zone	Pedestrian Through Zone	Frontage Zone	Total
Local Streets	Varies	2 - 8 feet	4 - 6 feet	N/A	6 - 14 feet
Commercial/Downtown Areas	Varies	4 - 8 feet	6 - 12 feet	2.5 - 10 feet	11 - 30 feet
Arterials and Collectors	Varies	2 - 8 feet	4 - 8 feet	2.5 - 5 feet	8 -21 feet

Seating for outdoor dining is most common and functional in furnishing zones of 6 ft, although narrower configurations are possible.

Six feet enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably

Discussion

It is important to provide adequate width along a sidewalk corridor. Two people should be able to walk side-by-side and pass a third comfortably. In areas of high demand, sidewalks should contain adequate width to accommodate the high volumes and different walking speeds of pedestrians. The Americans with Disabilities Act requires a 4 foot clear width in the pedestrian zone plus 5 foot passing areas every 200 feet.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped boulevard. Surfaces must be firm, stable, and slip resistant.

SIDEWALK OBSTRUCTIONS AND DRIVEWAY RAMPS

Description

Obstructions to pedestrian travel in the sidewalk corridor typically include driveway ramps, curb ramps, sign posts, utility and signal poles, mailboxes, fire hydrants and street furniture.

Guidance

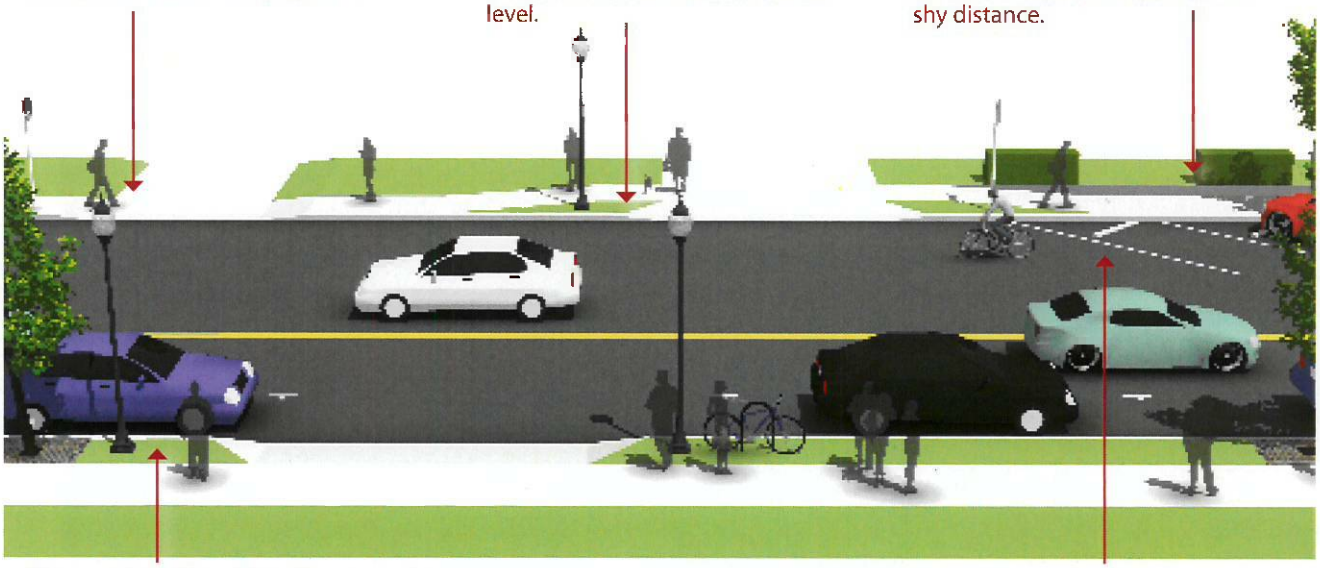
Reducing the number of accesses reduces the need for special provisions. This strategy should be pursued first.

Obstructions should be placed between the sidewalk and the roadway to create a buffer for increased pedestrian comfort.

Dipping the entire sidewalk at the driveway approaches keeps the cross-slope at a constant grade. This is the least-preferred driveway option.

Where constraints preclude a planter strip, wrapping the sidewalk around the driveway allows the sidewalk to still remain level.

When sidewalks abut hedges, fences, or buildings, an additional two feet of lateral clearance should be added to provide appropriate shy distance.



