



# Request for Qualifications

## City of Clemson's Green Crescent Trail Design Services

**Issued: 2/20/2020**

**Pre-Submittal Meeting: 3/5/2020; 2:00pm**

**Last Day for Questions: 3/10/2020; 4:00pm**

**Deadline for Submittal: 3/19/2020; 4:00pm**

### **Project Description:**

The City of Clemson and the Friends of the Green Crescent Trail are seeking the professional services of a qualified engineering and landscape architecture firm, or team of firms, to provide design services for the first phase of a multi-use path/sidewalk named Green Crescent Trail in the City of Clemson. The selected consultant is expected to provide topographical surveys, plan development, necessary permit acquisition, materials and exhibits for easement acquisition, develop bidding and construction plans and specifications, coordination and provide in-construction engineering assistance.

### **Study Area & Conceptual Plans:**

- The scope of the project area and proposed route is shown in Appendix 1 (attached)
- Conceptual plans for the Green Crescent Trail were developed under a previous contract and are shown in Appendix 2 (attached)

### **Services:**

The following services are expected to be provided under this Request for Qualifications:

- Topographic Survey
  - Property & right-of-way location and widths
  - Roadway features
  - Existing sidewalks
  - Crossing or side roadways
  - Drainage features, pipe diameter & materials, condition assessment
  - Tree location (species, diameter, etc.)
  - Field evident utilities
  - Water features (Waters of the State, Wetlands, etc.)
- Proposed and Alternative Route Analysis & Evaluation

- Preliminary Site Plans & Preliminary Construction Costs (Bid Plans)
  - Site Plan & Profiles with proposed multi-use paths overlaid with existing conditions
  - Cross Sections with multi-use paths overlaid with existing conditions
  - Pavement Marking Plans
  - Identification of easement acquisition in two categories
    - Temporary construction easements
    - Permanent easements
  - Drainage Plans
  - Utility Plans
  - Erosion and Sedimentation Control Plans
  - Temporary traffic control plan
  - Preliminary Construction Cost Estimate
- Jurisdictional Water Bodies and Wetland Identification (if necessary)
- Drainage Analysis and Design
- Utility Coordination & Relocation Plans
- Permit Acquisition
  - City of Clemson Stormwater / Land Disturbance
  - SCDOT & City of Clemson Encroachment
  - USACE (if necessary)
  - SC DHEC (if necessary)
- Final Site Plans & Estimated Construction Costs (For Construction Plans)
  - Title Sheet
  - Existing Conditions and Demolition Plan Sheet, including property lines and existing fixed features
  - Plan & Profile Sheets showing all proposed features of the project area overlaid with existing features, property lines and right-of-way limits
  - Cross Section Sheets showing all proposed features of the project area overlaid with existing features, property lines and right-of-way limits.
  - Drainage Plans including existing and modification or relocation plans, if necessary
  - Utility Plans including existing and relocation plans, if necessary
  - Traffic Control Plans
  - Pavement Marking Plans
  - Typical Sections
  - Construction Details
  - Materials and exhibits for easement acquisitions
  - Final Bid Package (Plans and Specifications)
- Engineering Assistance During Construction:
  - Attend pre-bid and pre-construction conferences
  - Review all shop and contractor submittals along with City Engineering Staff
  - Provide design/plan revision in accordance with contractor requests, change orders and/or change in existing conditions
  - Interpretation of plans, specifications and contract provisions.

Note: All encroachments, drainage modifications and utility relocations proposed within SCDOT's existing right-of-ways shall conform to SCDOT standards including:

- Policy for Accommodating Utilities on Highway Rights-of-Way
- Requirements for Hydraulic Design Studies
- SCDOT Standard Drawings

Note: All designs elements not classified as innovative or proprietary shall utilize the Federal Highway Administration's' Multi-Use Path Best Practices guide whenever possible.

Note: All plans shall be developed on the following standard sheet sizes only: 24" x 36", 11" x 17", 8 ½" x 11"

**Eligibility:**

Firms responding to this request must be properly registered and in good standing with the South Carolina Board of Registration and Professional Engineers and Surveyors (SC LLR) as applicable. The engineers and landscape architects must be properly registered/licensed and in good ethical and professional standing. It is the responsibility of the responding consultant to ensure that all sub-consultants, sub-contractors be in good standing in regards to licensing and registrations.

The responding firm shall be able to provide proof of professional and general liability insurance coverage in the amount of \$1,000,000, worker's compensation and employer's liability and automobile insurance. A hold harmless agreement will be also required to be executed by the responding firm along with any sub-contractors and sub-consultants. It is also the responding consultant's responsibility to provide proof of the same requirements of any sub-consultants or sub-contractors.

**Selection Criteria:**

A firm's proposal will be selected by the selection committee that will consist of City of Clemson Staff and Friends of the Green Crescent Trail. The selection committee shall select a single firm that is determined to best meet the requirements listed in the Request for Qualifications. The committee will make a recommendation regarding the award to City of Clemson City Council who shall have final authority to award a contract that is in the best interests of the City of Clemson.

Selection will be based on the following criteria:

- Qualifications and experience of the firm, assigned project personnel, sub-consultants and sub-contractors to perform the type of work required
- Lump sum fee for proposed design services described under Services section, with additional billable hourly rates for key project personnel, sub-contractors and sub-consultants
- Past performance of the firm on similar or related projects
- Teams understanding and response to the specific requirements of the project
- Innovative or project performance recommendations
- Firm with experience and/or prior success with the FHWA 'permission to experiment' process, in particular with advisory bike lanes and/or innovative multi-use pathways.

**Proposal Content and Format:**

Proposals are limited to 25 pages, excluding resumes and required forms. Proposals shall be submitted in paper or booklet style and should be formatted on 8 ½" x 11" or 11" x 17" paper. Five (5) printed copies should be submitted along with a PDF electronic copy via email. The proposal shall include the following:

- Introductory letter expressing interest in providing professional services, an acknowledgement of the firm's eligibility to perform the requested services, a statement citing any potential conflicts of interest and contact information including an email address for the primary point of contact.
- Identification of project personnel and their role in the proposed project, including organizational chart, demonstration that assigned staff have the availability to undertake the work required, and resumes of key staff members.
- A narrative stating understanding of the project approach and scope, deliverables and tentative or proposed schedule of tasks and vital milestones.
- Examples and identification of similar or related work performed within the past ten years including contact information for references (name, email, phone number),
- Description of relevant work experience, capabilities and expertise which qualify the key personnel assigned to this project.
- An estimated schedule of project milestones and total project completion
- A summary of estimated fees for design services including:
  - Lump sum fee of design services listed under Services section
  - Line item of billable hourly rates for key project personnel for work additional services outside of specified scope of work in this proposal



## **Document Transmittal and Selection Procedures:**

### *Pre-Proposal Meeting:*

The City of Clemson will host a pre-proposal meeting on **Thursday, March 5th 2020**, at **2:00pm** at the **City of Clemson's Council Chambers** at **City Hall**. Attendance is not required but strongly encouraged. Firms wishing to be qualified for submission of the Request for Qualifications shall respond with a Letter of Interest (LOI) prior to the deadline for final questions.

**Clemson City Hall (Council Chambers)**  
**1250 Tiger Boulevard**  
**Clemson, SC 29631**

### *Last Day for Questions:*

Questions in reference to this Request for Qualifications must be received in writing (no questions submitted via phone will be accepted) by **5:00pm** on **Tuesday, March 10th, 2020**. Questions shall be directed to Chris Shivar at the City of Clemson Engineering Department and shall be addressed to the email address: **cshivar@cityofclemson.org**. After the deadline for formal questions communications with staff, elected officials and members of the Friends of the Green Crescent Trail is strictly prohibited. A summary of submitted questions, with answers provided will be distributed to qualified firms.

### *Proposal Submission Deadline:*

All proposals wishing to be considered shall be submitted no later than **4:00pm** on **March 19th, 2020**. Proposals received after this time or not containing all required elements may not be considered.

Electronic Copy (single PDF) shall be submitted to:  
**cshivar@cityofclemson.org**

Hard copies of the proposal shall be mailed or hand submitted to:  
**City of Clemson Engineering Department**  
**Attn: Chris Shivar**  
**1250 Tiger Boulevard, Suite 5**  
**Clemson, SC 29631**

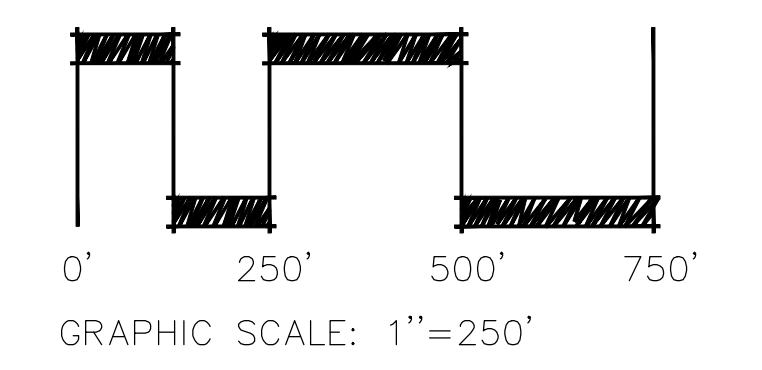
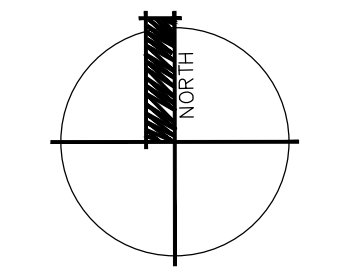
# **Appendix 1**

**Scope of Work Map & Proposed Route**





- BICYCLE/PEDESTRIAN FACILITY LEGEND**
- EXISTING TRAIL
  - - - PROPOSED TRAIL
  - - - PROPOSED ON-STREET FACILITY
  - - - MID-BLOCK CROSSING



DESIGNED:	BS	REVISIONS	
REVIEWED:	BS	NO	DATE
DRAWN:	BS	1	9.30.19
PROJECT NO.	2019-023	DATE	08-31-19
SCALE	1"=250'-0"		



**GREEN CRESCENT TRAIL  
FEASIBILITY PLAN UPDATE**  
City of Clemson, SC

GATEWAY PARK TO  
CLEMSON PARK  
ENLARGEMENT

SHEET NO.  
**2.0**



# **Appendix 2**

**Conceptual Plans & Feasibility Study**



**GREEN CRESCENT**  
TRAILS



Green Crescent Trail

# Feasibility Study Update

Master Plan Report | October 2019

Studio Main LLC

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## Project Parties

### Green Crescent Trail Board

Bob Brookover, President

Chad Carson, Vice President

Heidi Williams, Secretary

Justin Mann, Treasurer

Lisa Hallo, Committee Chair

Drake McNeary, Board Member

Tony Tidwell, Board Member

Eric Newton, Board Member

Erik Nielson, Board Member

Jason Chavis, Board Member

Jennifer Wood, Board Member

### Studio Main LLC

Blake Sanders, PLA – President

Calin Owens – Designer/Planner



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“Leading innovation is not about getting people to follow you into the future, it is about getting people to co-create it with you.”

