



# WEST ASHLEY

## GREENWAY + BIKEWAY MASTER PLAN



JANUARY 2019





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# ACKNOWLEDGMENTS

## THANK YOU **CHARLESTON.**

### **PUBLIC PARTICIPANTS**

Thank you to the residents of Charleston for their participation in this planning process and their passion for improving the place they call home.

### **STAKEHOLDER COMMITTEE**

Thank you to the engaged leaders of the Charleston community for their continued participation throughout the planning process and for their commitment to furthering the efforts of this plan.

### **GOVERNMENT AGENCIES**

Mayor John Tecklenburg  
City of Charleston and Charleston County staff  
Charleston City Council members  
Charleston Water System  
West Ashley Revitalization Commission  
SCDOT



# 01

## INTRODUCTION

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# PROJECT BACKGROUND

The West Ashley Greenway and Bikeway are assets of critical importance to not only West Ashley, but to the greater Lowcountry as a whole. Today, they function primarily as recreational amenities; for local residents they are a place to take an afternoaon stroll, a morning run, or a family bike ride. For those visiting from the greater Charleston region, they are a place to come and engage with nature within the heart of an increasingly busy and congested metropolitan area. These trails are a small but integral segment in the East Coast Greenway network, with a significant missing link across the Ashley River. Bridging the gap across the river will be the first major stride in order to complete a valuable connected bike and pedestrian network that is loved and cherished by the community.

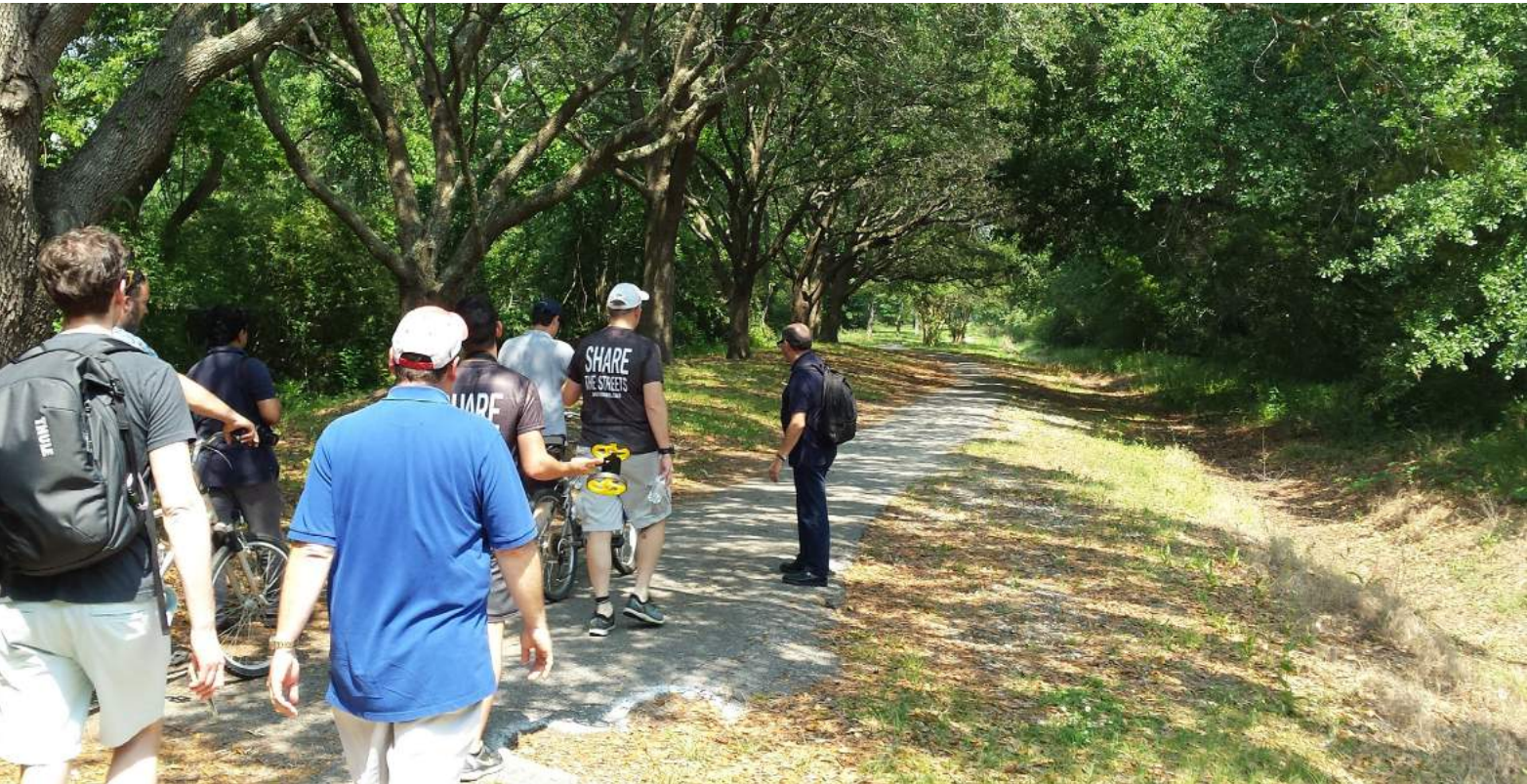
During the *Plan West Ashley* effort, adopted 2017, it became apparent that both the Greenway

and Bikeway are well-loved amenities in West Ashley; for residents who wanted to have mobility choices outside of driving a personal vehicle it is a convenient and safe option to get around the area. **As the Charleston region continues to grow, these segments have the potential to serve as critical pieces of a comprehensive active transportation network, granting West Ashley residents access to a wide variety of goods and services without needing a vehicle.** To accomplish this expansion of roles facility enhancements and missing links in the system need to be addressed, creating a safe and enjoyable experience for people of all ages and abilities using the trail. Enhancements include improved access points and street crossings, new amenity stations (such as restrooms and drinking fountains), and placemaking opportunities that reflect the unique cultural and ecological context of the trail. To that end, the Charleston Parks

Conservancy commissioned this Master Planning effort.

This Master Plan effort is also informed by and **builds upon the recommendations of the 2009 West Ashley Greenway Master Plan** completed by SeamonWhiteside+Associates. While the prior master planning work involved a relatively robust public engagement process and set a similar vision for the placemaking and alternative transportation capabilities for the West Ashley Greenway, this later effort differs in three major ways. First, this plan includes the West Ashley Bikeway (now the Maryville Bikeway) and looks at both trails as an overall trails system. Secondly, this plan looks specifically at the street crossings and how to make them safer for the trail users. And lastly, this master planning effort is coupled with a Public Art Master Plan effort, the results of which are included in this report’s appendix.

*(Below) The consultant team traverses the entire West Ashley Greenway and Bikeway alignment in order to assess existing conditions of the trail.*





# GUIDING PRINCIPLES

This process actively engaged the community during a series of stakeholder meetings, “on the ground” tours, and photo documentation of the entire length of the Greenway and Bikeway. In June 2018, a four-day design charrette open to the public was held to gather input and ideas on how to make the Greenway and Bikeway better. From the community engagement, the charrette team focused on **two guiding principles for the Master Plan**:

1

The Greenway and Bikeway shall be designed to be **more welcoming and safe**, by giving the Greenway and Bikeway users priority at the street crossings.

2

The Greenway and Bikeway shall be designed to be **more beautiful and inspiring**, by using wise, artful plantings and engaging public art.

In this way, the West Ashley Greenway and Bikeway can become even more cherished public spaces in the community. The elements included in this Master Plan accomplish both of these principles, while insuring that the Greenway and Bikeway are world-class facilities that become even more loved by residents, serve an important regional transportation mission, and contribute to Charleston’s boom tourism by providing yet another natural Lowcountry experience for visitors.



(Above) Higgins Pier, looking east across the Ashley River.



# SITE PHOTO GLOSSARY



Trail crossing at Cambell Drive near the Saint Andrew's School of Math & Science.



The existing Wesley Drive/Folly Road trail crossing looking west with the existing median in the foreground.



Existing pedestrian crossing at Wesley Drive and Windermere Boulevard that serves as the current Greenway crossing.



Makeshift Greenway bridge connection to an existing ballfield near the Farmfield Avenue crossing.



Drainage infrastructure and wetland conditions near the Greenway crossing at Nicholson Street.



Greenway crossing at Betsy Road. Note the parallel dirt path due to the close spacing of the existing bollards.



Scenic wetland conditions adjacent to the Greenway near Markfield Drive.



Typical scenic view of the Bikeway with its curvilinear route and drainage on both sides.



Bikeway crossing at White Oak Drive. Bikeway crossings typically lack definition, signage, and street markings.





Forest Park bridge connection to Bikeway, poor condition + grading issues.



Dirt footpath meanders next to Bikeway.



Near the east end of the Bikeway, there have been recent investments in new trail pavement, drainage, street approach upgrades, + trees.



Bikeway with existing trash receptacles near Higgins Pier and the Ashley River.



Unpaved trail conditions by Stinson Drive, rural area with good shade in places.



Newly paved Greenway with great tree cover west of the Clemson University Coastal Research + Education Center.



Scenic marshland west of Arlington Drive, on a newly improved segment of the Greenway..



The Greenway as it passes through Clemson University Coastal Research + Education Center is exposed with little to no tree cover.



Paved segment adjacent to wetlands, west of the Clemson University Coastal Research + Education Center.





Existing bridge over marsh is in good condition, near the west end of the Greenway.



Unimproved trailhead lot off McLeod Mill Road at the current west end of the Greenway has no sense of arrival for trail users.



McLeod Mill Road with dirt shoulder bending toward Stono River County Park.



Closely-spaced bollards at street crossings on the Greenway create hazards for bicyclists.



The Greenway is well-shaded by existing live oaks near the South Windermere shopping center at Wesley Drive.



The entrance to the Stono River County Park is barely visible from the street due to dense vegetation and a lack of signage.



Saint Andrews acts as a wall between the east and west sides of the Bikeway.



Greenway wraps around the 35 Folly Road apartments on the east and connects to future Point Park.

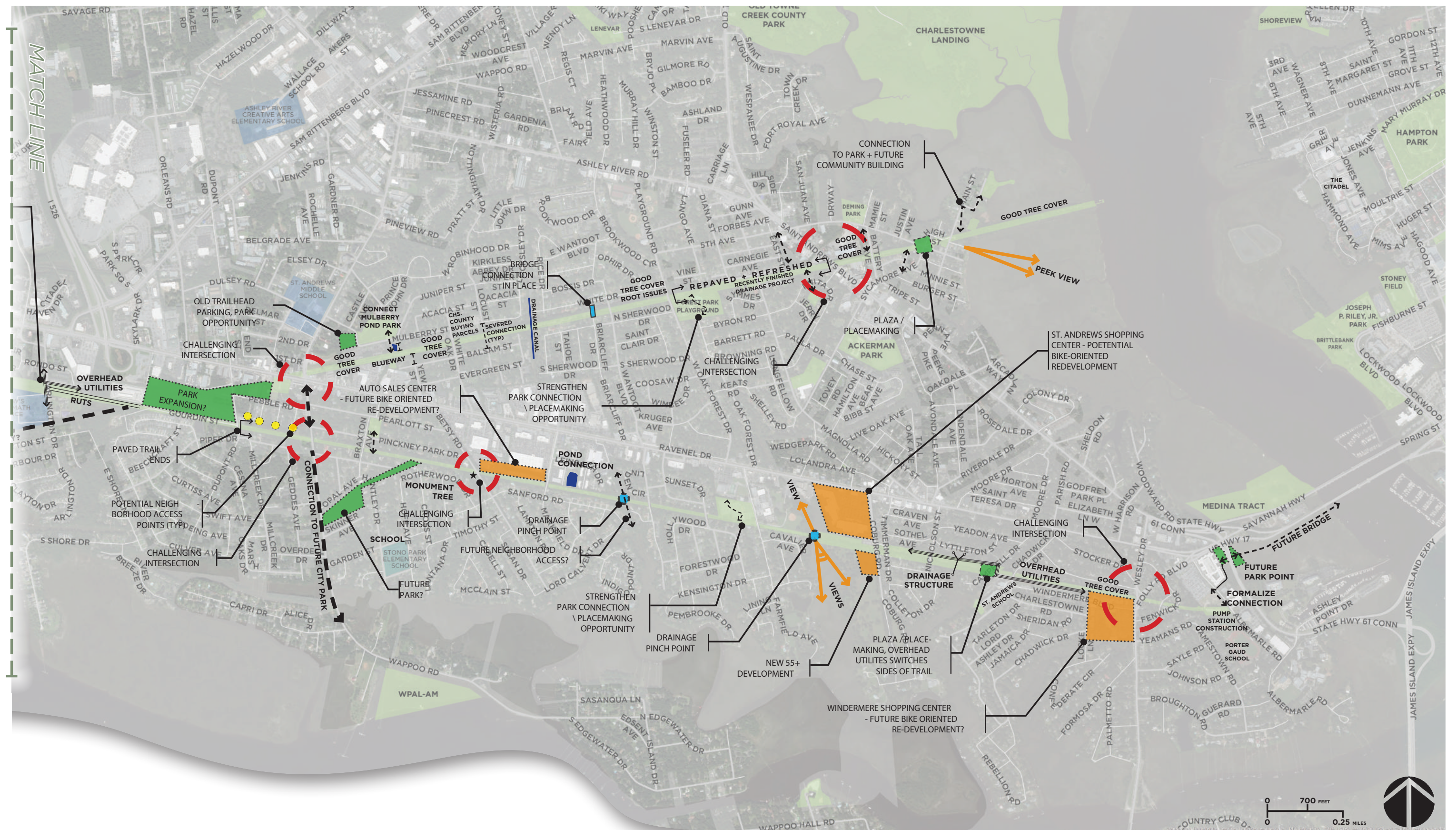


Greenway loses its definition as it approaches Albemarle Rd. The trail end is indeterminate and made worse by ongoing construction.











# 02

## PROCESS + PARTICIPATION

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# THE PROCESS

The creation of the Master Plan has been a collaborative effort among the consultant team, the Charleston Parks Conservancy, local and state agency representatives, and West Ashley stakeholders and residents. The design work for the Greenway and Bikeway was created in a collaborative effort focused around **two major events**:

1

Fieldwork that included a series of **stakeholder sessions** and **site documentation and analyses**.

2

A **multi-day design charrette** held at the Charleston Parks Conservancy offices in West Ashley.

## stakeholder groups

- City of Charleston and Charleston County staff
- SCDOT
- Charleston Water System
- Neighborhood Association leaders
- Local advocacy groups
- Charleston City Council members



(Above) Draft recommendation presentation open to the public, held June 7, 2018.  
Source: Katie Zimmerman

## public + stakeholder engagement

The fieldwork event, held May 8-9 in 2018, consisted of a string of kickoff meetings and a site tour along the entire greenway and bikeway with stakeholders and government agencies. The purpose of the tour was to photo-document existing conditions, assess opportunities and constraints, and discuss initial design ideas. At the conclusion of the event, the consultant team held a debrief session that summarized what was learned over the course of the two days. **The initial site visit and kickoff meetings set up a framework for the design efforts that followed at the charrette.**

During the week of June 4, 2018, the consultant team reconvened in West Ashley for a four-day design charrette, geared towards developing draft design recommendations for the Greenway and Bikeway that have since been refined

into this Master Plan. The team set up a public studio in the offices of the Charleston Park Conservancy and began to establish concepts that address the challenges present along the trail. As the week progressed, **charrette attendees were asked to react and respond to draft design recommendations**; the direction of the plan and design of individual elements were then adapted to better meet the needs and desires of West Ashley residents and visitors.

The following pages include a summary of feedback gathered during the public input process throughout both events.



# FEEDBACK + RESULTS

**More than 100 residents and stakeholders attended each event** throughout the entire public engagement process. Attendees were invited to drop in to open studio times and attend daily pin-ups; the studio played host to many informal small meetings with residents while design progressed. From these various forums, a wide range of feedback on the draft recommendations was received, as well as information on how residents plan to use the trail.

This section identifies specific issues and challenges expressed by stakeholders and residents of West Ashley during the public input events. These comments provided guidance for the direction of the Master Plan and directed the consultant team's design efforts as they moved forward with conceptualization.

## notable issues + challenges along the existing trail

- **Challenging street crossings** at Folly Road, St Andrews Boulevard, and Savannah Highway
- Trails are **too narrow** (8' width at paved sections)
- There needs to be a way to **cross the Ashley River** to access the Charleston Peninsula
- **Not enough shade** along the segments
- Lack of pavement on some segments of the Greenway and **deteriorated pavement** in other places, especially on the Bikeway
- **Lack of amenities** such as restrooms, benches, water stations, and places to sit and linger
- Need for improved **connectivity to regional destinations**, such as surrounding neighborhoods and other commercial areas

## the idea wall

Throughout the week, charrette participants were encouraged to add comments to the Idea Wall, opposite page. This exercise demonstrated what design elements and amenities mattered to West Ashley residents and stakeholders. Participants had the opportunity to interact with others' opinions or preferences, and write down their own for others to agree with or "second." This exercise was a valuable tool for the consultant team to pull ideas from during and after the charrette, and attendees enjoyed having a tangible community-led forum to discuss their vision for the Greenway and Bikeway.

The majority of Idea Wall responses focused on the **safety, lighting, and condition** of the trails. There were also many comments asking for **environmentally-sensitive design** – recycle bins, permeable paving, and amenities that support the various ecosystems the trail passes through.



(Above) Consultant team working during open studio at the Charleston Parks Conservancy.







# 03

## THE MASTER PLAN

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# OVERVIEW

Using the initial designs developed as part of the charrette and input received from the public and stakeholders, the Team refined and added detail to the proposed concepts to develop the final Master Plan. The Master Plan includes a breakdown of the **13 trail segments** that form the Greenway and Bikeway, as well as recommended improvements that support the unique identity of each segment and enhance the user experience overall.

In addition to segment recommendations, a set of **design guidelines and standards** were developed to guide future initiatives for the Greenway and Bikeway. This chapter describes the final Master Plan and its components, organized east to west, as well as standards for the entire trail network.

## DESIGN GUIDELINES + STANDARDS

This section contains guidelines and standards developed to make the Greenway and Bikeway a cohesive and integrated facility that accomplishes the goals of being a world-class public space and treasured segment of the East Coast Greenway. Standards include plant palettes, furnishing palettes and placement criteria, as well as guidelines for street crossings and neighborhood connectivity. The following table breaks down where guidelines for each element can be found in this section of the report.



(Above) Consultant team working on concept visualizations during the design charrette, held June 2018.

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greenway/bikeway element	page reference
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# GUIDING PRINCIPLES OF DESIGN

## continuity, connectivity, + accessibility

The West Ashley Greenway + Bikeway should be a continuous non-motorized multi-use pathway, accommodating all user types. This trunk line will connect directly to residential, commercial, and natural areas, with seamless and accessible connections to on-street facilities and secondary trails.

## trail experience

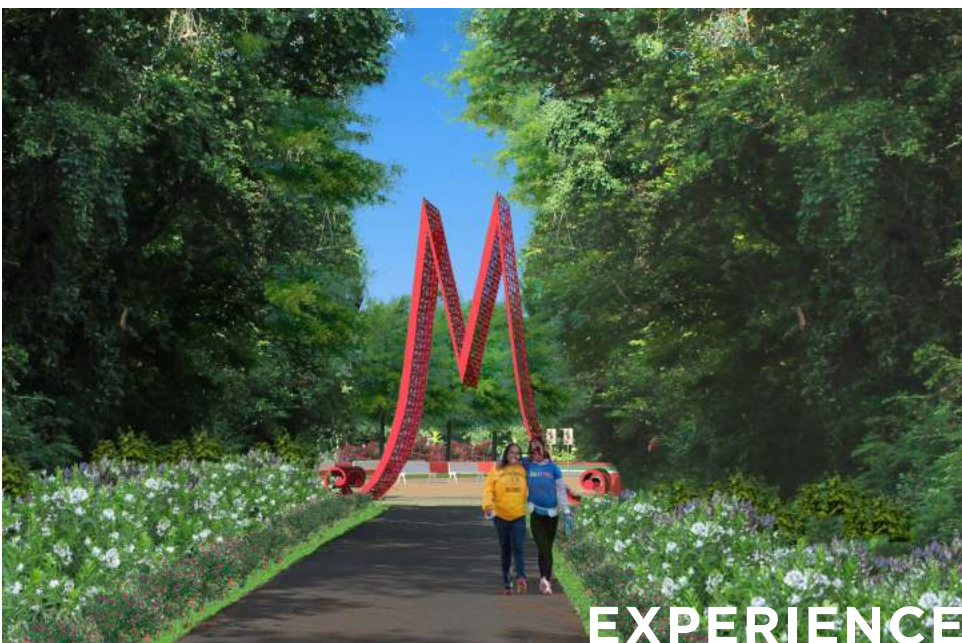
Trail design must be sensitive to the perspective of the visitor to promote use, enjoyment and a sense of stewardship and pride along the trail as a park space. This includes considering the impact on the five senses of the users and providing diverse and choreographed experiences. The trail corridor should ensure safety, provide visual interest, and stimulate the senses. Where feasible, the West Ashley Greenway should include passive areas along the trail for respite, socializing, and the enjoyment of public art.

## resource stewardship, compatibility, + sustainability

Wherever and whenever feasible use resilient materials that are responsibly sourced. Consider furnishings that non-polluting, conserve energy, and use natural, recycled or recyclable materials.

## public awareness + trail identity

The West Ashley Greenway will have a strong local and regional identity as a model for design excellence. The trail will be a centerpiece for Charleston recreation and transportation, resulting in trail-oriented development and green space preservation.



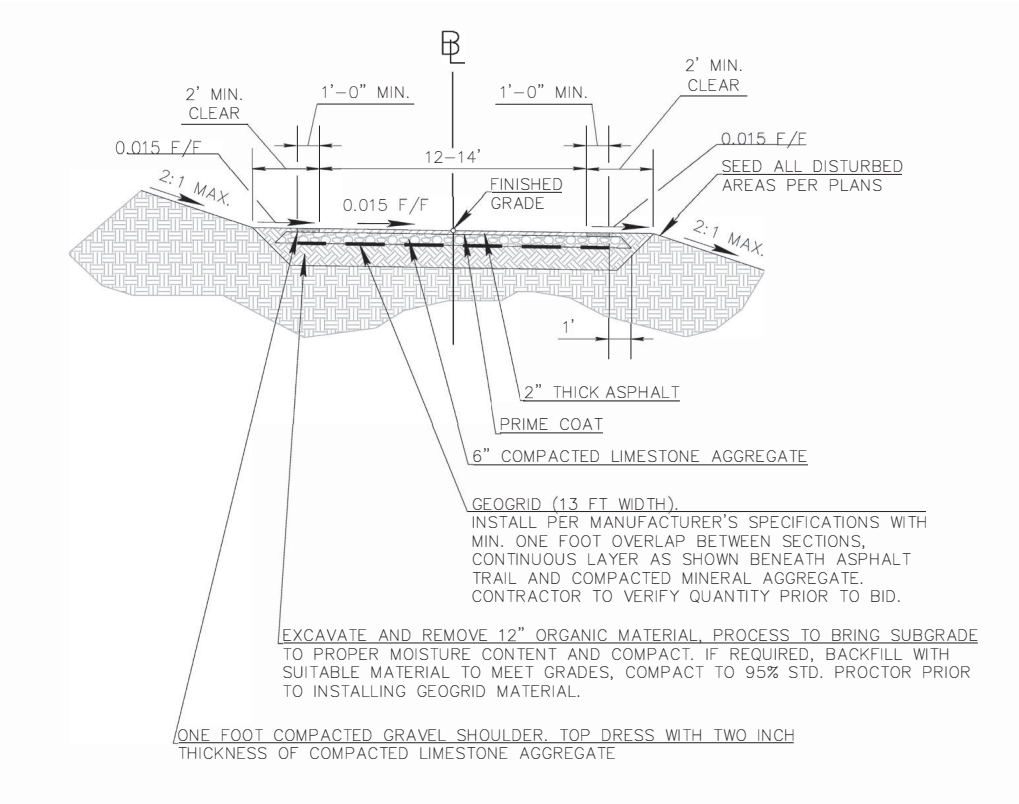
(Right) Source: West Ashley Greenway  
& Bikeway Public Art Master Plan  
© R & R Studios



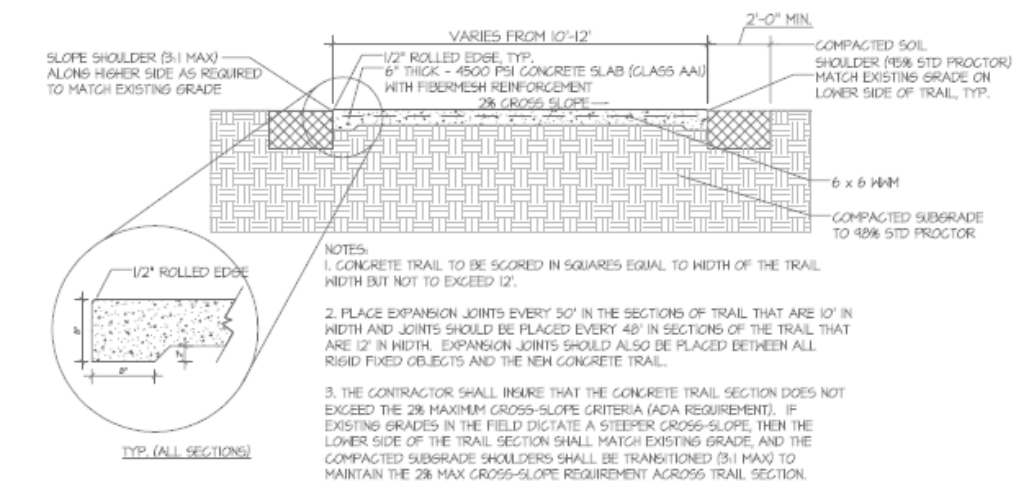
# general trail construction

## DESCRIPTION

The Greenway and Bikeway shall be paved (asphalt, save for concrete at pedestrian walks and approach aprons) multi-use trails that accommodate pedestrians, bicyclists, skates, wheelchairs and other non-motorized uses.



