

Town of Hillsborough, North Carolina

Ridgewalk Greenway Feasibility Study

June 2023



SUMMIT
DESIGN AND ENGINEERING SERVICES



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Chapter 1: Existing Conditions, Environmental Features, Community Plans

Introduction

The Town of Hillsborough has had a vision for many years to construct a multi-use greenway to provide access between downtown and neighborhoods south of Interstate 85. The greenway will aid in reducing vehicular miles travelled within the town and allow bicycle and pedestrian connectivity between area destinations for users of all ages. The greenway has been recommended in town planning documents previously under the name Cates Creek Greenway and as the North/South Greenway in the Hillsborough Community Connectivity Plan.

This feasibility study evaluates potential alignments and design elements for the project and analyzes the impacts to determine if construction is a practical option. It also serves to narrow the project scope and provide information to assist in project planning. A feasibility study does not provide final design and engineering. The recommendations provided in this report are subject to change once more information is available and as design progresses. However, this is an important planning step to identify challenges that the potential greenway routes may encounter, explore alternative options, make recommendations, and provide preliminary cost estimates.

The scope of the study is a high-level overview of the potential greenway routes. In analyzing routes, consideration is given to impacts on the environment and existing utilities. Environmental analysis reviews both the human environment and natural environment to minimize negative impacts to the surrounding area. This is a requirement of many funding sources and helps guide a project to produce the most favorable path. It is also vital to ensure that structures, such as bridges and necessary drainage, are feasible for any recommended route and that the right-of-way required is reasonable for the benefit of the project. The limit of a feasibility study is that all analysis is done based on preliminary information and more detailed information will be required as design and engineering progresses.

This study reviews the potential impacts associated with construction of the proposed Hillsborough Ridgewalk Greenway in Hillsborough, North Carolina from downtown Hillsborough to Cates Creek Park. The greenway would link to the existing Hillsborough Riverwalk greenway, which runs along the Eno River, and the future passenger train station, and utilizes the planned greenway in the Collins Ridge development. The greenway would provide connectivity to multiple neighborhoods including Collins Ridge, Beckett's Ridge, and Waterstone. The proposed greenway would cross the North Carolina Railroad corridor south of downtown Hillsborough, as well as the Interstate 85 corridor (I-85). This study is intended to assist the Town with preliminary planning for the proposed improvements.

Project Study Area

The proposed project would construct a separated pedestrian and bicycle greenway facility from downtown Hillsborough, North Carolina to Cates Creek Park to facilitate safe, barrier-free mobility for pedestrians and bicyclists between area destinations.

At the time of this report, it is not known whether the North Carolina Railroad will approve construction of the structures within the railroad corridor that are included in the preferred alignment of the proposed greenway

facility. Because of this uncertainty, the project study area includes a proposed alignment alternative in addition to the preferred alignment, described below.

The project study area is defined as an approximately 250-foot buffer around all potential proposed alignment alternatives. The project study area was used to identify potential environmental, cultural, community, and utility resources near the proposed alignment alternatives. The proposed project location and project study area are shown on the Project Vicinity Map in Figure 1.

Preferred Alignment

The current preferred alignment of the Hillsborough Ridgewalk Greenway would be approximately 2.7 miles long and proposed improvements would include three greenway segments:

- The **northern segment** would begin at Exchange Park Lane in downtown Hillsborough near the Hillsborough Riverwalk, follow Exchange Park Lane south to the North Carolina Railroad rail corridor, turn east along the corridor and under the S. Churton Street bridge, pass over the railroad tracks on an elevated structure, return to grade and continue southeast adjacent to North Carolina Railroad right-of-way before stopping at the northern boundary of the Collins Ridge development that is currently under construction. This segment also would include a trail spur south of the Eno River along Faribault Lane from Exchange Park Lane to the Hillsborough Riverwalk trailhead. The northern segment would include approximately 3,926 of newly constructed greenway facility and utilize approximately 86 feet of existing sidewalk on Exchange Park Lane.
- The **middle segment** would be located in Collins Ridge and would be constructed as part of the planned development and would include approximately 4,039 feet of new greenway facility. The Collins Ridge developer would be responsible for constructing this portion of the greenway to connect the northern and southern segments.
- The **southern segment** of the Ridgewalk Greenway improvements would continue south of Collins Ridge and pass over Interstate 85 on an elevated structure (e.g., pedestrian bridge) before returning to grade and following Beckett's Ridge Drive and Cates Creek Parkway south on existing sidewalk and side path to the entrance to Cates Creek Park. The southern segment would include approximately 2,918 feet of newly constructed greenway facility, including a 159-foot pedestrian bridge over Interstate 85, and utilize approximately 3,132 feet of existing sidewalk and asphalt path along Beckett's Ridge Drive and Cates Creek Parkway.

Potential Alignment Alternative

The potential alignment alternative would amend the northern segment of the preferred alignment described above to avoid constructing an elevated structure over North Carolina Railroad right-of-way. Instead, this alignment would continue south along Exchange Park Lane and pass under the railroad tracks using an on-street facility through an existing one-lane viaduct, then turn east along Orange Grove Road and terminate at the northern boundary of the Collins Ridge development. The Collins Ridge and southern segments of the alignment alternative would match the preferred alignment.

Human Environment

Community Facilities

A detailed community resource study was not conducted for this report. A search was performed to identify community resources located within or near the project study area. Identified resources are shown on the Community Features Map in Figure 2.

Schools

No primary or secondary schools are located within the project study area. The Center of Excellence Child Care & Academy, a preschool and daycare facility at 500 Millstone Drive, is located just outside the project study area boundary near Cates Creek Park. Other nearby schools include Pinewoods Montessori School (109 Millstone Drive), located west of the proposed southern terminus of the Ridgewalk Greenway, and River Park Elementary School (240 St Mary's Road), located northeast of the proposed northern terminus in downtown Hillsborough.

Additionally, no colleges or universities are located within the project study area. The nearest postsecondary educational institution is the Durham Technical Community College Orange County Campus, located at 525 College Park Road in Hillsborough. The Durham Tech campus is approximately 0.5 miles from the southern terminus of the proposed Ridgewalk Greenway in Cates Creek Park.

The current proposed alignment of the Ridgewalk Greenway is not anticipated to impact schools. The proposed project would improve pedestrian and bicycle access between schools and residential neighborhoods near the proposed alignment.

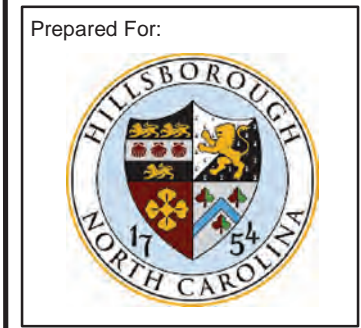
Parks

Three existing public parks, one privately-owned park that is open to the public, and one former private park are located within the proposed project study area.

Hillsborough Riverwalk is an urban greenway that stretches along the Eno River between Gold Park in western Hillsborough to Elizabeth Brady Road, where it connects to the Historic Occaneechee Speedway Trail. The Riverwalk trail is approximately 2.2 miles from end to end but includes more than 3.25 miles of overlapping and meandering paved and unpaved trails surrounded by greenway open space. The Riverwalk is also part of the Mountains-to-Sea Trail, a 1,175-mile network of trail connections stretching from the Great Smoky Mountains on the western border of North Carolina to the Outer Banks on the eastern coast. Approximately 1,000 feet of the Hillsborough Riverwalk is located within the project study area. The proposed Ridgewalk Greenway would connect with the Riverwalk at its northern terminus near downtown Hillsborough, as well as at its Faribault Lane spur.

River Park is a 5.3-acre passive open space park located at 228 South Churton Street, south of downtown Hillsborough, east of Churton Street, and north of the Eno River. River Park is owned and managed by Orange County and accessible via the Hillsborough Riverwalk. The northern terminus of the proposed Ridgewalk Greenway alignment would be located approximately 200 feet from River Park.

Cates Creek Park is a 17-acre park owned and managed by the Town of Hillsborough, located at 1445 Cates Creek Parkway south of Interstate 85 that includes the southern terminus of the proposed project. Amenities include restrooms, picnic tables, trails, multi-use fields, and playgrounds. The proposed Ridgewalk Greenway alignment would primarily utilize existing sidewalk and side path on Cates Creek Parkway along the eastern border of Cates Creek Park and terminate at the primary park access point and parking lot south of College Park Road. A small-



Hillsborough Ridgeway Greenway Feasibility Study

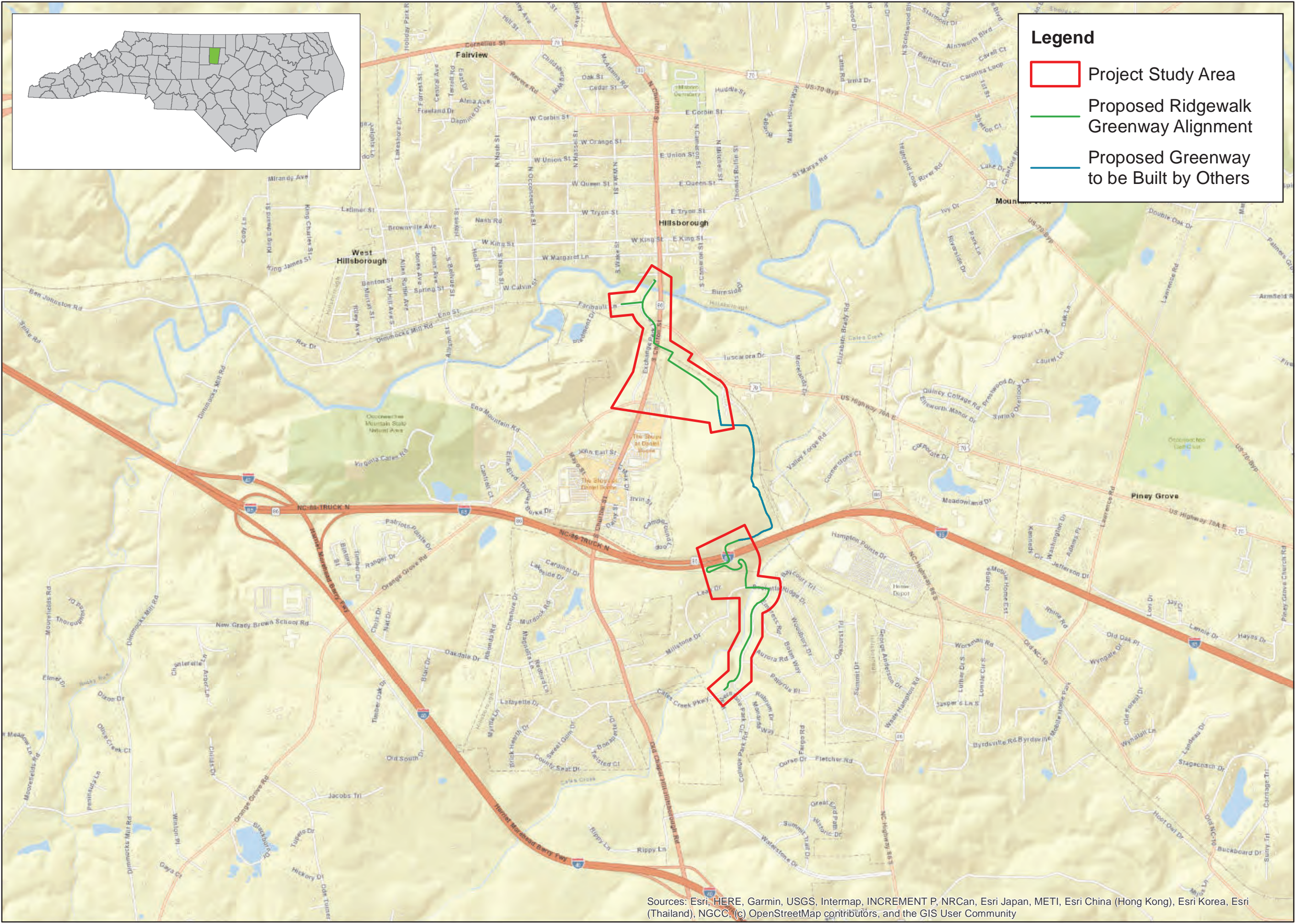
Project Vicinity
Map
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Orange County
North Carolina

Date:	May 2023
Scale:	0 1,000 2,000 Ft
Job No.:	22-030
Drawn By:	Checked By:
CMR	CM

Figure 1



Legend

- Project Study Area
- Proposed Ridgeway Greenway Alignment
- Proposed Greenway to be Built by Others

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

scale skateboarding park, or “skate spot,” of approximately 5,000 to 6,000 square feet is planned for Cates Creek Park. The skate spot is funded and slated for construction in 2024 and will be one of the few destinations in Hillsborough designated primarily for teens. The proposed Ridgewalk Greenway will provide non-motorized access to the Cates Creek skate spot.