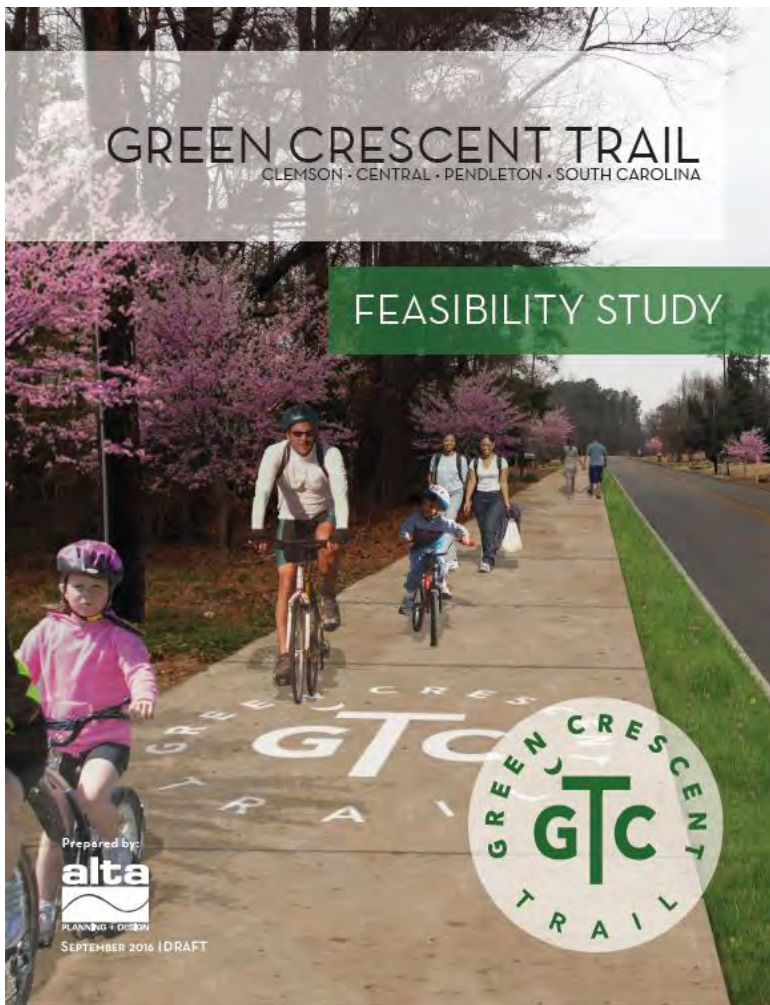
— *Linda A. Hill, Harvard Business School*

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# Chapter One | Introduction

## Overview

In 2016, the Green Crescent Trail (501c3), the Town of Central, and the City of Clemson adopted the Green Crescent Trail Feasibility Study - the product of an effort led by the Green Crescent Trail Board and supported by the City of Clemson. The focus of the 2016 Feasibility Study was to connect the Green Crescent Trail with the City of Clemson, Town of Central, and Town of Pendleton through over 35 miles of on and off-street trails to parks, amenities, neighborhoods, and cultural points of interest. At that time, the funding was not in place to implement the initial phases. Since then, the Town of Central has received partial funding for Phase One from Downtown Central to Southern Wesleyan University and the City of Clemson has committed to \$650,000 one-time funding to implement the initial phase of the Green Crescent Trail within the City of Clemson.



Top: 2016 Green Crescent Trail Feasibility Study

Right: Photosimulation of Proposed Network Trail

The primary intent of the Green Crescent Trail Feasibility Study Update is to build on the previous planning work by implementing connections that encourages future development and incorporates other comprehensive plans. Additionally, this update establishes an implementation plan through schematic design drawings and detailed cost estimates to encourage timely adoption and construction of Phase One.



## Project Purpose

The Friends of the Green Crescent (FOTGC) is a 501(c)(3) working towards a more bicycle and walkfriendly future for the greater Clemson area. In large part due to their work, there has been a recent surge in interest from residents and elected officials in new trail, sidewalk, and on-street bikeway development. A 2016 study initiated by FOTGC in conjunction with the City of Clemson and Town of Central identified several key improvements throughout the area that could make a substantial impact on bicycling and walking for transportation and recreation.

The FOTGC recognize the opportunities that exist with bicycle and pedestrians connections to community centers, existing trail systems, and key landmarks around the great Clemson-Central-Pendleton area. The FOTGC commissioned this Master Plan Update to explore implementation of critical connections inside the City of Clemson. In addition, the Master Plan Update identifies the priority routing to leverage committed funding from the City of Clemson with additional state and federal grant resources.

The analysis and feasibility of these trail segments identify initial phases and connections into other bicycle and pedestrian routes, points of interest, coordination with property owners affected by the trail, and funding strategies and sources for immediate implementation.

## Project Vision

In addition to the overall mission of the Green Crescent Trail, this planning process reiterates the key vision elements to guide the design of the trail network:

- Create a network of walkways, bikeways, and trails.
- Capitalize on existing community strengths, resources, and amenities.
- Improve the safety and comfort of bicycling and walking routes.
- Promote bicycling, walking, and trail usage as recreation and transportation.
- Ensure implementation.



Above: 2016 Public Meeting



BIKE / PED FACILITIES

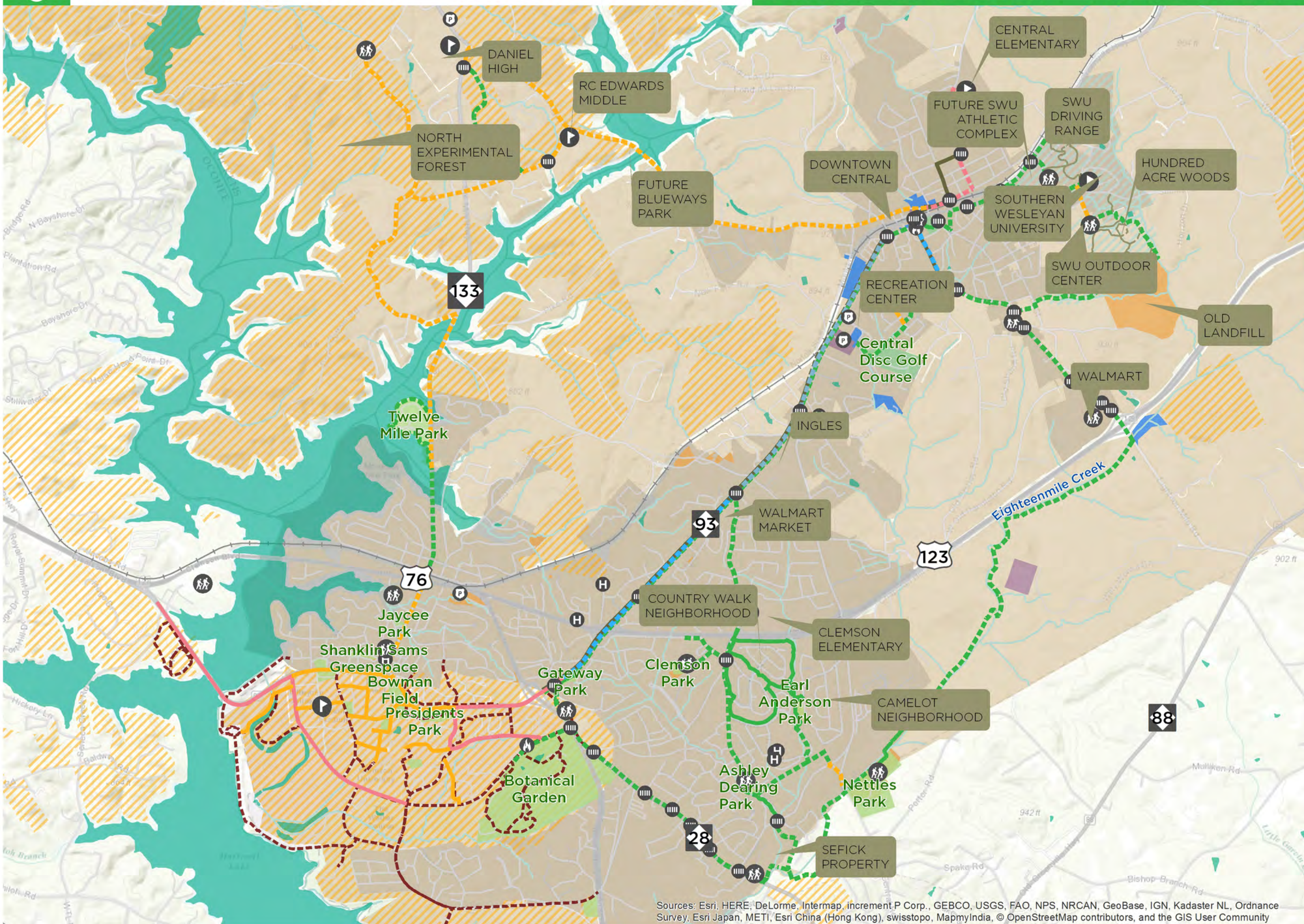
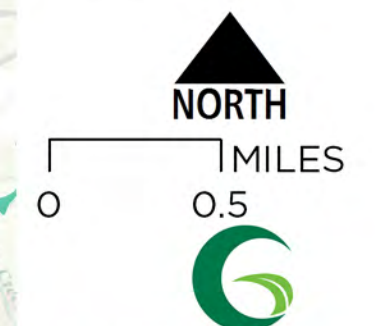
- EXISTING PROPOSED
- BIKE ROUTE
- BIKE LANE
- BUFFERED BIKE LANE
- PROTECTED BIKE LANE
- NATURAL SURFACE TRAIL
- GREENWAY
- SIDEWALK
- CLEMSON UNIVERSITY BIKEWAYS

OVERLAYS

- RAILROADS
- PARKS
- CLEMSON PROPERTY
- CENTRAL PROPERTY
- PICKENS CO PROPERTY
- SWU PROPERTY
- CLEMSON UNI PROPERTY
- TOWN LIMITS