(Above) Typical asphalt trail detail.



(Above) Typical concrete surfacing detail for trail approach aprons and pedestrian walks.

## GUIDELINES

- A 12'-wide path (14'-wide in high volume areas) is the minimum for West Ashley Greenway trails. See Type A, left.
- A 3' minimum clear zone, 5' preferred, on either side of the path including a minimum 2' shoulder. See Type B, left.
- 8'-6" is the minimum overhead clearance (10' preferred).
- Provide a minimum of 8'-0" horizontal clearance along shoulders, where appropriate.
- The general design speed for the trail is 20 MPH, and therefore a minimum radius of 100' is preferred. Where design speeds are slower or there is limited ROW, smaller radii may be considered.
- Superelevation of 1.5% to 2% should be provided on most curves.
- Provide sawcut joints at intervals equal to width of trail (tooled to a depth of 1" with a width of 1/4").
- Where trail abuts existing buildings, use isolation joints.
- The trail layout and alignment conforms to AASHTO guidelines.
- Class 5A aggregate compacted base depth varies depending on soil conditions.
- Minimum 1.5% cross slope for drainage and construction.
- Grades and superelevations conform to ADA standards for trails.
- Provide positive drainage to prevent water build-up on trail.
- Pavement markings per City and ADA standards (see Centerline Markings, page 21)
- Trim hazardous overhanging branches and deadwood.
- A centerline pavement stripe may be required in certain situations such as high traffic areas, around tight curves or other appropriate site-specific applications (see page 21)
- For streetside trails, provide a groomed meandering buffer zone between trail and curb where feasible (10' to 50' or more wide with mowed grass).
- Where ROW is constrained, provide a minimum 5' buffer (beauty strip) between road edge/back of curb and trail per AASHTO.
- Electrical and other utility lines in or adjacent to the trail should be buried or appropriately screened.
- Promote good visibility of the trail and lines of sight.



# universal access on trails

## DESCRIPTION

The trail must meet accessibility guidelines to ensure that paths, street crossings, signals, and other facilities for pedestrian circulation and use are readily accessible to and usable by pedestrians with disabilities.

## TYPICAL APPLICATION

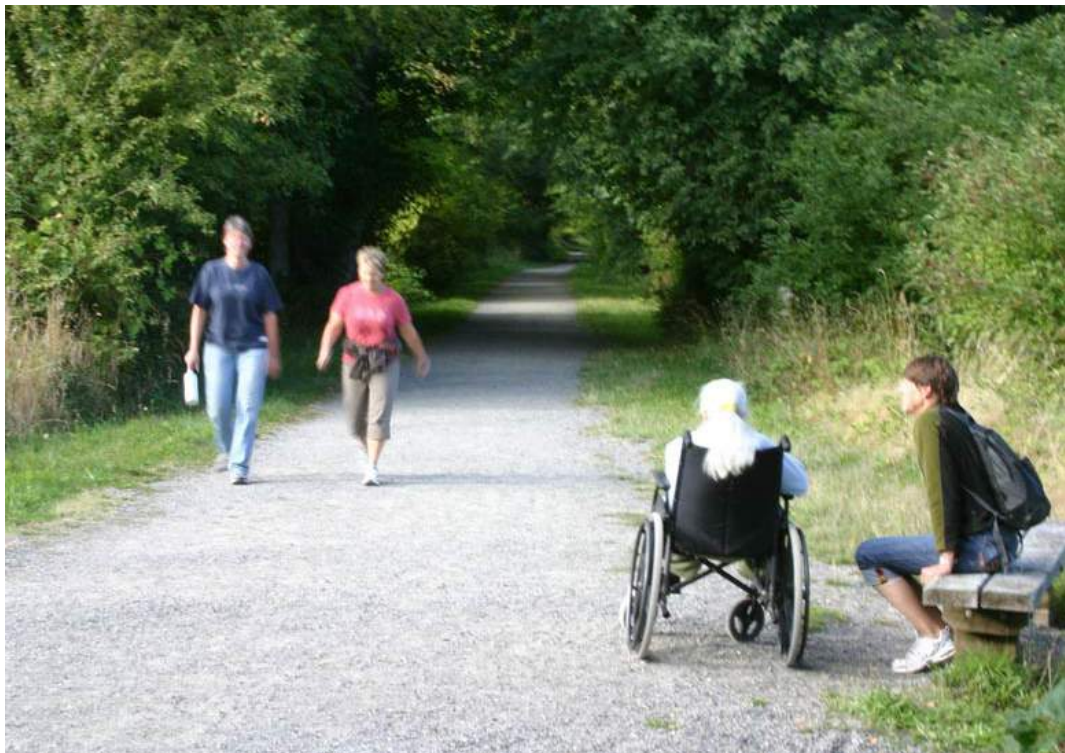
Constructing outdoor shared-use paths and trails may have limitations that make meeting ADA guidelines difficult and sometimes prohibitive. Prohibitive impacts include harm to significant cultural or natural resources; a significant change in the intended purpose of the trail; requirements of construction methods that are against federal, state, or local regulations; or terrain characteristics that prevent compliance.

## GUIDELINES

- Path surfaces must be firm, stable surfaces, and are generally limited to hard surface such as asphalt, concrete, wood, compacted gravel. Some surface materials must be periodically maintained to meet accessibility requirements.
- The path running slope must be less than 5% without use of landings. Design with a 4.5% running slope target is recommended to account for variation in construction tolerances. Where the shared use path is contained within a street or highway border, its grade shall not exceed the general grade established for the adjacent street or highway.
- The path cross slope must not exceed 2%. Design with a 1.5% cross slope target is recommended to account for variation in construction tolerances.
- Paths must provide a 5 ft (1.5 m) minimum clear width to serve as an accessible pedestrian access route. A minimum clear width is 4 ft is acceptable if passing spaces are provided every 200 ft. Most shared used paths designed for bicycle access will meet this requirement (PROWAG 2011).
- On trails designated as accessible, provide rest areas or widened areas on the trail, optimally at every 300 feet.
- The trail surface should be solid, free of obstacles and tripping hazards. Trail edge vegetation/screening, and signage should be maintained and located so as not to present obstacles for visually impaired trail users.

## FURTHER CONSIDERATIONS

- Trailhead signage should provide accessibility information, such as trail gradient/profile, distances, tread conditions, location of drinking fountains, and rest stops.
- At trailheads there should be at least one accessible parking area per every 25 vehicle spaces.
- Trail amenities, drinking fountains and pedestrian-actuated push buttons should be placed no higher than four feet off the ground.



(Above) Some gravel and crushed fine material trail types are considered to be ADA-compliant.

Source: National Trails Training Partnership



# centerline markings

## DESCRIPTION

Centerline striping can be used to delineate lanes for each direction of travel, or to indicate where it is unsafe to pass others on the trail. Under most conditions, centerline markings are not necessary. Centerline markings should only be used if necessary for clarifying user positioning or preferred operating procedure. Centerlines help communicate that in order to pass slower traffic, trail users must merge into a lane of opposing traffic. FHWA research suggests this results in more cautious passing maneuvers, but that it also depresses bicyclist level of service. Centerline markings should be used when the trail approaches intersections.

## GUIDELINES

- Solid line indicates no passing, dashed line indicates lane placement
- Trails with a high volume of bidirectional traffic should include a centerline. This can help communicate that users should expect traffic in both directions and encourage users to travel on the right and pass on the left.
- Where there is a sharp blind curve, painting a solid yellow line with directional arrows reduces the risk of head-on collisions.
- 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.

# seating walls

## DESCRIPTION

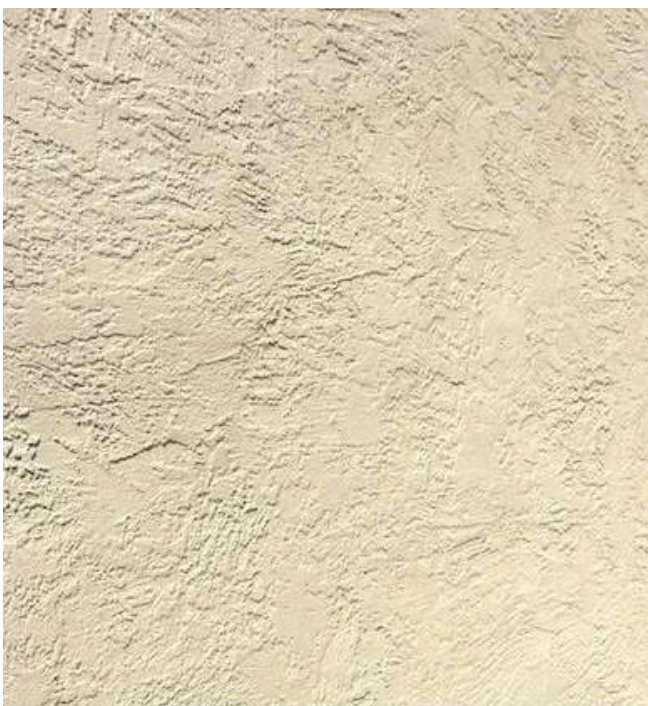
In general, any slope in excess of 3:1 grade will require stabilization or retention to control erosion. In many cases this will require a structural retaining wall. Walls may vary in height from a 6” curb to a higher wall or wall system of 5- to 12’ or more. Walls should have a veneer of brick, stucco, or coquina.

## GUIDELINES

- Where possible, it is desirable to keep wall height less than 4’. On steep, high slopes this may require “splitting” a wall with half of the height on the uphill side of the trail and half on the downhill side or “terracing” the slope with multiple shorter walls.
- Walls should be designed by a qualified professional and walls in excess of 4’ high should be reviewed and approved by a qualified engineer.
- Where feasible, stacked-natural stone walls are preferred for aesthetics.
- Where stone is not feasible, wall surfaces should be faced with a natural appearing stone façade such as brick veneer.
- Protruding and sharp edges should be avoided and where this is not feasible, such as the ends of walls, blunt ends should be marked with “hazard” demarcation panels per the Manual of Uniform Traffic Control Devices if they are within 30” of the edge of the trail.
- Seating walls can be constructed of cast-in-place concrete, anchored block system, or other appropriate material.



(Above) Brick veneer



(Above) Stucco texture



(Above) Coquina veneer



## boardwalks + bridging

### DESCRIPTION

Boardwalks and bridges are elevated structures that allow the trail to pass through or over wetlands, water bodies, unstable soils, and other sensitive areas. Depending on conditions and other trail planning considerations, they may be only a few inches off the ground or several feet or more above the surface. Though not required, low decks may have low curbs or railings as low edge restraints. However, in instances where the deck is 30" or more above the finished grade, a safety rail will be required.

### GUIDELINES

- Boardwalks have a clear unobstructed width (inside of curb or handrails) and should match or exceed the specified widths of the trails they serve. In some instances, however, there may be a transition area to allow tapering to interface the trail with the boardwalk while meeting safety standards.
- Sustainable design techniques are used to minimize adverse impacts or intrusion of the structure on the environment during both construction and use.
- Hand railing heights meet local and national code standards for the anticipated use including heights specified in the AASHTO Guide to the Development of Bicycle Facilities.
- Provide a minimum 42" high for low drops and 54" for high drop offs. Railings are designed to protect small children with appropriate minimal gaps where conditions dictate.
- Use resilient materials with low maintenance. Concrete decking and steel or cable railing is preferred. Decking may be composite material or concrete for long term maintenance and resiliency.
- Boardwalk and bridge design and materials should fit with the branding and furnishing styles of the various character segments of the West Ashley Greenway and Bikeway.



(Above) Boardwalk example.



(Above) Boardwalk example.



# handrails + guardrails

## DESCRIPTION

Handrails and guardrails are safety barriers that serve several functions depending on the situation. A “handrail”, for example, is primarily a safety device intended to protect trail users from a potential hazardous condition including keeping small children and toddlers from slipping through the railing.

A “guardrail” primarily serves to protect bicyclists, roller skaters and other higher speed wheeled users from a hazardous situation. In some instances, such as above a vegetated embankment where the threat of impact is minimal the railing may be lower in height. Where the threat of impact is substantial, such as over a highway, the rail would be higher. (Heights are determined per national published bicycle design standards.) In many cases, particularly where the drop off is more hazardous, the safety barrier serves both a handrail and guardrail function.

## GUIDELINES

- For handrails, if there is a drop-off in excess of 18” or other hazard, openings on the rail should not pass a 4” sphere (confirm with local codes).
- A guardrail should withstand a 250 lb. load with 1/2” deflection with a w=50 pound per linear foot transverse and vertical load capacity.
- Rails should not present sharp or protruding edges and ends should be flanged and marked with MUTCD-specified hazard panels to reduce the chance of injury from collision.
- Handrails should conform to local and national building codes.
- Guardrails and guardrail/handrail combinations should conform to the specified minimum heights per the AASHTO Guide to The Development of Bicycle Facilities and other local and state standards—ranging from 42” to 54” depending on the situation.
- Where bicycle traffic will be present, an off-set “rub rail” should be provided to prevent entanglement of bicycles with the railing structure. Rub-rail is optional on overlooks, or pull-offs out of main stream of bike traffic.
- There should be a minimum clear-zone (typically 10’) between the insides of the railings when rail is on both sides of the trail.
- Structures should be durable and affordable to build and maintain, such as weathered steel or powder coated steel.
- Aesthetic designs should conform to overall branding standards including consistent selection of materials and colors per each branded segment.



(Above) Cable railing with timber posts and handrail.



(Above) Coated metal railing.



trail + roadway intersections

DESCRIPTION

The specific type of treatment for West Ashley Greenway and Bikeway trail crossings may range from a simple marked crosswalk to full traffic signal or grade separated crossing. At unsignalized and RRFB street crossings, all street traffic will stop for trail users.

The table below presents a high-level assessment of potential crossing treatment options for a variety of contexts. Enhanced treatments require additional site by site analysis and should be implemented based upon a safety engineering evaluation, and identified community need. The evaluation should consider the number of lanes, the presence or lack of a median, the distance from adjacent signalized intersections, the pedestrian volumes and delays, the average daily traffic (ADT), the posted or statutory speed limit or 85th-percentile speed, the geometry of the location, the possible consolidation of multiple crossing points, the availability of street lighting, and other appropriate factors.

MARKED CROSSWALK GUIDELINES

- High visibility “ladder” style crosswalk markings
- A Bicycle/Pedestrian warning sign (W11-15) with downward arrow plaque (W16-7P) at the crossing, on both sides. Bicycle and Pedestrian figures on the sign should always face toward the crosswalk.
- A Bicycle/Pedestrian warning sign (W11-15) with “ahead” plaque (W16-9) before the crossing.

PEDESTRIAN CROSSING CONTEXTUAL GUIDANCE At unsignalized locations	Local Streets 15-25 mph		Collector Streets 25-30 mph			Arterial Streets 30-45 mph							
	FACILITY TYPE		2 lane with median refuge			2 lane with median refuge			4 lane with median refuge		5 lane		6 lane with median refuge
	2 lane	3 lane	2 lane	3 lane	3 lane	2 lane	3 lane	3 lane	4 lane	5 lane	6 lane	6 lane	6 lane
Crosswalk (with warning signage and stop signs)	EJ	✓	✓	✓	✓	EJ	EJ	EJ	X	X	X	X	X
Active Warning Beacon (RRFB)	X	EJ	✓	✓	✓	✓	✓	✓	X	✓	X	X	X
Hybrid Beacon	X	X	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓	✓	✓
Full Traffic Signal	X	X	EJ	EJ	EJ	EJ	EJ	EJ	✓	✓	✓	✓	✓
Grade separation	X	X	EJ	EJ	EJ	X	EJ	EJ	EJ	EJ	EJ	✓	✓

MARKED CROSSWALK



RAISED CROSSWALK



LEGEND	
Most Desirable	✓
Engineering Judgement	EJ
Not Recommended	X

RAISED CROSSWALK GUIDELINES

- Crosswalks should be raised at all unsignalized crossings.
- Use detectable warnings at the curb edges to alert vision-impaired pedestrians that they are entering the roadway.
- Approaches to the raised crosswalk may be designed to be similar to speed humps.
- Raised crosswalks can also be used as a traffic calming treatment.



# RECTANGULAR RAPID FLASHING BEACON (RRFB) GUIDELINES

- RRFBs shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic control signals.
- RRFBs shall initiate operation based on user actuation and shall cease operation at a predetermined time after the user actuation or, with passive detection, after the user clears the crosswalk.
- Secondary installations of RRFBs on median islands can improve conspicuity and driver yielding behavior.



# PEDESTRIAN HYBRID BEACON GUIDELINES

- Pedestrian Hybrid Beacon Crossings with a R10-23 or R10-23a should be paired with a Marked Crosswalk and Advance Stop Bar crossing treatment package.
- A stop line and STOP HERE ON RED sign (R10-6) should be used.
- Push buttons should be easy to identify and located on the right-hand side of the path. They should be positioned so that bicyclists do not have to dismount to activate.
- Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk to provide adequate sight distance.



(Left) Rest area example.  
Source: Razorback Greenway, Bentonville, AR.

## rest areas + overlooks

### DESCRIPTION

Rest areas and overlooks afford places to stop, rest, eat a snack, have a drink, take refuge from the sun or enjoy a view. These spots may also offer interpretive, cultural and wayfinding information as well as public art. Several kinds of rest areas could be provided including rest pads, larger rest areas, overlooks, and trail pavilions. A larger rest area might include two or more benches and possibly a drinking fountain with a toilet facility nearby. A pavilion rest area might include a shelter and picnic table(s). An overlook is a special kind of rest area tied to a view of special interest. An overlook might include interpretive signage describing the area being viewed.

### GUIDELINES

- All rest areas and overlooks should be designed to move users and their bicycles off the main trail to eliminate any possible traffic hazard.
- Rest areas and overlooks should be located in attractive, quiet, secure-feeling settings away from traffic noise and not close to private residences.
- Rest areas and overlooks should be accessible per the ADA and should offer shade with either trees or a sun shelter.
- Rest areas, at least rest pads, should be located every 1/4 to 1/2 mile depending on grade.
- Larger rest areas or overlooks should generally be located every one to two miles and should include a crushed stone or concrete pad with benches, a bike rack, informational signage, trash receptacle and drinking fountain.
- Larger rest areas and overlooks, especially those with trash receptacles should be readily accessible by maintenance vehicles.
- Consider storm shelters, sunshade structures and picnic shelters appropriately grounded for lightning.



# erosion control + slope protection

## DESCRIPTION

In a number of instances, steep slopes, stream banks, construction cuts, and other areas subject to erosion will require erosion control and stabilization improvements. In instances where retaining walls are not needed, other forms of erosion control and slope protection will be required.

## GUIDELINES

- Typically erosion control should be considered where grades exceed 3:1 unless well stabilized by vegetation .
- Consider incorporating raingardens and bioretention areas along trail to handle storm runoff from paved sections, especially in areas with steeper slopes to prevent erosion from runoff.
- Where feasible, use natural or natural-appearing stabilization that promotes the re-growth of vegetative cover such as woven plant fiber matting.
- If rock rip rap is used for stabilization provide an adequate buried toe along river and stream banks and bury rock with soil that is stabilized and

revegetated to conceal rock and promote a more natural slope.

- Along river and stream banks and other embankments terrace slopes to create a natural appearance and establish a healthy riparian edge with reforestation.
- Wherever feasible restore disturbed slopes with appropriate indigenous vegetation.
- Local and state guidelines prevail for all erosion and sediment control in South Carolina. Refer to the South Carolina Soil and Water Conservation Commission’s manual.

# shade structures

## DESCRIPTION

Whether it be protection from the rain or a place to rest during a sunny day, shade structures and shelters create comfort and protection for all trail users. Shade structures should be sensitive to context and designed to integrate with intended function of the site and trail user needs. All structures will require approval from City staff and should include little to no maintenance.

## GUIDELINES

- The orientation of structures should be considered to provide maximum protection from elements.
- Can be placed in any setting (grass, concrete, asphalt, etc) with considerations for ADA access to and into the structure.
- Plants may be incorporated into the design of the structures especially where they can provide additional user benefits (vines or greenwall for cooling effect). Plant material should be context sensitive and low maintenance.
- Structures should not impede bicycle and/ or pedestrian movement and shall be located adjacent to the trail (not within the travelway).
- Structures should not block viewsheds of historic, natural, or cultural elements.
- Structures should incorporate other amenities, especially benches and picnic tables.
- Colors should fit into a natural setting and not be bright oranges, pinks, blues, etc.
- Provide shade structures, particularly where mature trees are not available to provide shade.
- Appropriate shade tolerant grasses should be used under shade structures when grass is desired underneath.



(Above) Shade sails provide flexibility and numerous color options.



# restrooms + drinking water fountains

## DESCRIPTION

Careful consideration should be given to a number of factors before locating restrooms for the West Ashley trails including available land, size of gateway or trailhead, frequency of use, existing restroom facilities within the trail system, utility availability, and user need. Public restrooms require considerable maintenance and service. Access to these resources should be a strong consideration when planning for restroom buildings.

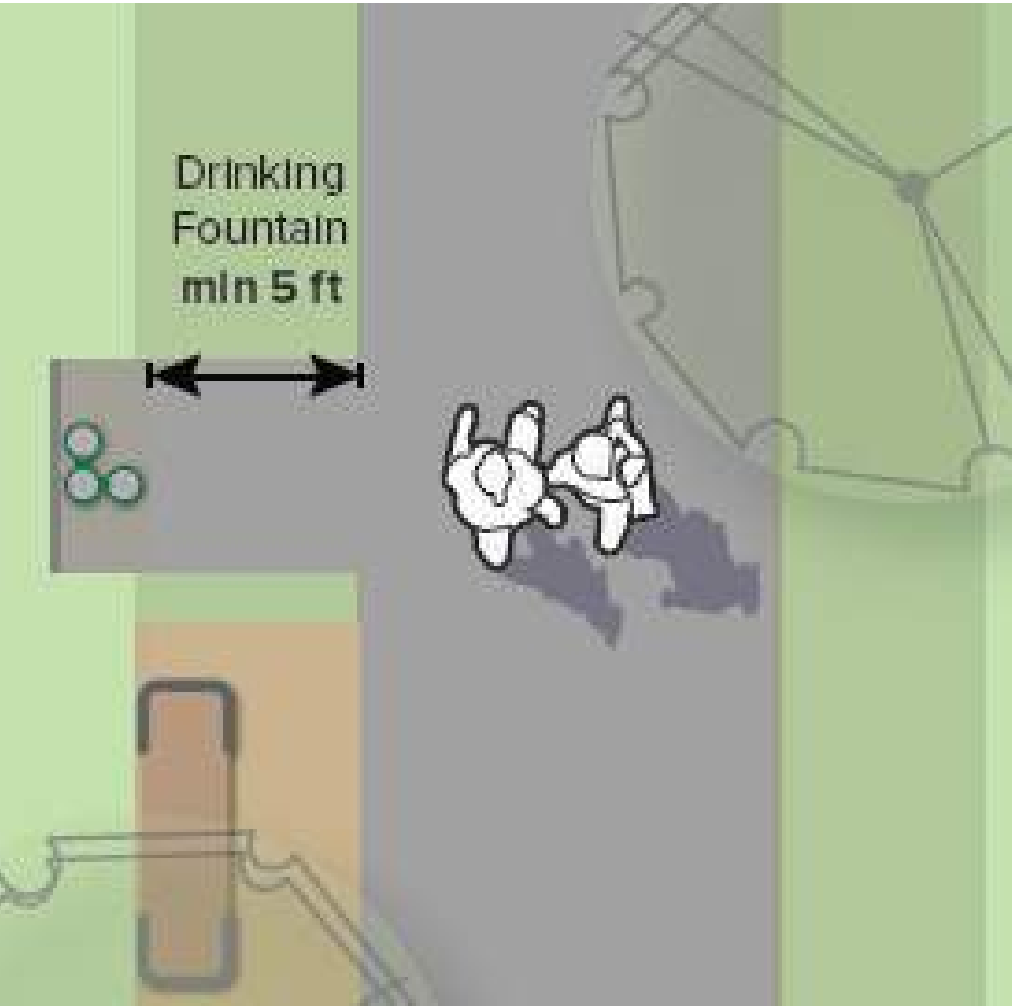
Access to drinking water is crucial to safety and trail enjoyment for multiple user types. Sources of potable water should be identified along the trail alignment with spacing of five miles or less. If access points are more than five miles apart, signs should be placed at potable water access points to indicate distance to the next source.