Planter strips allow sidewalks to remain level, with the driveway grade change occurring within the planter strip.

When sidewalks abut angled on-street parking, wheel stops should be used to prevent vehicles from overhanging in the sidewalk.

Discussion

Driveways are a common sidewalk obstruction, especially for wheelchair users. When constraints only allow curb-tight sidewalks, dipping the entire sidewalk at the driveway approaches keeps the cross-slope at a constant grade. However, this may be uncomfortable for pedestrians and could create drainage problems behind the sidewalk.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped space. Surfaces must be firm, stable, and slip resistant.

PEDESTRIAN AMENITIES

Description

A variety of streetscape elements can define the pedestrian realm, offer protection from moving vehicles, and enhance the walking experience. Key features are presented below.

Street Trees

In addition to their aesthetic and environmental value, street trees can slow traffic and improve safety for pedestrians. Trees add visual interest to streets and narrow the street's visual corridor, which may cause drivers to slow down. It is important that trees do not block light or the vision triangle.

Street Furniture

Providing benches at key rest areas and viewpoints encourages people of all ages to use the walkways by ensuring that they have a place to rest along the way. Benches should be 20" tall to accommodate elderly pedestrians comfortably. Benches can be simple (e.g., wood slats) or more ornate (e.g., stone, wrought iron, concrete). If alongside a parking zone, street furniture should be placed to minimize interference with passenger loading.

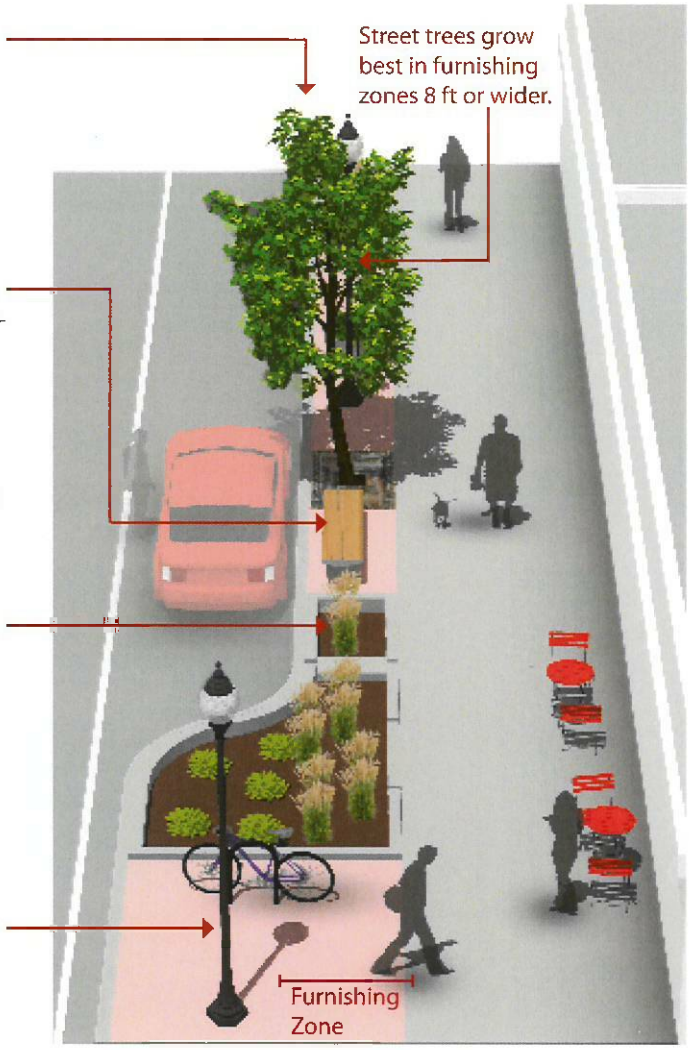
Green Features

Green stormwater strategies may include bioretention swales, rain gardens, tree box filters, and pervious pavements (pervious concrete, asphalt and pavers).

Bioswales are natural landscape elements that manage water runoff from a paved surface. Plants in the swale trap pollutants and silt from entering a river system.

Lighting

Pedestrian scale lighting improves visibility for both pedestrians and motorists - particularly at intersections. Pedestrian scale lighting can provide a vertical buffer between the sidewalk and the street, defining pedestrian areas.



Discussion

Additional pedestrian amenities such as banners, public art, special paving, along with historical elements and cultural references, promote a sense of place. Public activities should be encouraged and commercial activities such as dining, vending and advertising may be permitted when they do not interfere with safety and accessibility.