POINTS OF INTEREST

- PROPOSED TRAILHEAD
- PROPOSED X-WALK
- SCHOOLS
- EMS
- FIRE & RESCUE
- LAW ENFORCEMENT
- HEALTH FACILITY



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



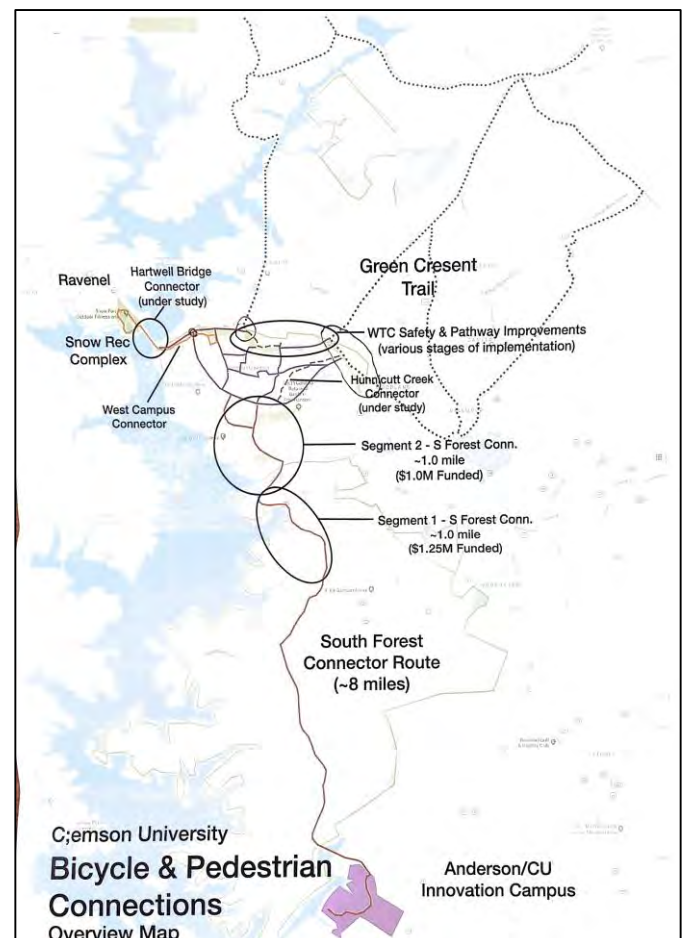
## Primary Mission of the Green Crescent Trail

The Green Crescent Trail, through its creation and ongoing preservation, will dramatically improve quality of life in and around the Upstate of South Carolina with the possibility of attaining national recognition. Community life and nature have always been intimately connected in this part of the country. Thomas Green Clemson, the founder of Clemson University, was an agriculturalist here and gave his land to create “a high seminary of learning.” Today Clemson-area residents, students, employees, and visitors still cherish their village-style connection to the surrounding natural resources. The Green Crescent Trail will enhance, protect, and promote this unique community-nature connection. The trail also will cultivate historical and cultural richness by highlighting local, historically significant people and places.

## Board Member Outreach

During this working meeting, guidelines, actions, methods, and goals were identified for Phase One of the Green Crescent Trail. Each board member was able to share their views for connectivity and redevelopment of corridors that would extend the trail network to destinations while providing connectivity to the adjacent neighborhoods. Studio Main toured the corridors prior to the workshop to gain insight into peak vehicular and pedestrian traffic movements along the entire corridor.

The workshop included a recap of the 2016 Green Crescent Trail Feasibility Study as well as an update to the Action Items identified. Throughout each topic, the board members discussed and focused priority routing from Gateway Park to Clemson Park and from Nettles Park to Ashley Dearing Park. Other spur connections discussed included connector trails to the African American Museum, Patrick Square, Camelot Neighborhood, Country Walk Neighborhood, and the Clemson University Botanical Garden. The summary notes below provide a framework for Phase One recommendations and meets the primary mission identified in the 2016 Green Crescent Trail Feasibility Study.



## Board Member Outreach Summary

### August 14, 2019

- Provide connection from Gateway Park to Clemson Park (on-street)
- Small rights-of-way from Gateway Park to Brooks Street
- Small rights-of-way from Rippleview Drive to Clemson Park
- Multiple trail options from Frontage Road to Clemson Park (creek, sewer r/w, stormwater pond)
- Connect gardens to Clemson Park
- Review Clemson Park Master Plan (additional funding available for implementation in this park)
- Country Walk Neighborhood and Clemson Downs could use sharrows and additional trail signage
- Connect Country Walk Neighborhood to Earl Anderson Park through Bayberry Lane
- Old road rights-of-way parallels Issaqueena Trail and Keystone Lane to connect Nettles Road to Ashley Dearing Park if Sefick property isn't available for easement
- Country Walk Neighborhood, Patrick Square, and Camelot may need a community meeting to become part of the network
- Connect Gateway Park to African American Museum through sharrows and signage
- All low-traffic streets need a neighborhood safety plan
- Utilize existing bridge at Nettles Park that connects to Patrick Square
- Provide handcycle turnaround at end of bridge with plaza; expand existing sidewalk to 10' (existing 5' concrete sidewalk)
- Expand trail around existing dog park and around the outfield of the existing baseball field
- Trail could go under or Central Road at existing bridge or use at at-grade road crossing
- Property easements needed along 18 Mile Creek to Lark Circle or Sefick Property to connect to Ashley Dearing Park
- Long-term connections to Pacolet-Milliken property and Clemson South Experimental Forest
- \$650,000 funded committed from City of Clemson; potential for PARD funding through Pickens County, Recreational Trails Program (\$100,000) and private donors
- Next Steps: Updated Feasibility Plan with action items for Phase One as noted with facility types, cost estimates, photosimulations, and sections (if needed)

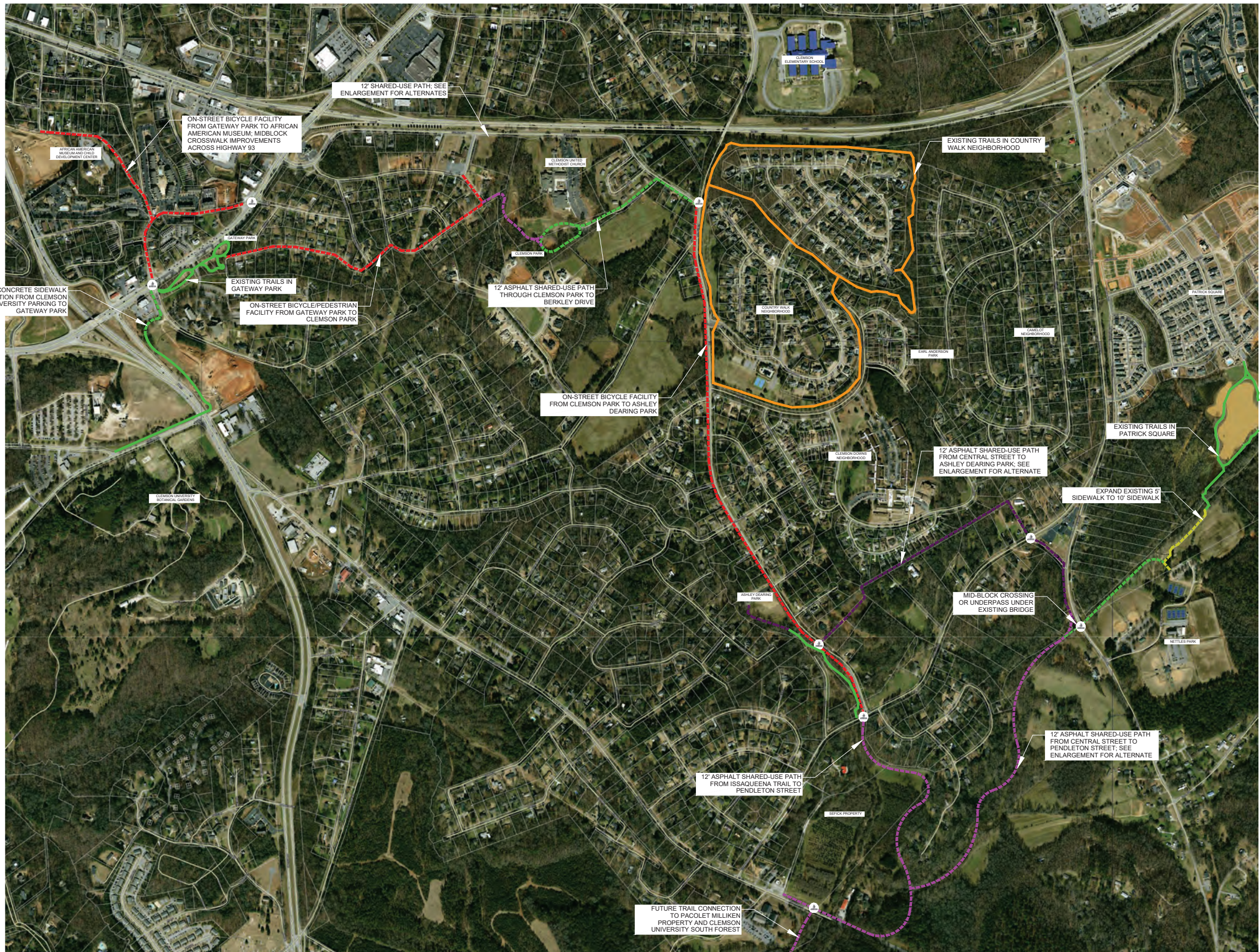
“When I’m working on a problem, I never think about beauty. But when I’ve finished, if the solution is not beautiful, I know it’s wrong.”

– *Buckminster Fuller*



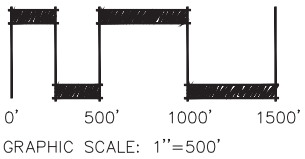
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**BICYCLE/PEDESTRIAN FACILITY LEGEND**

- EXISTING TRAIL
- - - PROPOSED TRAIL
- - - PROPOSED ON-STREET FACILITY
- MID-BLOCK CROSSING



DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2018-023 PROJECT NO.	08-31-19 DATE
1"=500'-0" SCALE	

REVISIONS		
NO	DATE	ITEM
1	9.30.19	PHASE ONE ROUTING PLAN



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



**GREEN CRESCENT TRAIL  
FEASIBILITY PLAN UPDATE**  
City of Clemson, SC

OVERALL TRAIL PLAN

SHEET NO.

**1.0**



# Chapter Two | Recommendations

## Phase One Recommendations

The design approach for implementation of Phase One utilizes the public input from the 2016 Feasibility Study to connect existing park facilities to neighborhoods, prioritizing three areas of implementation within the next 18 months.

- Gateway Park to Clemson Park (Phase One)
- Clemson Park to Ashley Dearing Park (Immediate Future Phase)
- Nettles Park to Ashley Dearing Park (Immediate Future Phase)

The images below represent the public input received during the 2016 Feasibility Study, noting the highest priority was to connect schools, neighborhoods and community centers, and providing a linear greenway along 18-Mile Creek. In addition, since 2016 the Green Crescent Trail has continued to provide opportunities for input and engagement and have implemented initial phase one amenities.