## GUIDELINES

- Restrooms should be located at all major access points and recreational areas.
- Spacing between restrooms should not exceed 5 miles.
- Restrooms should be housed in architecturally appropriate facilities and property screened and buffered from adjacent private properties.
- Drinking water should be available at all major trailheads/access points. A commercially manufactured water fountain product is recommended and should have a spigot for filling water bottles and pet drinking bowls.
- Directional signage should be provided indicating the location and directions to convenience stores and other commercial “way-stations” where food and drinks may be purchased.
- All facilities should be accessible per the ADA.



(Above) Fountain example.



(Above) Typical detail.



(Above) Restroom example.



# vegetation management + trail edge grooming

## DESCRIPTION

There are several areas of landscape management to promote both an ecologically and user-friendly greenway and trail system. For the West Ashley Greenway, these include areas such as river edge and wetlands; multi-use trail edge/shoulder; “streetside parkways”; parks and feature areas; and managed “natural” areas.

**1 || Multi-Use Trail Edge** — the zone immediately adjacent to and above paved multi-use pathways. Vegetation management refers to trimming the shoulder and beyond to assure a safe, usable trail. It also includes maintaining (trimming and/or mowing) an under-story “clear zone” back into the adjacent vegetation to promote lines of sight for safety and security and a more groomed appearance of the trail corridor. This edge should appear natural and should undulate and can vary in some areas from 5’ to 20’ back into the adjacent forest or meadow.

**2 || Streetside Parkways** — Greenway sections visible from nearby streets with a more parklike open landscape setting. These reaches may vary from 50’ to 200 feet wide and are intended to create a more formal park feel. There may be mowed turf grass or other managed landscape including tree groupings with cleared understory.

**3 || Parks and Feature Areas** — more formal areas of the trail that incorporate parks and other attractions along the corridor. Typically these are turf grass areas, plazas or other more formal areas maintained by Parks and Recreation.

**4 || Managed “Natural” Areas** — are designated areas with scenic enhancement or interpretation. An example of this might be a meadow planted in wildflowers or a variety of ornamental grasses.

## GUIDELINES

- Regularly monitor activities and conditions in natural areas including proposed public works projects such as stream channel and utility work.
- Groom larger trees in the buffer zones to 8’-10’ above ground.
- Plant and groom low to medium height grasses and wildflowers on opposite side of trail from roadway in a meandering swath 10’ to 50’ in width.
- Thin understory and groom trees along opposite side of trail from roadway in a 10’ to 50’ meandering swath.
- Regularly monitor tree growth around the trail and remove potentially hazardous overhanging branches and deadwood.
- Regularly monitor for invasive and pest species and eradicate using environmental sustainable methods.
- Use native species in all landscapes.
- Consider including the removal of exotic and invasive species along the trail system.
- Promote a natural look in grooming and mowing with undulating edges that follow the landscape rather than straight lines or shapes that don’t match the local terrain. This might include “articulated” mowing of trail edges to create attractive curves and sweeps.
- Where appropriate, provide and maintain vegetated buffer zones between activity areas and sensitive landscapes such as wetlands.
- Pruning and tree care should follow ANSI A300 Tree Care Guidelines.



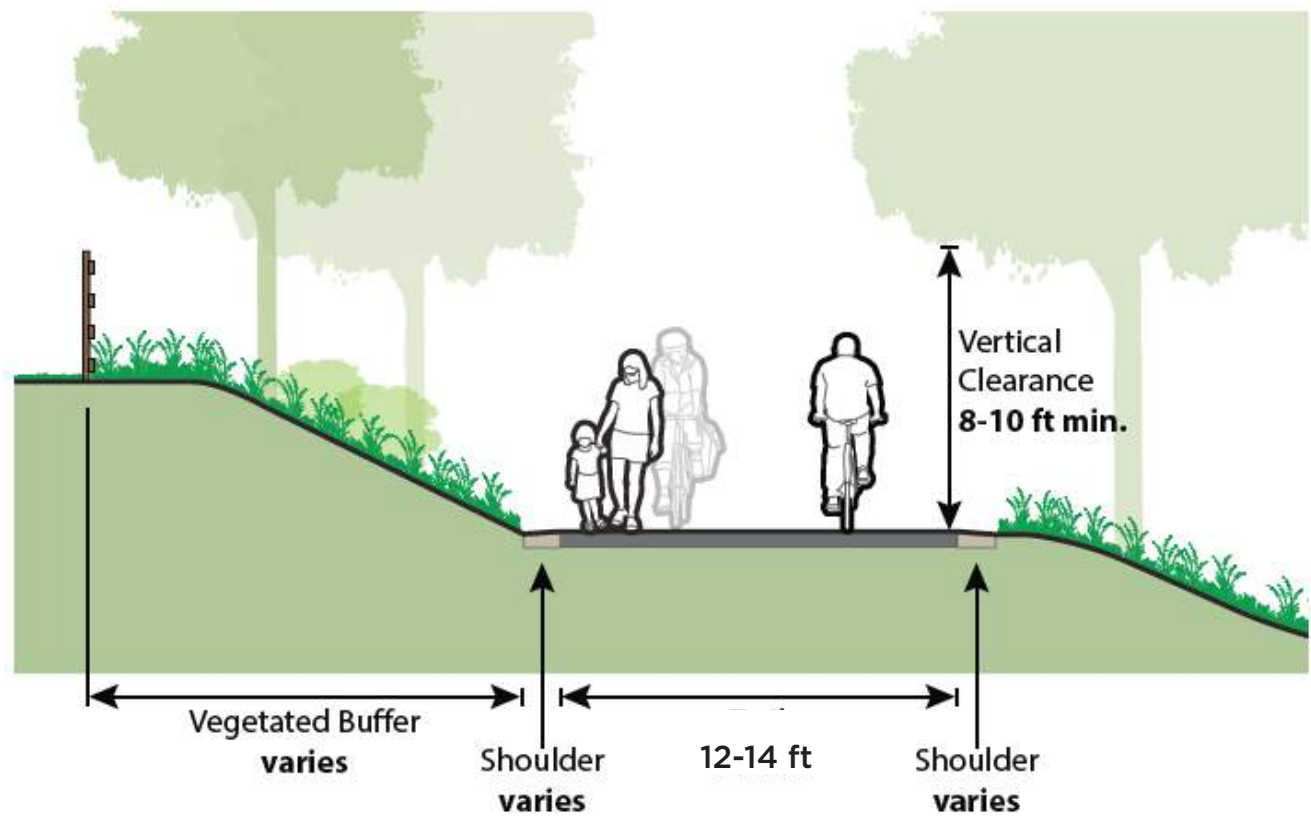
# landscape + vegetation screening/fencing\*

## DESCRIPTION

In some instances screening is desired either to conceal visually unattractive objects (such as overhead power lines) from trails or to screen from adjacent land uses such as residences in the interest of privacy. This may be accomplished with plantings, screen fences or other delineators such as a rail-type fence to create a sense of delineation.

## SCREENING GUIDELINES

- All groundcover should be trimmed to a maximum of 24” above ground level height.
- Where vegetative screens are recommended to provide privacy for private properties, they are not to exceed 4’ in height.
- Consider Crime Prevention Through Environmental Design (CPTED) principles when providing screening along trails.
- Trees should be trimmed to provide a minimum of 8 ft (2.4 m) of vertical overhead clearance, 10 ft (3.0 m) preferred (AASHTO Bike Guide).
- Tree canopies should not obstruct pathway illumination.
- Select and place trail vegetation to provide seasonal comfort; shade in the warmer months and sunlight in colder months.



(Above) Typical detail with vegetative screening.

## FENCING GUIDELINES

- Minimize use of fencing, height and type of fencing (i.e. simple post and wire to protect an area where security or privacy is not a major concern). A 48” height is preferred to 72” unless higher required by security or safety concerns.
- Avoid opaque fencing to permit visibility.
- Attempt to conceal fencing behind vegetation where feasible.
- When securing private property include placards that state: “Private Property: Please Respect Owner’s Privacy”
- As much as possible fencing should blend with the natural trail environment.
- Where appropriate affix “Do Not Trespass”, or “Sensitive Wildlife Area” or other appropriate regulatory or informational signage to fences.



(Above) Native plants should be used as much as possible for proposed landscape screening along West Ashley trails.



# seating\*

## DESCRIPTION

Seating along trails provides a place for trail users to rest, congregate, contemplate, or people-watch along trails and throughout the trail system. Benches can be designed to create identity in a place or along the trail or be strictly utilitarian. Picnic tables provide places for trail users to congregate for meals or to just and relax.

## GUIDELINES

- Locate benches at all gateways, trailheads, picnic areas and at regular intervals along the trail.
- Locate all seating (and other site furniture) a minimum of 3' from the edge of the trail.
- Locate benches a minimum of 4' from restrooms, phone booths and drinking fountains and a minimum of 2' from trash receptacles, light poles and sign posts.
- Seating should be placed in shaded area, especially where there is minimal shade available.
- Drainage should slope away from the bench and the trail.



(Above) Typical detail.

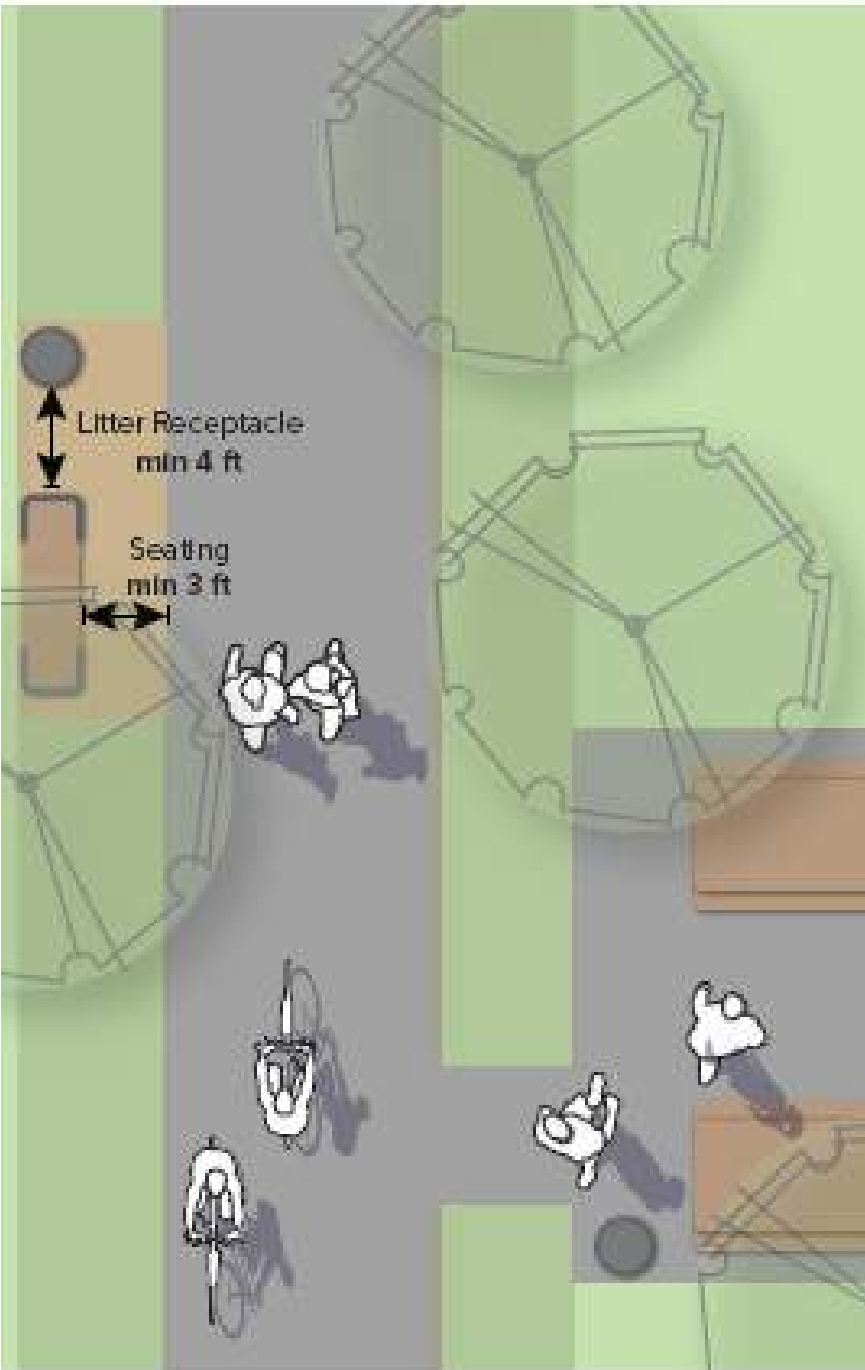
# trash receptacles\*

## DESCRIPTION

Trash and recycle receptacles provide for proper maintenance and appearance of the trail system. Trash and recycle receptacles should be placed at gateways, rest stops or comfort stations, concession facilities, or area where users might stop to drink and eat.

## GUIDELINES

- Locate receptacles at each trailhead and each seating area (1 per every 1 picnic table, 1 per every 2 benches).
- Placement of other receptacles will depend upon the location of concessions, facilities and areas of group activities.
- Receptacles should be selected using the following criteria:
  - Expected trash amount
  - Maintenance program requirements
  - Types of trail users
  - Durability



(Above) Typical detail.

**\*note:** Recommended designs + applicable locations of these elements are detailed in the Street Furnishings section of this chapter (see page 34).



# lighting\*

## DESCRIPTION

Lighting for trails should be analyzed per segment context with full consideration for safety needs, sensitive habitats, trail function, and maintenance commitments. In general, lighting is not appropriate for trails in remote areas, trails with low use, or where there is little to no development.

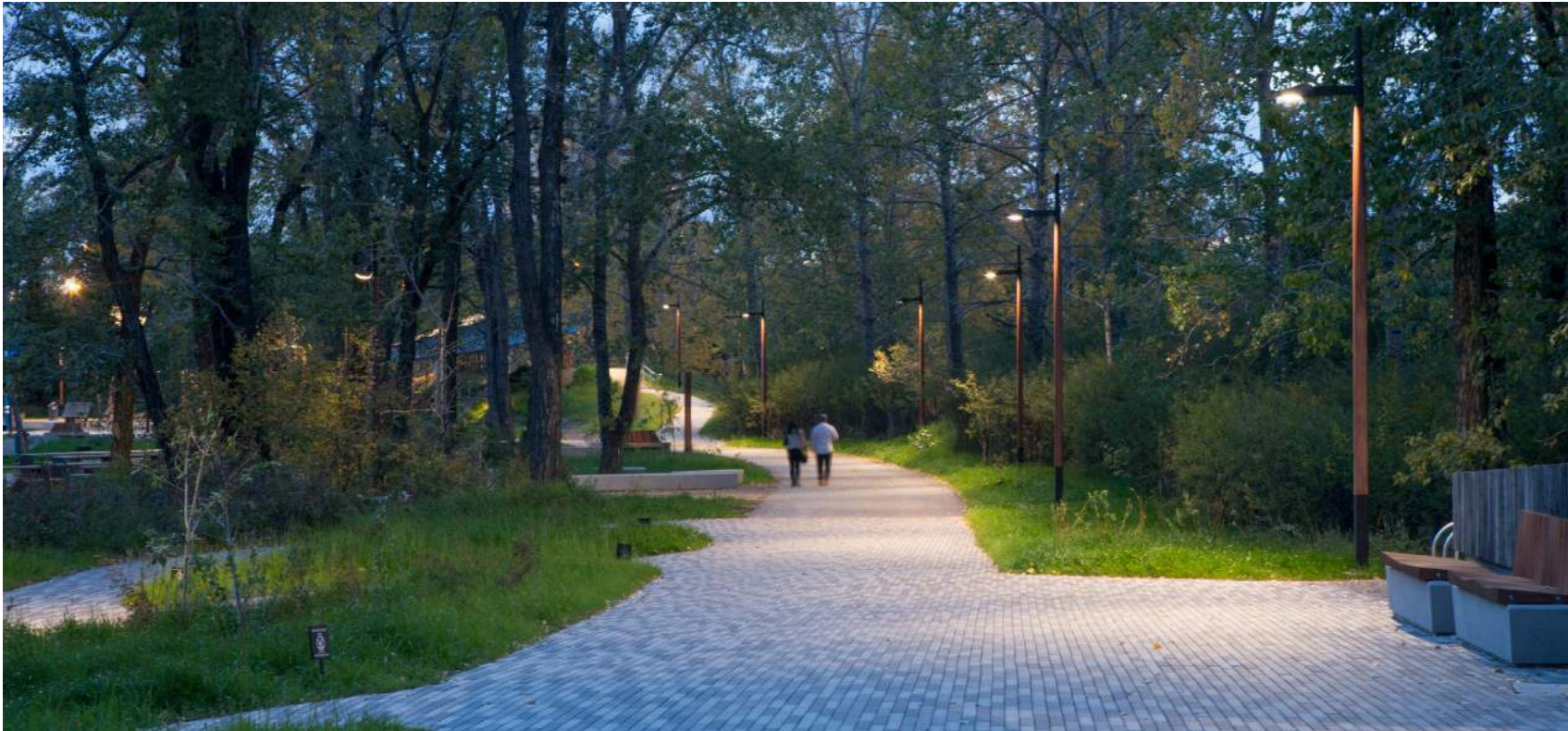
Street lighting can improve visibility of the crossing and trail users for motorists. Lighting may also be necessary for daytime use in trail tunnels and underpasses.

## GUIDELINES

- Lighting should be at pedestrian scale. Placement, spacing, and other finish specifications depends on the fixture and optics.
- Place lighting at decision points and areas of interest, such as street crossings, intersections with other trails, trail spurs, and near commercial and mixed-use developments.
- Consider CPTED principles whenever lighting is introduced, such as color rendering, dimly lit “hiding places” and abstracted illumination.
- Lighting should avoid trees and be placed outside of canopy edge where possible.
- Solar powered lighting is available where utility connection is difficult or when alternative energy sources are desired. Daylight hours should be analyzed per season prior to specifying solar lighting.

- Avoid light fixtures at eye level that could impair visibility.
- Dependent upon trail hours, consider uses in urban and/or commercial land use areas.
- All fixtures should be LED 2700K color temperature when possible.
- The location and type of fixture should always be reviewed and approved by the Charleston Department of Parks prior to implementation.

**\*note:** Recommended designs + applicable locations of these elements are detailed in the Street Furnishings section of this chapter (see page 34).



(Above) Examples of trail lighting.  
Source: <https://structura.com/galleries/>



# wayfinding signage

## DESCRIPTION

Developing a consistent regional wayfinding experience through adherence to best practices will improve the user experience along the West Ashley Greenway and Bikeway and facilitate more regional trips by foot or bike. Bicycle wayfinding signage provides information on direction and distance to key regional destinations and other routes. This plan provides guidelines for West Ashley to develop their own wayfinding, including sign design and placement.

A coordinated, well-designed signage system improves the coherency of a greenway network. It also provides a greater sense of security and comfort for users by confirming that riders are on the

correct route and are aware of how far they will have to travel to reach their destination. On-street bicycle wayfinding signs also provide visual cues to motorists that people on bikes may be present and should drive with caution.

Signage should provide a sense of identity and utility for the trail network. The signage program should adhere to a consistent, selective, and strategic manner so as not to clutter or dominate the visual character of the trails. The signs should also be easily reproducible, since the implementation and construction could take place over many years.

## GOALS

The following goals were developed to guide the design of the West Ashley Greenway and Bikeway wayfinding system, to ensure that the proposed design suits the needs of the corridor, and its users.

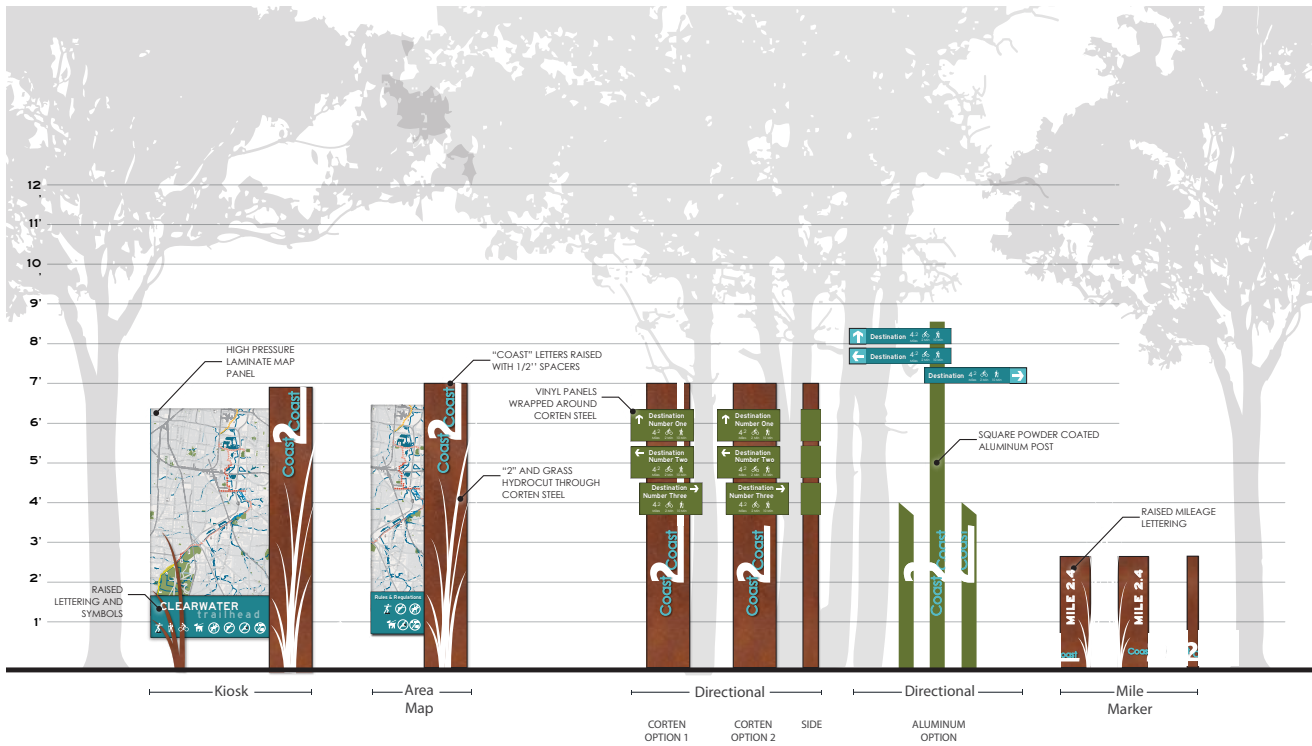
- Enhance awareness for users that they are along a larger trail network.
- Improve wayfinding throughout the sub-areas.
- Improve connections to trail networks from adjacent neighborhoods/communities, improve connections from the trail network to nearby amenities, cultural destinations or recreational destinations.
- Enhance education opportunities about local history, amenities, culture and ecology.