Pedestrian amenities should be placed in the furnishing zone on a sidewalk corridor. See Zones in the Sidewalk Corridor for a discussion of the functional parts of a sidewalk. Signs, meters, tree wells should go between parking spaces.

Materials and Maintenance

Establishing and caring for your young street trees is essential to their health. Green features may require routine maintenance, including sediment and trash removal, and clearing curb openings and overflow drains.

ACCOMMODATING PEDESTRIANS AT SIGNALIZED CROSSINGS

Description

Pedestrian Signal Head

Pedestrian signal indicators demonstrate to pedestrians when to cross at a signalized crosswalk. All traffic signals should be equipped with pedestrian signal indications except where pedestrian crossing is prohibited by signage. An Accessible Pedestrian Signal (APS) using audible and/or vibrotactile indication should be provided for pedestrians upon detection/actuation.

Countdown pedestrian signals are particularly valuable for pedestrians, as they indicate whether a pedestrian has time to cross the street before the signal phase ends. Countdown signals should be used at all signalized intersections.

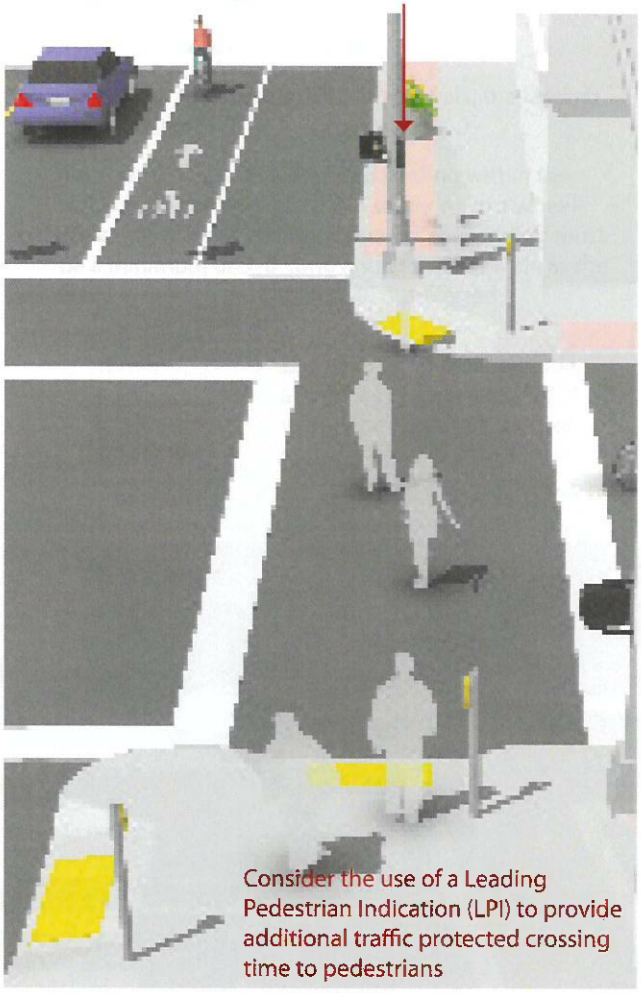
Signal Timing

Providing adequate pedestrian crossing time is a critical element of the walking environment at signalized intersections. The MUTCD recommends traffic signal timing to assume a pedestrian walking speed of 4' per second, meaning that the length of a signal phase with parallel pedestrian movements should provide sufficient time for a pedestrian to safely cross the adjacent street.

At crossings where older pedestrians or pedestrians with disabilities are expected, crossing speeds as low as 3' per second may be assumed. Special pedestrian phases can be used to provide greater visibility or more crossing time for pedestrians at certain intersections.

In busy pedestrian areas such as downtowns, the pedestrian signal indication should be built into each signal phase, eliminating the requirement for a pedestrian to actuate the signal by pushing a button.

Audible pedestrian traffic signals provide crossing assistance to pedestrians with vision impairment at signalized intersections



Consider the use of a Leading Pedestrian Indication (LPI) to provide additional traffic protected crossing time to pedestrians

Discussion

When push buttons are used, they should be located so that someone in a wheelchair can reach the button from a level area of the sidewalk without deviating significantly from the natural line of travel into the crosswalk, and marked (for example, with arrows) so that it is clear which signal is affected.