I would love to see safe routes for biking and walking children by all three schools (Clemson elementary, Edwards middle school, and Daniel high school). There are not even sidewalks by the middle school. I would also love to see safe biking by the public library and Ingles on 93. And safer biking from Berkeley to the University. Thank you for all you are doing to make our town a safer and better place to bike and walk.

Also, please work with university traffic engineers to significantly reduce RC Edwards and Daniel HS vehicular traffic by providing great bike access. Current plan has greenway from Daniel to RCE but that's nothing more than a neighborhood path. Greenway or raised bike path from RCE to Clemson neighborhoods (eg Berkeley) is what is really necessary - transportation, not recreation.

My highest priority is highway 133 crossing 123 towards downtown Clemson. I live on Mtn View Lane and commute to class everyday, twice a day, along with several other people in the area behind Sonic. I think there could be a huge improvement in the 123 crossing just with paint on the ground and signs. It is unclear which lane cyclists should be in to cross 123, so a sign added to the existing pavement could direct cyclists and warn drivers along with a crosswalk for walkers. I don't think downtown could be improved much with the current road but from the bottom of the hill to 123 could be improved tremendously.

Not in my backyard

I'd like to see the greenway along 18 mile creek built first. I think this greenway will be the spine for the whole system. Once it is built, we'll need to connect to it via Pendleton and Berkeley, etc. Thank you for all the work.

I would like to see more neighborhoods connected like Clemson downs and Camelot are. Also I wish there were more crosswalks marked at busy roads like Issaqueena Trail.

I'd like to see trails that connect communities. i.e. a trail that would go from Clemson to Anderson to Greenville to Easley to Pickens and back to Clemson.

I would take with a grain of salt all the 'X' marks on the maps around Dellwood. I cannot imagine that many homeowners were present and believe one or two irritated residents may have marked multiple plots. Also, schools need to be connected with paved greenways not competing with automotive traffic, particularly RC Edwards (as those students can't drive and there aren't even sidewalks there and the pick-up traffic congestion is horrible). And please don't concentrate solely on student housing complexes as "destinations." It's low-hanging fruit, but leaves the year-round residents out of the picture.

Your suggestion that would prevent left hand turns from 93 to Berkeley is a very bad idea. It will encourage accidents and result in the additional consumption of fuel. I make left hand turns from 93 to Berkeley 4-7 times a week. This would be a real burden.

The description of Berkeley north of 123 as having a turn lane is inaccurate. There is only a turn lane by the elementary school.

I object to any plan that will involve cutting down vegetation on private property! Berkeley Proposal A is unacceptable. The creation of two-way bike lanes requires an additional foot of easement. I have landscaped my home for privacy which will be lost. This proposal also includes barriers and trees which are traffic hazards. Proposal B appears to involve tearing up the existing paved shoulders and sidewalks in order to lay new sidewalks. This is a waste of money! Neither proposal addresses the fact that property owners on one side of Berkeley bear the total loss of their property to sidewalk and paved shoulders; in my case 12 feet. They also do not address the fact that on any day of the week there are landscapers, contractors, say nothing of guests who park on the paved shoulders which they ignore say nothing of the fact that once a week garbage is required to be placed there. Throughout the year lawn waste is placed near the road. In the fall this is particularly the case and the city takes a bit of time to pick it all up. It needs to be placed near the street because the removal equipment can't go too far from the roadway.

# ALES FOR TRAILS

## WHERE: ELKMONT TAP

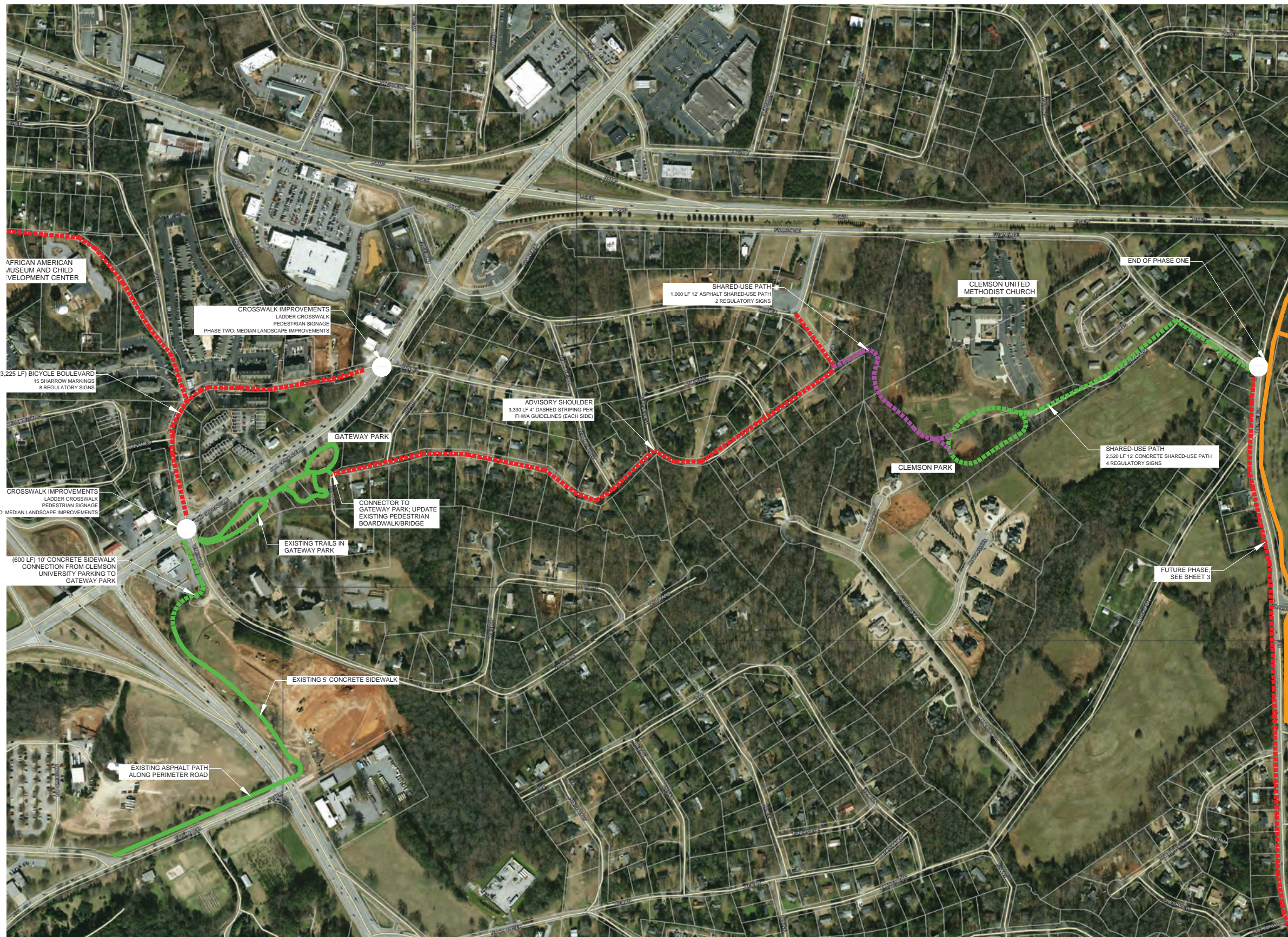
WHEN: APRIL 27, 2019  
5PM-7PM



COME DRINK, EAT, HANG OUT, AND LEARN WHAT THE GREEN CRESCENT TRAIL IS ALL ABOUT AND HOW YOU CAN GET INVOLVED!

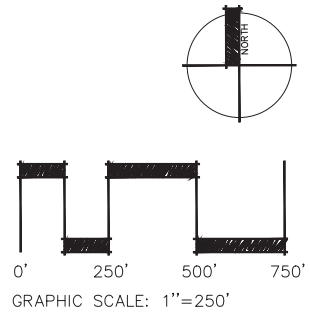






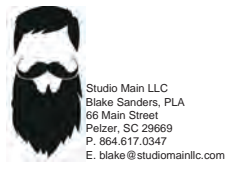
**BICYCLE/PEDESTRIAN FACILITY LEGEND**

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DESIGNED:	BS
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DRAWN:	BS
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REVISIONS		
NO	DATE	ITEM
1	9.30.19	PHASE ONE ROUTING PLAN