## DESTINATION/DIRECTIONAL SIGN GUIDANCE

The ability to navigate through a community is informed by landmarks, natural features, and other visual cues. Wayfinding signs indicate the direction of travel and the location of destinations and access points along the way. These signs increase users' comfort and accessibility to the trail network. Signs should typically be placed at key locations leading to and along routes, including the intersection of multiple routes. Wayfinding signage should use existing signage standards as a base for an expanded family of signs.

Directional signs serve many purposes, including:

- Helping to familiarize users with the trail system.
- Helping users and emergency responders identify locations, in case of emergency on the trails.
- Helping users identify the best routes to destinations.
- Helping overcome a “barrier to entry” for people who do not use the trail system.
- Helps users find access points to the trail system.



(Above) Example of a greenway wayfinding signage package.



## REGULATORY SIGN GUIDANCE

Regulatory signs give a direction that must be obeyed, and apply to intersection control, speed, vehicle movement and parking. The examples below are types of regulatory signage.

- Smaller scale signs or plaques may be used for trail applications.
- See the MUTCD 9B for a detailed list of regulatory sign application and guidance.



R1-1



R1-2



R9-7



R5-3

(Above) Examples of regulatory signage.

## INFORMATIONAL KIOSK GUIDANCE

Kiosks and message centers provide trails users with information to orient themselves, learn of areas of interest, read the rules and regulations of the trail system, and find the hours of operation. Along the entire trail rules, regulations, and ADAAG accessibility advisories should be included on each kiosk.



(Above) Kiosk at Walnut Creek Trail.

- Install kiosks at each major and minor trailhead.
- When locating kiosks next to parking facilities, set the units back far enough from traffic and protect the support posts or structure with appropriately sized barriers.
- Provide ADA access using established guidelines for visual height, clearance, and surface type where kiosks are located.
- Evaluate the use of emerging technology options for implementation of greenway information and messages as part of the signage program (LED displays, mobile friendly links and maps, etc.).

## INTERPRETIVE SIGN GUIDANCE

Interpretive displays provide trail users with information about the surrounding environment or site, wildlife, vegetation, history and the significance of cultural elements. Interpretive displays may also be combined with public art and sculpture opportunities along the trail.

- Consider the character of the trail and surrounding elements when designing these signs.
- Work with experts specific to the information you are conveying on the signs such as historians, ecologists, or artists.
- Separate interpretive signage panels from the main trail circulation so that users can stop and not impede traffic.
- Consider including interpretive signage at rest stops or areas of congregation.
- Panels must be ADA accessible.
- Consider use of technology for interpretation. (i.e. website links, mobile apps, or podcasts)

## ETIQUETTE SIGN GUIDANCE

Informing trail users of acceptable etiquette is a common issue when multiple user types are anticipated. Yielding the right-of-way is a courtesy and yet a necessary part of a safe trail experience. The message must be clear and easy to understand. The most common trail etiquette systems involve yielding of bicyclists to pedestrians.

- Trail etiquette information should be posted at access points and periodically along the trail.



(Above) Example of etiquette signage.



site furnishings

DESCRIPTION

Much like a landscaping palette, repetition of standard site furnishings will unify the aesthetic experience of all of the segments within the West Ashley Greenway and Bikeway. Limiting variety in bench, trash receptacle, lighting, and other design element selection is recommended.

Elements shown on the following pages were chosen based on feedback from the public and stakeholders. Alternatives to the standard proposed furniture should be reviewed and approved by the City of Charleston to ensure design consistency.

The following is a table of possible locations for design elements along the Bikeway and Greenway. Numbers correspond to a branded segment of the trail, listed by name below. Full descriptions for each segment can be found in the Trail Segment section of this chapter (see page 38).

- KEY

01

Windermere Trail

02

The Azalea Mile

03

Wappoo Trail

04

The Maryville Bikeway

05

The Autumn Mile

06

The Pier

07

The Quiet Center

08

East Forest Tunnel

09

The Farm

10

West Forest Tunnel

11

The Marshland Causeway

12

The Piney Woods

13

Palmetto Allee

type		manufacturer	01	02	03	04	05	06	07	08	09	10	11	12	13
BENCHES															
Classical	J+M Foundry, Inc.		●	●	●		●	●							
Artistic	Landscape Forms Lakeside Bench					●			●	●	●	●	●	●	●
BIKE RACKS															
Modern 1	Landscape Forms Loop Bike Rack					●			●	●	●	●	●	●	●
Modern 2	Columbia Cascade Cycloops Arch Bike Rack		●	●	●		●	●							
FENCING/SCREENING															
Wood	Locally sourced + fabricated to match existing								●	●	●	●	●	●	●
Vegetative	N/A		●	●	●	●	●	●							
LIGHTING															
Bollards	Hydrel 3100C LED Louvered Bollard (or similar)		●	●	●	●	●	●	●	●				●	
Modern Lightpost	Landscape Forms Rama Area Light (1 or 2 luminaire, pedestrian height with cutoffs)								●		●			●	●
Traditional	SCE&G LED Octagonal/Round lightpost		●	●	●	●	●	●							
TRASH RECEPTACLES															
Classical	Victor Stanley SD 242 Recycling Can		●	●	●		●	●							
Artistic	Landscape Forms Lakeside Trash Receptacle					●			●	●	●	●	●	●	●





From left to right:

#### TOP ROW

- J+M Foundry Classica Charleston Bench
- Victor Stanley SD 242 litter receptacle with recycle
- Vegetative screening

#### MIDDLE ROW

- Locally-sourced wood fencing fabricated to match existing
- Landscape Forms Rama Area Light (1 or 2 luminaire)
- Landscape Forms Lakeside Bench
- SCE&G Octagonal/Round Light post

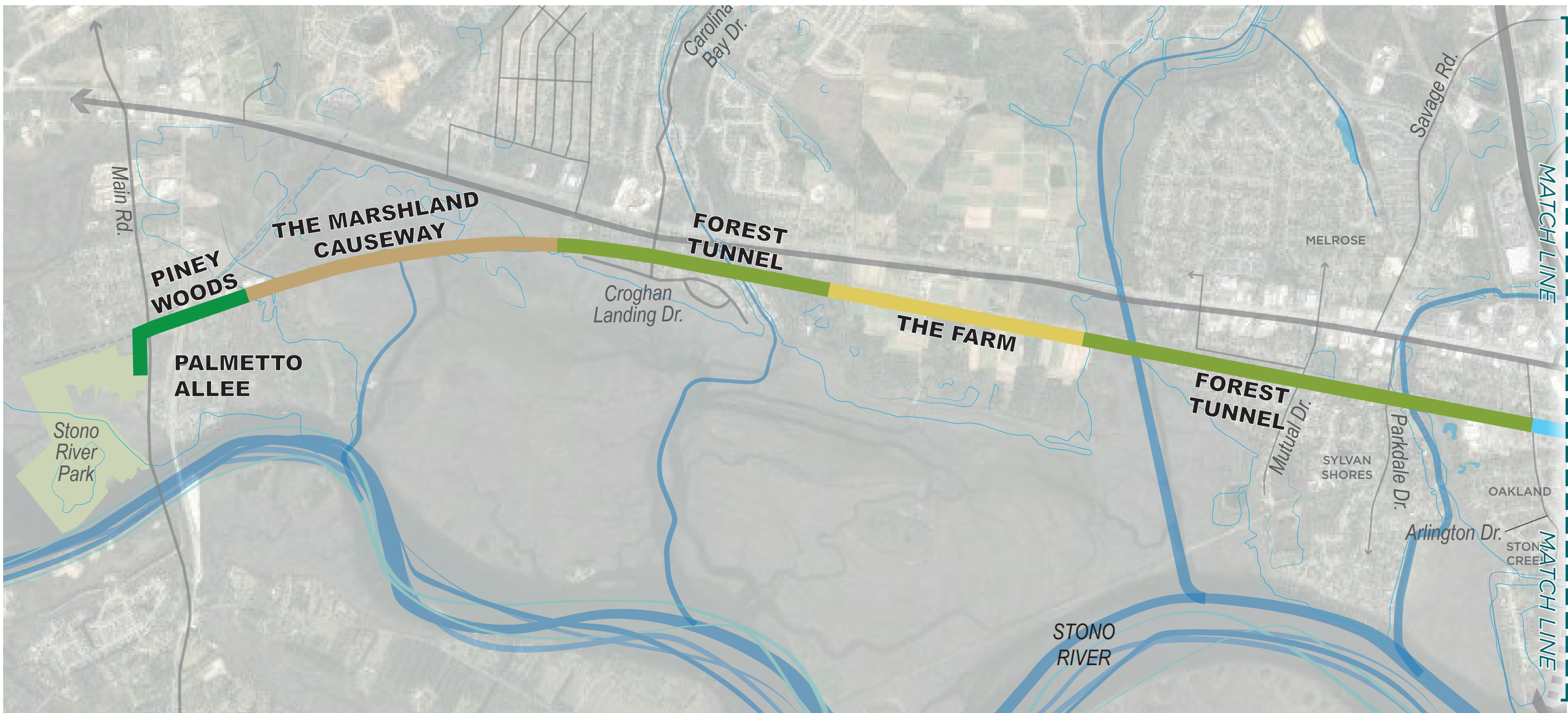
#### BOTTOM ROW

- Landscape Forms Lakeside Trash Receptacle
- Columbia Cascade Cycloops Arch Bike Rack
- Hydrel 3100C Louvered Bollard (or similar)
- Landscape Forms Loop Bike Rack





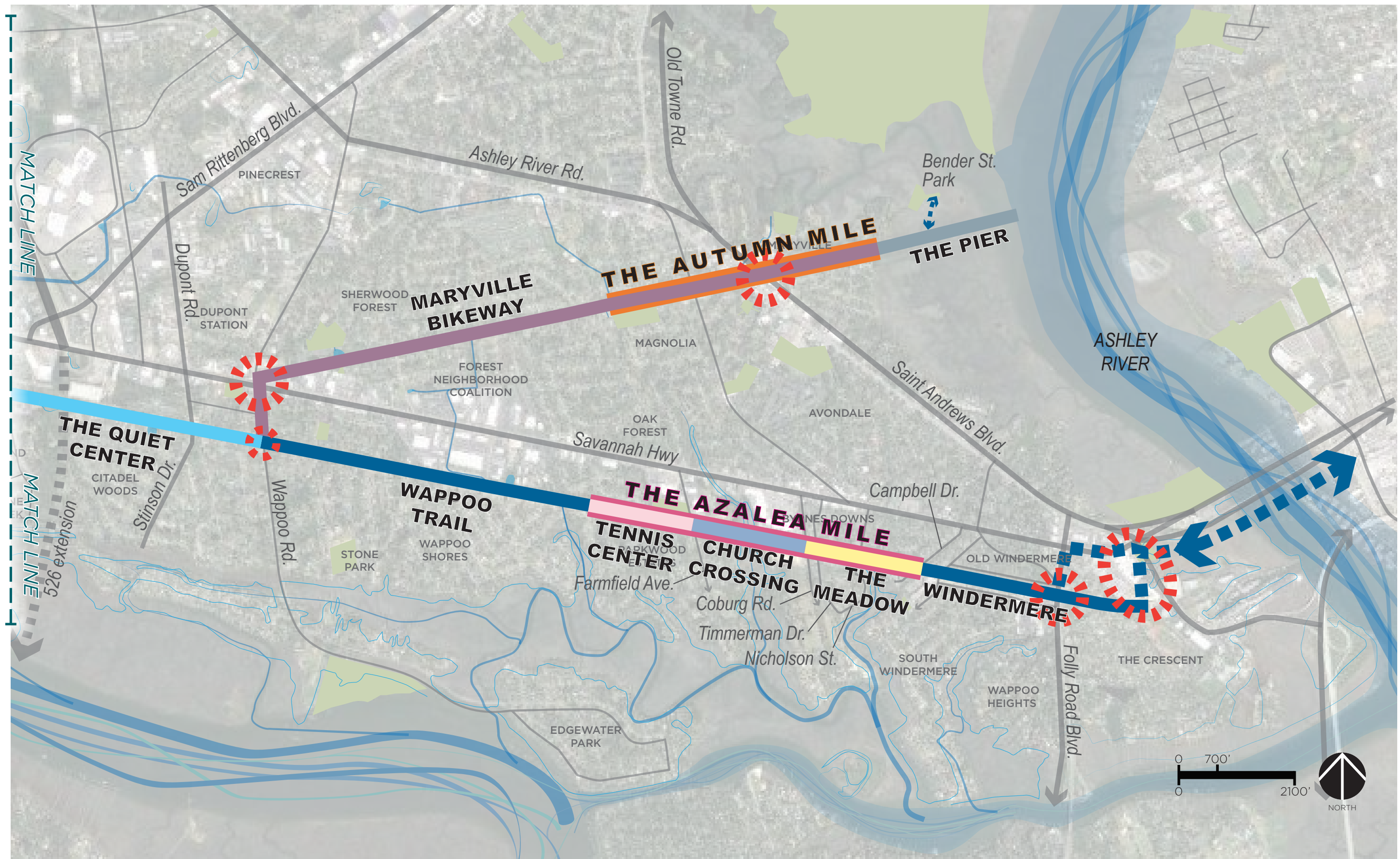
# OVERALL PLAN DIAGRAM



The final Master Plan is keyed to the various character segments identified and named during the charrette. There are 13 segments, from east to west: Windermere Trail, The Azalea Mile, Wappoo Trail, The Maryville Bikeway, The Autumn Mile, The Pier, The Quiet Center, East Forest Tunnel, The Farm, West Forest Tunnel, The Marshland Causeway, The Piney Woods, and Palmetto Allee. **Segment names are contextual, derived from the environmental setting and surrounding landmarks** around that portion of trail.

**Naming each sub-area for its distinctive attributes focuses on sense of place at the forefront of developing a brand for the Greenway and Bikeway.** Trail users can use segment names to meet up with friends or locate destinations along the alignment. Establishing each segment with its own identity will make the Greenway and Bikeway feel like a series of linear parks and authentic experiences, linked by the trail as the common thread that guides the user from one to the next. The **long-term vision** for each branded segment as well as specific initiatives contained within each are detailed in the following pages.









## overview

The Windermere Trail section of the West Ashley Greenway begins at the Ashley River Bridge on the east end and runs to its west extent at the Campbell Drive crossing. This portion of the trail includes the Saint Andrews School of Math + Science, the South Windermere Shopping Center and the Folly Road/Wesley Drive major street crossing. There is also a developer-built section of 10' wide concrete trail that connects to the future Point Park around an apartment development on Albemarle Road and Folly Road. This section of trail should be **widened to a 14' wide asphalt trail** with a **6' wide concrete or paver sidewalk** immediately next to the trail. The widening of the trail can follow the future sewer tunnel project (10-15 years away) that will likely cause massive disruption of the existing trail right-of-way.

The South Windermere shopping center is an excellent opportunity to add commercial frontage facing toward the greenway (see below). **Trail-oriented development** has occurred in similar conditions and proven to be successful on the Razorback Greenway in Arkansas, as well as on the West Orange Trail in Oakland Park and Winter Garden, Florida.

(Right) Trail-oriented development in Fayetteville, AR and Winter Garden, FL.

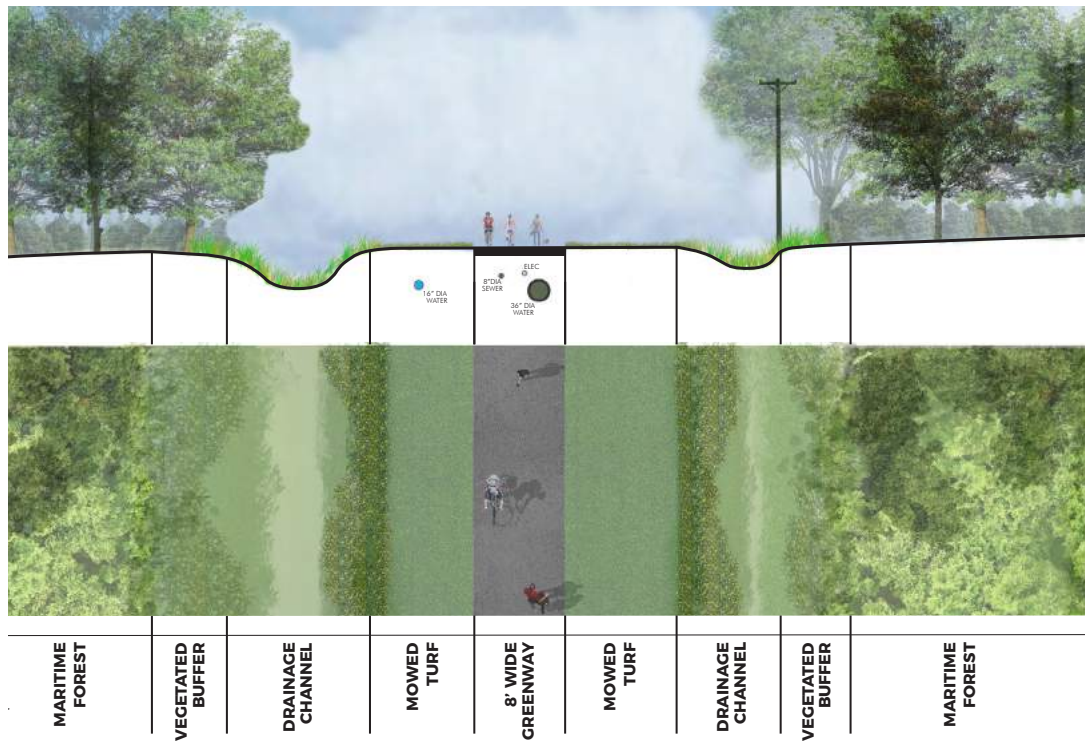
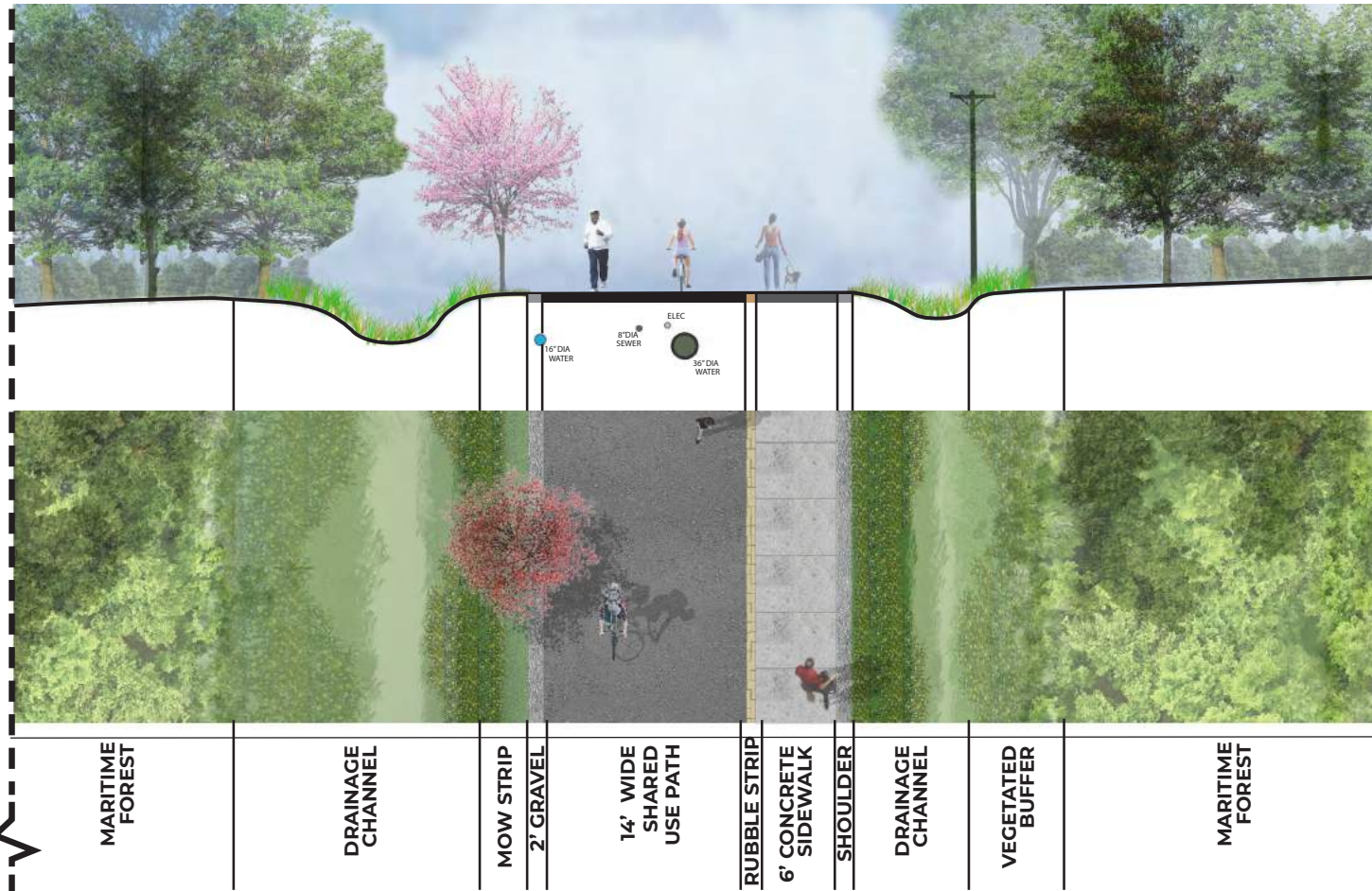


(Above) Existing conditions at the South Windermere Shopping Center.