Exchange Club Park is a 16-acre park located at 331 Exchange Club Lane that is owned and operated by the Hillsborough Exchange Club. Though privately owned, it is open to the public and includes two playgrounds, open space areas, picnic tables and shelters, and a baseball field used by the Hillsborough Youth Athletic Association, a non-profit organization offering sports programming to children ages 4 to 15. The proposed Ridgewalk Greenway alignment would connect to Exchange Park Lane approximately 1,000 feet north of the park entrance.

Additionally, Collins Field is the former site of four baseball and softball fields formerly operated by the Hillsborough Youth Athletic Association. The property at 255 Orange Grove Street was purchased by the Town of Hillsborough from a private owner and will be the site of the future Hillsborough passenger train station. The proposed Ridgewalk Greenway alignment would connect to the proposed station at the north end of the site before crossing north over North Carolina Railroad right-of-way.

The current proposed alignment of the Ridgewalk Greenway is not anticipated to require right-of-way from or otherwise impact any existing parks. The proposed project would improve pedestrian and bicycle access to and between the existing parks within the project study area, in addition to providing a new recreational greenway in Hillsborough.

Places of Worship

One place of worship is located within the project study area:

- Iglesia Pentecostes Aposento Alto - 238 Orange Grove Street

The current proposed alignment of the Ridgewalk Greenway is not anticipated to require right-of-way from or otherwise impact any place of worship.

Places of Interest

The following places of interest are located within the project study area:

- Downtown Hillsborough – bounded approximately by the Eno River (south), Nash Street (west), Corbin Street (north), and Cameron Street / St. Mary’s Road / Lydia Lane (east)
- Gateway Center (Government Office) – 228 S. Churton Street
- Weaver Street Market – 228 S. Churton Street
- Future passenger train station – 255 Orange Grove Street

The current proposed alignment of the Ridgewalk Greenway is not anticipated to impact any identified community places of interest. The greenway would provide improved pedestrian and bicycle access to nearby community destinations.

Several government facilities including the Orange County Public Library, Orange County West Campus offices, and Orange County Courthouse are located immediately north of the project study area in downtown Hillsborough. The proposed Ridgewalk Greenway would provide improved pedestrian and bicycle access to downtown amenities from the future passenger train station and neighborhoods in southern Hillsborough.

Emergency Management Services (EMS)

No Emergency Management Service facilities were identified with the project study area. However, the following Emergency Management Service facilities are located immediately north of the project study area in downtown Hillsborough:

- Orange Rural Fire Department Station 1 – 206 South Churton Street
- Orange County Sheriff's Office – 106 E. Margaret Lane
- Town of Hillsborough Police Station – 127 North Churton Street

Additionally, a new public safety building was constructed in 2023 in the Waterstone development at 350 College Park Road, approximately 0.4 miles south of the southern terminus of the proposed Ridgewalk Greenway alignment. The building houses the Orange Rural Fire Department as well as Orange County Emergency Services staff.

The current proposed Hillsborough Riverwalk Greenway is designed with adequate trail width and clearance for emergency service vehicles to access the trail and trail users. Unique address geolocation points would be created every 1/10 mile and shared with Emergency Management Service providers, and location signage would be installed at each point to help identify trail user location in the event of an emergency. The entire proposed alignment is within two miles of an Emergency Management Service station location.

Medical Facilities

No medical facilities are located within the project study area. The nearest medical facilities to the proposed Ridgewalk Greenway alignment are:

- University of North Carolina Hillsborough Campus – 430 Waterstone Drive
- University of North Carolina Urgent Care at Hillsborough – 2800 Old North Carolina 86
- University of North Carolina Hospitals Dermatology & Skin Cancer Center– 2201 Old North Carolina 86
- Duke Medical Plaza – 267 South Churton Street

The current proposed Hillsborough Riverwalk Greenway alignment would not impact medical facilities. The greenway would provide improved pedestrian and bicycle access to medical facilities near the alignment.



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Community Features Map

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Orange County North Carolina

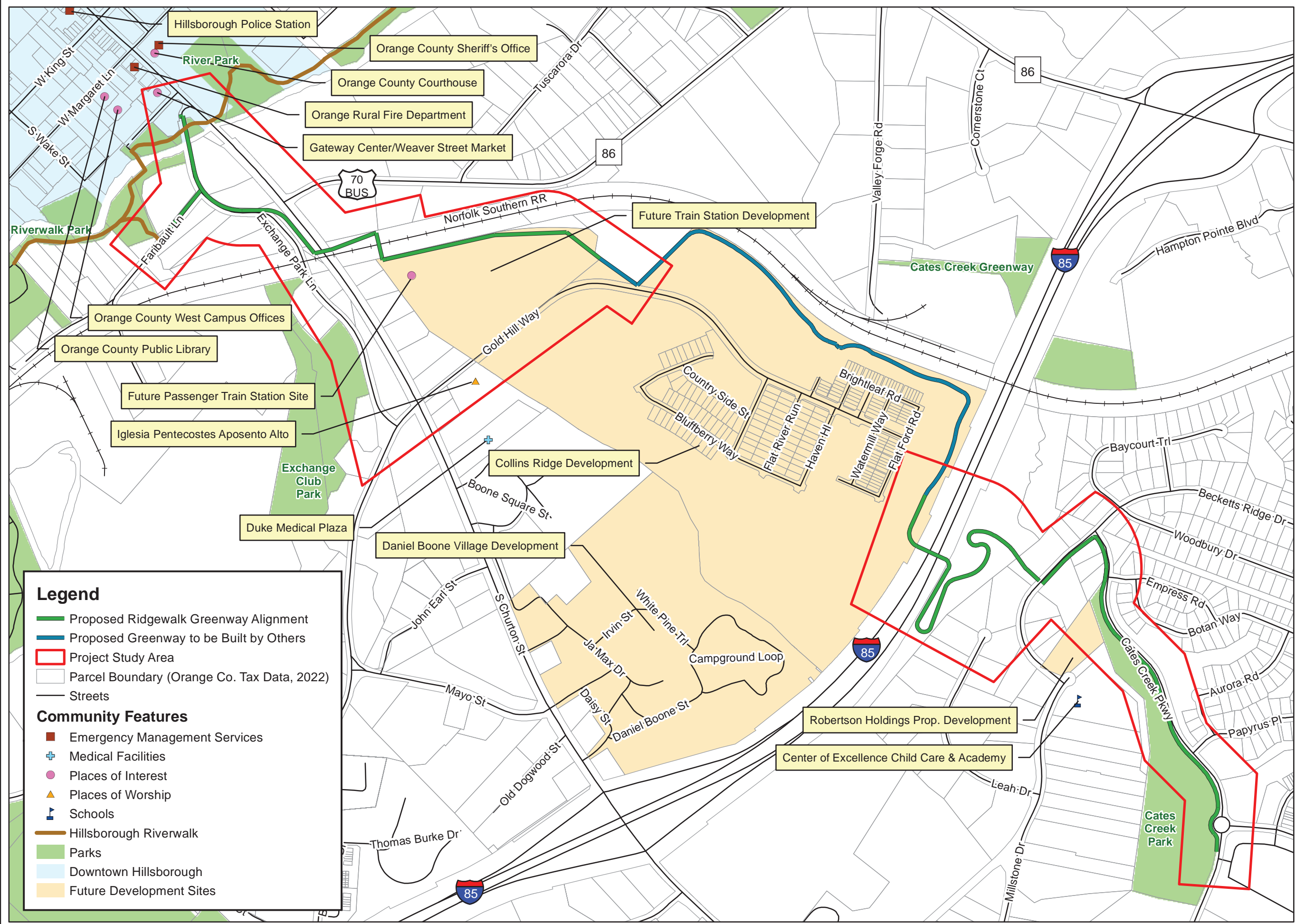
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Figure 2



Legend

- Proposed Ridgeway Greenway Alignment
- Proposed Greenway to be Built by Others
- Project Study Area
- Parcel Boundary (Orange Co. Tax Data, 2022)
- Streets

Community Features

- Emergency Management Services
- Medical Facilities
- Places of Interest
- Places of Worship
- Schools
- Hillsborough Riverwalk
- Parks
- Downtown Hillsborough
- Future Development Sites

Cultural Resources

Historic Architecture

The project study area was screened using the North Carolina State Historic Preservation Office (NC-HPO) GIS Web Service. The following potential historic resources were identified within the project study area and may require further investigations and/or coordination with the North Carolina State Historic Preservation Office if there is a federal or state nexus associated with construction of the improvements (e.g., federal/state funding, federal/state permit). The Historic Resources Map is shown in Figure 3.

- Exchange Park Lane bridge over Eno River – Determined eligible for listing in the National Register of Historic Places (NRHP) in the North Carolina Department of Transportation (NCDOT) 2005 Historic Bridge Inventory.
- Hillsborough Historic District (Local) – Includes the Town’s historic commercial core and surrounding residential neighborhoods; established through passage of a preservation ordinance in 1973.
- Hillsborough Historic District (NRHP) – Listed in the NRHP in 1973 with a larger boundary than the local district that extends south of the Eno River within the project study area; listed under the following preservation criteria:
 - *Criterion A – African American Heritage and Education:* Property is associated with events that have made a significant contribution to the broad patterns of our history.
 - *Criterion C – Architecture:* Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack Period of Significance individual distinction.
- Contributing structures to the Hillsborough Historic District (parcel located within the project study area):
 - Map ID 1 – 205 United States Highway 70A (SE corner of Highway 70 and Churton St) – Highlands House, wellhouse, reflecting pond, garage, shed, and carport
 - Map ID 2 – 229 South Churton Street – Jonathan P. Steed House (Eno Lodge) and flowerhouse
 - Map ID 3 – 226 South Churton Street – Commercial building: Volume Records & Beer
 - Map ID 4 – 144 East Margaret Lane – Orange County District Attorney’s Office (former Sheriff’s Dept.)

Archaeology

No screening for archaeological resources was performed for the study area; however, the project study area may need to be investigated for archaeological resources if there is a federal or state nexus associated with construction of the improvements (e.g., funding, permitting).



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Historic Resources Map

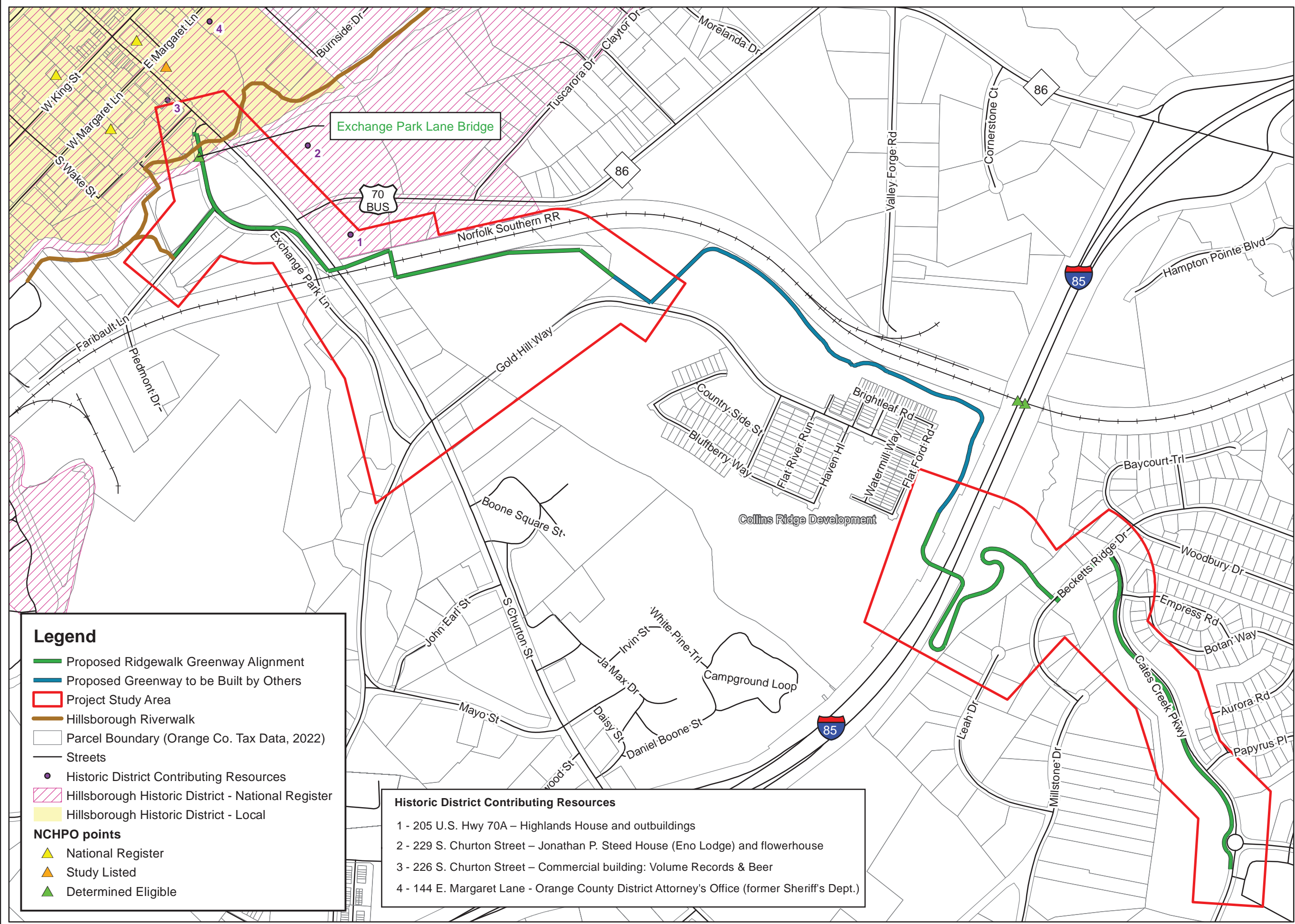
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Figure 3



- Legend**
- Proposed Ridgeway Greenway Alignment
 - Proposed Greenway to be Built by Others
 - Project Study Area
 - Hillsborough Riverwalk
 - Parcel Boundary (Orange Co. Tax Data, 2022)
 - Streets
 - Historic District Contributing Resources
 - Hillsborough Historic District - National Register
 - Hillsborough Historic District - Local
 - NCHPO points**
 - ▲ National Register
 - ▲ Study Listed
 - ▲ Determined Eligible

- Historic District Contributing Resources**
- 1 - 205 U.S. Hwy 70A – Highlands House and outbuildings
 - 2 - 229 S. Churton Street – Jonathan P. Steed House (Eno Lodge) and flowerhouse
 - 3 - 226 S. Churton Street – Commercial building: Volume Records & Beer
 - 4 - 144 E. Margaret Lane - Orange County District Attorney's Office (former Sheriff's Dept.)