**GREEN CRESCENT TRAIL  
FEASIBILITY PLAN UPDATE**  
City of Clemson, SC

GATEWAY PARK TO  
CLEMSON PARK  
ENLARGEMENT

SHEET NO.  
**2.0**



## Chapter Two | Recommendations

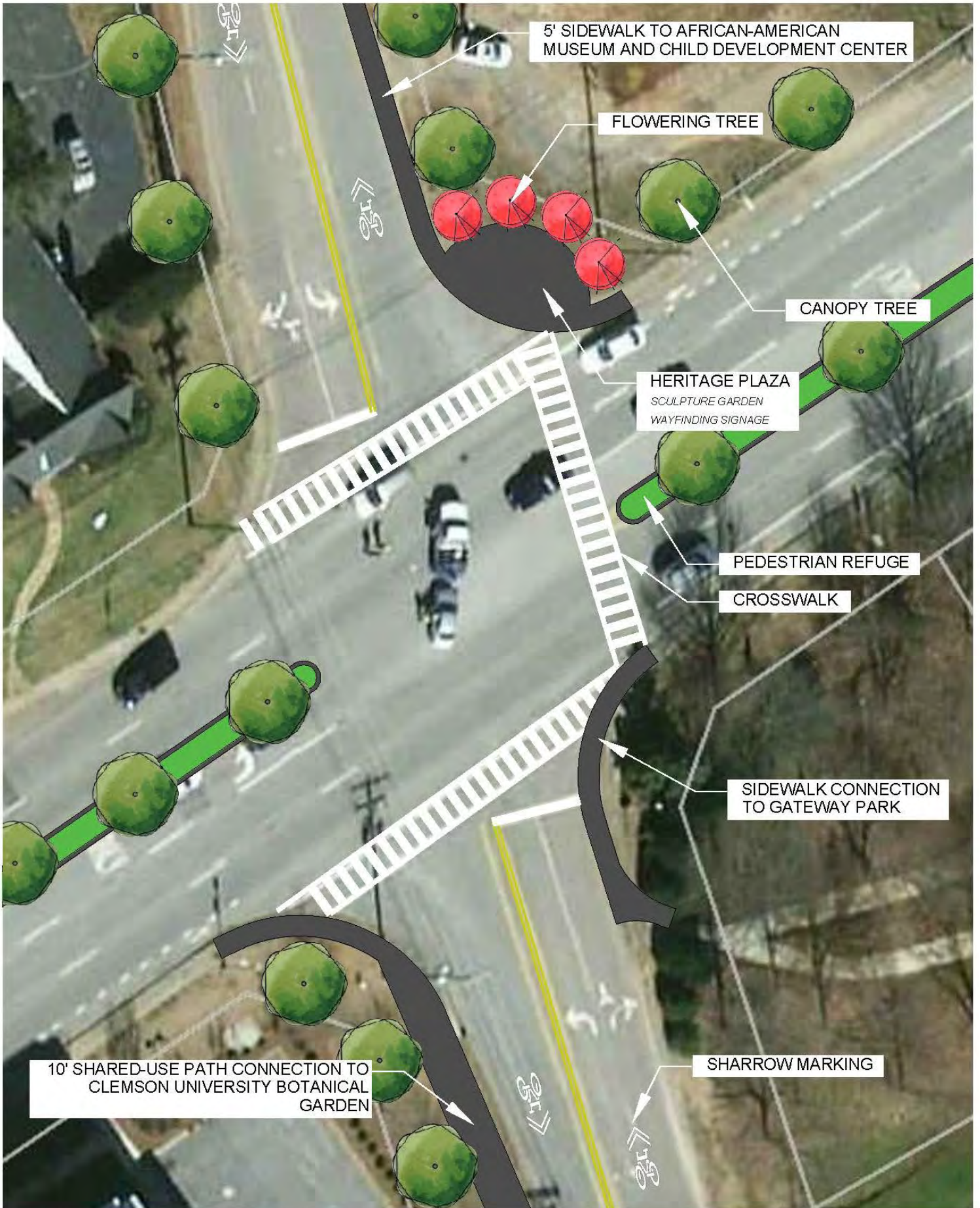


Advisory Shoulder in Hanover, New Hampshire

### Phase One | Gateway Park to Clemson Park

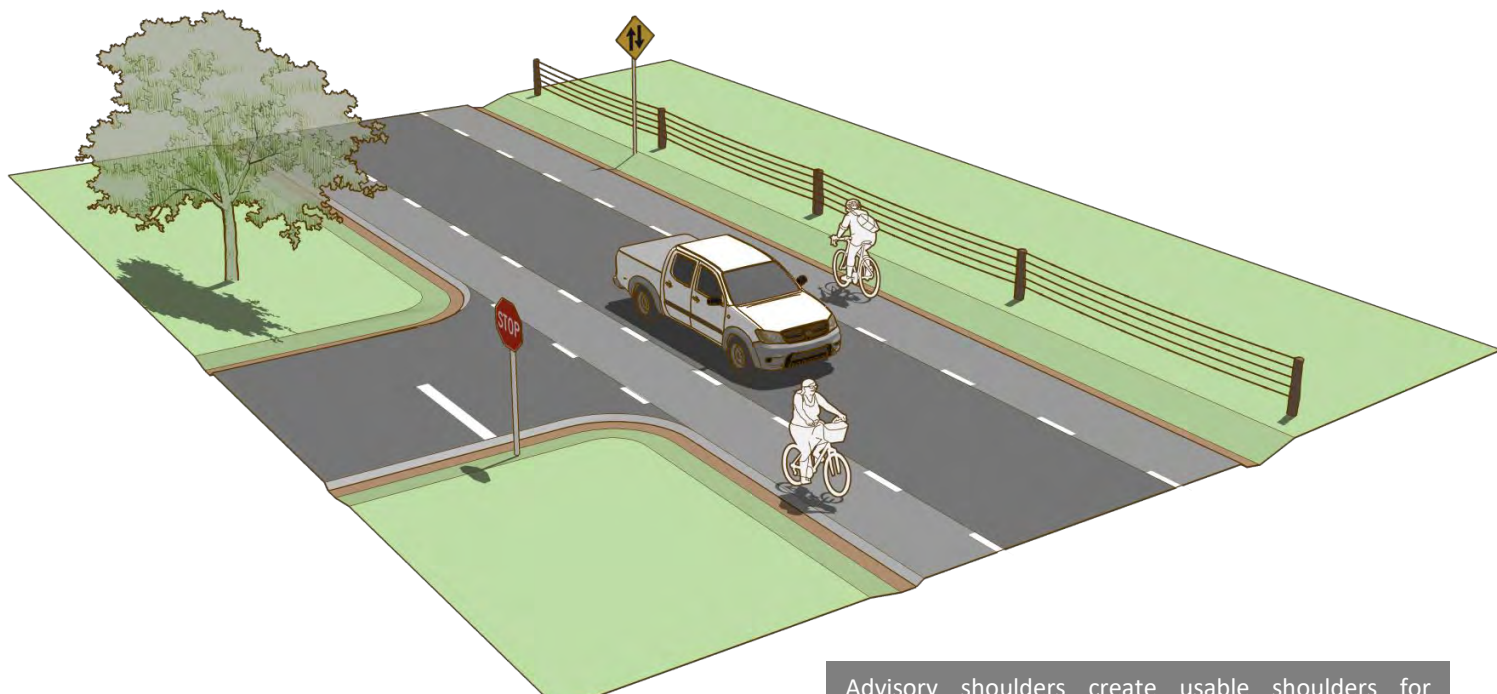
Gateway Park is connected to the existing Clemson University parking facilities located on Highway 76 via an existing 5' concrete sidewalk. An extension of this sidewalk via a proposed 10' concrete shared-use path adjacent to First Citizens Bank would provide additional trailhead parking opportunities and connect to an existing asphalt trail and future Clemson University pedestrian and bicycle improvements along Perimeter Road. In addition, this connection would connect residents to Clemson University and the Botanical Gardens. A mid-block crossing at the intersection of Kelly Road and Highway 93 would connect Gateway Park to a proposed bicycle boulevard and sidewalk improvement along Kelly Road to the African American Museum and Child Development Center. An existing rights-of-way owned by the City of Clemson would connect Gateway Park to Brooks Street and Rippleview Drive, both proposed as Advisory Shoulder facilities as recommended by the Federal Highway Administration in their 2016 Small Town and Rural Design Guide. This traffic calming measure is permitted on low-traffic roads and provides a dedicated space for bicycle and pedestrian traffic while maintaining the existing roadway width. Since traffic volumes and speeds are low on both streets, traffic would yield to the shoulder when oncoming vehicular traffic is visible. At the intersection of Azalea Street and Rippleview Drive, multiple options are viable for connecting to Clemson Park.



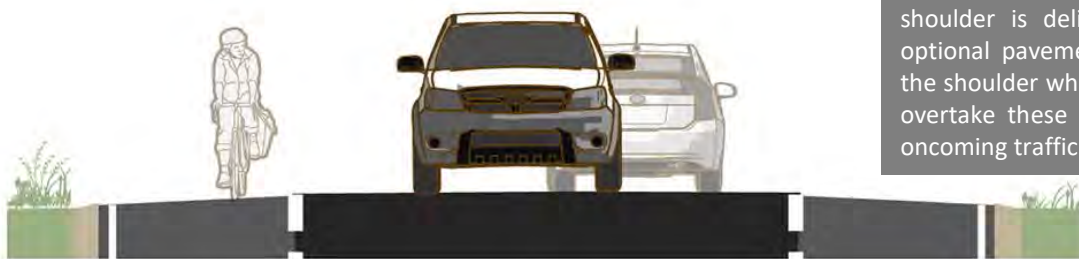




# Chapter Two | Recommendations



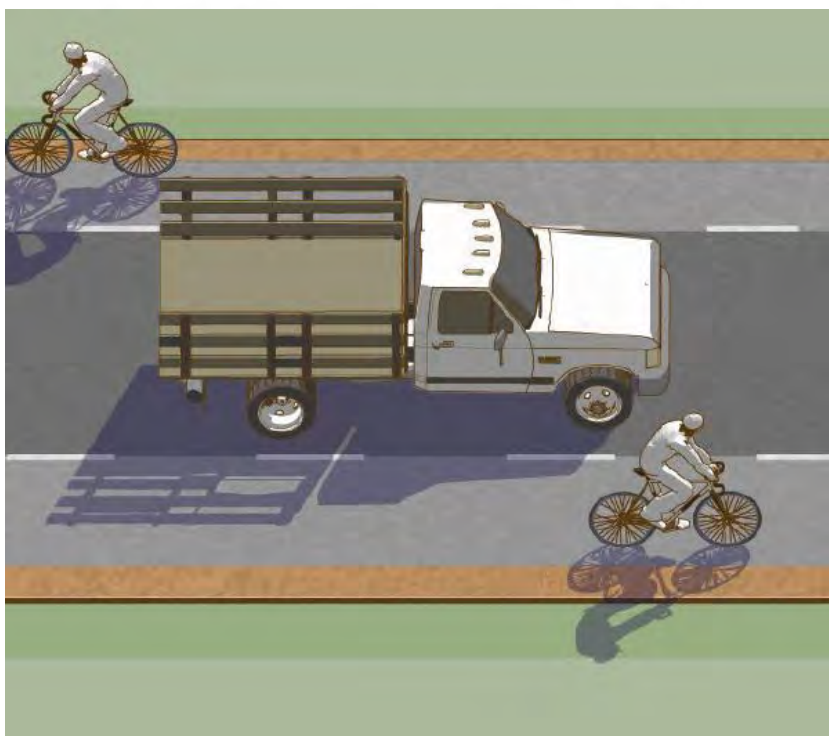
Advisory shoulders create usable shoulders for pedestrians and bicyclists on a roadway that is otherwise too narrow to accommodate one. The shoulder is delineated by pavement marking and optional pavement color. Motorists may only enter the shoulder when no bicyclists are present and must overtake these users with caution due to potential oncoming traffic.



**Advisory Shoulder**  
6 ft (1.8 m) preferred

**Center Two-Way Travel Lane**  
10-18 ft (3.0-5.5 m)

Advisory shoulders clarify positioning and yield priority on roads too narrow to provide exclusive travel space. When pedestrians or bicyclists are present, motorists may need to yield to users present in the advisory shoulder before passing.



A broken lane line used to delineate the advisory shoulder should consist of 3 ft (1.0 m) line segments and 6 ft (2.0 m) gaps.

Where additional edge definition is desired, stripe a normal solid white edge line in addition to the broken advisory shoulder line.

In general, do not mark a center line on the roadway. Short sections may be marked with center line pavement markings to separate opposing traffic flows at specific locations, such as around curves, over hills, on approaches to at-grade crossings, and at bridges. At these locations, widen the paved roadway surface to provide space for paved bicycle-accessible shoulders and conventional width travel lanes. See Table 2-3 for sight distance requirements.





Rippleview Drive | Before



Rippleview Drive | After



## Chapter Two | Recommendations



### Gateway Park to Clemson Park

Transitioning from an on-street facility to an off-street shared-use path would occur along Rippleview Drive at an existing rights-of-way nearest Azalea Drive and connect to Clemson United Methodist Church (CUMC). This connector has topographic challenges to meet ADA and connects on the sewer rights-of-way at the existing stormwater detention facility. A pedestrian bridge is required to cross an existing unnamed tributary.