200' RIGHT-OF-WAY

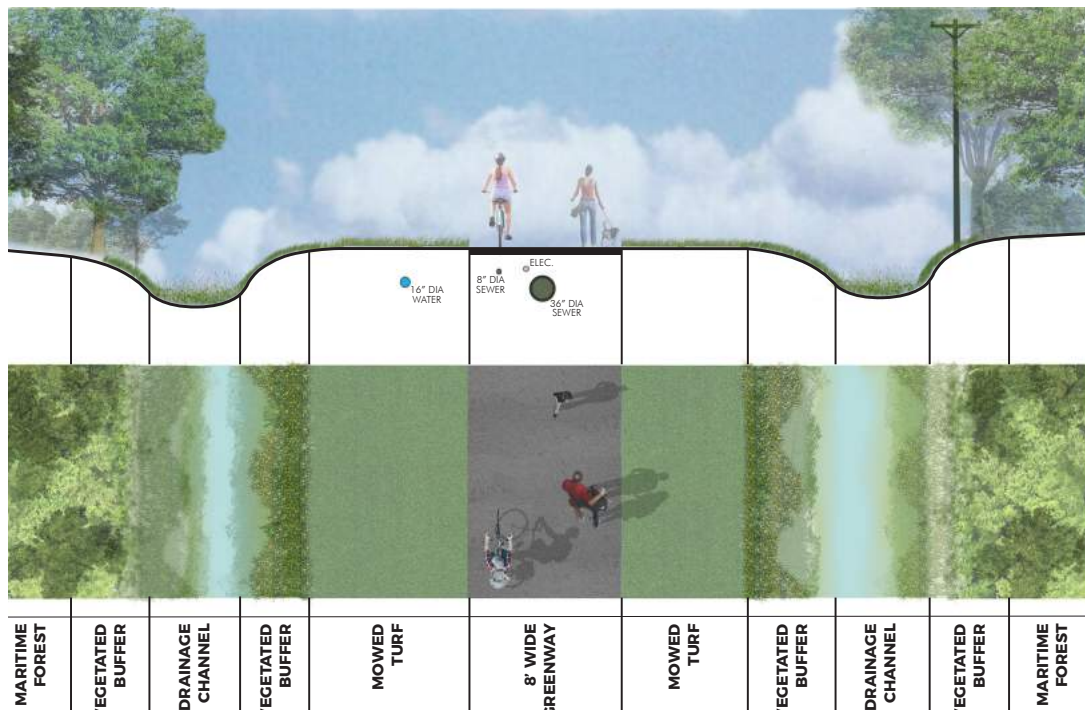
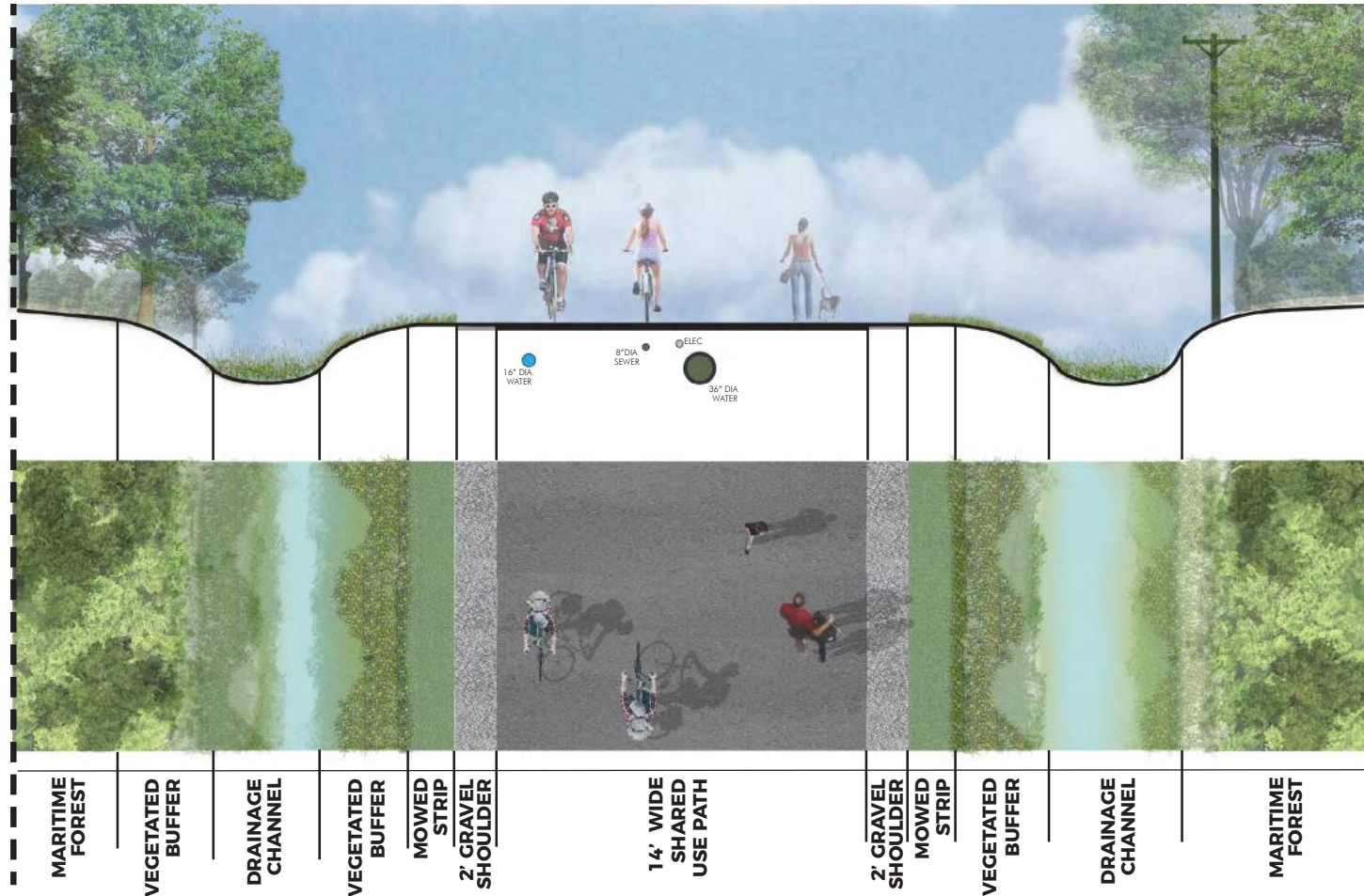
TYPICAL SECTION. CAMPBELL DR TO NICHOLSON ST



(Above) Existing cross section for the Windermere trail, Campbell Dr to Nicholson St.

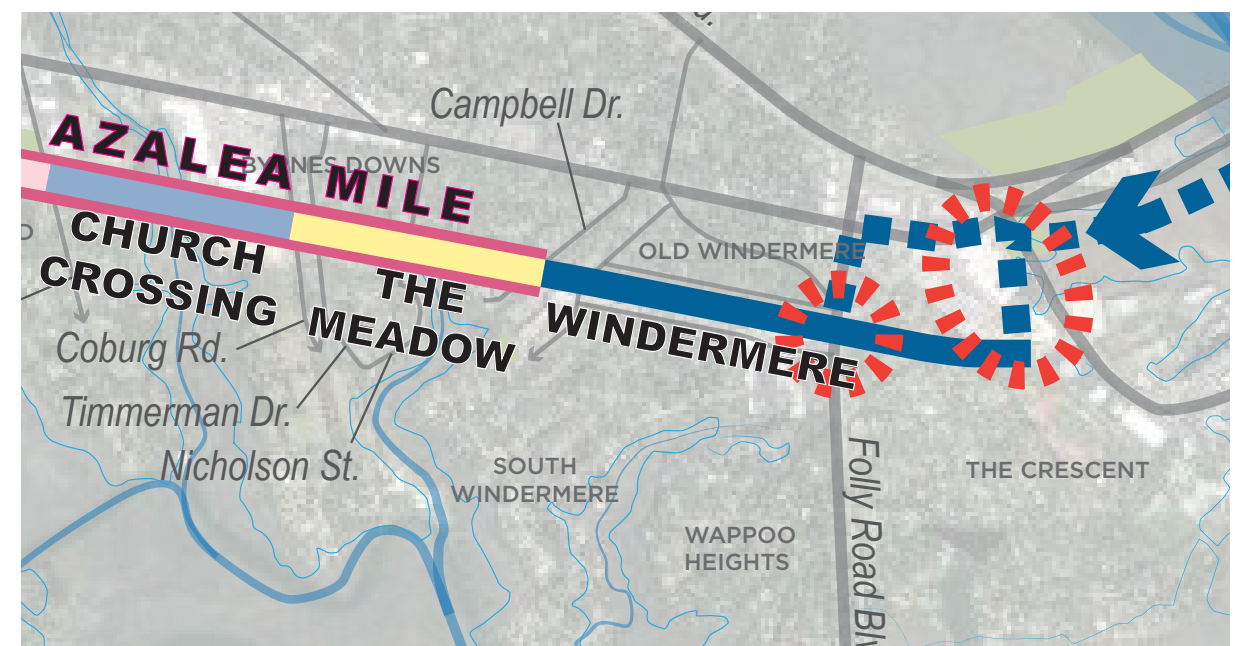
50' RIGHT-OF-WAY

TYPICAL SECTION. CHADWICK DRIVE TO FOLLY ROAD BLVD



(Above) Existing cross section for the Windermere trail, Chadwick Dr to Folly Rd.





## crossing improvements

Aside from getting the Ashley River Bridge built to connect to the downtown Charleston Peninsula, the biggest challenge with this segment is **getting across Folly Road/Wesley Drive conveniently, efficiently, and safely**. This crossing could be made better for trail users by moving the crossing through the existing median direct to the other side, and adding an all-red phase for a short time to allow bicyclists and pedestrians enough time to get across the roadway (see model, left).

Another challenge for the Windermere Trail section will be connecting the west end of the future Ashley River Bridge through Point Park and then down Albemarle Road to the Greenway right-of-way alignment.

(Right) Aerial rendering of crossing improvements at Folly Road/Wesley Drive intersection.



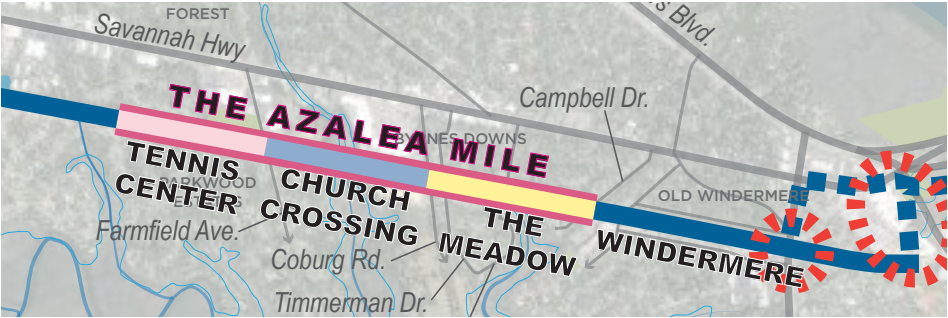


# 02 | THE AZALEA MILE



## overview

The Azalea Mile is a section of the West Ashley Greenway that includes **three sub-areas**, described on the following pages - The Meadow, Church Crossing, and The Tennis Center. This section of the Greenway starts at Campbell Drive and runs east to Sunset Drive/Parkwood Estates Drive. The design intent of this sub-area is to mimic the gardens and paths of Middleton Place and Augusta, Georgia.



(Above) Azaleas at Magnolia Plantation + Gardens, Charleston, SC.  
Source: CrowellPhoto.com  
(Left) Azaleas at the Inn at Middleton Place, Charleston, SC.  
Source: TripAdvisor.com



# 1. the meadow

Between Campbell Road on the east end and Coburg Road on the west end the West Ashley Greenway is The Meadow. The right-of-way in this section widens out to 200' wide in many places, providing an expanse of mowed grass in these areas. Because of the wider right-of-way, this length of trail appears relatively wide and exposed. Improvements proposed for this area are as follows:

- A **community garden**;
- Development of a **park square** (Byrnes Downs Square, see following page);
- **Trail widening** to 12' of asphalt, and adding a parallel **pedestrian path** and **gathering areas**;
- Adding **shade** (structures or deciduous tree cover); and,
- Conversion of some of the mowed grass to **no-mow prairie or wildflower meadow**, both of which will assist with rainwater infiltration and make the Greenway feel more park-like.

## maintenance requirements

The meadow should be planted with a native, drought tolerant seed mix. Sea Oats and Sweet Grass should both work and should only require irrigation during establishment and dire drought conditions. It would be best to direct runoff from the trails and other pavement into the meadow areas for natural irrigation.

In the first 3 years after planting, the meadow should be monitored for invasive species and heavy seed producing weeds, such as Beggar's Tick. For best results, these should be removed manually, bagged and hauled off. Maintenance can mow in late fall which allows the pollinator plants to bloom and provide nectar. This method may encourage a more 'wild appearance.' Maintenance can also choose to mow in mid-summer which will stunt all woody growth, but will decrease the pollinator affect. This method typically means less maintenance, but also less wildlife benefits.

After the first 3 years, the strategy changes from maintenance to management; the era of plucking nuisance weeds should be behind and the groundskeepers will need to keep an eye out for invasive species and execute the one scheduled mow per growing season.

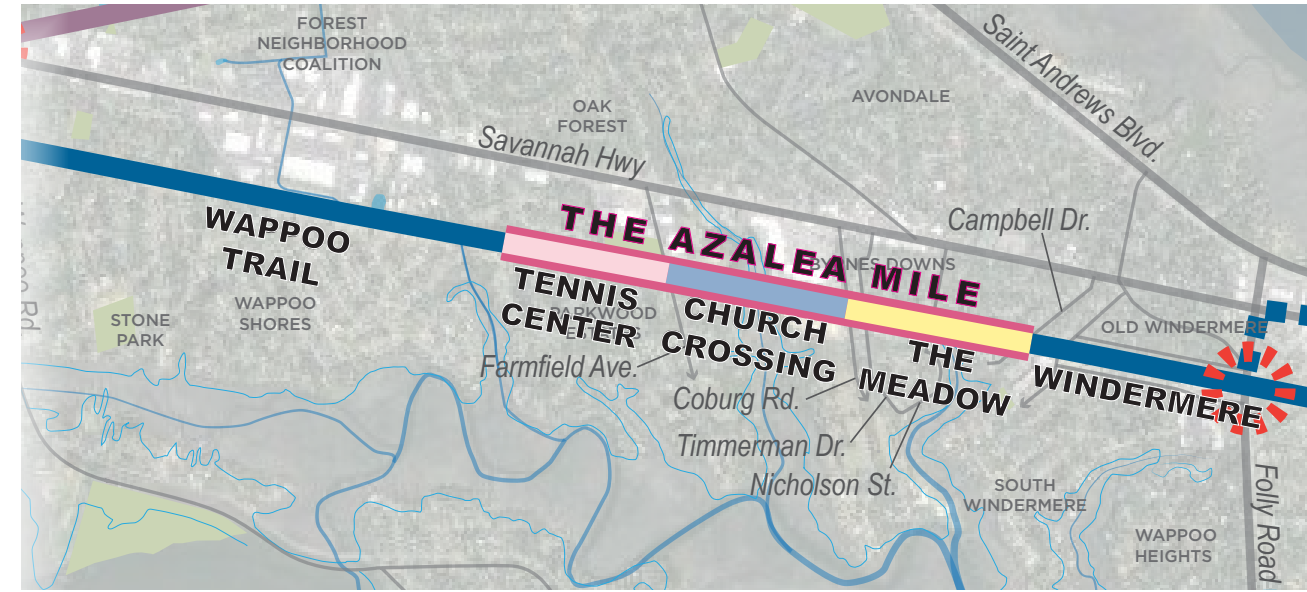


(Above) Existing conditions at The Meadow.



(Above) Proposed scenic footpath alongside the trail at The Meadow.

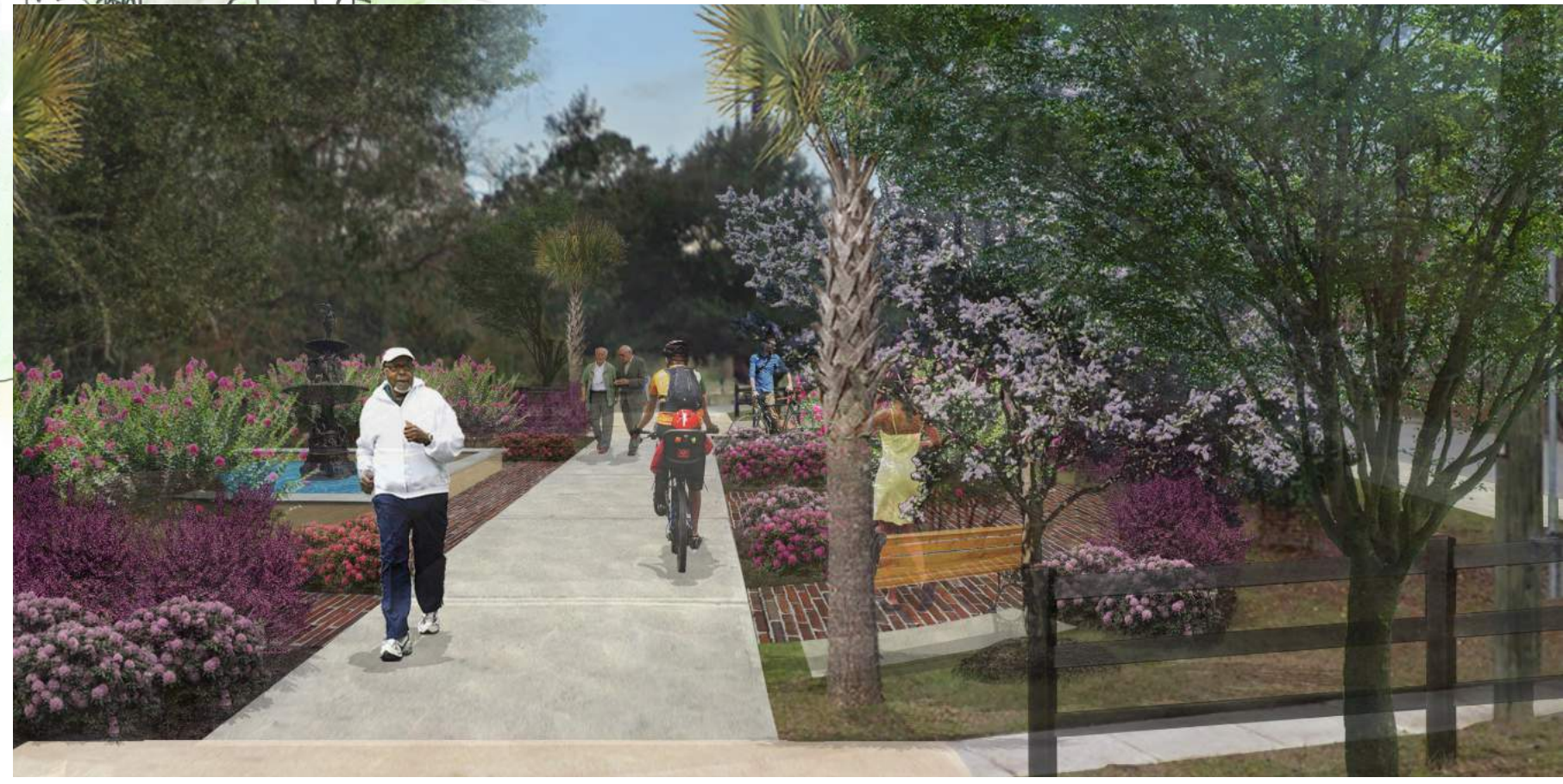




# byrnes downs square concept



(Above) Existing conditions at the Byrnes Downs Square.



(Above) Potential improvements at the Byrnes Downs Square.





(Above) Scenic view of marsh + church spire at Church Crossing.

## 2. church crossing

At Church Crossing, the right-of-way narrows with more commercial land uses adjacent to the trail. This section runs from Coburg Road on the east to Farmfield Road at the west end. Most of the trail here has drainage ditches closer to the trail edges. The key feature of this section is a marsh crossing that provides **scenic views in both directions**, a church spire to the north and the Wappoo Creek marshes to the south (see left). The edges of this segment of trail also appear more commercial-oriented with the Saint Andrews shopping center to the north, and a new 55+ development with trailside exercise equipment to the south both on the Coburg Road (east) end. Recommended improvements to this segment are the following:

- A **canoe/kayak launch** and **designated crabbing area** at the marsh access point south of the trail;
- **Park edge/trail-oriented development facade improvements** at the backside of Saint Andrews shopping center to activate the north edge;
- **Trail widening** to 12' of asphalt; and
- Additional **exercise stations and play equipment** next to the single station at the 55+ development to make a more complete exercise circuit.

## 3. the tennis center

The Tennis Center section of trail runs from Farmfield Road on the east end to Sunset Drive on the west end. Currently, the Tennis Center segment is dominated by the tennis court fences of the Charleston Tennis Center, which seems to turn its back to the Greenway. There needs to be **more integration** between the Tennis Center and the Greenway, taking advantage of some underutilized space between the courts and the Greenway to make a more official parklike edge for the trail and tie the two together more. The Tennis Center also has bathrooms and could serve as an informal trailhead for the Greenway.



(Above) Existing conditions at The Tennis Center.





## overview

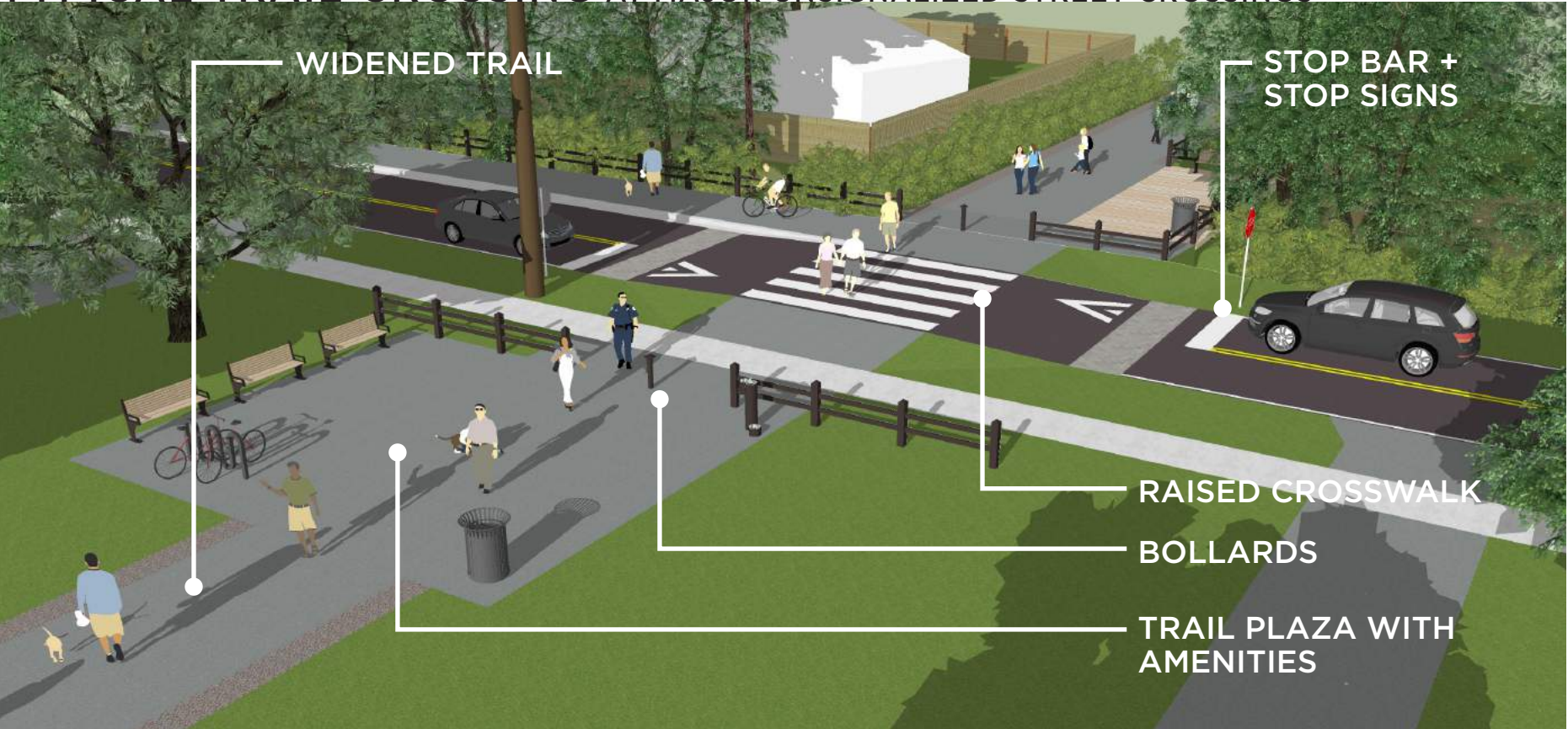
Between Sunset Drive on the east and Wappoo Road on the west is the Wappoo Trail segment. This section of trail has a high concentration of residential back yards closer to the trail along with a number of makeshift private bridges connecting to the Greenway (see right). The right-of-way is narrower along this segment and the edges of the trail are defined by drainage ditches and back yard fences. There are also some commercial and office developments along this section of trail, but overall this section feels suburban.

Recommended improvements include a **scenic overlook** and **parklet access** to the retention pond at the Markfield Drive office park complex. The trail through The Wappoo Trail section should be widened to a **12' wide asphalt trail** with **2' gravel shoulders**, and should have **space set aside at key areas** for overlooks, pull-offs/conversations, and small gathering areas. The existing commercial development between Betsy Road and Markfield Drive could have a second facade added that interacts with the trail better. Most of the commercial frontage has extra parking spaces that could be repurposed to **trail-oriented development**.



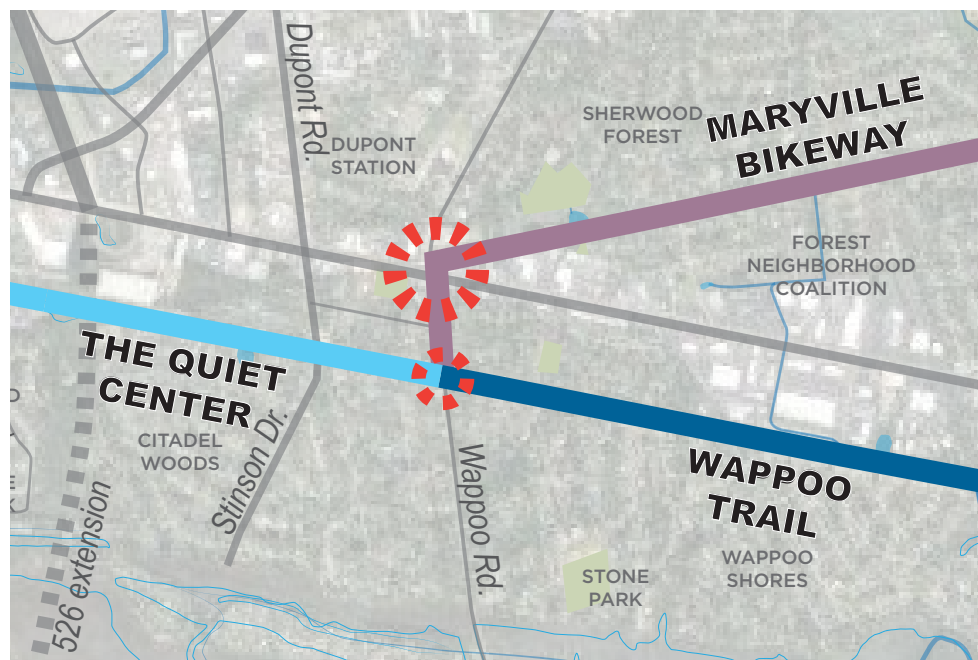
(Above) Makeshift bridge along the Wappoo Trail.