Land Use and Zoning

Land Use

Figure 4 shows existing land uses in and around the project study area in Hillsborough. The project study area is comprised of a mix of residential, commercial, retail, town center, open space, and mixed-use land uses. The proposed Ridgewalk Greenway would connect government, retail, and residential uses in downtown Hillsborough (identified as Town Center in the land use map) with the Hillsborough Riverwalk south of downtown, the retail mixed use corridor along S. Churton Street, the future passenger rail station (shown as Mixed-Use in Figure 4), Collins Ridge residential development, and the Employment and Small Lot Residential areas and Cates Creek Park south of Interstate 85.

The proposed greenway trail would be in character with existing land uses within the project study area. The two major land uses within the project study area that are not compatible with a pedestrian and bicycle trail – the North Carolina Railroad tracks and Interstate 85 – would be avoided by using pedestrian and bicycle bridge structures.

Zoning

Figure 5 shows the existing zoning in and around the project study area in Hillsborough. The project study area contains the following zoning classifications:

- AR – Agricultural Residential
- CC – Central Commercial
- EDD – Economic Development District
- ESU – Entranceway Special Use
- GC – General Commercial
- HIC – High Intensity Commercial
- MHP – Mobile Home Park
- NB – Neighborhood Business
- OI – Office Institutional
- R10 – Residential (10,000 sf. min.)
- R15 – Residential (15,000 sf. min.)
- R20 – Residential (20,000 sf. min.)
- RSU – Residential Special Use

The current proposed alignment of the Ridgewalk Greenway would construct a new greenway trail in areas zoned R20 Residential, Neighborhood Business, Agricultural Residential, Residential Special Use, and General Industrial. The proposed greenway trail would be compatible with all existing zoning classifications within the project study area, and no rezoning is anticipated to be required.



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Land Use Map

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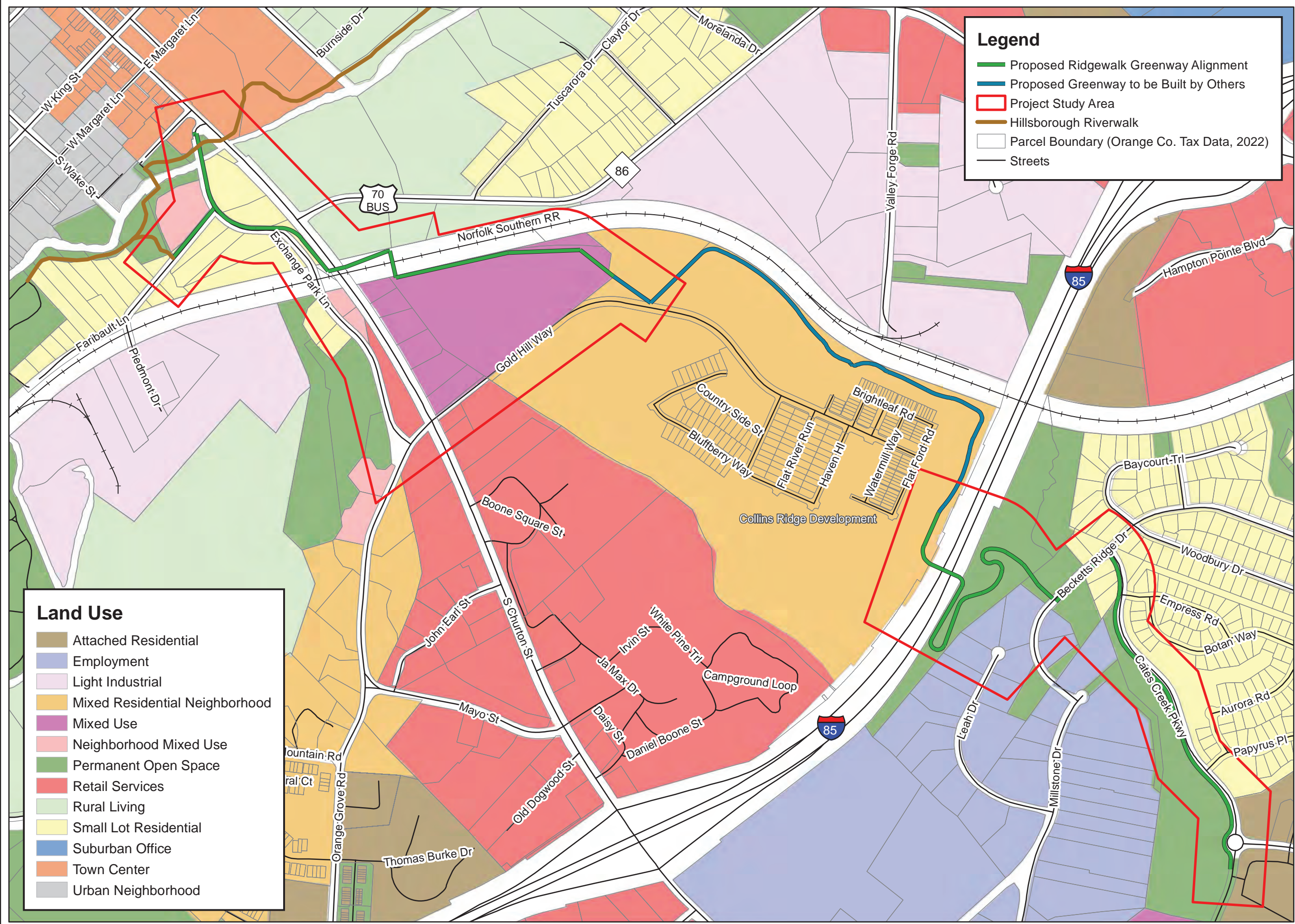


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Figure

4



Legend

- Proposed Ridgeway Greenway Alignment
- Proposed Greenway to be Built by Others
- Project Study Area
- Hillsborough Riverwalk
- Parcel Boundary (Orange Co. Tax Data, 2022)
- Streets

Land Use

- Attached Residential
- Employment
- Light Industrial
- Mixed Residential Neighborhood
- Mixed Use
- Neighborhood Mixed Use
- Permanent Open Space
- Retail Services
- Rural Living
- Small Lot Residential
- Suburban Office
- Town Center
- Urban Neighborhood



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Hillsborough Ridgeway Greenway Feasibility Study

Zoning Map

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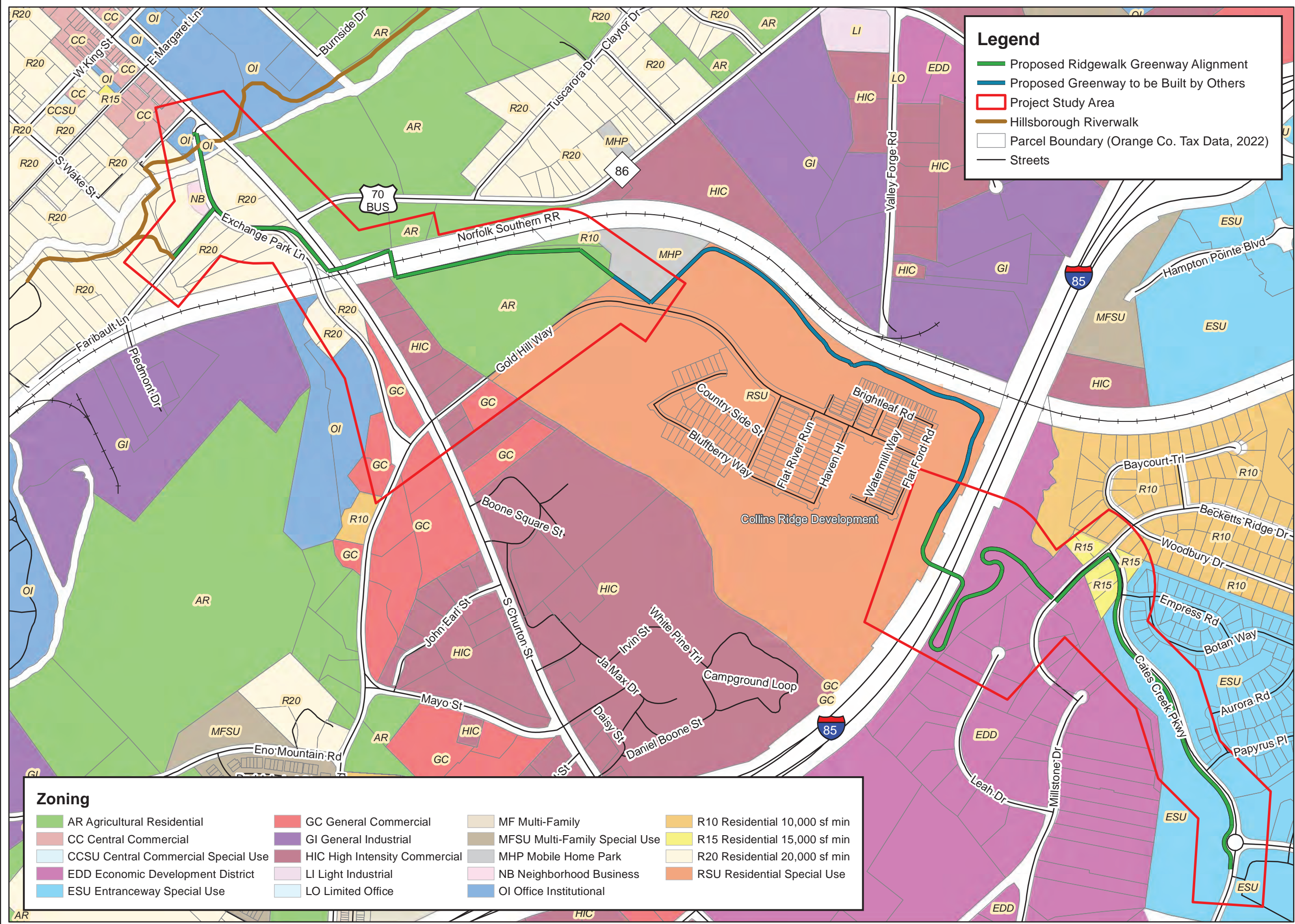


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North Carolina

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Figure

5



Legend

- Proposed Ridgeway Greenway Alignment
- Proposed Greenway to be Built by Others
- Project Study Area
- Hillsborough Riverwalk
- Parcel Boundary (Orange Co. Tax Data, 2022)
- Streets

Zoning

<ul style="list-style-type: none"> ■ AR Agricultural Residential ■ CC Central Commercial ■ CCSU Central Commercial Special Use ■ EDD Economic Development District ■ ESU Entranceway Special Use 	<ul style="list-style-type: none"> ■ GC General Commercial ■ GI General Industrial ■ HIC High Intensity Commercial ■ LI Light Industrial ■ LO Limited Office 	<ul style="list-style-type: none"> ■ MF Multi-Family ■ MFSU Multi-Family Special Use ■ MHP Mobile Home Park ■ NB Neighborhood Business ■ OI Office Institutional 	<ul style="list-style-type: none"> ■ R10 Residential 10,000 sf min ■ R15 Residential 15,000 sf min ■ R20 Residential 20,000 sf min ■ RSU Residential Special Use
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Natural Environment

The following natural resources assessment was completed using a desktop-level exercise, as well as a cursory field review to “spot-check” the results of the desktop-level exercise. A detailed environmental study was not conducted for this report. Natural resources are shown on the Environmental Features Map in Figure 6.