Upon exiting the rights-of-way and through CUMC property, the shared-use path would traverse around the existing community garden and connect to proposed park improvements and parking facilities. This asphalt path would then connect back to Frontage Road along Clemson Park Road. The path continues to an improved intersection at Berkley Drive and Frontage Road, connecting Clemson Elementary School, Country Walk, and residents along Berkley Drive via an improved two-way cycle track. It is proposed as part of Phase One that the City request SCDOT to study the intersection of Frontage Road and Berkley Drive as a potential for a three-way stop.





Clemson Park | Before



Clemson Park | After





Clemson Park Entrance | Before



Clemson Park Entrance | After





“Plans are only good intentions  
unless they immediately degenerate  
into hard work.”

– *Peter Drucker*

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# Chapter Three | Implementation

## Opinion of Probable Cost

Cost estimating for Phase One relies on a variety of factors that are related to the design challenges. The following factors play a role in cost estimation:

### Engineering Cost

Engineering costs cover a variety of professional services, including:

- Survey
- Preliminary, Semi-Final, and Final Design
- Permitting (Local, State, and Federal as required)
- Preparation of Construction Documents
- Bid Assistance and Contract Negotiation
- Construction Administration

Based upon similar project experience and proposed concept design features, engineering costs are expected to be approximately ten percent of the total construction cost.

### Construction Cost

Opinions of probable cost are preliminary estimates of construction costs based upon the conceptual designs described in this report. Opinion of probable cost is derived from previous studies, contractor coordination, and recent indexed construction cost. Based on review of GIS data provided by Pickens County, property easements will be required to implement Phase One. These opinions of probable cost are schematic in scope and will be refined as Phase One enters final design by the Engineer of Record. These estimates should continue to be considered 'order of magnitude cost' and additional contingencies above and beyond those noted should be carried by the City or implementing agency. American Society for Testing and Materials (ASTM) Standard E2620 defines Order of Magnitude as being accurate to within plus 50% or minus 30%. Many factors can affect final construction costs including revision to the construction documents during final design, additional requirements imposed by property owners (if required), fluctuations in commodity pricing, and additional amenities (signage, lighting, etc.) as requested by the City. As the project progresses through to final design, these uncertainties continue to diminish. With each round of refinement and range of expected construction costs will become more accurately known.



**ORDER OF MAGNITUDE OPINION OF COST**

PROJECT: Green Crescent Trail	DATE PREPARED: September 30, 2019	
LOCATION: Clemson, SC	BASIS:	
DESCRIPTION: Green Crescent Trail from Gateway Park to Clemson Park	From Sta.	To Sta.
	LENGTH: NOTED ON PLANS	WIDTH: NOTED ON PLANS
PROJECT NO.: 2019-023	PREPARED BY: STUDIO MAIN LLC	

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

Item	Est. Quant.	Unit	Unit Price	Total
<b>CLEMSON PARK TO BERKLEY DRIVE</b>				
EROSION CONTROL	2520	L.FT.	\$5.00	\$12,600
FINE GRADING	8400	S.YD.	\$9.00	\$75,600
CLEARING AND GRUBBING	1.25	ACRE	\$10,000.00	\$12,500
6" GRAVEL BASE	840	C.YD.	\$60.00	\$50,400
ASPHALT PAVING	555	TONS	\$120.00	\$66,600
REGULATORY SIGNAGE	4	EACH	\$300.00	\$1,200
<b>Contract Items</b>			<b>SUBTOTAL</b>	<b>\$218,900</b>
<b>AZALEA DRIVE TO CLEMSON PARK</b>				
EROSION CONTROL	1000	L.FT.	\$5.00	\$5,000
FINE GRADING	3350	S.YD.	\$9.00	\$30,150
CLEARING AND GRUBBING	1.00	ACRE	\$10,000.00	\$10,000
6" GRAVEL BASE	225	C.YD.	\$60.00	\$13,500
ASPHALT PAVING	190	TONS	\$120.00	\$22,800
REGULATORY SIGNAGE	2	EACH	\$300.00	\$600
PEDESTRIAN BRIDGE	1	EACH	\$75,000.00	\$75,000
<b>Contract Items</b>			<b>SUBTOTAL</b>	<b>\$157,050</b>
<b>GATEWAY PARK TO AZALEA DRIVE</b>				
4" THERMOPLASTIC STRIPING	6360	L.FT.	\$3.00	\$19,080
REGULATORY SIGNAGE	4	EACH	\$300.00	\$1,200
MISCELLANEOUS	1	EACH	\$1,500.00	\$1,500
<b>Contract Items</b>			<b>SUBTOTAL</b>	<b>\$21,780</b>
<b>CLEMSON UNIVERSITY PARKING TO GATEWAY PARK</b>				
FINE GRADING	666	S.YD.	\$9.00	\$5,994
CONCRETE SIDEWALK (6")	6000	S.FT.	\$18.00	\$108,000
EROSION CONTROL	600	L.FT.	\$5.00	\$3,000
<b>Contract Items</b>			<b>SUBTOTAL</b>	<b>\$116,994</b>
<b>GATEWAY PARK TO AFRICAN AMERICAN MUSEUM</b>				
SHARROW MARKINGS	15	EACH	\$300.00	\$4,500
REGULATORY SIGNAGE	8	EACH	\$300.00	\$2,400
CROSSWALK ENHANCEMENTS	3	EACH	\$2,500.00	\$7,500
MISCELLANEOUS	1	L.SUM	\$1,500.00	\$1,500
<b>Contract Items</b>			<b>SUBTOTAL</b>	<b>\$15,900</b>
<b>Subtotal All Contract Items</b>			<b>SUBTOTAL</b>	<b>\$530,624</b>
Mobilization		8.0%		\$42,450
Construction Staking		1.0%		\$5,306
Traffic Control		3.0%		\$15,919
			<b>CONSTRUCTION TOTALS</b>	<b>\$594,299</b>
CONTINGENCIES		20.0%		\$118,860
DESIGN AND ENGINEERING		12.0%		\$71,000
			<b>TOTAL ESTIMATED COST</b>	<b>\$784,159</b>

*Note: From Clemson Park to Berkely Drive, a concrete substitution would result in a Total Estimated increase of \$330,000.00*



# Chapter Three | Implementation

## Action Items

The implementation of the Phase One of the Green Crescent Trail will require multiple sources of funding, partnerships, and consultant driven design and construction. It will also take the dedication of City staff and a commitment to the vision established by this plan update, the 2016 Feasibility Study, and the City's Comprehensive Plan. The following list of action items will set the implementation process in motion. It is anticipated that these task can be completed within 12-18 months.

## City Initiatives

As the City Council moves toward a multi-year funding strategy for additional implementation, the conceptual design should be refined during engineering to meet all federal, state, and local codes, as wells as other internal design guidelines. The following is a framework plan to move toward design engineering of Phase One.

- Individual property owner meetings to review temporary construction impacts and final design intent.
- Final budget allocations and approval from City Council
- Survey (topographic, utility, above/below ground structures, right-of-way extents, etc.
- Request for Qualifications from Engineering and Landscape Architecture firms specializing in streetscape and multi-modal design
- Construction documentation and permitting
- Bidding and Contract Negotiation
- Construction administration

## Wayfinding Signage (Greenway, Downtown and Parking)

While the City continues to expand its bicycle, pedestrian, and automobile circulation networks Citywide, it is vital that signage and informational infrastructure direct residents and visitors to key recreational, commercial, and cultural destinations throughout Clemson. Preference should be given to directing visitors along low-traffic streets to neighborhood amenities and cultural destinations.

## Marketing and Events

As Phase One is implemented, the City and Friends of the Green Crescent should develop a marketing strategy to encourage use. Examples include programming sections of the trail as the start of annual 5k events and hosting cultural events along the network. Local clubs (Girl and Boy Scouts) can be a valuable resource in developing short-term, high impact projects along the new connection.

# Chapter Three | Implementation

## Action Items cont.

### Additional Goals and Objectives

Additional Goals and Objectives were identified during the Board workshop and should be considered during yearly updates. These objectives can be developed in conjunction with City of Clemson staff, privately funded by non-profit groups or interested parties, or developed as part of thesis or graduate work at local or statewide universities.

- Marketing and Promotion Plan for the Green Crescent Trail
- Traffic calming for additional neighborhoods not covered in this Feasibility Study update
- Zoning/Planning Updates to secure easements along public utilities rights-of-way for future trail connections

While the City continues to implement City-wide strategies that will increase the quality of life throughout Clemson, special consideration should be given to the Green Crescent Trail with updates on action items to ensure transparency toward implementation. City staff should update the public on the implementation of Phase One on a quarterly basis with anticipated timelines for future projects and active timelines for ongoing projects.. Yearly updates on maintenance, management, and expansion should be given during City budget discussions or during annual Department Head workshops. Digital and hard copy maps should be updated annually to ensure that residents, visitors, and businesses are aware of new connections.

“What we need more is to look at  
how our landscape should look in  
the next decades.”

– *Dieter Rams*



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# Appendix A | Immediate Future Phases