In new construction, APS should be installed wherever pedestrian signals are installed. New accessible signals should be prioritized where insufficient acoustic information exists — at all times — to permit safe crossing at a particular intersection or crosswalk. See http://www.apsguide.org/ for more information.

Materials and Maintenance

It is important to repair or replace traffic control equipment before it fails. Consider semi-annual inspections of controller and signal equipment, intersection hardware, and loop detectors.

MARKED CROSSWALKS

Description

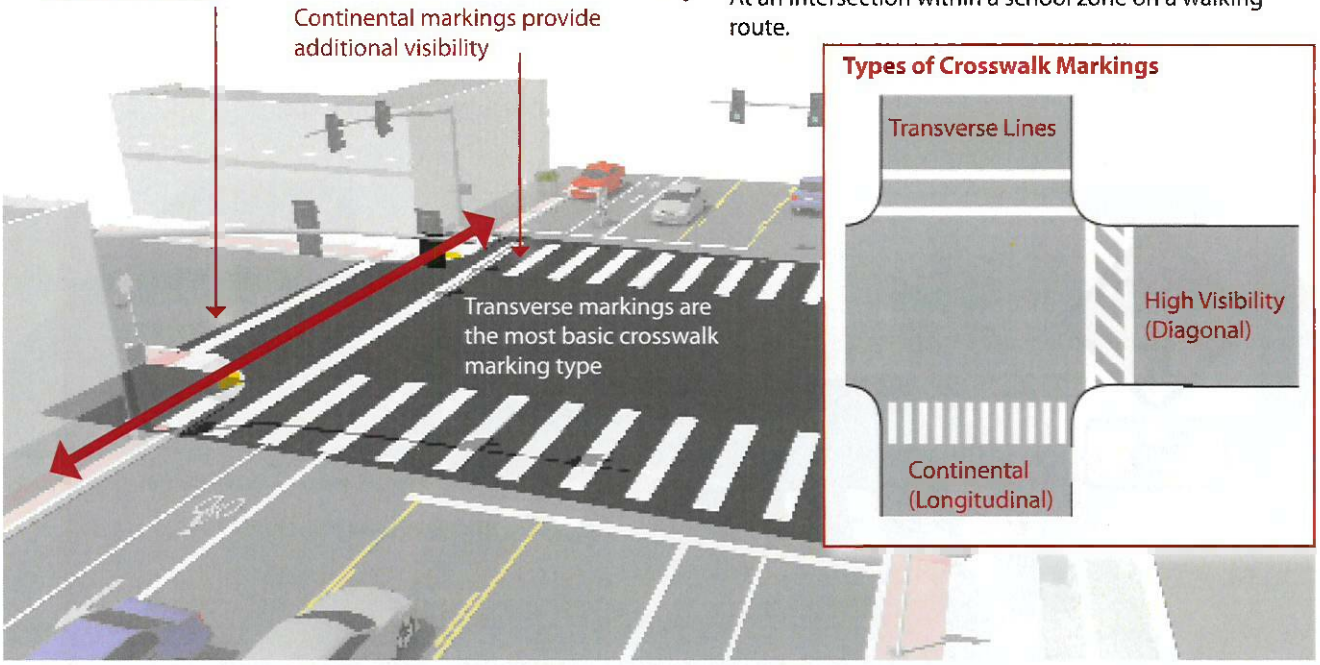
A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer especially on multi-lane roadways.

At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks.

Guidance

At signalized intersections, all crosswalks should be marked. At un-signalized intersections, crosswalks may be marked under the following conditions:

- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the shortest route across traffic with the least exposure to vehicular traffic and traffic conflicts.
- At an intersection with visibility constraints, to position pedestrians where they can best be seen by oncoming traffic.
- At an intersection within a school zone on a walking route.



Discussion

Continental crosswalk markings should be used at crossings with high pedestrian use or where vulnerable pedestrians are expected, including: school crossings, across arterial streets for pedestrian-only signals, at mid-block crosswalks, and at intersections where there is expected high pedestrian use and the crossing is not controlled by signals or stop signs.

Materials and Maintenance

Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority. Thermoplastic markings offer increased durability than conventional paint.

SHARED-USE PATH GENERAL GUIDANCE

Description

Shared use paths can provide a desirable facility, particularly for recreation, and users of all skill levels preferring separation from traffic. Bicycle paths should generally provide directional travel opportunities not provided by existing roadways.