Jurisdictional Features

Potential jurisdictional features were not field delineated as part of this feasibility study. Data referenced below is based off the most current remote sensing data (National Hydrography Dataset [NHD] data, United States Fish and Wildlife Service [USFWS] National Wetland Inventory [NWI] mapping, United States Geological Survey [USGS] Streamstats data, Natural Resources Conservation Service [NRCS] and North Carolina Division of Water Resources [NCDWR] data) and available orthoimagery. Water resources in the study area are part of the Eno River Subbasin of the Neuse River Basin (United States Geological Survey [USGS] Hydrologic Unit Code [HUC] 03020201).

Based on the North Carolina Division of Water Resources and United States Geological Survey mapping, two named streams, plus five potential unnamed tributaries, are located within the project study area (Table 1). The locations of the potential streams are shown on Figure 6.

Table 1. Potential streams in the study area (continued)

Stream Name	NCDWR Index Number	Subject to Neuse River Buffer Rules	Best Usage Classification	Approximate Length (feet) ¹	Present in Field
Eno River	27-2-(7)	Subject ¹	WS-V; NSW	725	Yes
Cates Creek	27-2-8	Subject ¹	WS-V; NSW	1,783	Yes
Unnamed Tributary to Eno River (Stream SA)	27-2-(7)	Subject ¹	WS-V; NSW	1,418	Yes
Unnamed Tributary to Eno River (Stream SB)	27-2-(7)	Subject ¹	WS-V; NSW	1,265	No
Unnamed Tributary to Eno River (Stream SC)	27-2-(7)	Subject ²	WS-V; NSW	534	No ³
Unnamed Tributary (Intermittent) to Cates Creek (Stream SD)	27-2-8	Subject ¹	WS-V; NSW	906	Yes
Unnamed Tributary (Intermittent) to Cates Creek (Stream SE)	27-2-8	Subject ²	WS-V; NSW	477	No

¹ On both USGS topographic and NRCS soil survey mapping.

² Only on NRCS Soil Survey mapping

³ Stream SC has been diverted to an underground channel

Field verification of potential stream features within the project study area confirmed the presence of Eno River, Cates Creek, and Streams SA and SD. Streams SB and SE are not present; Stream SC has been diverted to an underground channel.

The current proposed Ridgewalk Greenway alignment would cross the Eno River, Cates Creek, and Stream SD using existing sidewalks and sidepaths on the Exchange Park Lane bridge, Beckett’s Ridge Drive, and Cates Creek Parkway. Cates Creek and Stream SD are conveyed through existing culverts in the vicinity of the proposed alignment. No structural modifications to the bridge or culverts are anticipated.

The current proposed Ridgewalk Greenway alignment would construct a ten-foot asphalt path on the north side of Faribault Lane where it crosses Stream SA, with a 2.5-foot grass strip separating the path from the existing edge of pavement and a 2-foot grass shoulder on the north side of the path. Stream SA is conveyed through an existing culvert under Beckett’s Ridge Drive in this location. Extension of the existing culvert is anticipated to be necessary for construction of the proposed greenway.

No potential surface waters were identified in the project study area.

Wetlands

Potential wetlands were not field delineated as part of this report. Future project phases should include delineation of wetlands within the project study area to confirm impacts. Based on United States Fish and Wildlife Service National Wetland Inventory mapping, six potential jurisdictional wetlands are located within the project study area, and a seventh additional potential wetland was observed during field review (Table 2). Five of the six potential wetlands shown in the National Wetland Inventory are riverine wetlands within the existing stream channels identified in Table 1, including one within the channel of a stream (SB) that was not present during field review. Non-riverine wetlands identified in the National Wetland Inventory are shown in Figure 6.

The potential wetlands in the project study area are located within the Neuse River Basin (United States Geological Survey Hydrologic Unit Code 03020201). One additional freshwater pond (National Wetland Inventory Classification PUBHh) is located outside of the northeastern end of the project study area in River Park.

Table 2. Potential wetlands in the study area

NWI Classification	Cowardin Classification	Approximate Location	Area in Study Area (acres)
Riverine Wetland	R2UBH	Along the Eno River	1.52
Riverine Wetland	R5UBH	Along the south bank of the Eno River beneath and west of the Exchange Park Lane bridge	0.18
Riverine Wetland	R5UBH	Along the south bank of the Eno River east of Churton Street	0.002
Riverine Wetland	R4SBC	Along an intermittent stream (SA) that runs south from the Eno	0.64

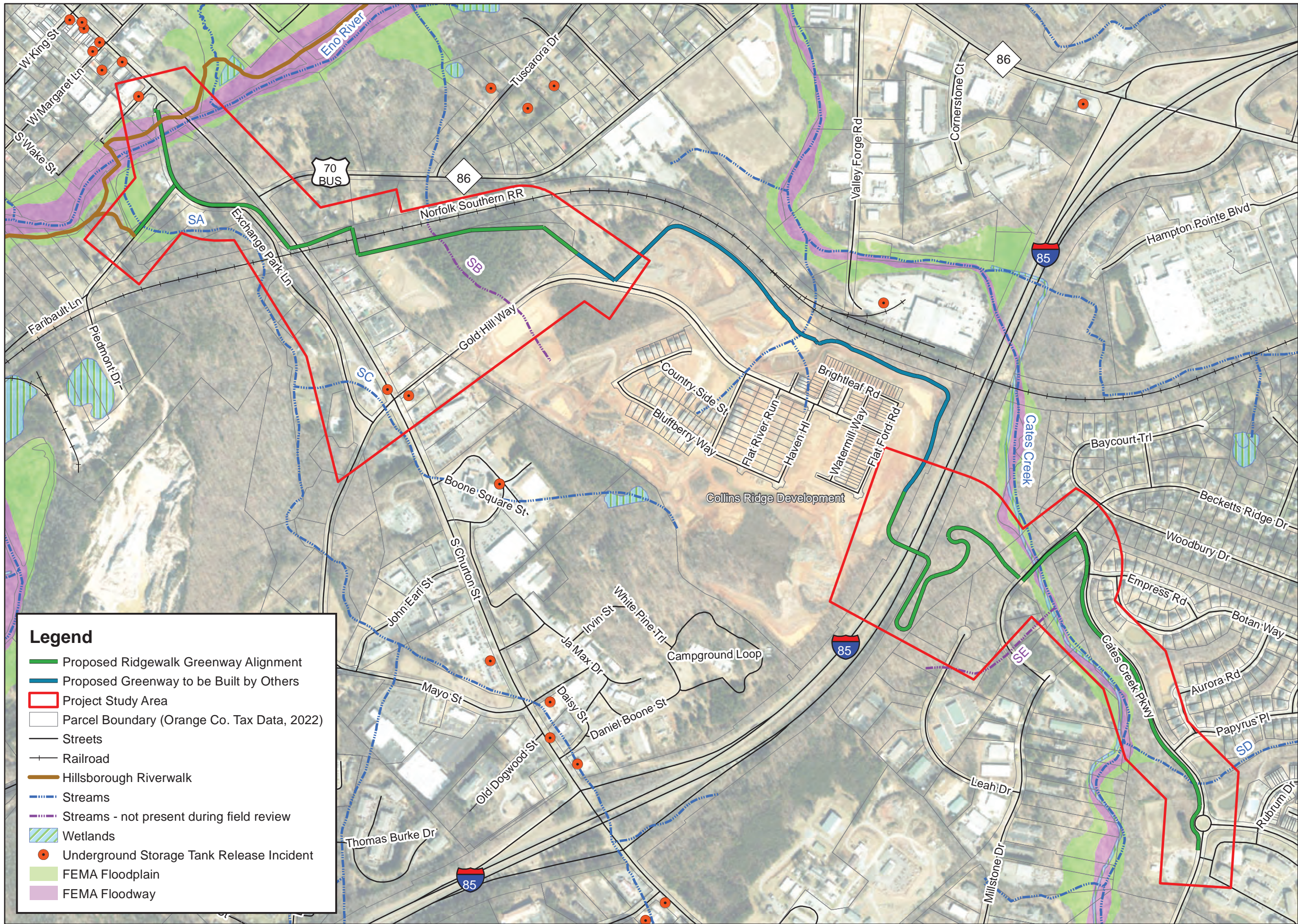
Table 2. Potential wetlands in the study area

NWI Classification	Cowardin Classification	Approximate Location	Area in Study Area (acres)
		River on the west side of Exchange Park Lane.	
Riverine Wetland	R4SBC	Along an intermittent stream (SB) that runs south from the Eno River to the Collins Ridge development	0.58
Freshwater Forested/Shrub Wetland	PFO1A	Along Cates Creek	0.79
Riverine Wetland	R4SBC	Along an intermittent stream (SD) that crosses Cates Creek Pkwy. near the southern end of the project study area	0.41
Undetermined	PFO	Observed during field review along a potential intermittent stream (SE; not present during field review) running west from Cates Creek to Leah Drive	Undetermined

The proposed Ridgewalk Greenway alignment would utilize existing sidewalks in the vicinity of the three potential riverine wetlands associated with the Eno River, the freshwater forested/shrub wetland associated with Cates Creek, and the riverine wetland that crosses Cates Creek Parkway. The proposed alignment would not impact the observed potential wetland in the vicinity of Stream SE.

The proposed project would construct a new greenway trail along Faribault Lane, including crossing of a potential riverine wetland area associated with Stream SA. The proposed typical section is a ten-foot asphalt path on the north side of Faribault Lane with a 2.5-foot grass strip separating the path from the existing edge of pavement and a 2-foot grass shoulder on the north side of the path.

The current proposed Ridgewalk Greenway alignment would cross the potential wetland associated with Stream SB (the stream was not present during field review) on a 14-foot-wide elevated boardwalk structure. Pier locations have not been established at this phase of design. If in-field delineation in future phases confirms the presence of the potential wetland, avoidance or mitigation may be required.



Legend

- Proposed Ridgeway Greenway Alignment
- Proposed Greenway to be Built by Others
- Project Study Area
- Parcel Boundary (Orange Co. Tax Data, 2022)
- Streets
- Railroad
- Hillsborough Riverwalk
- Streams
- Streams - not present during field review
- Wetlands
- Underground Storage Tank Release Incident
- FEMA Floodplain
- FEMA Floodway



Prepared For:



Hillsborough
Ridgeway
Greenway
Feasibility Study

Environmental
Features
Map

DRAFT FOR REVIEW



Orange County
North Carolina

Date: May 2023

Scale: 0 300 600 Ft

Job No.: 22-030

Drawn By: CMR	Checked By: CM
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Figure

6

Water Quality Considerations

There are no designated Outstanding Resource Waters, High Quality Waters or water supply I or II watersheds within the project study area or within 1.0 mile downstream of the project study area. The North Carolina 2022 Final 303(d) and 2020 Draft Clean Water Act Section 303(d) lists of impaired waters does not list any impaired streams within the project study area or within 1.0 mile downstream of the project study area.

No potential streams within the project study area have been designated by the United States Army Corps of Engineers as a Navigable Water under Section 10 of the Rivers and Harbors Act.

This project is within the Neuse River Basin. Therefore, streams within the project are potentially subject to the Neuse River Riparian Buffer Rules. Table 1 lists which features are potentially subject to these buffer rules based on their presence on either United States Geological Survey topographic mapping and/or Natural Resources Conservation Service soil survey mapping. Features that were either mapping type, but were confirmed to be absent in the field, would not require riparian buffers.

Riparian Floodways and Floodplains

Riparian floodplains were identified within the project study area using Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map mapping. Both the Eno River and Cates Creek are Federal Emergency Management Agency-regulated floodways and Zone AE flood zones (100-year floodplain) encroach into the project study area (Table 3).

Table 3. Characteristics of FEMA-regulated floodplains in the study area

Map ID	Floodway in Study Area (acres)	Zone AE in Study Area (acres)
Eno River	3.20	3.34
Cates Creek	2.66	3.42

The proposed Ridgewalk Greenway alignment would utilize existing sidewalks within both the Eno River and Cates Creek floodways and Zone AE floodplains. New path construction would not encroach on floodways or Zone AE floodplains, as currently designed, therefore the proposed alignment is not anticipated to impact Federal Emergency Management Agency-regulated floodplains.

Protected Species

Endangered Species Act Protected Species

As of May 11, 2023, the United States Fish and Wildlife Service Information for Planning and Consultation website lists six federally protected (or proposed for protection) species under the Endangered Species Act as having habitat ranges that potentially overlap the project study area (Table 4). A review of the Winter (January) 2023 North Carolina Natural Heritage Program dataset revealed known occurrences of Atlantic pigtoe (Element Occurrence No. 7) and Neuse River waterdog (Element Occurrence No. 690) within 1.0 mile of the project study area (both in the Eno River). For each species, habitat presence was reviewed using the most recently available orthoimagery. This assessment does not replace in-field surveys, which are required to confirm habitat presence/absence.