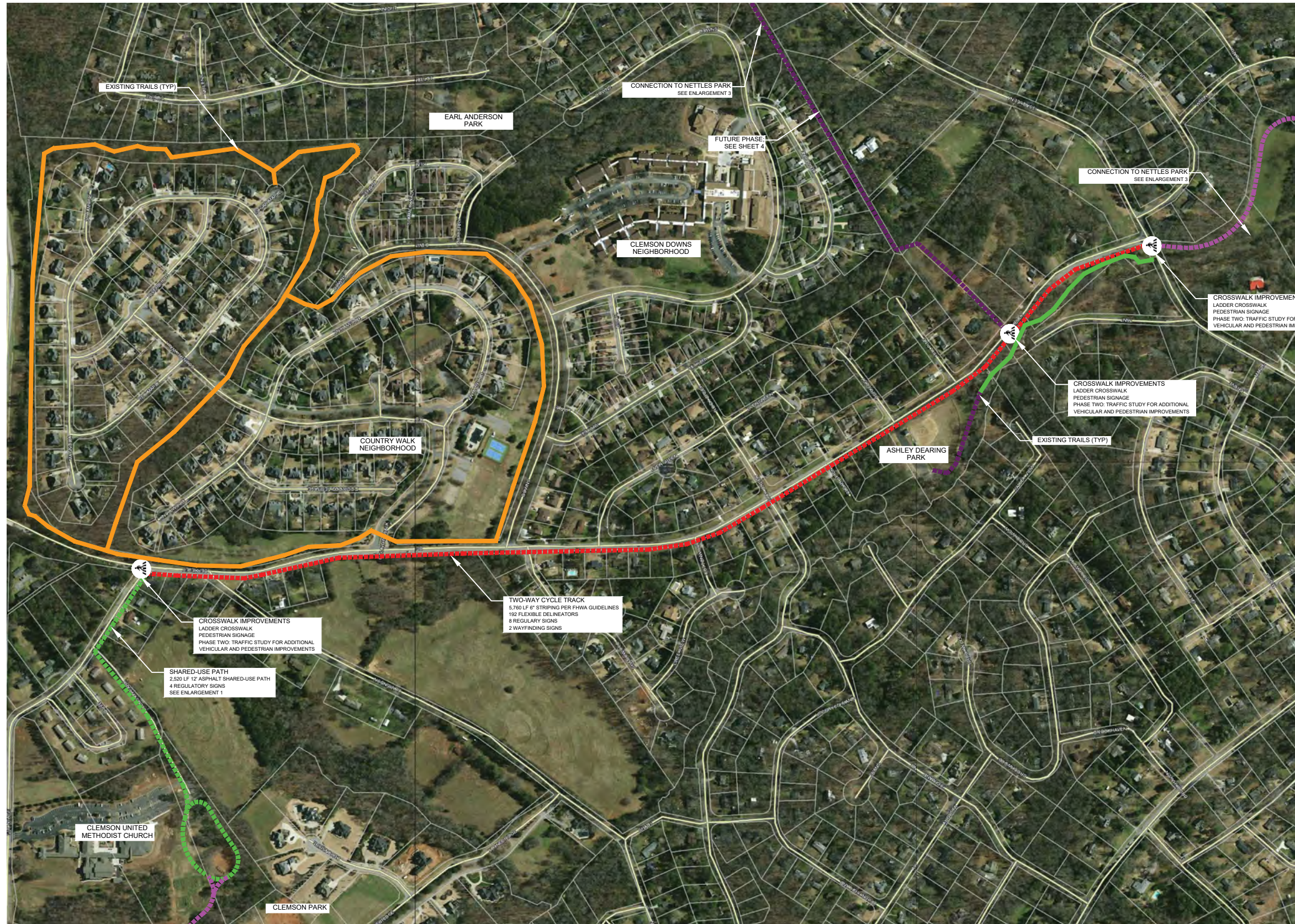
## Clemson Park to Ashley Dearing Park

As identified in the 2016 Feasibility Study, the connector along Berkley Drive exist via a 5' concrete sidewalk and expanded shoulder. This should can be improved with flexible delineators and paint markings to allow for two-way bicycle traffic adjacent to the existing sidewalk. Additional improvements should include signage and stormwater grate improvements to prevent bicycle conflicts.

With additional funding and resources as part of Phase Two, the curb and be moved to accommodate a concrete shared use path adjacent to the roadway. Where ROW is available, the path could be buffered from vehicular traffic with a vegetative buffer, as shown above. Existing pathways within Country Walk could also be connected to the proposed Green Crescent Trail so that the Country Walk Neighborhood has access to the expanded trail system, and so that the community has access to the existing trail system.

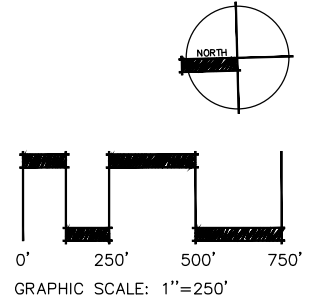






**BICYCLE/PEDESTRIAN FACILITY LEGEND**

- EXISTING TRAIL
- - - PROPOSED TRAIL
- - - PROPOSED ON-STREET FACILITY
- MID-BLOCK CROSSING



DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2019-023	08-31-19
PROJECT NO.	DATE
1"=250'-0"	
SCALE	

REVISIONS		
NO	DATE	ITEM
1	9.30.19	PHASE ONE ROUTING PLAN



**GREEN CRESCENT TRAIL  
FEASIBILITY PLAN UPDATE**  
City of Clemson, SC

CLEMSON PARK TO ASHLEY  
DEARING PARK  
ENLARGEMENT

SHEET NO.  
**3.0**



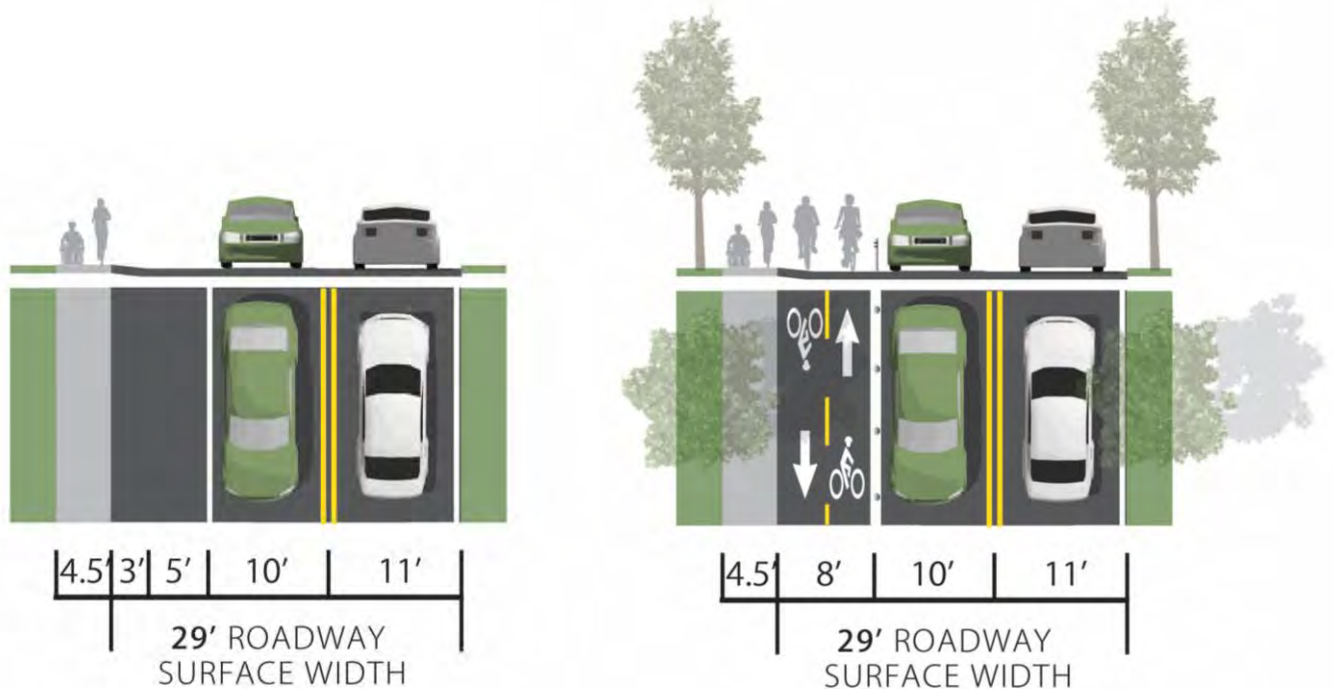
## ORDER OF MAGNITUDE OPINION OF COST

PROJECT: Green Crescent Trail	DATE PREPARED: September 30, 2019	
LOCATION: Clemson, SC	BASIS:	
DESCRIPTION: Green Crescent Trail from Clemson Park to Ashley Dearing Park	From Sta.	To Sta.
	LENGTH: NOTED ON PLANS	WIDTH: NOTED ON PLANS
PROJECT NO.: 2019-023	PREPARED BY: STUDIO MAIN LLC	

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Item	Est. Quant.	Unit	Unit Price	Total
<b>FRONTAGE ROAD (CLEMSON PARK) TO ASHLEY DEARING PARK ALONG BERKLEY DRIVE</b>				
FLEXIBLE DELINEATORS	192	EACH	\$60.00	\$11,520
6" THERMOPLASTIC STRIPING	5760	L.FT.	\$4.00	\$23,040
WAYFINDING SIGNAGE	2	EACH	\$1,000.00	\$2,000
REGULATORY SIGNAGE	8	EACH	\$300.00	\$2,400
CROSSWALK ENHANCEMENTS	3	EACH	\$2,500.00	\$7,500
MISCELLANEOUS	1	L.SUM	\$25,000.00	\$25,000
<b>Contract Items</b>			<b>SUBTOTAL</b>	<b>\$71,460</b>
<b>Subtotal All Contract Items</b>			<b>SUBTOTAL</b>	<b>\$71,460</b>
Mobilization		8.0%		\$5,717
Construction Staking		1.0%		\$715
Traffic Control		3.0%		\$2,144
			<b>CONSTRUCTION TOTALS</b>	<b>\$80,035</b>
CONTINGENCIES		20.0%		\$16,007
DESIGN AND ENGINEERING		12.0%		\$10,000
			<b>TOTAL ESTIMATED COST</b>	<b>\$106,042</b>

### Berkley Drive Existing and Proposed Roadway Sections



# Appendix A | Immediate Future Phases

## Nettles Park to Ashley Dearing Park

Connecting Nettles Park to Ashley Dearing Park, Pendleton Road, and other proposed facilities will require property owner coordination. Multiple options are provided for consideration as the City of Clemson moves toward implementation.

Patrick Square has an existing trail network that can be utilized to provide connections to residents and businesses. After crossing 18 Mile Creek on the existing bridge, the 5' concrete sidewalk should be expanded to 10' to accommodate bicycle and pedestrian users. This 10' concrete shared-use path continues around the existing dog park and existing baseball fields to create a loop within Nettles Park. Existing parking and kiosk should be utilized as a trailhead. This path could be part of a future pedestrian/trail network when outlined in a future Nettles Park Master Plan. At the intersection of Central Road, two options exist to connect to Ashley Dearing Park.

Option 1: An at-grade road crossing would allow trail users to cross 18 Mile Creek and connect to Gordon Lane. The shared-use path would cross Issaqueena Trail and continue along an abandoned road rights-of-way. This rights-of-way parallels Issaqueena Trail and Keystone Lane. Property owner coordination would be required to connect to an improved at-grade road crossing at Berkley Drive to connect to Ashley Dearing Park.