Guidance

Width

- 12 feet is recommended in most situations and will be adequate for most usage levels. A separate track (5' minimum) can be provided for pedestrian use.
- In constrained conditions for short distances, 8 foot width may be acceptable.

Lateral Clearance

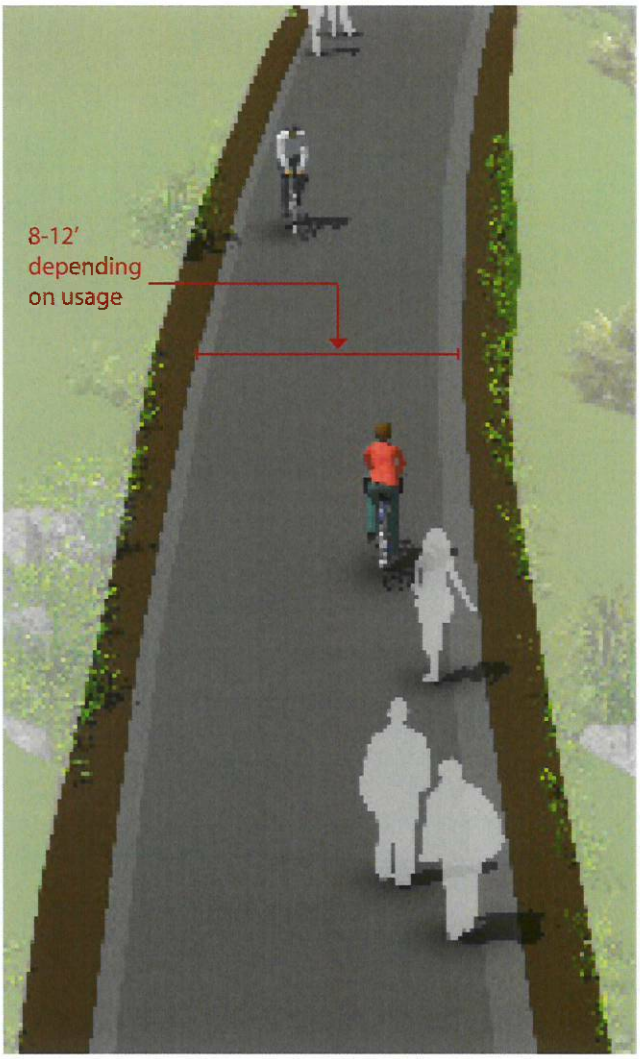
- A 2 foot or greater shoulder on both sides of the path should be provided. An additional foot of lateral clearance (total of 3') is required by the MUTCD for the installation of signage or other furnishings.
- If bollards are used at intersections and access points, they should be colored brightly and/or supplemented with reflective materials to be visible at night.

Overhead Clearance

- Clearance to overhead obstructions should be 8 feet minimum, with 10 feet recommended.

Striping

- When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.
- Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.



Discussion

Terminate the path where it is easily accessible to and from the street system, preferably at a controlled intersection or at the beginning of a dead-end street.

Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

SHARED USE PATHS ALONG ROADWAYS

Description

Shared Use Paths along roadways, also called Sidepaths, are a type of path that run adjacent to a street.

Because of operational concerns it is generally preferable to place paths within independent rights-of-way away from roadways. However, there are situations where existing roads provide the only corridors available.

Along roadways, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding where bicyclists enter or leave the path.

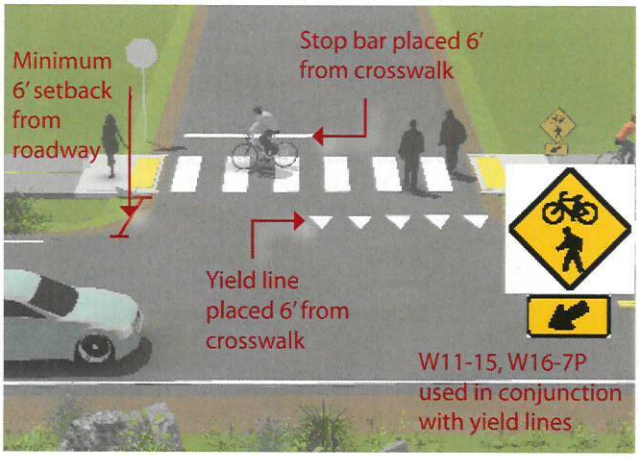
The AASHTO Guide for the Development of Bicycle Facilities cautions practitioners of the use of two-way sidepaths on urban or suburban streets with many driveways and street crossings.