Table 4. ESA federally protected species listed for Orange County

Scientific Name	Common Name	Federal Status ¹	Habitat Present
<i>Perimyotis subflavus</i>	Tricolored Bat	PE	Yes
<i>Noturus furiosus</i>	Carolina madtom	E	Yes
<i>Necturus lewisi</i>	Neuse River waterdog	T	Yes
<i>Fusconaia masoni</i>	Atlantic pigtoe	T	Yes
<i>Alasmidonta heterodon</i>	Dwarf wedgemussel	E	Yes
<i>Danaus plexippus</i>	Monarch Butterfly	C	Yes

¹E – Endangered; PE – Proposed Endangered; T – Threatened; C – Candidate

Tricolored Bat

Tricolored bat was proposed for listing on September 13, 2022. Generally, species become listed roughly a year following their proposal for listing, and it is anticipated that this species will be listed statewide. Tree-clearing and percussive activities will occur as part of this project. If tree-clearing activities occur prior to the official listing of the species, then no restrictions on tree clearing will be required. After listing, the United States Fish and Wildlife Service may require conservation measures to minimize potential take of tricolored bats, such as:

- no tree clearing during the bat active season (April 1 – October 15)
- no percussive activities during the bat maternity season (May 15 - August 15)

If the project commences after the species is listed, it is recommended that the United States Fish and Wildlife Service be consulted to determine the appropriate steps for the project.

Aquatic Species

Carolina madtom, Neuse River waterdog, Atlantic pigtoe, and dwarf wedgemussel are all listed by the United States Fish and Wildlife Service Information for Planning and Consultation as potentially occurring in the project study area. The Eno River within the project study area is identified as critical habitat for the Neuse River waterdog. The proposed Ridgewalk Greenway alignment would utilize existing sidewalks to cross both the Eno River and Cates Creek, and impacts to these streams are not anticipated. If future design changes for the proposed project are anticipated to cause impacts to streams, particularly the Eno River and Cates Creek, surveys and/or coordination with the United States Fish and Wildlife Service is recommended.

Bald and Golden Eagle Protection Act

The bald eagle is not listed by the United States Fish and Wildlife Service Information for Planning and Consultation; however, it is federally protected under the Bald and Golden Eagle Protection Act, which is enforced by the United States Fish and Wildlife Service. Habitat for the bald eagle primarily consists of mature forests in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water.

A desktop-level assessment of the project study area, as well as the area within a 1.0-mile radius of the project limits, was performed using the most currently available orthoimagery. Water bodies large enough or sufficiently

open to be considered potential feeding sources were identified. Since foraging habitat is located within the review area, a survey of the project study area and the area within 660 feet of the project limits is recommended.

Existing Mitigation Sites

There are no existing North Carolina Department of Transportation Mitigation Sites within the project study area.

GeoEnvironmental Sites

One potential hazardous waste site parcel was identified within the project study area:

- Hillsborough Chrysler Dodge Jeep Ram at 259 South Churton Street (formerly known as Don Lacefield Chevrolet/Carden's Body & Paint Service) is identified as a very small quantity hazardous waste generator in the Resource Conservation and Recovery Act (RCRA) system and is listed in the underground storage tank (UST) program. A sliver of the site parcel is located within the study area in the vicinity of the alternative alignment along Orange Grove Street.

Three underground storage tank petroleum release incidents have been recorded within the project study area:

- 228 South Churton Street – Gateway Center and Weaver Street Market: the incident occurred in June 2000, an intermediate risk level was determined and the incident was closed in 2004.
- 250 South Churton Street – Gro Smart Pet Supply: the incident occurred in October 1995, a low risk level was determined and the incident was closed in 2000.
- 255 South Churton Street – Quickie Mart: the incident occurred in May 2014, an intermediate risk level was determined; there is no record of incident closure.

Two non-underground storage tank petroleum release incidents have been recorded within the project study area:

- 250 South Churton Street – Duke Power: the incident occurred in October 1995, risk level was undetermined; there is no record of incident closure.
- Near 400 United States Highway 70A – Norfolk Southern: the incident occurred in February 2005, a low risk level was determined and the incident was closed in 2005.

The current proposed alignment of the Ridgewalk Greenway is not anticipated to impact any of the above listed properties. If future design changes for the proposed project require right-of-way acquisition of any of the above listed properties, further evaluation such as a Phase I Environmental Site Assessment is recommended to confirm desktop findings and determine if additional studies are required.

Farmlands

Because the project is located within a Census Urbanized Area, a farmland assessment is not required, in accordance with federal statutes.

Permitting and Documentation

Environmental Permitting

The environmental permits required for the project cannot be completely determined until final design (or close to final design) is completed. However, based on the type of project being considered and the location of the project, it is anticipated that the following permits and authorizations will be required.

Section 404 Permit

Section 404 of the Clean Water Act requires permitting for any project that discharge fill material into waters of the United States including streams and wetlands. The proposed project as currently designed would require a Section 404 permit from the United States Army Corps of Engineers, the federal agency responsible for issuing these permits. The current proposed alignment of the Ridgewalk Greenway is anticipated to qualify for a Nationwide Permit, which are permits issued on a nationwide basis for projects that would result in minimal adverse effects, such as Nationwide Permit 14 (linear transportation projects) or Nationwide Permit 42 (recreational facilities).

401 Water Quality Certification

Section 401 of the Clean Water Act authorizes states and tribes to grant, deny, or waive permits for activities that may result in discharge into waters of the United States. A Section 401 Water Quality Certification from the State of North Carolina is required for any project that requires a federal permit due to impacts to wetlands or waters. The proposed project would require a Section 401 Water Quality Certification(s) because it would require a Section 404 permit.

Neuse River Riparian Buffer Authorization

Additionally, due to the project's presence in the Neuse River Basin and anticipated impacts to riparian buffers around streams, a Neuse River Riparian Buffer Authorization would also be required for the proposed project. The Neuse River Basin buffer rule applies both perennial and intermittent streams such as those found in the project study area, as well as jurisdictional lakes, ponds, estuaries, and modified natural streams. The North Carolina Division of Water Resources is the state agency responsible for issuing buffer authorizations.

Anticipated Mitigation

The proposed Ridgewalk Greenway as currently designed – a ten-foot asphalt path with two-foot shoulders – would be considered an allowable use after written riparian buffer authorization from the North Carolina Division of Water Resources and thus would not require riparian buffer mitigation. Extension of the existing culvert carrying Stream SA under Faribault Lane may require mitigation as currently designed, depending on the amount of permanent stream impact resulting from the extension. The threshold for requiring stream mitigation is currently 0.03 acres of impacted streambed.

Environmental Documentation

If there is a federal nexus associated with construction of the proposed Ridgewalk Greenway (e.g., any amount of federal funding or permitting by a federal agency) the proposed project would require environmental review and the documentation of potential environmental impacts in compliance with the National Environmental Policy Act (NEPA) of 1969. Assuming that federal transportation funds are used and/or a Section 404 permit from the United States Army Corps of Engineers is required, the Ridgewalk Greenway project would require federal environmental review and documentation. As currently designed, the proposed project is anticipated to meet criteria for a Federal Highway Administration Categorical Exclusion, established in 40 CFR 1508.4 and listed in 23 U.S.C. § 771.117(c)(3): "Construction of bicycle and pedestrian lanes, paths, and facilities."

In the absence of a federal nexus (i.e., no federal funding or Section 404 permit requirement), the Ridgewalk Greenway may be subject to the North Carolina State Environmental Policy Act (SEPA). Under Session Law 2015-90, the 2015 State Environmental Policy Act Reform Act, an environmental document must be prepared for all projects that use of \$10 million or more of state funds, include an action by a state agency, and have the

potential for detrimental environmental effects. If the proposed project were funded with \$10 million or more from state agencies including the North Carolina Department of Transportation, it would be subject to the North Carolina Environmental Policy Act.

Title 19A of the North Carolina Administrative Code includes “Construction of bicycle and pedestrian lanes, paths, and facilities” in its Minimum Criteria Rules for thresholds under which environmental documentation is not required for North Carolina Department of Transportation projects. Therefore, the proposed is anticipated to meet the criteria for a Minimum Criteria Determination Checklist.

Community Plans

There have been several plans developed by the Town of Hillsborough that help identify key aspects of locations and features for greenways and public spaces.

- Comprehensive Sustainability Plan (2023)
- Cates Creek Park Master Plan (2022)
- Community Connectivity Plan (2017)

Information provided in these plans, along with guidance from regulatory documents such as the Unified Development Ordinance, were utilized to complete this study and should be incorporated during final design.

Adjacent Projects

Developments

One existing development and one proposed development are located within the project study area. Additionally, there is a potential future planned development site near the proposed pedestrian bridge over Interstate 85, and future commercial development is anticipated within the project study area near the future passenger train station. Future development sites are shown on the Community Features Map in Figure 2. The Town of Hillsborough also continues to receive development proposals. A lot of growth in Hillsborough is occurring in the area surrounding the proposed greenway location which will allow the greenway to serve even more residents in the future.

Collins Ridge

Collins Ridge is a private housing development that is currently under construction between Orange Grove Road and Interstate 85. Construction will include single family homes, townhomes, apartments, and affordable rental units. As part of the development a 10 foot wide greenway will be built within the perimeter buffer by the developer and subsequently turned over to the Town of Hillsborough for ownership and maintenance. The developer has committed to completing construction of the greenway by December 31, 2027. The greenway inside of Collins Ridge will become part of the Ridgewalk trail.

Robertson Holdings Prop.

The Robertson Holdings development is a proposed light manufacturing building at 1800 Millstone Drive, which is located immediately west of Cates Creek near the proposed Ridgewalk Greenway where it would run along Cates Creek Parkway. The proposal is currently under review by the Hillsborough Planning Department, and a site plan was submitted in December 2022.

The proposed development would be located across Cates Creek from the proposed greenway alignment and would not be impacted by the proposed project.

Daniel Boone Village

Daniel Boone Village is a potential future mixed-use development on the site of the former Shops at Daniel Boone. The 58-acre site is located in south Hillsborough north of Interstate 85, east of Churton Street/Old North Carolina 86, south of the Food Lion at 106 Rebecca Drive, and immediately west of the Collins Ridge development. The site was acquired in 2018 by Daniel Boone LandCo and later transferred to DBC54, a corporate entity formed under D.R. Horton, a construction company that also controls Collins Ridge.

Initial draft redevelopment plans in 2020 showed 16 buildings containing more than 200,000 square feet of ground-floor commercial space, structured parking, and 384 residential units. However, DBC54 has not submitted plans to the Town of Hillsborough for development review. Demolition of the remaining former Shops at Daniel Boone buildings was completed in 2022.

The current proposed Ridgewalk Greenway alignment would not provide direct access to the Daniel Boone Village site. However, an access path from the site to the Ridgewalk Greenway could be constructed as part of Daniel Boone Village and may be considered for inclusion in conditions of approval for any future development plans submitted to the Town.

Future Development Near Train Station

Although there are no existing development plans at the time of this report, the Town of Hillsborough intends to preserve land surrounding the future passenger train station for mixed-use development. The most recent train station plans include the use of approximately 6.4 acres of the 19.6-acre parcel owned by the Town, leaving more than 13 acres potentially available for private or joint development opportunities.

The current proposed Ridgewalk Greenway alignment would be constructed along the northern and eastern boundaries of the proposed train station and development site, providing direct bicycle and pedestrian access to any future development from downtown Hillsborough, the Riverwalk, Collins Ridge, and neighborhoods along the proposed alignment.

Public Transportation Projects

P-5701 (Train Station)

The future train station site is currently being designed. Final designs and permits are anticipated within a few years with construction complete by February 2028. This project site will include a train station building with town offices and meeting space, parking lot, and stormwater mitigation. Ridgewalk is planned to be constructed through the site and adjacent to the station building. An entrance to Ridgewalk is anticipated from the parking lot of the train station site.

U-5845 (Churton Street Widening)

The proposed project to widen Churton Street is suggested to reduce congestion from Interstate 40 and Interstate 85 into and out of Hillsborough. The current typical section of 2-3 lanes would be widened to a 4-lane divided section with bike lanes and sidewalks. U-5845 is proposed to begin on the south side of the Interstate 40 interchange and end just south of the Eno River. This project is included in the current North Carolina Department of Transportation 2020-2029 State Transportation Improvement Plan.

I-5967 (Interstate 85 Widening)

Interstate 85 has been studied to be widened with improvements to the interchange at Churton Street. The proposed typical section includes a 6-lane section with a 27 foot paved median and 14 foot shoulders. This project is included in the current North Carolina Department of Transportation 2020-2029 State Transportation Improvement Plan.

Other Transportation Projects

There are several other projects that have been identified or studied in the surrounding area that do not have a direct association with the Ridgewalk greenway.