## TYPICAL TRAIL CROSSING AT MAJOR UNSIGNALIZED STREET CROSSINGS



(Above) Proposed improvements at Wappoo Trail street crossing. Recommendations completely halt traffic to allow users to safely cross.





## crossing improvements

- **Pedestrian refuge island** on eastern leg of intersection makes crossing safer and more comfortable for trail user
- **High-visibility crosswalks** at all 4 legs
- **10-foot shared-use path** continues north and connects to the Maryville Bikeway (see following page), with a dedicated trail plaza and gateway feature

## SAVANNAH/WAPPOO CROSSING PLAN



(Above) Existing conditions at Wappoo Road + Savannah Highway.

(Left) Proposed crossing improvements at Wappoo Road + Savannah Highway.



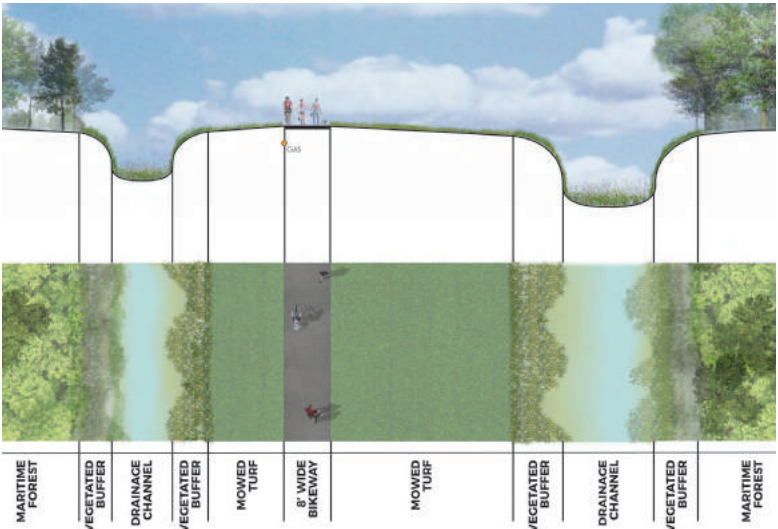
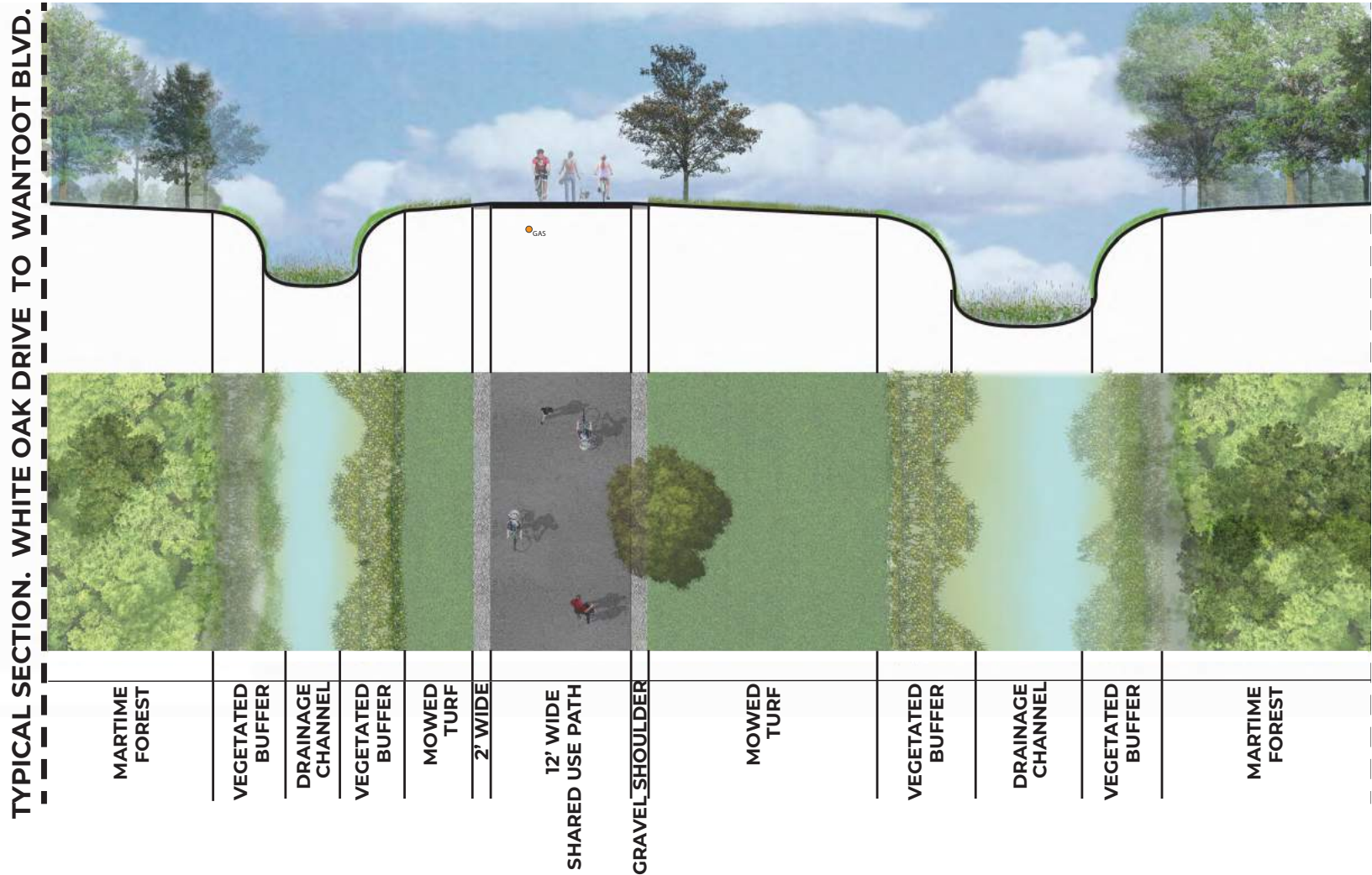
# 04 | THE MARYVILLE BIKEWAY

## overview

This Master Plan proposed the **renaming** of the West Ashley Bikeway to the Maryville Bikeway. The Bikeway connects to the historic Maryville neighborhood and naming the Bikeway after Maryville could help reduce the confusion between the two trails. The Maryville Bikeway is divided into three sections – The Maryville Bikeway proper, The Autumn Mile, and The Pier. The latter two of these sections are described further on the following pages.

The Bikeway proper has an 8’ wide curvilinear asphalt path that has several areas of deterioration. As sections of the Bikeway come up for repaving, the trail should be **widened to 12’ wide** with **2’ gravel shoulders** on both sides. Accommodations should be made in some areas to **keep existing mature trees** by installing a parallel trail instead of widening the existing trail. Improvements to street crossings, enhancements to shade tree cover, and additional **park amenities** to the Bikeway are also recommended.

100’ RIGHT-OF-WAY



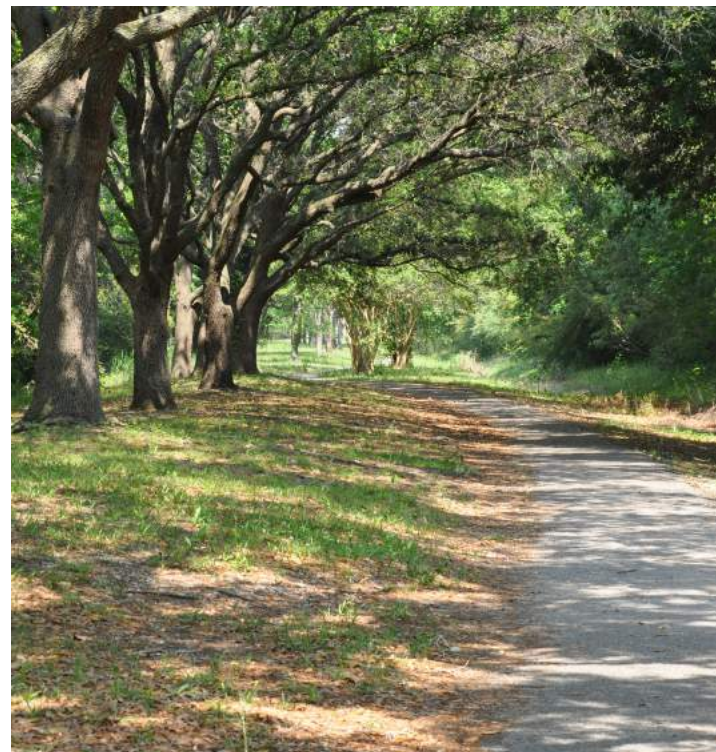
(Above) Existing cross section for the Maryville Bikeway, White Oak Dr to Wantoot Blvd.







(Above) Proposed concept for a scenic overlook and informational signage along the Bikeway.



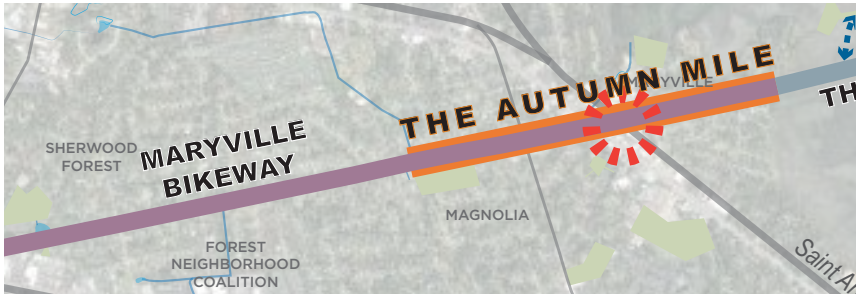
(Above) Existing conditions along the Maryville Bikeway.





## overview

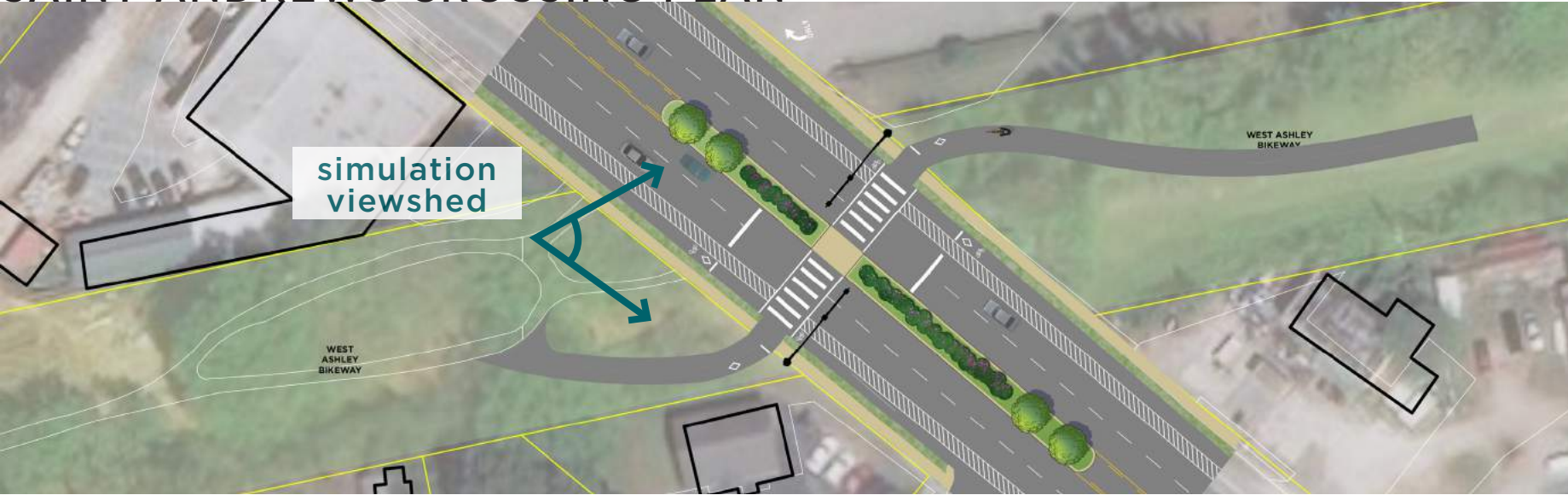
On the Maryville Bikeway, the section between the Playground Road crossing on the west end and the Main Street crossing on the east end is designated as the Autumn Mile. Improvements for this section include **connectivity and edge enhancements** at Forest Park, and leveraging the recent improvements on this section of trail to make a more **parklike setting**.



This section is called the Autumn Mile as it could be **dressed up with plantings** that have fall color like red maple, black gum, sassafras, sweetspire and sumac, along other trees and shrubs. The Autumn Mile and the Azalea Mile on the Greenway, when implemented together, would create two specific areas of seasonal interest at different times of the year.

This segment of trail also includes the major road crossing at Saint Andrews Boulevard where a **HAWK pedestrian signal** is proposed (see following page).

## SAINT ANDREWS CROSSING PLAN



(Above) Existing conditions along a newly paved section of the Autumn Mile.





## crossing improvements

- **HAWK signal** stops traffic completely when activated
- **Pedestrian refuge island** makes crossing safer and more comfortable for trail user
- **High-visibility crosswalks**
- Ultimate options include a buffered bike lane with **pavers and planters** that increase separation from vehicular traffic



(Above) Existing conditions at the Saint Andrews Crossing.



# plant palette for the autumn mile

## TREES

species	common name
<i>Acer buergerianum</i>	Trident Maple
<i>Acer rubrum</i> “October Glory”	October Glory Red Maple
<i>Carpinus caroliniana</i>	Carolina/American Hornbeam
<i>Cornus florida</i> “Cherokee Princess”	Cherokee Princess Flowering Dogwood
<i>Cornus</i> (Rutgers varieties)	Rutgers Hybrid Dogwood(s)
<i>Ginkgo biloba</i>	Ginkgo (male-only)
<i>Lagerstroemia</i> “Muskogee”	Muskogee Crepe Myrtle
<i>Lagerstroemia</i> “Natchez”	Natchez Crepe Myrtle
<i>Liquidambar styraciflua</i>	Fruitless Sweetgum
<i>Nyssa sylvatica</i>	Blackgum
<i>Oxydendron arboreum</i>	Sourwood
<i>Pistacia chinensis</i> ‘Keith Davey’	Keith Davey Chinese Pistache (male-only)
<i>Quercus alba</i>	White Oak
<i>Quercus coccinea</i>	Scarlet Oak
<i>Quercus rubra</i>	Northern Red Oak
<i>Sassafras albidum</i>	Sassafras
<i>Taxodium distichium</i>	Common Baldcypress



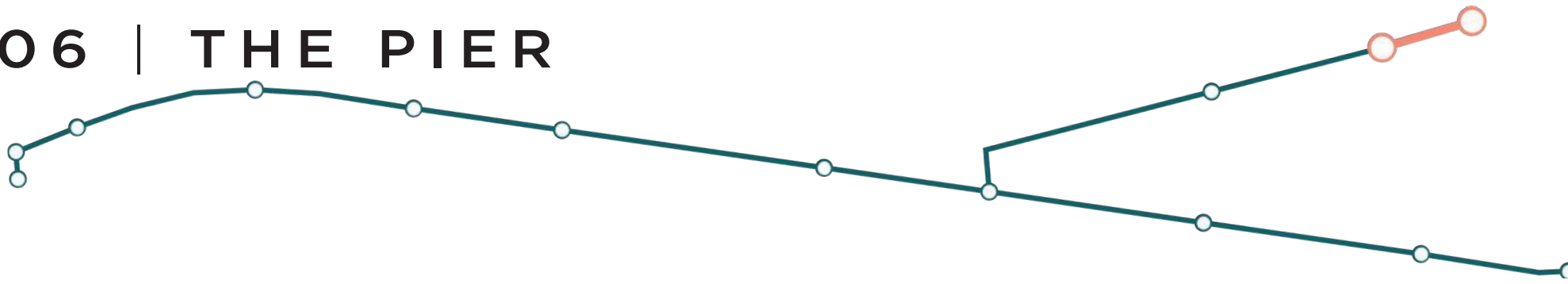
## PERENNIAL SHRUBS

species	common name
<i>Callicarpa americana</i>	American Beautyberry
<i>Calycanthus floridus</i>	Sweetshrub
<i>Hydrangea quercifolia</i>	Oakleaf Hydrangea
<i>Itea virginica</i>	Sweetspire
<i>Rhus spp.</i>	Sumacs
<i>Vaccinium arboreum</i>	Sparkleberry
<i>Vaccinium ashei</i>	Rabbiteye Blueberry
<i>Viburnum prunifolium</i>	Blackhaw Viburnum
<i>Viburnum rufidulum</i>	Southern Blackhaw





## 06 | THE PIER



### overview

The Pier section of the Maryville Bikeway includes the Higgins Pier along with the railbed causeway leading up to it. This trail segment starts at the Main Street crossing and runs east to the pier end in the Ashley River.

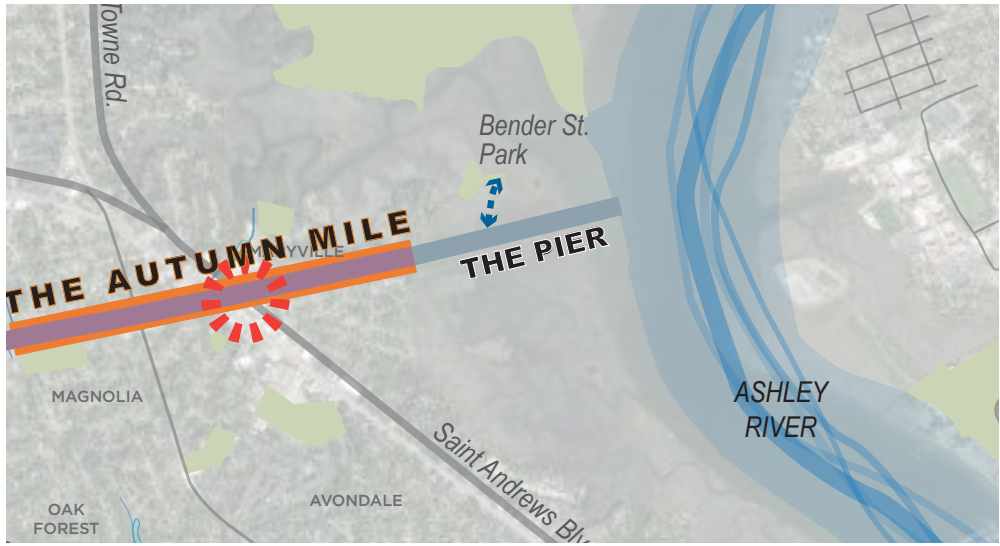
The causeway is 2,000 feet long and is lined with scrubby live oaks and other vegetation. There are occasional breaks in the trees that offer views of the surrounding marshes and downtown. The pier itself offers panoramic views of downtown, the Ashley River ecosystem, and in the distance, the old Charles Towne Landing.

Potential improvements include a **connection to Bender Street Park** and **park improvements** around the existing parking lot/trailhead. Updating and adding to the **site furnishings** and installing a drinking fountain to the parking lot area are other recommendations for this area.



(Above) Existing conditions at Higgins Pier.





(Above) Existing conditions along the Causeway and at Higgins Pier.



# 07 | THE QUIET CENTER

## overview

As the West Ashley Greenway runs west from Wappoo Road to the Arlington Road crossing on the west end, it becomes designated as The Quiet Center. On this stretch of trail, the houses are setback further off the trail and there is more separation from residences with an existing tree-lined and vegetative buffer. Most of this length of trail is unpaved which adds to the rural appearance of this area.

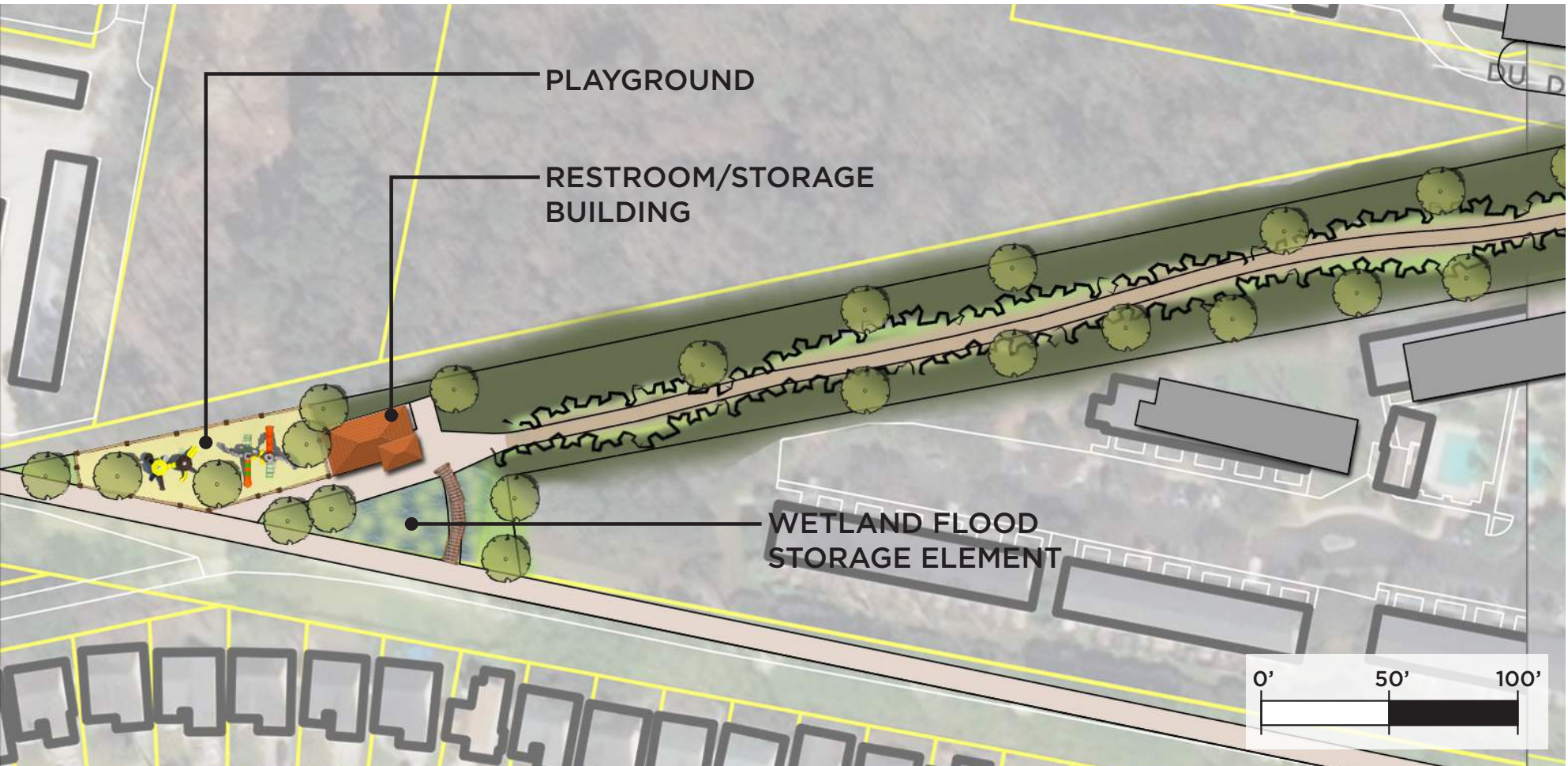
It is recommended that the trail be widened and repaved with **12' wide asphalt**, with **2' wide gravel shoulders**. Supplemental **tree plantings** for shade and seasonal interest could be added, along with **amenities** near the Oakland Elementary + Middle Schools at the Arlington Drive street crossing, such as site furnishings and a drinking fountain.



## BIKEWAY + GREENWAY CONNECTION







CHARLESTON 9 MEMORIAL PARK CONCEPT



Please note: The elements and improvements shown in these concepts could also be effective treatments at other sections along the trail. Potential applicable locations should be evaluated in the next phase of implementation.