In general, there are two approaches to crossings: adjacent crossings and setback crossings, illustrated below.

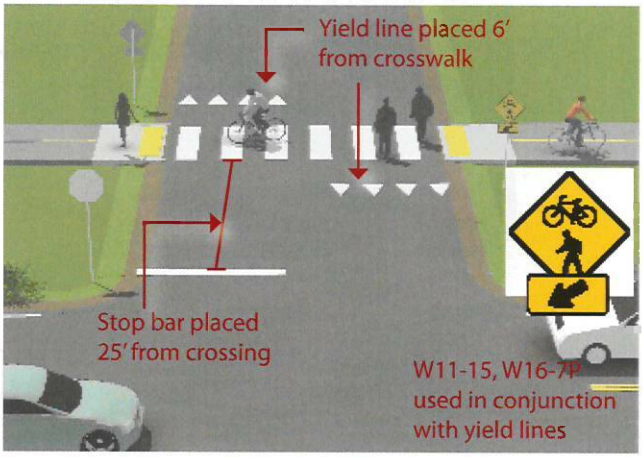
Guidance

- Guidance for sidepaths should follow that for general design practises of shared use paths.
- A high number of driveway crossings and intersections create potential conflicts with turning traffic. Consider alternatives to sidepaths on streets with a high frequency of intersections or heavily used driveways.
- Where a sidepath terminates special consideration should be given to transitions so as not to encourage unsafe wrong-way riding by bicyclists.
- Crossing design should emphasize visibility of users and clarity of expected yielding behavior. Crossings may be STOP or YIELD controlled depending on sight lines and bicycle motor vehicle volumes and speeds.

Adjacent Crossing - A separation of 6 feet emphasizes the conspicuity of riders at the approach to the crossing.



Setback Crossing - A set back of 25 feet separates the path crossing from merging/turning movements that may be competing for a driver's attention.



Discussion

The provision of a shared use path adjacent to a road is not a substitute for the provision of on-road accommodation such as paved shoulders or bike lanes, but may be considered in some locations in addition to on-road bicycle facilities.

To reduce potential conflicts in some situations, it may be better to place one-way sidepaths on both sides of the street.

Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

CITY OF GOOSE CREEK, SC

BRANDING AND WAYFINDING

TRAIL BRANDING

Branding is a widely used term to describe the perception of a product or service in a target audience's mind. David Ogilvy, commonly known as the father of advertising, said it best— a brand is, "the intangible sum of a product's attributes."

A trail or greenway is more than a physical facility; it is a *place*, a *destination* that people engage, enjoy, and share with their family and friends. It is important for a trail to have an identity that includes all of the elements of a strong brand: a memorable name, specific fonts and typefaces, a color palette, and an icon. Additionally, this brand identity should be extendable into marketing tools and environmental graphics such as signage and markers.

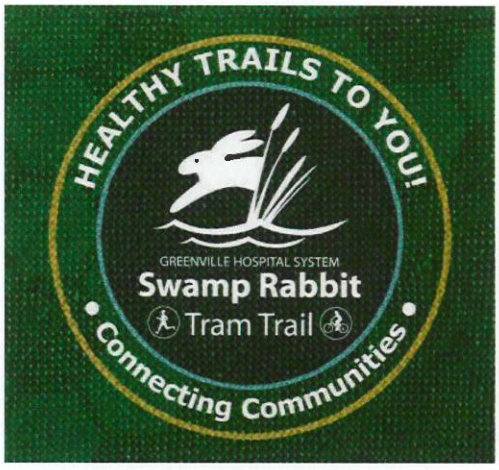
A brand should be crafted to provide a name and graphic identity that will foster successful implementation. Branding should remain consistent throughout all materials, messaging, and representation of the trail. Over the coming years, a brand will lay the foundation for identifying funding partners, marketing strategies, target markets, and tactics that will attract investment to the communities along the trail and create a personality that will attract visitors. One of the most important functions of a brand will be to provide a cohesive, professional appearance for materials and public messaging that will enable trail supports to secure implementation funding.

This appendix explores a brand identity concept and a complimentary wayfinding signage family.

CAROLINA THREAD TRAIL®

Weaving Communities Together

Carolina Thread Trail logo and tagline.



Swamp Rabbit Trail logo and tagline.