- North Carolina 86 Connector Study (2021)
- I-5984 Plans – Interchange upgrades at Interstate 85 and North Carolina 86
- I-5958 & I-5959 – Pavement rehabilitation on Interstate 85 from west of SR 1114 (Buckhorn Road) to Durham County line
- I-3306A – Interstate 40 interchange improvements between Interstate 85 and the Durham County line
- B-6037 – Bridge 670049 replacement over North Carolina Railroad/Norfolk Southern Railroad

Chapter 2: Greenway Consideration and Preferred Alignment

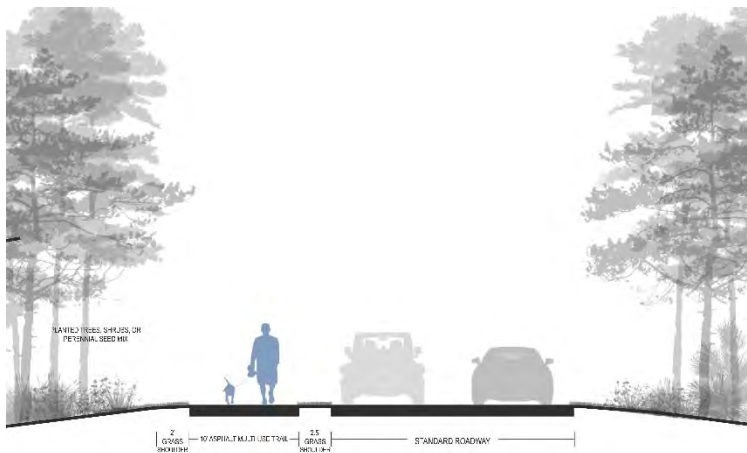
Design Criteria and Typical Section

Design Criteria

Design criteria for this project follows federal, state, and local guidance. The United States Department of Agriculture Accessibility Guidebook for Outdoor Recreation and Trails, the Manual on Uniform Traffic Control Devices (MUTCD), the American Association of State Highway Transportation Officials' (AASHTO) Guide for the Development of Bicycle Facilities (Fourth Edition), the North Carolina Bicycle Facilities Planning and Design Guidelines, and the 2010 Americans with Disabilities Act Standards for Accessible Design standards are all applicable to the greenway. The Town of Hillsborough also has greenway and public standards that they have published in their Community Connectivity Plan and Comprehensive Sustainability Plan.



Proposed Greenway Typical Section



Proposed Greenway next to Existing Roadway

Greenways typically are designed as an 8-12 foot path and to meet a 20 mile per hour design speed which requires a 100 foot minimum radius. Americans with Disabilities Act standards for grade also need to be met. They allow for up to a 5% continuous grade with a maximum grade of 12%. Grades between 5% and 12% require landings for rest at various intervals dependent on the grade.

Typical Sections

These typical sections are meant to provide a general plan for what the different parts of the proposed greenway may look like in terms of width, location, and materials. They do not show all minor variables, such as retaining walls, that may change in small sections of greenway in order to reduce impacts. The recommended typical sections may need to be revised in specific sections of the greenway during final designs as further information is available.

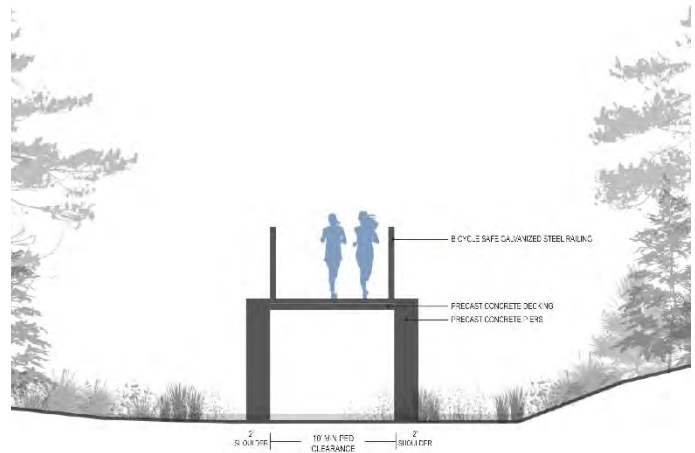
Greenway

A 10 foot greenway is recommended with 2 foot grass shoulders for areas where a standalone greenway will be built. For areas where the greenway is along a roadway a 2.5 foot grass strip is recommended between the

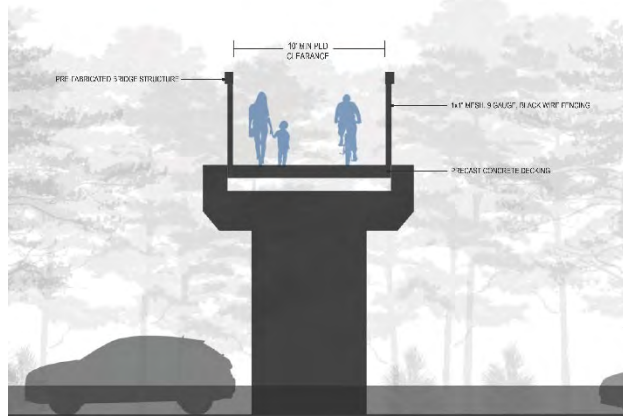
roadway and greenway with the same 10 foot wide path and 2 foot outside grass shoulder. An 8 foot wide greenway can be utilized if necessary to avoid major impacts. Maximum allowable cut and fill slopes are suggested to maintain the natural surroundings. However, ditches may be required outside of the slopes in some locations along the greenway for adequate drainage. To create an enjoyable experience for users of all types a smooth asphalt surface course layer should be used. The surface course should meet requirements similar to the North Carolina Department of Transportation specification for SF9.5A and use a subgrade of aggregate base course.

Boardwalk

Elevated boardwalk will be utilized in areas around structures where the grade required would create unreasonable fill heights or undesirable environmental impacts. The boardwalk will require a minimum of 10 foot clear width with railings due to the elevation. The railings will require guard rails at 42 inches and hand rails at 36 inches. Due to maintenance concerns, it is recommended that the boardwalk be constructed with a precast concrete deck on precast concrete beams with a bicycle safe galvanized steel railing or something similar.



Boardwalk Typical Section



Pedestrian Bridge Typical Section

Structures

Structures for the project will require a 10 foot clear width. It is anticipated that they will be prefabricated bridges for cost and construction purposes. A concrete deck is also recommended with a 1 inch x 1 inch mesh, 9 gauge, black wire fence. Bridges over other transportation facilities, such as Interstate 85 or the railroad, will require fencing to be included which will protect against objects thrown from the greenway.

Alternatives Considered

South on Churton and Crossing at United States 70 Business

This alternative explored a greenway alignment that started at Weaver Street Market and then continued south along Churton Street rather than Exchange Park Lane. The greenway would then have to cross to the east side of Churton Street at United States 70 Business and continue down to the crossing over the railroad. This alignment

was eliminated due to safety concerns caused by the amount of traffic on Churton Street and a lack of desire to have an at grade road crossing on the greenway at a busy intersection.

Tunnel Under Churton Street

The tunnel alternative began at Weaver Street Market, continued south down Exchange Park Lane and proposed a tunnel to cross under Churton Street just south of the intersection of Churton Street and United States 70 Business. The path would then continue down to the crossing over the railroad. This alternative was eliminated due to concern for the traffic control necessary to construct the tunnel and the historic property between United States 70 Business and the rail line.



View of North Side of One-Lane Trestle on Exchange Park Lane

Exchange Park Lane to Orange Grove Road

This alternative started at Weaver Street Market and then continued south along Exchange Park Lane down to Orange Grove Road where it would turn east to run along the roadway until it connected with existing sidewalk on the east side of Churton Street. This alignment avoids passing under the Churton Street bridge in the rail corridor and constructing elevated walkway over the North Carolina Railroad tracks. However, this alternate passes under the railroad through an existing one-lane trestle which causes safety concerns for pedestrians using the greenway. Due to the configuration of the existing structure and the adverse impacts improvements would have to rail traffic, it is not feasible to improve the clear roadway width on Exchange Park Lane under this trestle to accommodate both pedestrian and vehicular traffic on separated facilities. There is also no direct connection to the future train station. Though some discussion with North Carolina Railroad has already occurred, there is no guarantee that the railroad will agree to allow a greenway to run in the rail corridor. If an agreement cannot be reached, this alignment is the next preferred alternative.

Multiple Alignments South of Interstate 85

Multiple alignments were studied between Interstate 85 and Beckett's Ridge Drive due to the large elevation change in the area. The topography necessitated a meandering alignment that strategically crossed the terrain changes. Initially a further east crossing over Interstate 85 was analyzed and found to not be feasible due to a large slope on the south side of Interstate 85. After the crossing was moved further to the west some more direct routes were studied, but did not meet Americans with Disabilities Act standards for greenway grades. Ultimately, one greenway alignment that meets a 20 miles per hour design speed was developed, but it encroached into the parcels on the cul-de-sac of Leah Drive. Due to right-of-way constraints, it is not desirable to impact these parcels, so the alternative was eliminated.

Preferred Alignment

Discussion of Alternative

Ridgewalk Greenway is proposed as a north-south pedestrian connection. Currently, Hillsborough has a network of east-west greenway paths, but none that run north-south. The recommended route starts at Weaver Street Market where a crosswalk will be needed to help pedestrians get to the east side of Exchange Park Lane. The greenway runs south along Exchange Park Lane until just north of the Norfolk Southern rail line. Once the path reaches the railroad, it crosses under the Churton Street bridge next to the rail line. A retaining wall is proposed on the left side of the greenway, starting where the path separates from the roadway and continuing down and under the bridge, in order to reduce large cut slopes, maintain natural surroundings, and accommodate the greenway under the Churton Street Bridge. The elevated boardwalk begins on the east side of the bridge where it climbs to the elevation needed to cross the railroad tracks. After crossing the railroad on an elevated structure at the future train station, the grade gradually lowers as the boardwalk passes the future train station building. A ramp is recommended to allow access to Ridgewalk from the parking lot of the future train station. On the east side of the train station site the boardwalk turns back into an asphalt greenway surface as it runs parallel with the railroad before connecting into the portion of greenway that will be built by the Collins Ridge development.



Concept of Elevated Boardwalk and Railroad Crossing View East from the Churton Street Bridge (Design Subject to Change)



Beckett's Ridge Drive at the Proposed Greenway Crossing



Intersection of Cates Creek Parkway & Empress Lane from the Southeast Corner of the Intersection

At the south end of the greenway built by Collins Ridge, the asphalt greenway would continue leading up to a pedestrian bridge over Interstate 85. The crossing is proposed approximately ½ mile east of the current Churton Street interchange. A short segment of elevated boardwalk is recommended on the south side of the pedestrian bridge due to fill height and proximity to the rest of the trail. The boardwalk will then transition back into a



Riverwalk Trailhead and Greenway Location on Faribault Lane Looking East

paved greenway surface that meanders down to Beckett’s Ridge Drive due to the existing steep topography of the area. A short section of retaining wall is recommended on the right side of the greenway around the first curve south of Interstate 85 in order to reduce impacts to natural surroundings and properties. After crossing Beckett’s Ridge Drive, Ridgewalk would continue down the existing sidewalk to the west side of Cates Creek Parkway. There is a short section of sidewalk that will need to be constructed on Cates Creek Parkway, near the intersection of Empress Road, in order to fill an existing gap in the facility. The existing path then transitions into greenway as it leads down to Cates Creek Park where Ridgewalk will officially end. The entire alignment can be seen in Figure 7.

SEGMENT 1



MATCHLINE 1

LEGEND	
GREENWAY	
BOARDWALK	
BRIDGE	
LIMIT OF CONSTRUCTION	
EASEMENT	
RIGHT OF WAY	
EXISTING /BUILT BY OTHERS	

SEGMENT 1 / DEVELOPER BUILT





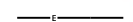

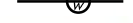


MATCHLINE 1

MATCHLINE 2

END SEGMENT 1

COLLINS RIDGE

LEGEND	
GREENWAY	
BOARDWALK	
BRIDGE	
LIMIT OF CONSTRUCTION	
EASEMENT	
RIGHT OF WAY	
EXISTING /BUILT BY OTHERS	



DEVELOPER BUILT /SEGMENT 2



MATCHLINE 2

MATCHLINE 3

LEGEND	
GREENWAY	
BOARDWALK	
BRIDGE	
LIMIT OF CONSTRUCTION	
EASEMENT	
RIGHT OF WAY	
EXISTING /BUILT BY OTHERS	



COLLINS RIDGE

BEGIN SEGMENT 2

I-85

BEGIN BRIDGE

END BRIDGE

BEGIN BOARDWALK

END BOARDWALK

CATES CREEK





END SEGMENT 2

BECKETT'S RIDGE DR

CATES CREEK PKWY

EXISTING FACILITIES CATES CREEK PARKWAY

MATCHLINE 3

LEGEND	
GREENWAY	
BOARDWALK	
BRIDGE	
EXISTING /BUILT BY OTHERS	



It is important to provide convenient access to Ridgewalk from surrounding areas as well as connectivity to existing pedestrian corridors. A section of greenway is proposed to run along Faribault Lane from the intersection with Exchange Park Lane to a Riverwalk trailhead for this reason. There are other neighborhood connections that would be helpful in creating access both now and in the future. One location is along Orange Grove Street/Gold Hill Way where there is existing sidewalk along most of the roadway, but there are some sections missing starting at Churton Street and continuing east about 600 feet. This connection will become even more important once Churton Street is widened and sidewalks are installed. Another area where future connections should be considered is in the area east of the future train station site. As this area continues to develop it would be beneficial to provide connection from the development directly to Ridgewalk for ease of access. Any road crossings along the greenway should include North Carolina Department of Transportation standard Americans with Disabilities Act accessible curb ramps and a crosswalk type that is appropriate for the location and meets North Carolina Department of Transportation standards.