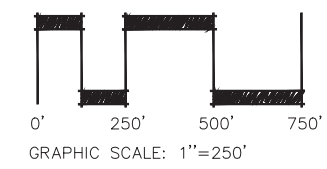






**BICYCLE/PEDESTRIAN FACILITY LEGEND**

- EXISTING TRAIL
- - - PROPOSED TRAIL
- - - PROPOSED ON-STREET FACILITY
- MID-BLOCK CROSSING



DESIGNED:	BS
REVIEWED:	BS
DRAWN:	BS
2018-023 PROJECT NO.	08-31-19 DATE
1"=250'-0" SCALE	

REVISIONS		
NO	DATE	ITEM
1	9.30.19	PHASE ONE ROUTING PLAN

Studio Main LLC  
Blake Sanders, PLA  
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Pelzer, SC 29669  
P. 864.517.0347  
E. blake@studiomainllc.com

**GREEN CRESCENT**  
TRAILS

**GREEN CRESCENT TRAIL  
FEASIBILITY PLAN UPDATE**  
City of Clemson, SC

NETTLES PARK TO ASHLEY  
DEARING PARK  
ENLARGEMENT

SHEET NO.  
**4.0**



# Appendix A | Immediate Future Phases

## Nettles Park to Ashley Dearing Park Cont.

Option 2: The shared-use path could utilize the existing underpass along 18 Mile Creek to go under Central Road. Staying along the east side of 18 Mile Creek, the path would traverse along a proposed easement to connect into Clemson University Experimental Forest property along Pendleton Road and connect to Sefick Property, identified in the 2016 Feasibility Study. The connection through Sefick Property provides a direct connection to Ashley Dearing Park. Improved pedestrian crossing at Issaqueena Trail and Berkley Drive is required; additional traffic studies and pedestrian crossing evaluations could warrant a three-way stop or additional visual signalization (e.g. flashing beacons, etc.) for enhancing pedestrian safety. While this shared-use path would require coordination from multiple property owners, it provides a direct connection to Pacolet Milliken proposed trails and a shared-use path adopted by the Town of Pendleton along North Mechanic Street.

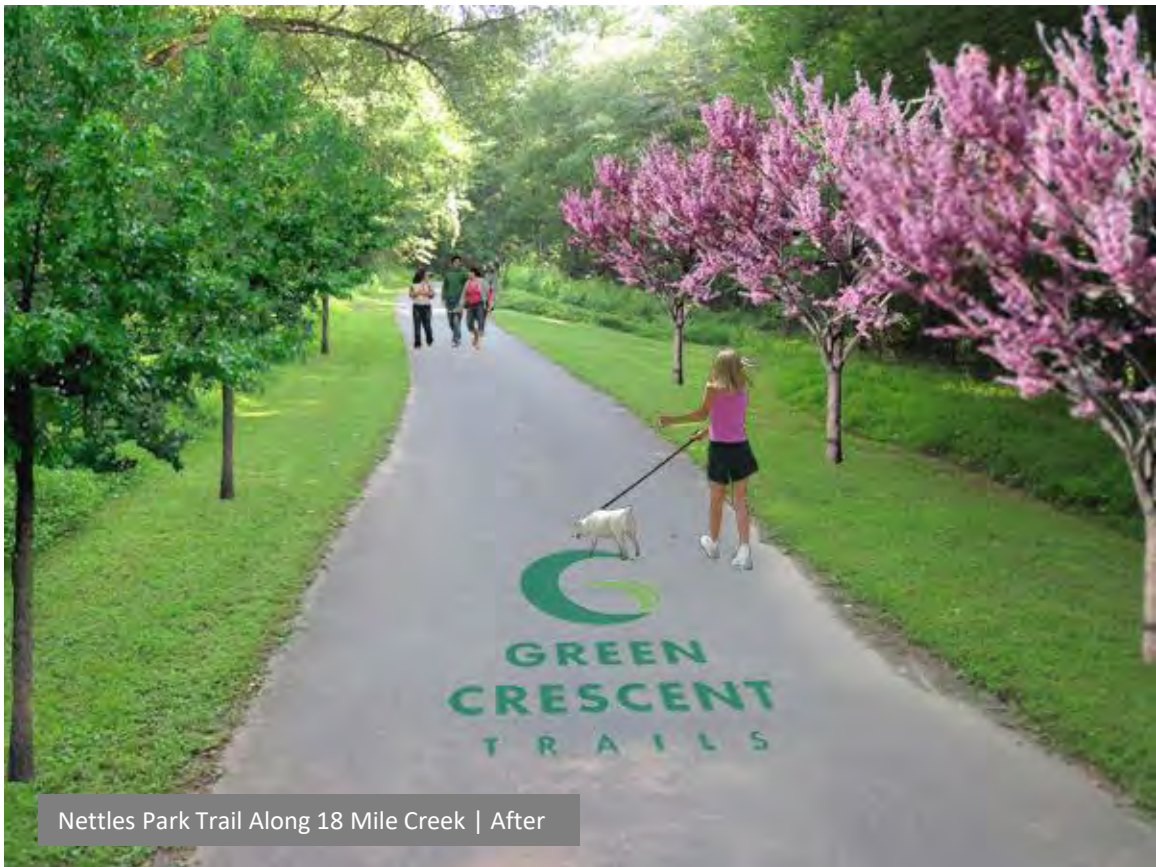




# Appendix A | Immediate Future Phases



Nettles Park to Ashley Dearing Park | After



Nettles Park Trail Along 18 Mile Creek | After



**ORDER OF MAGNITUDE OPINION OF COST**

PROJECT: Green Crescent Trail	DATE PREPARED: September 30, 2019	
LOCATION: Clemson, SC	BASIS:	
DESCRIPTION: Green Crescent Trail from Nettles Park to Ashley Dearing Park - OPTION 1	From Sta.	To Sta.
	LENGTH: NOTED ON PLANS	WIDTH: NOTED ON PLANS
PROJECT NO.: 2019-023	PREPARED BY: STUDIO MAIN LLC	

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Item	Est. Quant.	Unit	Unit Price	Total
<b>SHARED-USE PATH FROM CENTRAL ROAD TO ASHLEY DEARING PARK - OPTION 1</b>				
EROSION CONTROL	4200	L.FT.	\$5.00	\$21,000
FINE GRADING	14000	S.YD.	\$9.00	\$126,000
CLEARING AND GRUBBING	2.50	ACRE	\$10,000.00	\$25,000
6" GRAVEL BASE	1400	C.YD	\$60.00	\$84,000
ASPHALT PAVING	925	TONS	\$120.00	\$111,000
REGULATORY SIGNAGE	6	EACH	\$300.00	\$1,800
CROSSWALK ENHANCEMENTS	2	EACH	\$2,500.00	\$5,000
WAYFINDING SIGNAGE	2	EACH	\$1,000.00	\$2,000
<b>Contract Items</b>			<b>SUBTOTAL</b>	<b>\$375,800</b>
<b>SHARED-USE PATH FROM NETTLES PARK TO CENTRAL ROAD</b>				
EROSION CONTROL	1100	L.FT.	\$5.00	\$5,500
FINE GRADING	3666	S.YD.	\$9.00	\$32,994
CONCRETE SIDEWALK (6")	11000	S.FT.	\$18.00	\$198,000
CLEARING AND GRUBBING	1.00	ACRE	\$10,000.00	\$10,000
REGULATORY SIGNAGE	2	EACH	\$300.00	\$600
<b>Contract Items</b>			<b>SUBTOTAL</b>	<b>\$247,094</b>
<b>CONCRETE SIDEWALK EXPANSION IN NETTLES PARK</b>				
EROSION CONTROL	840	L.FT.	\$5.00	\$4,200
FINE GRADING	935	S.YD.	\$9.00	\$8,415
CONCRETE SIDEWALK (6")	4200	S.FT.	\$18.00	\$75,600
REGULATORY SIGNAGE	2	EACH	\$300.00	\$600
MISCELLANEOUS	1	L.SUM	\$2,500.00	\$2,500
<b>Contract Items</b>			<b>SUBTOTAL</b>	<b>\$87,115</b>
<b>Subtotal All Contract Items</b>			<b>SUBTOTAL</b>	<b>\$710,009</b>
Mobilization		8.0%		\$56,801
Construction Staking		1.0%		\$7,100
Traffic Control		3.0%		\$21,300
			<b>CONSTRUCTION TOTALS</b>	<b>\$795,210</b>
CONTINGENCIES		20.0%		\$159,042
DESIGN AND ENGINEERING		12.0%		\$95,000
			<b>TOTAL ESTIMATED COST</b>	<b>\$1,049,252</b>



**ORDER OF MAGNITUDE OPINION OF COST**

PROJECT: Green Crescent Trail	DATE PREPARED: September 30, 2019	
LOCATION: Clemson, SC	BASIS:	
DESCRIPTION: Green Crescent Trail from Nettles Park to Ashley Dearing Park - OPTION 2	From Sta.	To Sta.
	LENGTH: NOTED ON PLANS	WIDTH: NOTED ON PLANS
PROJECT NO.: 2019-023	PREPARED BY: STUDIO MAIN LLC	

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Item	Est. Quant.	Unit	Unit Price	Total
<b>SHARED-USE PATH FROM CENTRAL ROAD TO ASHLEY DEARING PARK - OPTION 2</b>				
EROSION CONTROL	7900	L.FT.	\$5.00	\$39,500
FINE GRADING	10777	S.YD.	\$9.00	\$96,993
CLEARING AND GRUBBING	4.00	ACRE	\$10,000.00	\$40,000
CONCRETE SIDEWALK (6")	79000	S.FT.	\$18.00	\$1,422,000
REGULATORY SIGNAGE	10	EACH	\$300.00	\$3,000
CROSSWALK ENHANCEMENTS	2	EACH	\$2,500.00	\$5,000
BRIDGE	1	EACH	\$75,000.00	\$75,000
<b>Contract Items</b>			<b>SUBTOTAL</b>	\$1,681,493
<b>SHARED-USE PATH FROM NETTLES PARK TO CENTRAL ROAD</b>				
EROSION CONTROL	1100	L.FT.	\$5.00	\$5,500
FINE GRADING	3666	S.YD.	\$9.00	\$32,994
CLEARING AND GRUBBING	1.00	ACRE	\$10,000.00	\$10,000
CONCRETE SIDEWALK (6")	242	S.FT.	\$18.00	\$4,356
REGULATORY SIGNAGE	2	EACH	\$300.00	\$600
<b>Contract Items</b>			<b>SUBTOTAL</b>	\$53,450
<b>CONCRETE SIDEWALK EXPANSION IN NETTLES PARK</b>				
EROSION CONTROL	840	L.FT.	\$5.00	\$4,200
FINE GRADING	935	S.YD.	\$9.00	\$8,415
CONCRETE SIDEWALK (6")	8500	S.FT.	\$18.00	\$153,000
REGULATORY SIGNAGE	2	EACH	\$300.00	\$600
MISCELLANEOUS	1	L.SUM	\$2,500.00	\$2,500
<b>Contract Items</b>			<b>SUBTOTAL</b>	\$164,515
<b>Subtotal All Contract Items</b>			<b>SUBTOTAL</b>	\$1,899,458
Mobilization		8.0%		\$151,957
Construction Staking		1.0%		\$18,995
Traffic Control		3.0%		\$56,984
		<b>CONSTRUCTION TOTALS</b>		\$2,127,393
CONTINGENCIES		20.0%		\$425,479
DESIGN AND ENGINEERING		12.0%		\$255,000
		<b>TOTAL ESTIMATED COST</b>		<b>\$2,807,872</b>



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