THE CITY OF GOOSE CREEK

BRANDING CONCEPT: ST. JAMES TRAIL

As part of the City of Goose Creek Connectivity Master Plan, Studio Main developed an identity icon for the larger greenway network within the City of Goose Creek. The St. James Trail speaks to the history of the City while complimenting the existing branding. The logo for the St James Trail features a profile that accompanies an outline of mature live oaks, complimenting the existing City brand. The color palette, fonts, and identifiable features are extracted from existing branding and marketing efforts.

GOOSE CREEK

SAINT JAMES TRAIL

TRAIL WAYFINDING

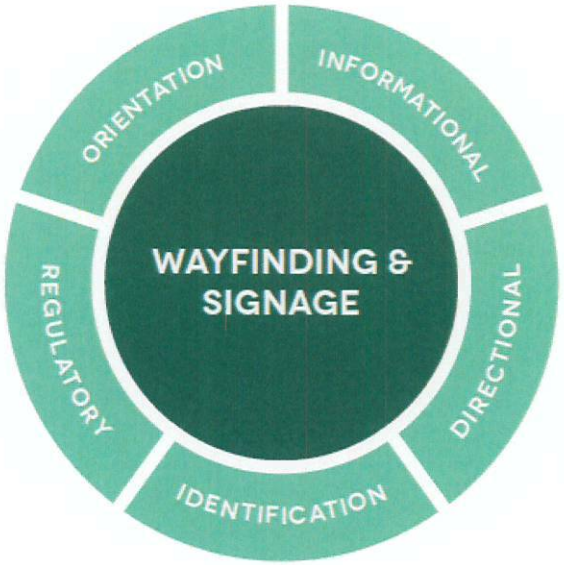
A wayfinding system includes a toolkit of signage types that orient, inform, direct, identify, and regulate actions and activities related to the greenway. A wayfinding system concept for the St. James Trail is shown on the facing page. The various elements, which include trailhead markers and kiosks, directional signage, and pavement markings, facilitate the trail user experience and reinforce the trail brand identity. The program adheres to a consistent, selective, and strategic manner so as not to clutter or dominate the visual character of the trails.

TRAILHEAD MONUMENTS

Municipalities often desire identification and a favorable image of their community. Gateway Monuments are typically any freestanding structure or sign that will communicate the name of a local entity. Gateway signs provide the first welcome to visitors while reinforcing community identity, pride, and sense of place. They should be integrated into the greater wayfinding plan in order to create a unified, welcoming, and legible system.

Gateway monuments should:

- Be a maximum of one Gateway Monument, visible from the traveled way, and placed at the appropriate approach to avoid distraction and visual clutter.
- Include the officially adopted town logo/seal, however this is not required.
- Be located well beyond the clear recovery zone or otherwise placed to minimize the likelihood of being struck by an errant vehicle (if along a roadway).
- Be kept clean, free of graffiti, and in good repair. Their care should be incorporated into maintenance schedules prior to installation.
- Be developed and placed to require low or no maintenance to minimize exposure of workers and others to potential risks. Protective graffiti resistant coatings should be applied.
- Be composed of materials that are durable for the projected life span of the project.
- Be appropriate to the proposed setting and community context.
- Be in proper size and scale with its surroundings.



INFORMATIONAL COMPONENTS OF A COMPLETE WAYFINDING SIGNAGE SYSTEM

Orientation – provides an overview of the geographical context (example - Map Kiosk)

Informational – provides general or specific information about a place (example – Informational Kiosk)

Directional – the circulatory system of the trail (example – Trail Directional Sign)

Identification – first and foremost, identifies the Palmetto Trail but often may identify specific elements of the trail (example -Trailhead Monument)

Regulatory - describes the do's and don'ts of the trail or place along the trail (example – allowed trail uses or hours)

ST. JAMES TRAIL wayfinding concept no. 1

SEPTEMBER 2021

MILEAGE MARKERS

Mileage markers provide trail users with awareness and notification of their location on the larger trail system. Vertical mile markers should be place every 1/2 mile and should be checked regularly for damage. Thermoplastic pavement markings noted every 1/10 mile with associated brand reinforce awareness and safety. All mile markers should be entered in the Berkley County Emergency Management System so that first responders and safety personnel can attend to emergency needs efficiently.

Additional components for consideration for a trail safety in addition to mile markers include:

- Active collaboration between emergency response and parks and recreation staff
- Training for local emergency response agencies
- Development and sharing of extraction points, to include keys, etc.
- Coordination with local agencies of trail events, activities and new trail openings;
- Public education and signage