Culvert on Faribault Lane

Evaluation of Drainage

Drainage Structures

Existing and proposed drainage patterns have been reviewed to identify potential upgrades or additions that the installation of the greenway may require. There are two existing structures that have been identified as needing upgrades; one is a pipe located on Exchange Park Lane just south of the bridge over the Eno River and the other is a culvert located on Faribault Lane near the tie to the Riverwalk trailhead that will need to be extended.

There are also 2 potential new pipes in the area where the greenway separates from Exchange Park Lane. South of Interstate 85 there are not existing pipes that would be impacted by the greenway, but 5 potential crosspipe locations have been identified.

Stormwater Treatment

The Hillsborough Ridgewalk project lies within the Falls Lake Watershed and is held to the standard of the Falls Lake Nutrient Strategy. Within this strategy, the target nitrogen export load is 2.2 pounds per acre per year, and the target phosphorous load is 0.33 pounds per acre per year. Based on the planned impervious surface and managed vegetation square footage of the project, permanent stormwater measures will be required to meet the target loads. It is recommended that the project design include bioretention cells and wet or dry vegetated pollutant removal swales to reduce the nitrogen and phosphorus export numbers to the required targeted numbers. As design progresses, locations and sizing for natural stormwater treatment options will need to be evaluated.

Evaluation of Structures

North Carolina Railroad and Interstate 85 Pedestrian Bridge Crossings

There will be two bridges required for the preferred alignment, one over the North Carolina Railroad rail line and one over Interstate 85. A preliminary review of the structure locations has been completed. They are

recommended to be prefabricated steel truss bridges with a weathering steel finish. The look of the bridge may be similar to Contech Engineered Solutions “Continental Capstone Pedestrian Bridge” model, though this will be investigated further with the Town when final designs are underway. The bridges should be designed using American Association of State Highway Transportation Officials’ (AASHTO) “LRFD Guide Specification for Design of Pedestrian Bridges” utilizing an American Association of State Highway Transportation Officials H-10 Truck loading and a pedestrian load of 90 pounds per square foot. Prefabricated bridges can accommodate up to a 180 foot span length which at this time will be sufficient for both locations. The bridge over Interstate 85 will need to be constructed to allow for future planned widening from 4 to 6 lanes at the crossing location.

The substructure for the bridges will vary. The bridge constructed over the railroad is recommended to utilize concrete hammerhead piers transitioning to the elevated platforms on each side of the North Carolina Railroad tracks. The Interstate 85 bridge can utilize a concrete abutment with a retaining wall on the north side of the bridge but will also require a hammerhead pier on the south side due to the transition to elevated boardwalk on that side of the bridge. Required clearances also will differ with a minimum of 17 feet and 23 feet for Interstate 85 and the railroad respectively. Both bridges will require coordination with North Carolina Department of Transportation and an encroachment agreement before they can be constructed.



Concept of Interstate 85 Pedestrian Bridge Looking West with Proposed Interstate 85 Widening Constructed (Design Subject to Change)

Boardwalk

Since the boardwalk is recommended to have a concrete deck with metal railings the substructure would also be concrete. It is suggested that shallow spread footings can be used where applicable and driven or augured piles be utilized where necessary. The boardwalk should be designed using American Association of State Highway Transportation Officials’ “LRFD Guide Specification for Design of Pedestrian Bridges” and American Concrete Institute 2005 – Building Code and Commentary. The recommended design load is an American Association of

State Highway Transportation Officials H-5 Truck and pedestrian load of 90 pounds per square foot. Span lengths for this type of boardwalk can range from 10 feet to 30 feet depending on the geometry of the path. The boardwalk should also be designed to accommodate turning movements for maintenance vehicles at critical locations.

Design Exception

Due to the steep topography and right-of-way constraints in the area between Interstate 85 and Beckett's Ridge Drive a horizontal design exception would be required for the preferred alignment. Rather than utilizing a 100 foot radius, the proposed alignment uses 50 foot radii which results in a 15 miles per hour design speed. The design exception allows the greenway to not impact otherwise undisturbed parcels around the cul-de-sac on Leah Drive and provides the geometry for a flatter greenway that will be more enjoyable for all types of users.



Utilities Next to Exchange Park Lane North of the One-Lane Trestle

Utilities

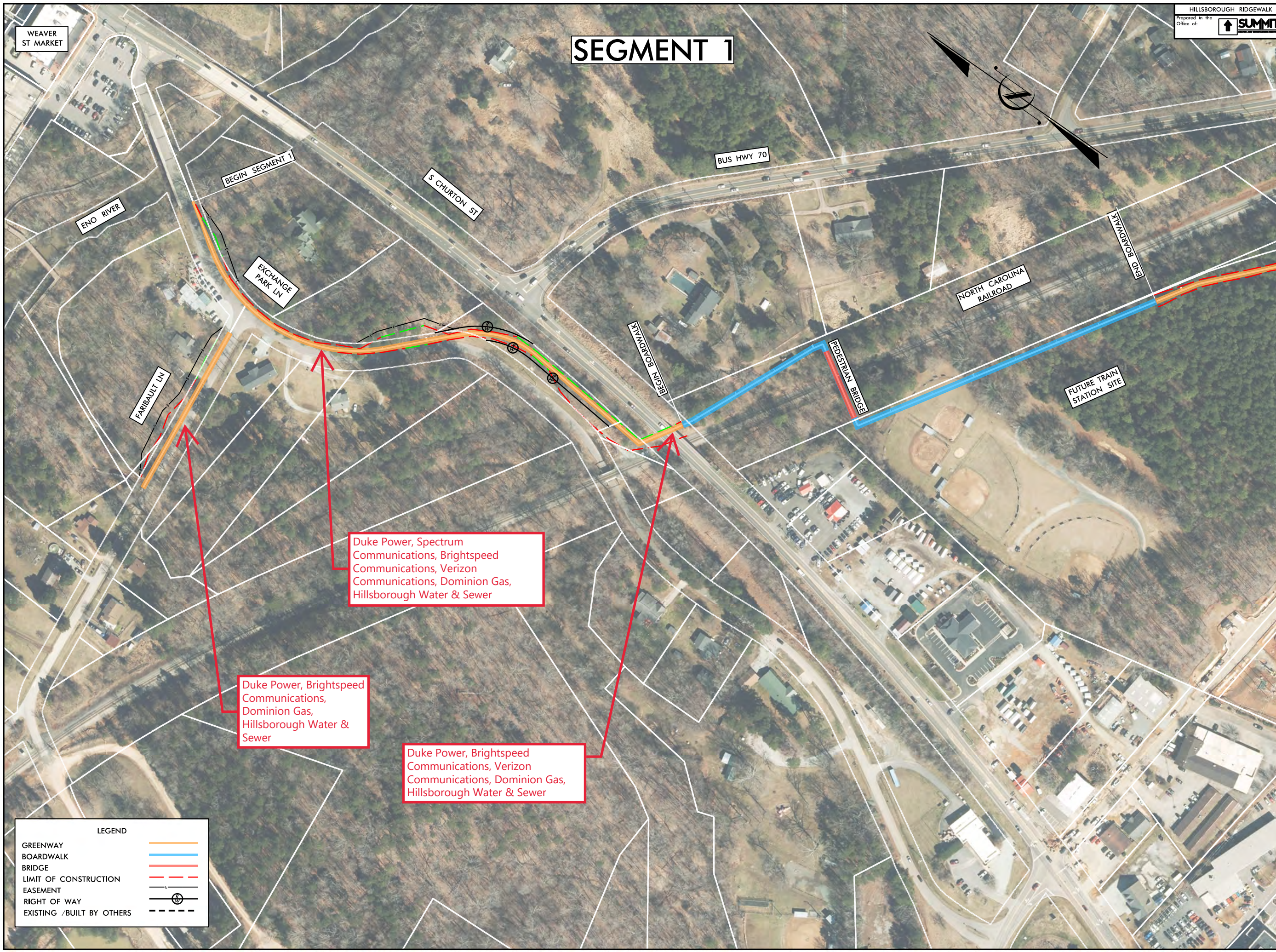
Field inspections were conducted and found evidence of numerous utilities along the proposed greenway alignment. The utilities are especially focused in the area between Exchange Park Lane and Churton Street as well as along Faribault Lane. Some relocations will be required due to greenway construction. Currently power, telephone, gas, water, and sewer would require anticipated relocation. However, existing utility locations in relation to the greenway location will need to be studied much more in depth during final design and some of the relocations may be able to be avoided. Coordination will be needed with all affected utility owners as final designs are developed. A map of the approximate known existing utility locations can be found in Figure 8.

Right-of-Way

Property Considerations

One goal for the greenway was to determine a feasible location while also ensuring that the path was not prohibitive to development on the surrounding properties. This was a consideration on the site of the future train station as well as south of Interstate 85 where the path comes close to the properties surrounding the cul-de-sac on Leah Drive. Consideration was also given to avoiding historic properties that were in the project study area.

SEGMENT 1



WEAVER ST MARKET

ENO RIVER

BEGIN SEGMENT 1

S CHURTON ST

BUS HWY 70

NORTH CAROLINA RAILROAD

END BOARDWALK

FARBULT LN

EXCHANGE PARK LN

BEGIN BOARDWALK

PEDESTRIAN BRIDGE

FUTURE TRAIN STATION SITE

Duke Power, Spectrum Communications, Brightspeed Communications, Verizon Communications, Dominion Gas, Hillsborough Water & Sewer

Duke Power, Brightspeed Communications, Dominion Gas, Hillsborough Water & Sewer

Duke Power, Brightspeed Communications, Verizon Communications, Dominion Gas, Hillsborough Water & Sewer