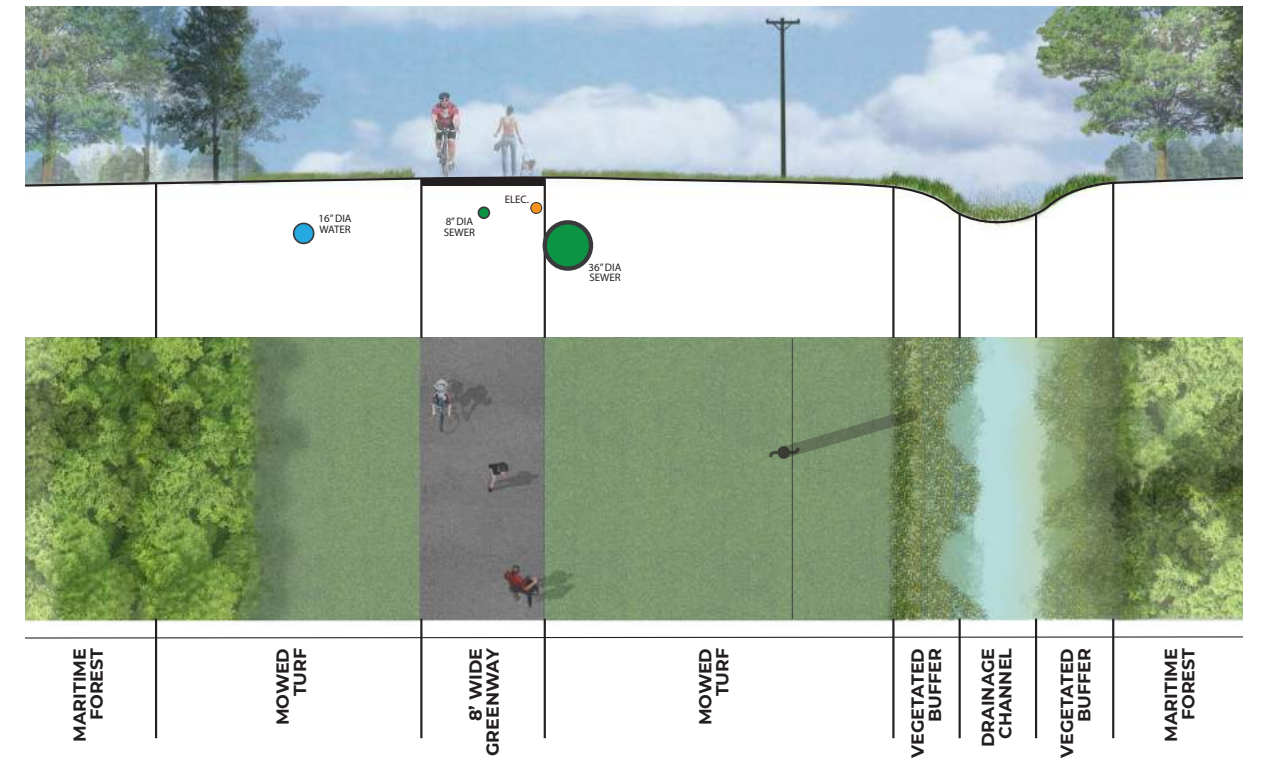
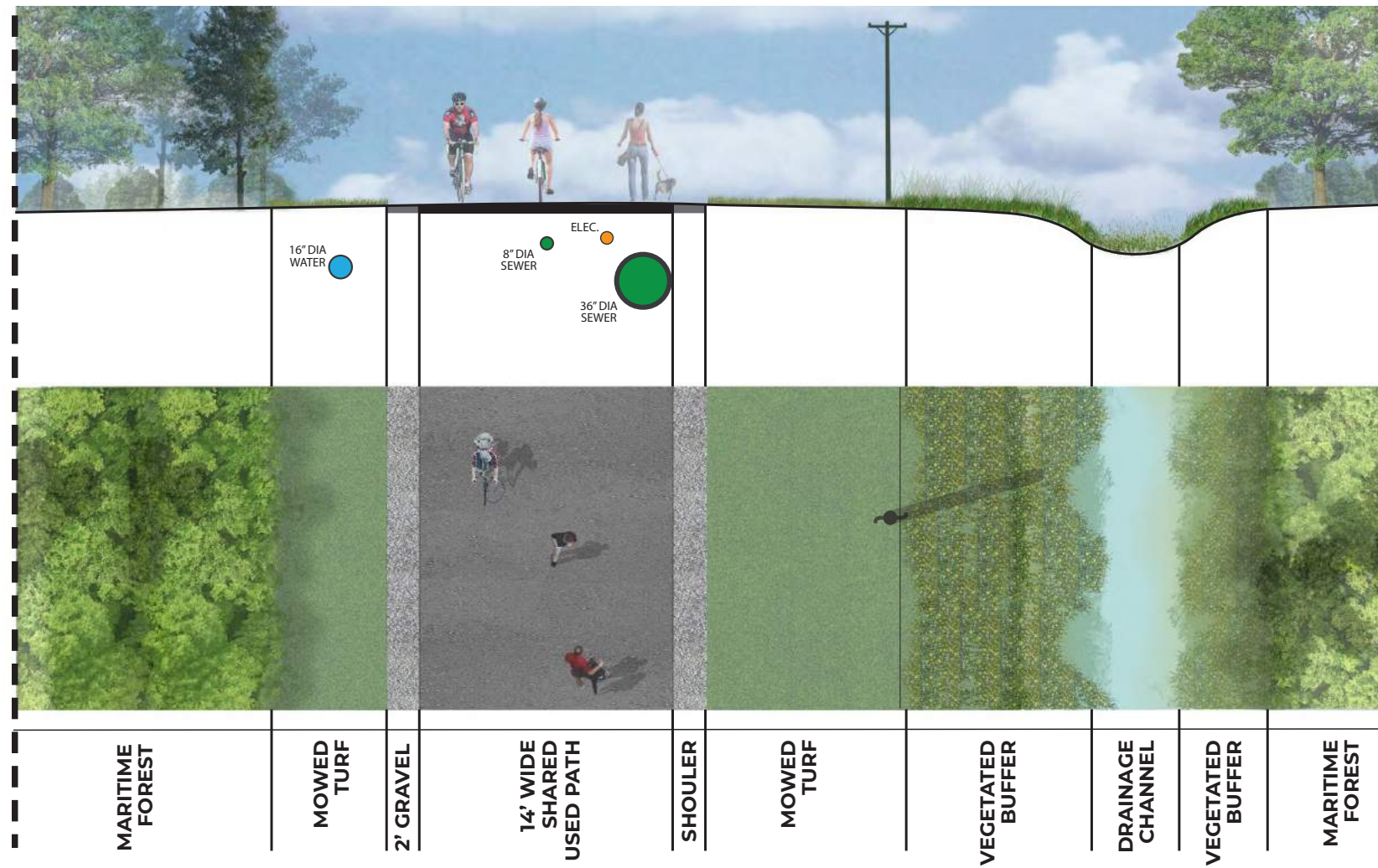


(Above) Existing conditions throughout this segment of the Greenway.



TYPICAL SECTION. WAPPOO ROAD TO STINSON DRIVE

100' RIGHT-OF-WAY



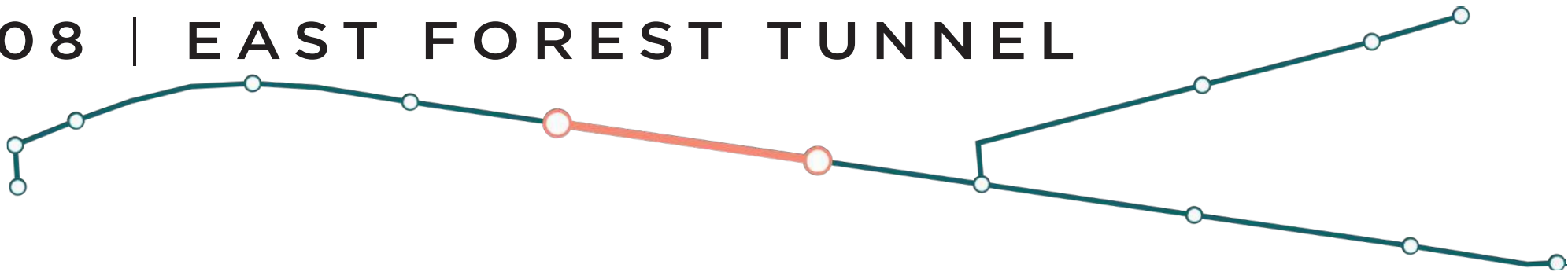
(Above) Existing cross section for The Quiet Center, Wappoo Rd to Stinson Dr.



(Above) Existing conditions throughout The Quiet Center.

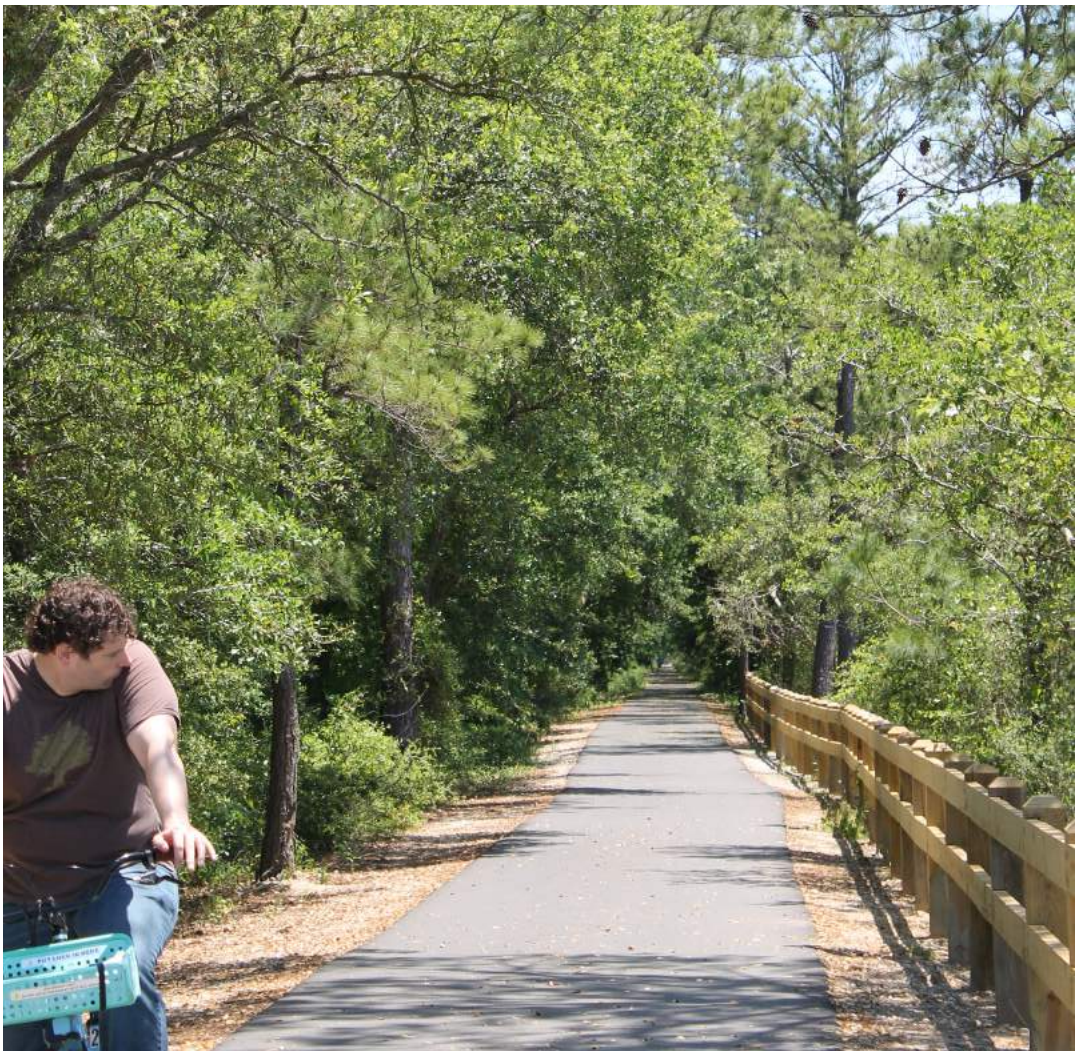
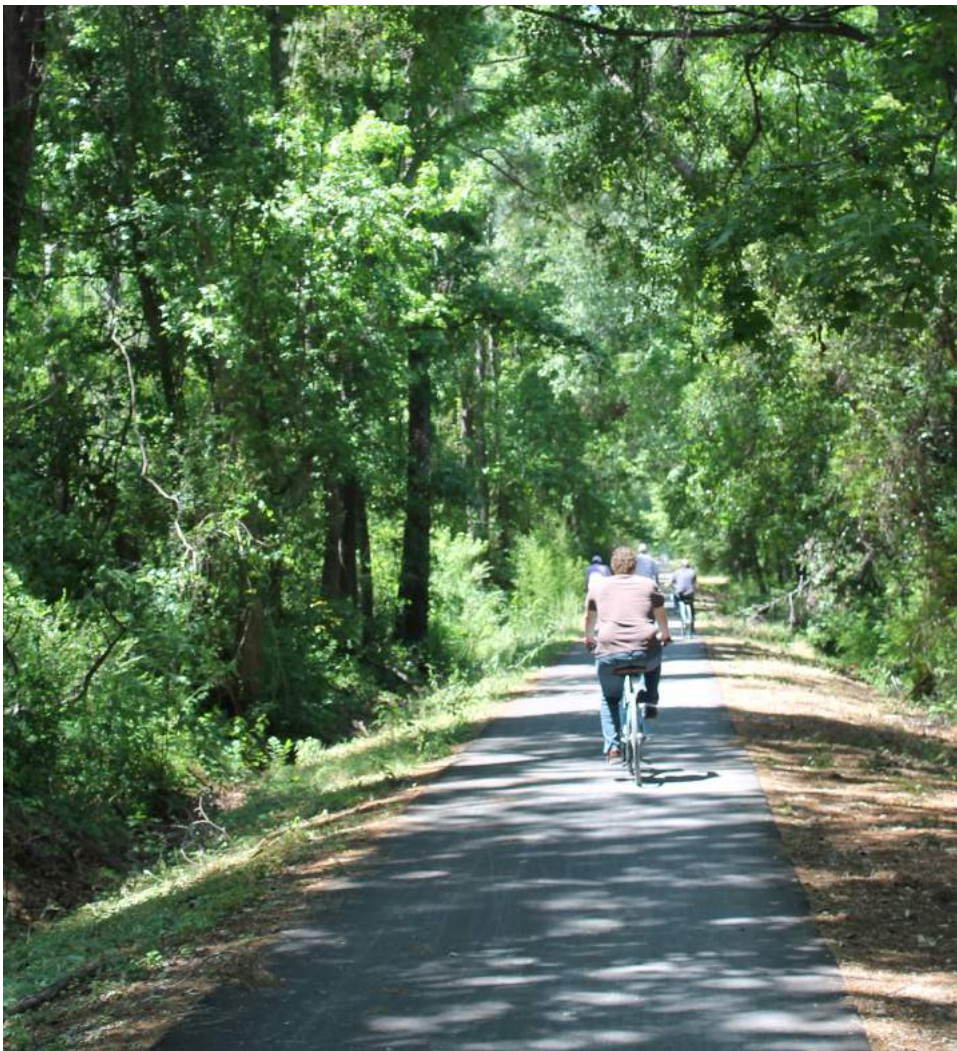


# 08 | EAST FOREST TUNNEL



## overview

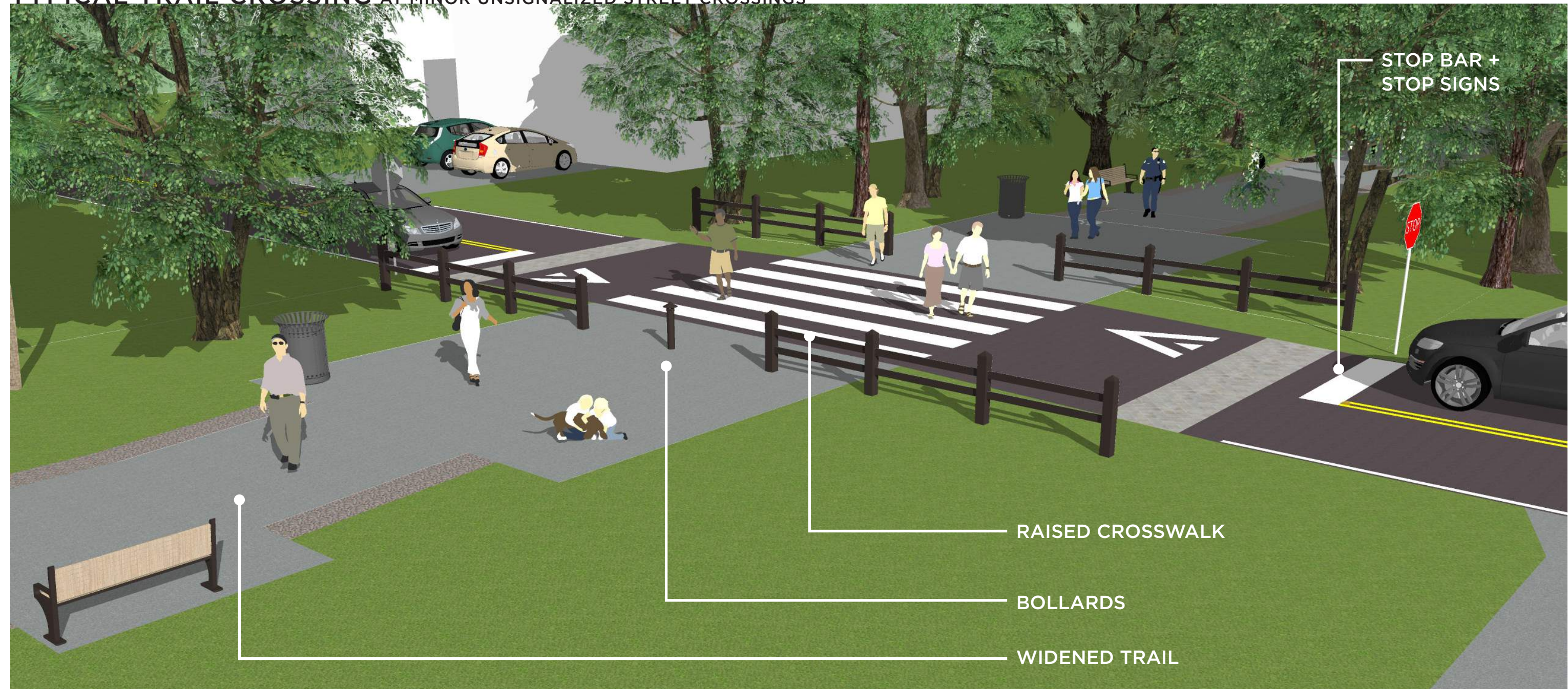
The East Forest Tunnel runs from Arlington Drive on the east to the beginning of the Clemson Coastal Research + Education Center on the west end. This forested section is unique from the West Forest Tunnel in that there are more marsh crossings and residential backyards are closer to the trail, although they are screened well by the tree cover. There are also some exposed sewer and water lines running parallel to the trail that are in clear view. Given these issues, the trail is well-shaded for most of this section’s length. The main design recommendations for this area would be widening the trail to **12’ wide** on the next repaving cycle, and **adding gravel shoulders**, benches, and other **furnishings** along the trail. One or two **canoe or kayak launch points** with access from the trail could also be added.



(Above) Existing conditions at the East Forest Tunnel.



## TYPICAL TRAIL CROSSING AT MINOR UNSIGNALIZED STREET CROSSINGS



(Above) Existing conditions as the trail crosses Parkdale Drive.



## 09 | THE FARM

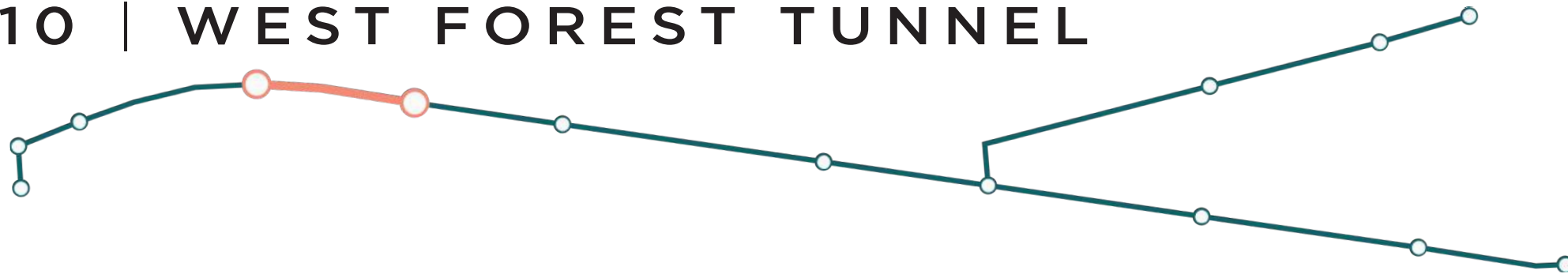
As the West Ashley Greenway runs through the Clemson Coastal Research + Education Center, the segment becomes designated as The Farm. This section of trail has expansive views of the Extension's agricultural research fields, but lacks shade or good spatial enclosure at a human scale.



59



# 10 | WEST FOREST TUNNEL



## overview

On the west edge of the Clemson Coastal Research + Education Center the West Ashley is another Forest Tunnel, which runs until the neighborhoods drop off and wide expanses of marshes begin. This section of the Greenway has the most continuous tree cover and shade, and has the most distinctly wooded feel to it. There is only one street crossing on this section of trail – Croghan Landing Drive, and there is a driveway crossing on the west edge of the Clemson Coastal Research + Education Center. The main design recommendations for this area would be widening the trail to **12' wide** on the next repaving cycle, and adding **gravel shoulders**, benches, and other **furnishings** along the trail.



(Above) Existing conditions at the West Forest Tunnel.



# 11 | THE MARSHLAND CAUSEWAY



## overview

The Marshland Causeway section of the Greenway begins when the Forest Tunnel opens up to marshland on both sides and the trail is on an old railbed causeway. This is one of the **most scenic sections** of the Greenway due to its unique setting and the long open views out to the marshes. The trail is unpaved here, and in many areas the old rail ballast has punctured through to the surface, making for a rough riding surface for bicycles. There is little shade here and the vegetation on the sides is scrubby. The only improvements to be suggested here would be a **12' wide asphalt paved trail** with **2' wide gravel shoulders** with the possibility of a couple of **scenic overlooks** or **kayak/canoe launch points**.



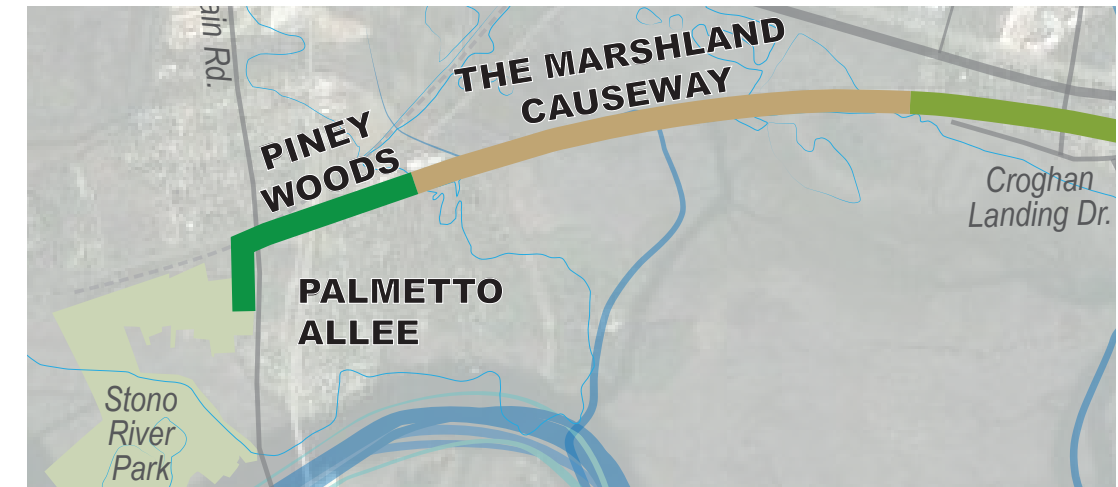
(Above) Existing conditions at The Marshland Causeway. The bridge and both approaches are in good condition.



## 12 | THE PINEY WOODS

### overview

The Piney Woods is the current west trailhead of the West Ashley Greenway and begins when the marshes give way to forested land. Currently an informal parking lot and a business park driveway entrance occupy the area. The forest is a mix of deciduous hardwoods and pines; trail recommendations at this segment include planting **more slash pine trees** along the trail. There is also the potential for a sizable **gateway feature** at the entrance to the Piney Woods from the Marshland that can be seen for a long distance as one approaches from the Marshland. The parking lot could be transformed into a **more functional trailhead** with parking and public space with furnishings and a water fountain, possibly other amenities.



(Above) Existing conditions at The Piney Woods.



# bicycle monument

The arch commemorates the breakthrough historic accomplishment of building the Greenway as a safe place to walk, run, and ride bicycles by weaving together architectural memories of the Lowcountry and symbolism of cycling culture. It is a human-made object inserted into the woods, creating a unique lens through which to perceive the natural backdrop of the surrounding Greenway.

Seen in the distance, the profile of the object immediately recalls the tradition of **classical architecture** in Charleston. As one gets closer the arch takes on an ethereal presence, with the skeleton of the sculpture **made of pipes and salvaged bike frames, arranged in a dense welded lattice of white triangles**. The bikes frames form familiar, but irregular, patterns that recall the classical revival architecture tradition that defines the local flavor of Charleston and the Lowcountry. The arch is a skeletal point of passage, but not a gate or barricade. It invites trail users to see and move through it, just as the wind, light, and sound do.



(Above) Bike gate precedent at Overton Park in Memphis, TN.



Please note: The improvements shown in this monument concept could also be effective treatments at other sections along the trail. Potential applicable locations should be evaluated in the next phase of implementation.

(Above) Existing conditions where the proposed gateway could be constructed.



# 13 | PALMETTO ALLEE



## overview

As the West Ashley Greenway extends west under the Main Road bridge and toward the proposed Stono River County Park, the trail begins to follow the McLeod Mill Road alignment closely. Due to narrow existing right-of-way and to minimize right-of-way or easement acquisitions the Greenway will have to parallel the road closely, but the trail width will remain at 12-feet wide. This significantly limits the separation from traffic and planted space alongside the trail. Recommendations here propose the trail be lined with a **row of palmettos** on both sides, starting at the Main Road bridge all the way to the Stono River County Park entrance. A potential **architectural gateway feature** or an **arrival plaza with monument sign** could create a trail entrance into the proposed park.



(Below) Existing conditions at the bend in the McLeod Mill Road.



## palmetto allee connection to park

The terminus of the Palmetto Allee trail provides a direct connection to the entrance of the Stono River County Park. Recommendations for this transition include:

- **Selective clearing** of existing vegetation and replacing with shade trees, palms, and native perennials creates a more welcoming environment for visitors
- **Option 1** – cost-effective treatment for entrance, includes new **entrance signage** at the park driveway (see bottom left)
- **Option 2** – a conceptual idea of a potential **large archway monument** that gives a greater sense of arrival to the Stono River County Park, and further ties the park to the West Ashley Greenway. Illustrated here (see top left) is a smaller replica of the Charleston Old Exchange and Provost Dungeon, but the idea being shown is that a gateway or grander entrance into the park is a long-term future possibility, regardless of style.



(Left) Existing conditions at the entrance of the Stono River County Park.



# 04

## IMPLEMENTATION

- 67 PRIORITY INTERSECTIONS
- 69 INTERIM DESIGN SOLUTIONS
- 70 OVERVIEW OF METHODOLOGY
- 70 IMPLEMENTATION MATRIX



# PRIORITY INTERSECTIONS

While the most glaring gap in the active transportation system is also the most challenging (and expensive) to close, that being the crossing of the Ashley River, other gaps exist that preclude walking and bicycling on the trail system west of the Ashley River. **To fully realize their potential as more than a recreational trail system, the 8+ mile West Ashley Greenway and 3 mile long West Ashley Bikeway’s gaps must be closed prior to the construction of the Ashley River Bridge.** Closing these gaps will fully realize a connected system afforded by

the crossing of the Ashley River onto the Charleston Peninsula. The Charleston Parks Conservancy has commissioned and is in the process of developing a master plan for the West Ashley Greenway and Bikeway geared toward enhancing the trails to become transportation facilities in addition to the recreational facilities they are today. To accomplish that goal, three major barriers of street crossings were identified and concepts developed to address the safe and efficient crossing of the Greenway and Bikeway across these historically

challenging street crossings. By addressing these crossings and closing these gaps in the active transportation network, the ridershed (and therefore the ridership) of the facility can increase dramatically with the concurrent connection of the bridge to the Peninsula and the closure of these street crossing gaps. As articulated in the Conservancy’s Master Plan, the three intersections to be addressed and their recommended treatments are articulated below.

## 1. maryville bikeway/saint andrews boulevard (sc 61)

Currently the West Ashley Bikeway (Maryville Bikeway) does not have a formal crossing of St. Andrews Boulevard (SC 61), requiring users to cross at an unprotected crossing or travel 750’ south (and then 750’ back north) to the signalized intersection at Sycamore Road. Since the Bikeway follows an abandoned rail corridor, the rail crossing that once existed has been removed. Since St, Andrews carries upwards of 40,000 vehicles per day at speeds exceeding 40 mph, crossing the street to get from one side of the Bikeway to the other can be a harrowing experience, and one that isolates users in the Maryville and Ashleyville neighborhoods from accessing the West Ashley Greenway to the south, on which the bridge to the Peninsula is proposed. To create a safe crossing and enhance the ability for users to access the entire greenway system, a concept for a midblock pedestrian hybrid beacon (HAWK) signal was developed as shown in the diagram.

Elements of the crossing include the following:

- Installation of a HAWK signal to be coordinated with the signal 750’ to the south at Sycamore Road;
- Construction of a median refuge in the current center turn lane on St. Andrews;
- Construction of curb ramps and landing areas on both sides of St. Andrews; and
- High visibility crosswalk markings at the midblock crossing.

Cost of this construction is estimated at \$200,000.



(Above) Saint Andrews Crossing Improvements



## 2. savannah highway (us 17)/wappoo road intersection

There currently exists a gap of about ¼ mile between the western end of the West Ashley (Maryville) Bikeway and the West Ashely Greenway along Wappoo Road. The City has a current project to construct a shared use path to connect the Greenway to Savannah Highway (US 17) through SCDOT TAP funding; however, the crossing of Savannah Highway was identified as a location that could be enhanced to make a better and more usable connection between the Greenway and Bikeway. The crossing will utilize the existing traffic signal at the intersection but will add a median refuge island and landing areas on the Greenway Connector (east) side of the intersection. The concept also completes pedestrian crossings for all four quadrants of the intersection.

Elements of the concept, shown in the diagram, are as follows:

- Construction of a landscaped median refuge island on the east side of the intersection;
- High visibility crosswalk markings and pedestrian countdown signals on all approaches;
- Curb ramps and landing areas on all corners for pedestrian and bicycle waiting; and
- Connector path between intersection and west end of West Ashley (Maryville) Bikeway.
- Closure of the northeast dedicated right turn lane on Savannah Highway and closure of the northwest slip lane for additional pedestrian space.
- Signage and landscape to reinforce the West Ashley Greenway & West Ashley (Maryville) Bikeway connection and wayfinding to each.

Cost of these intersection enhancements is estimated at \$130,000.

## 3. folly road/wesley drive/windermere drive + west ashley greenway

Currently users of the West Ashley Greenway are forced to make an almost 500’ out-of-direction movement, traversing (and waiting for) two signalized crossings in the process. The length of this movement creates a significant barrier to Greenway users, especially when combined with trying to cross Wesley Drive & Folly Road in the vicinity of the South Windermere Shopping Center entrance. This gap becomes more critical with the construction of the Ashley River Bridge as it can be a serious impediment to users once the connection to the Peninsula is established. As part of the Conservancy’s Master Plan, a concept was developed that allows a straight-through crossing of the intersection as shown in the diagram. Under this scenario, Greenway users could cross in the “shadow” of the Windermere Boulevard green phase of the signal; cyclists and runners could traverse the entire intersection during a single phase, and walkers could accomplish the crossing in two stages within the current timing of the signal. This crossing scheme has little to no impact on the vehicle operations and subsequent delay at the intersection, while affording a much more direct, logical, and quick crossing for Greenway users.

Elements of the crossing are as follows:

- Installation of midblock Greenway crossing markings;
- Reconstruction of the existing median island to create a pedestrian refuge area;
- Upgrade to the signal equipment at the intersection to accommodate the additional crossing movement with countdown heads integrated into the signal controller;
- Curb ramps and landing areas on the east and west sides for pedestrian and bicycle waiting; and
- Signage and landscape to reinforce the continuation of the West Ashley Greenway on both sides of the intersection.

Cost of these enhancements is estimated at \$225,000





(Above) Savannah/Wappoo Crossing Improvements



(Above) Folly/Wesley/Windermere Crossing Improvements

## INTERIM DESIGN SOLUTIONS

One good tactic for project implementation is to use interim design techniques to test out design ideas on the ground and to get people thinking about what a place could be with quick-build solutions. This way of using cheaper, quick construction projects is also known as **tactical urbanism**. Interim design solutions have been used for visualizing streets design, parks design and activation through pop-up design installations, and with reclaiming parking spaces as public space on PARK(ing) Day events. Interim design projects are also a way to get more public feedback from people as they are using the street and park spaces. Interim design projects can range from 1-day to 1-month demonstration projects, to 1 to 2 year pilot projects, to 5-10 year interim design projects. The ultimate goal is to arrive at permanent construction, but interim design solutions allow ideas to be tested, and allow people to see the possibilities without the big cost commitment of hard design and construction.

























# OVERVIEW OF METHODOLOGY






















The West Ashley Greenway and Bikeway Master Plan contains specific initiatives and projects that, when implemented, will achieve the goals set forth in the Master Planning effort of enhancing the trail to serve more of the Charleston and greater community. Details critical to specific projects are summarized by segment in the previous chapter; this chapter prioritizes those projects in an implementation matrix for easy reference as funding becomes available later on. Finally, an opinion of probable cost was developed to guide funding discussions for both public and private funding source.

The following matrix summarizes each project by its description, priority rank, scale of probable cost, as well as where more information and visualizations can be found in previous pages of this Plan. Notes are also included that outline specific collaboration requirements, potential funding sources, or other pertinent information relative to each project. **Prioritization was ranked on a scale of 1-3 lotus flowers, with 3 lotus flowers representing a high priority project.**





























## IMPLEMENTATION MATRIX

project name	estimated cost	priority rank	notes	page reference
Bikeway Renaming	Less than \$50k	  	<ul style="list-style-type: none"><li>Changing West Ashley Bikeway to Maryville Bikeway</li><li>New entrance signage</li></ul>	47
Greenway/Bikeway Branding + New Signage Concept Package	Less than \$50k	  	<ul style="list-style-type: none"><li>Develop new logo + signage package</li></ul>	N/A
Paint Treatment at Bikeway, 5th + Sycamore Intersection	Less than \$50k	  	<ul style="list-style-type: none"><li>Artistic crosswalks</li><li>New stop signs + stop bars</li></ul>	
Paint Treatment on Local Street Crossings	Less than \$50k ea.	  	<ul style="list-style-type: none"><li>Artistic crosswalks</li><li>New stop signs + stop bars</li></ul>	N/A
Paint Treatment on State Route Crossings	Less than \$50k ea.	 	<ul style="list-style-type: none"><li>Will require SCDOT approval</li><li>Artistic crosswalks</li><li>New stop signs + stop bars</li></ul>	N/A
Community Garden Installation between Timmerman + Nicholson	Less than \$50k	 	<ul style="list-style-type: none"><li>Community garden in The Meadow section of the Greenway</li></ul>	42
Pop-Up Park at Charleston Tennis Center	Less than \$50k	  		44
Wood Bridges with Rails at Street Ends	Less than \$50k	  	<ul style="list-style-type: none"><li>Connecting dead end streets to the Greenway and Bikeway</li></ul>	N/A





























project name	estimated cost	priority rank	notes	page reference
Pop-Up Park at Byrnes Down Square	Less than \$50k	  	<ul style="list-style-type: none"><li>Interim design of park to activate space</li></ul>	43
Pop-Up Park or Interim Design Park (connects Mulberry Pond Park to Maryville Bikeway)	Less than \$50k	  	<ul style="list-style-type: none"><li>Interim design of park to activate space</li></ul>	
Pop-Up Park at Stinson Drive crossing	Less than \$50k	  	<ul style="list-style-type: none"><li>Located at NE corner of crossing</li></ul>	54
Pop-Up Park at Arlington Drive crossing	Less than \$50k	  	<ul style="list-style-type: none"><li>Located at NE corner of crossing</li></ul>	54
Pop-Up Park at 5th + Sycamore Intersection	Less than \$50k	  	<ul style="list-style-type: none"><li>Interim design of park to activate space</li></ul>	
Raised Crossing + Approach Apron Plazas on Minor + Local Streets	\$100k-\$150k	 	<ul style="list-style-type: none"><li>Focus implementation on locations east of Wappoo based on availability of funding</li><li>Intersections west of Wappoo can be addressed as funding becomes available</li></ul>	N/A
Walkway Connection from the Charleston 9 Memorial	\$100k-\$250k	 	<ul style="list-style-type: none"><li>Street markings + signage</li><li>Implementation concurrent with new fire station construction</li></ul>	55
Wood Ramp System + Interim Park Design by Forest Park	\$100k-\$200k	  	<ul style="list-style-type: none"><li>ADA connection from the Maryville Bikeway to Forest Park</li></ul>	49
Upgrades along Clemson Coastal Research Station Frontages	\$1.5 Million-\$2.5 Million	 	<ul style="list-style-type: none"><li>Shade tree planting + fencing upgrades</li><li>\$50,000-75,000 per 100 feet, cost dependent on length</li></ul>	59
Meadow planting along The Meadow segment	Less than \$100k	 	<ul style="list-style-type: none"><li>Other areas with wider unprogrammed ROW widths can also be seeded with meadow</li></ul>	42
<b>Crossing Improvements at Savannah Highway + Wappoo Rd</b>	\$100k-\$150k	  	<ul style="list-style-type: none"><li>Lane reallocation, removal of slip lane, add spot median, striping.</li></ul>	46
Drainage + Green Infrastructure Improvements along Maryville Bikeway	\$100k-\$250k per mile	 	<ul style="list-style-type: none"><li>Slope reinforcement + vegetation establishment</li><li>Cost varies depending on length and width of project.</li></ul>	47
<b>Folly Road Signal + Crossing Modifications</b>	\$200k-\$250k	  	<ul style="list-style-type: none"><li>Includes median/slip lane modifications, signal modifications, and striping</li></ul>	40








project name	estimated cost	priority rank	notes	page reference
Saint Andrews HAWK Signal + Crossing Improvements	\$175-\$250k	  	<ul style="list-style-type: none"><li>Includes signal, median improvements, and striping</li></ul>	50
Crossing Improvements at State Routes + Major Street Crossings	\$100k-\$499k	  	<ul style="list-style-type: none"><li>Raised crosswalks + approach aprons/plazas</li><li>Will require SCDOT approval</li></ul>	45
Byrnes Downs Square Park	\$350k-\$550k		<ul style="list-style-type: none"><li>Park design with decorative fountain, specialty paving, and lush planting</li></ul>	43
Forest Park Edge Improvement/Connection to Bikeway	\$100k-\$499k	 	<ul style="list-style-type: none"><li>Regrading + street connection improvements at bridge</li></ul>	49
Mulberry Pond Park Improvements + Pergola Overlook	\$350k-\$550k	 		48
Permanent Construction of the Bikeway, 5th + Sycamore Intersection Approach Plazas	\$100k-\$499k	 	<ul style="list-style-type: none"><li>Permanent construction based on availability of funding</li><li>Specialty paving in streets + trail approaches</li></ul>	50
Dupont-Wappoo New Park at old Bikeway Trailhead Parking	\$100k-\$499k		<ul style="list-style-type: none"><li>Includes connections to Mulberry Street Park</li></ul>	
Plantings along the Autumn Mile	\$100k-\$499k	 	<ul style="list-style-type: none"><li>Tied to widening project, can be phased</li></ul>	51
Plantings along the Azalea Mile	\$100k-\$499k	 	<ul style="list-style-type: none"><li>Tied to trail widening work + utilities upgrade</li></ul>	41
Formal Trailhead + Arrival Plaza/Gateway Development	\$100k-\$499k	 	<ul style="list-style-type: none"><li>Located at the current west end of the West Ashley Greenway</li></ul>	62
Interpretive Signage + Entrance Plaza with Security Gate at The Farm	\$100k-\$250k	  	<ul style="list-style-type: none"><li>Clemson Coastal Research Station public gardens + education area</li><li>Can be phased + implemented with shade tree plantings project</li></ul>	59
Nature Playground Installation	\$100k-\$150k ea.		<ul style="list-style-type: none"><li>Can be cheaper if implemented as an interim design</li></ul>	
ADA-Accessible Kayak Launch, Crabbing + Fishing Area Installation	\$100k-\$125k per site	 		
Exercise Station Installation	\$100k-\$200k per site	 	<ul style="list-style-type: none"><li>Costs variable based on type + number of equipment units</li></ul>	








project name	estimated cost	priority rank	notes	page reference
Permanent Construction of Park/Community Garden at Stinson Drive Crossing	\$100k-\$499k	  	<ul style="list-style-type: none"><li>Located at NE corner of crossing</li><li>Costs dependent on included amenities</li></ul>	54
Permanent Construction of Park/Community Garden at Arlington Drive Crossing	\$100k-\$499k	 	<ul style="list-style-type: none"><li>Located at NE corner of crossing</li><li>Could include improvements to the Oakland Elementary + Oak Grove Middle Schools</li></ul>	54
Braxton Ave Shared-Use Path Connection to Randolph Park	\$250k-\$600k	 	<ul style="list-style-type: none"><li>Includes necessary signage + striping and streetscape improvements, 650’ of improvements.</li></ul>	
Braxton Ave/Huntley Drive Shared-Use Path Connection to Stono Park Elementary School	\$800k-\$1.5 Million	 	<ul style="list-style-type: none"><li>Includes necessary signage + striping and streetscape improvements, 2,500’ of improvements.</li></ul>	
Permanent Construction of Park/Community Garden at 5th + Sycamore Intersection	\$100k-\$499k	 	<ul style="list-style-type: none"><li>Located at NW corner of crossing</li></ul>	
Markfield Pond Overlook with Gathering Area + Interpretive Signage	\$150k-\$300k	 	<ul style="list-style-type: none"><li>Includes furnishings, furnishings pads, gravel/paved rest area, interpretive signage, and plantings.</li></ul>	45
Street Crossing Lighting Installation	\$100k per crossing		<ul style="list-style-type: none"><li>Can be post lights or bollard lights</li></ul>	N/A
Shared-Use Path Connection + Streetscape Improvements along Nicholson Dr	\$500k-\$1 Million	 	<ul style="list-style-type: none"><li>Will connect the West Ashley Greenway to Avondale, 900’ of improvement</li></ul>	39
Ashley River Bridge to Peninsula	\$15 Million-\$20 Million	  	<ul style="list-style-type: none"><li>Separate bridge with lift span across Ashley River</li><li>Will require multiple jurisdictional partners and funding sources</li></ul>	53
Windermere Trail Segment Widening + Amenity Improvements	\$1.5 Million-\$3 Million per mile	  	<ul style="list-style-type: none"><li>Segments to be widened to 14’ with bike + pedestrian pavement delineation</li><li>Should be timed with future sewer tunnel project</li></ul>	38
Trail Widening of Maryville Bikeway + West Ashley Greenway west of Wappoo Rd	\$1 Million-\$2 Million per mile	 	<ul style="list-style-type: none"><li>Segments to be widened to 12’</li><li>Cost dependent on amenities included in project.</li></ul>	
Trail Widening of Greenway Segments east of Wappoo Rd	\$2 Million-3.5 Million per mile	 	<ul style="list-style-type: none"><li>Segments shall be widened to 14’</li><li>Includes reconstruction of adjacent walkways in some cases</li><li>Costs dependent on included amenities/upgrades</li></ul>	



project name	estimated cost	priority rank	notes	page reference
Park Development + Trail Connection along old CSX Corridor west of Wappoo Rd	\$1.5 Million-\$2.5 Million		<ul style="list-style-type: none"> <li>Construction of 1500' of 10' wide trail connecting to the Greenway</li> <li>Includes construction of restroom facilities + playground</li> </ul>	
Park Development on the Point Park Site/Green space between the 35 Folly Apartments + the Ashley River	\$2 Million-\$5 Million	 	<ul style="list-style-type: none"> <li>Implementation concurrent with Ashley River Bridge construction</li> </ul>	38
Relocation/Undergrounding of Overhead Utilities	\$8 Million-\$12 Million per mile		<ul style="list-style-type: none"> <li>Can be phased/targeted to specific locations</li> </ul>	N/A
Greenway Extension to Stono River County Park	\$800k-\$2 Million	 	<ul style="list-style-type: none"> <li>Includes streetscape improvements + construction of the Palmetto Allee along McLeod Mill Rd</li> <li>Costs dependent on entry feature and other amenities</li> </ul>	64
Trail Development on old CSX Rail right-of-way along Stono River	\$2.5 Million-\$4 Million per mile		<ul style="list-style-type: none"> <li>Provides additional connections to the school + adjacent neighborhoods</li> <li>Includes some land acquisition, trestle work, + new bridges. Cost depends on included amenities/upgrades</li> </ul>	
Shared-Use Path Connection to Saint Andrews Middle School	\$500k-\$1.5 Million	 	<ul style="list-style-type: none"> <li>Includes streetscape improvements along Wappoo Rd</li> <li>Cost dependent on project length (800' minimum)</li> </ul>	
Festival Street at Culbertson Dr	\$500k-1.5 Million	 	<ul style="list-style-type: none"> <li>Located at Saint Andrews School of Math + Science</li> <li>Includes crossing improvements + arrival plazas at street ends, lush or educational planting-infiltration island demonstration for 400' of road length.</li> </ul>	
Replacement of Wood Bridges with Metal or Permanent Structures	\$350k-\$600k each		<ul style="list-style-type: none"> <li>Located at key Greenway + Bikeway connections to dead-end streets</li> </ul>	N/A
Shared-Use Path Connection + Streetscape Improvements at Playground Rd	\$500k-\$1 Million	 	<ul style="list-style-type: none"> <li>Connects Maryville Bikeway to Saint Andrews Park + Playground, 1,700' of streetscape &amp; path, west side of street.</li> </ul>	
Shared-Use Path Connection + Streetscape Improvements at Magnolia Rd	\$800k-\$1.5 Million	 	<ul style="list-style-type: none"> <li>Connects Maryville Bikeway to Magnolia Park + Community Garden + Charleston Parks Conservancy, 2,400' of improvement</li> </ul>	
Shared-Use Path Connection + Streetscape Improvements at Magnolia Rd	\$1 Million-\$1.5 Million	 	<ul style="list-style-type: none"> <li>Finishes the trail connection from the Maryville Bikeway by connecting Magnolia Park to Avondale + Nicholson St shared-use path to the Greenway, 2,500' path/streetscape</li> </ul>	



project name	estimated cost	priority rank	notes	page reference
Lighting Installation along Trail Corridors	\$1 Million-\$2 Million per mile		<ul style="list-style-type: none"><li>Can be phased/targeted to specific locations</li></ul>	N/A
South Windermere Shopping Center Connection + Trail-Oriented Development	N/A		<ul style="list-style-type: none"><li>Potential to receive funding from shopping center owners/developers</li><li>Development includes retail + dining frontage that faces the Greenway</li></ul>	38
Trail-Oriented Development between Betsy Rd + Markfield Dr	N/A		<ul style="list-style-type: none"><li>Funded by developer</li></ul>	45
Trail-Oriented Development at Saint Andrews Shopping Center	N/A		<ul style="list-style-type: none"><li>Funded by developer</li></ul>	50
Sidewalk/Path Connection to Bender Street Park via Main Street	\$450k-650k		<ul style="list-style-type: none"><li>Connects the Maryville Bikeway to Bender Street Park, 1,300' of improvement.</li></ul>	





# 05

## APPENDICES

PUBLIC ART MASTER PLAN