LEGEND

- GREENWAY
- BOARDWALK
- BRIDGE
- LIMIT OF CONSTRUCTION
- EASEMENT
- RIGHT OF WAY
- EXISTING /BUILT BY OTHERS

MATCHLINE 1

SEGMENT 1 / DEVELOPER BUILT



MATCHLINE 1

MATCHLINE 2

END SEGMENT 1

Duke Power, Brightspeed Communications, Spectrum Communications

COLLINS RIDGE

LEGEND	
GREENWAY	
BOARDWALK	
BRIDGE	
LIMIT OF CONSTRUCTION	
EASEMENT	
RIGHT OF WAY	
EXISTING /BUILT BY OTHERS	



DEVELOPER BUILT /SEGMENT 2






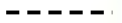

MATCHLINE 2

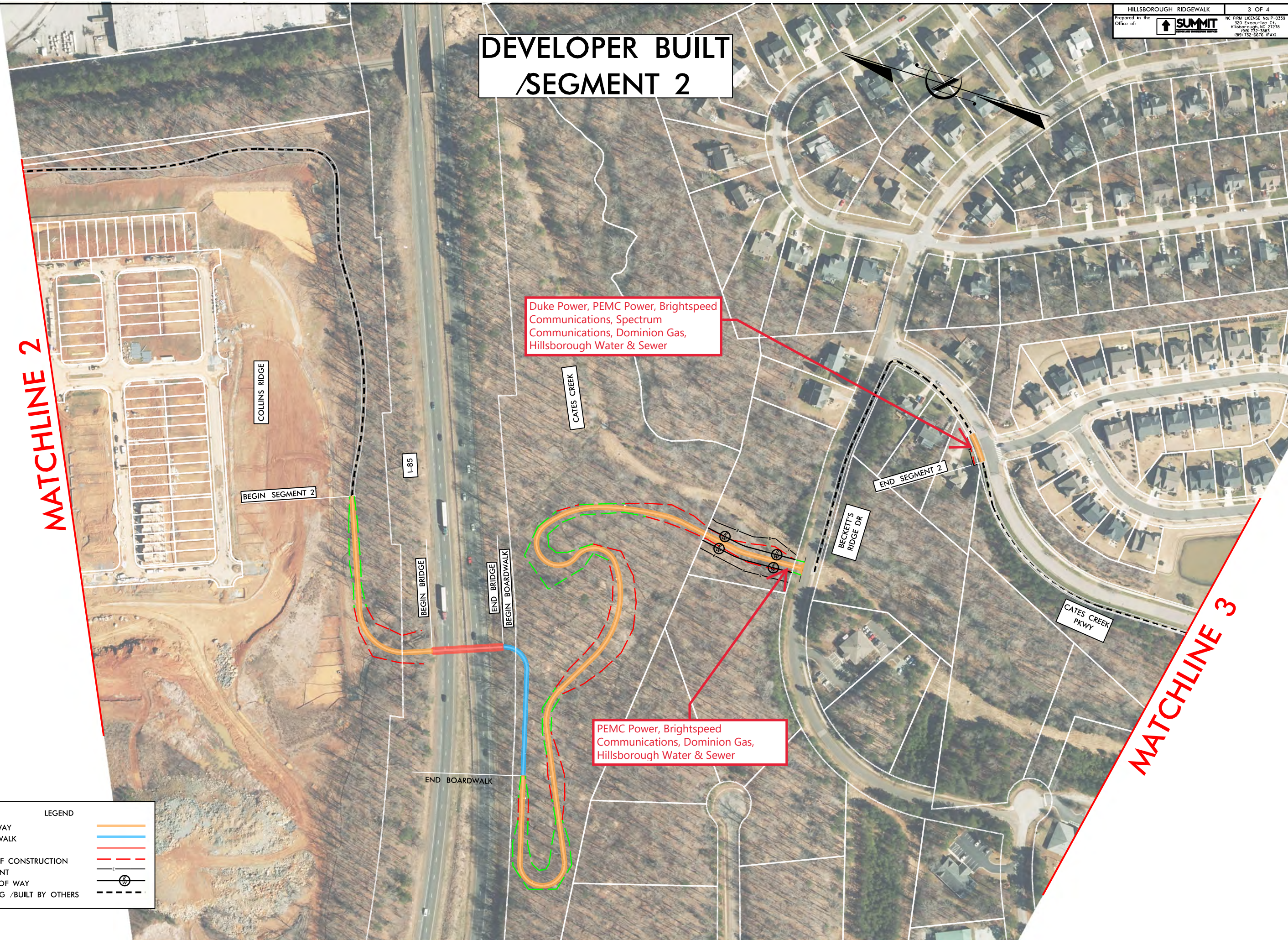
MATCHLINE 3

Duke Power, PEMC Power, Brightspeed Communications, Spectrum Communications, Dominion Gas, Hillsborough Water & Sewer

PEMC Power, Brightspeed Communications, Dominion Gas, Hillsborough Water & Sewer




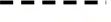
LEGEND

- GREENWAY 
- BOARDWALK 
- BRIDGE 
- LIMIT OF CONSTRUCTION 
- EASEMENT 
- RIGHT OF WAY 
- EXISTING /BUILT BY OTHERS 



EXISTING FACILITIES CATES CREEK PARKWAY

MATCHLINE 3

LEGEND	
GREENWAY	
BOARDWALK	
BRIDGE	
EXISTING /BUILT BY OTHERS	



Required Right-of-Way

Easement will need to be purchased from 5 properties and right-of-way from 2 properties will be needed to construct the preferred alignment. The required right-of-way is currently 1 private property between Churton Street and Exchange Park Lane and 1 is a developer owned property along Beckett's Ridge Drive. The 2 properties requiring right-of-way also require easement and the 2 remaining properties are privately owned and located along Faribault Lane and Exchange Park Lane.



Critical Property Between Churton Street & Exchange Park Lane



Critical Property on Beckett's Ridge Drive

Critical Property

There are 4 critical properties that will allow for the greenway to be built as shown. Two of the properties are where right-of-way will need to be purchased. The other 2 properties are the railroad corridor and the parcel south of Interstate 85 that contains a large majority of the greenway trail as it continues down toward Beckett's Ridge Drive. The property just south of Interstate 85 is owned by the Collins Ridge Development which is currently building on the north side of Interstate 85. The Town has been in discussions with the developer about a fair land trade in order to acquire this property for the construction of Ridgewalk.

Railroad Considerations

As mentioned previously, there has been some discussion with North Carolina Railroad about the possibility of constructing a greenway, boardwalk, and bridge within the railroad right-of-way. They appear to be open to the concept, but there is no guarantee that North Carolina Railroad will allow the path to be constructed in the corridor. The railroad



Greenway Location Near Railroad & Churton St Bridge – on North side of Railroad Looking West

could decide to not allow the greenway inside of their right-of-way due to safety concerns and liability that can occur with a pedestrian facility next to railroad tracks. If a formal agreement cannot be reached one of the alternate alignments will need to be considered.

Also, with any permanent facilities located inside the railroad corridor the Town of Hillsborough may have to make an annual payment for indemnification to North Carolina Railroad. The annual cost is unknown would only be determined once a formal agreement is reached.

Segmentation of Preferred Alternative

This greenway may be cost prohibitive to build under one contract. Reasonably the project is recommended to be built in 2 segments. The first segment would include the greenway, boardwalk, and bridge from Weaver Street Market to the north side of the Collins Ridge development. Faribault Lane greenway would also be built with this portion. The second segment would begin at the south side of the Collins Ridge development and build out the rest of Ridgewalk down to Beckett’s Ridge Drive as well as the small section of sidewalk on Cates Creek Parkway.

Costs

The costs have been broken up into the two segments recommended for construction as well as some miscellaneous items. The miscellaneous costs include items such as signs or benches that may be added to the portion of greenway that is being built by the Collins Ridge development and have been included in the cost for the first segment.

The utility and right-of-way costs estimates have also been completed for the entire preferred alignment. Utility costs for the greenway construction are primarily due to power pole relocations. Further coordination with the power company may allow for a reduction in pole relocations. Right-of-way costs are for the purchase of the required right-of-way and easements to build the preferred alignment as well as fees associated with negotiations and acquisition. All detailed cost estimates can be found in the appendix.

There will also be costs associated with the design and construction of the project which include design and engineering fees, and construction administration fees. Design and engineering fees are inclusive of design fees for all required disciplines and permitting costs for both segments of the greenway. Construction administration will be utilized throughout the greenway construction process to ensure that things are going according to plan. It is also important to include a contingency to address unforeseen costs that occur with any project.

Table 5. Cost Estimate Summaries

Segment 1	COST ESTIMATE (2023)	Segment 2	COST ESTIMATE (2023)
Construction	\$6,460,343	Construction	\$5,180,225
Utilities	\$319,680	Utilities	\$79,920
Right-of-Way	\$88,300	Right-of-Way	\$4,700
Design and Engineering Fees (10%)	\$686,850	Design and Engineering Fees (10%)	\$526,500
Construction Administration (10%)	\$686,850	Construction Administration (10%)	\$526,500
Contingency (20%)	\$1,373,150	Contingency (20%)	\$1,053,000
Segment 1 Total	\$9,615,173	Segment 2 Total	\$7,370,845

It should be noted that estimates have been calculated at current costs and costs will rise over time at an unknown rate. Material and labor costs have been volatile over the past several years and it is unknown how

costs may change in the years ahead. An escalation of 6% was added to the cost estimates to account for inflation up to an estimated bid date in the second quarter of 2024. A further increase in cost should be anticipated for any later bid date.

Life-cycle costs will also be associated with maintenance of the greenway as well such as waste and recycling removal, repaving the greenway surface, mowing, and maintaining crosswalks to name a few. These costs have not been estimated as part of this study, but they will be required throughout the life of the greenway.

Additional Amenities

Signing

The Town of Hillsborough has standards for wayfinding signs that can be utilized for all of the sign types that are recommended. Wayfinding signs are recommended in the future along adjacent roadways to direct users to Ridgewalk access points.

Signage is important along Ridgewalk to inform pedestrians of the access the greenway provides. It is recommended that 3 trailhead signs are provided along the greenway. The proposed locations for signage are on Exchange Park Lane near the Weaver Street Market parking lot, at the access point from the future train station site, and on the north side of Beckett's Ridge Drive. Additional locations for trailhead signs may be desired at other neighborhood connections such as Collins Ridge. Directional signs should also be considered throughout Ridgewalk at various locations where they can provide directions or distances to features of interest.

The Town has also implemented emergency marker signs with address points along the Riverwalk greenway. This system allows emergency services to locate more easily and quickly anyone who is in need of assistance while on the path by placing a numbered sign every 1/10th mile along the trail. The same system is proposed to be installed along Ridgewalk to aid in response time.

The town also has a very successful interpretive signage program. Interpretive signage adds interest to sites and provides educational opportunities. The town has standards for interpretive signage. Ridgewalk could provide multiple sites to expand the town's interpretive signage program. The locations and subject matter of interpretive signs will be determined at a later date.

Lighting

Due to Ridgewalk serving as a pedestrian corridor lighting should be considered along the greenway. Lighting would provide increased security and allow the greenway to be utilized for extended hours more safely. As final design of the greenway is developed power sources could be investigated. Current options that are available include solar or hard-wired services.

Benches, Waste Stations, Bicycle Racks

The Town of Hillsborough has standards for benches, waste/recycling receptacles, dog waste stations, picnic tables, and bicycle racks that should be utilized along Ridgewalk. These standards can be found in both the Town's "Community Connectivity Plan" and their "Comprehensive Sustainability Plan". Benches are recommended to be placed a minimum of every ¼ mile along the path to allow adequate areas for users to rest. Typically waste/recycling receptacles and dog waste stations are only placed near entrances to the greenway in order to allow for the Town and its partners to access and empty these containers more easily. Picnic table and bicycle rack locations will be determined as final designs are completed in order to locate them in the most beneficial spaces for the public.



Hillsborough Standard Waste/Recycling Receptacle and Bench

Bollards

Bollards are recommended at entrances to the greenway for the purpose of keeping motorized vehicles off the path. However, they will need to be able to fold down to allow the Town’s maintenance vehicles access to interior parts of the greenway.

Plantings

Plantings along the greenway are desirable to enhance the beauty of the natural surroundings. Potential trees, shrubs, and perennials that can thrive along a greenway are summarized in Table 5 below. All of these species are part of Hillsborough’s recommended plant lists in the Unified Development Ordinance. The Hillsborough Tree Board will determine the appropriate species and locations for plantings along the greenway.

Table 6. Greenway Potential Plant Species

CANOPY TREES					
BOTANICAL NAME	COMMON NAME	SUN/SHADE	HT	WIDTH	EVERGREEN
Acer rubrum	Carolina Maple	Full-Part Sun	40-70'	30-50'	
Magnolia grandiflora	Southern Magnolia	Full-Part Sun	60-80'	20-40'	X
Nyssa sylvatica	Black Tupelo	Full Sun	40-70'	20-30'	
Quercus stellata	Post Oak	Full Sun	40-50'	35-50'	
UNDERSTORY TREES					
BOTANICAL NAME	COMMON NAME	SUN/SHADE	HT	WIDTH	EVERGREEN
Amelanchier canadensis	Eastern Serviceberry	Part Shade	15-25'	15-20'	
Cercis canadensis	Eastern Redbud		20-30'	25-35'	
Cornus florida	Flowering Dogwood	Full-Part Sun	15-25'	15-30'	
Ilex vomitoria	Yaupon Holly	Full Sun-Deep Shade	10-20'	8-12'	X
Juniperis virginiana	Eastern Red Cedar	Full-Part Sun	30-40'	10-20'	X
Magnolia grandiflora 'Little Gem'	Little Gem Magnolia	Full-Part Sun	15-20'	8-10'	X
SHRUBS					
BOTANICAL NAME	COMMON NAME	SUN/SHADE	HT	WIDTH	EVERGREEN
Baptisia australis	Blue False Indigo	Full-Part Sun	3-4'	2-4'	
Callicarpa Americana	American Beautyberry	Full-Part Sun	3-8'	3-6'	

<i>Calycanthus floridus</i>	Carolina Allspice	Full Sun-Deep Shade	4-10'	4-10'	
<i>Cephalanthus occidentalis</i>	Buttonbush	Full-Part Sun	5-8'	3-6'	
<i>Ilex verticillata</i>	Winterberry				
<i>Rhododendron minus</i>	Dwarf Rhododendron	Part-Deep Shade	3-6'	3-6'	X
<i>Viburnum opulus</i> var. <i>americanum</i>	American Cranberry Viburnum	Full-Part Sun	8-12'	8-12'	
<i>Viburnum obovatum</i> 'Mrs Schillers Delight'	Small Viburnum	Full-Part Sun	2-3'	2-3'	X
OTHER PERENNIALS					
BOTANICAL NAME	COMMON NAME	SUN/SHADE	HT	WIDTH	EVERGREEN
Monarda	Bee Balm	Full Sun	2-4'	2-3'	
<i>Panicum virgatum</i>	Switchgrass	Full-Part Sun	3-6'	2-3'	X
<i>Rudbeckia fulgida</i>	Black-Eyed Susan				
<i>Sisyrinchium angustifolium</i>	Blue-Eyed Grass	Full-Part Sun	1-2'	0.5-1'	

The Path Forward

This feasibility study has provided recommendations and information on the greenway location, structures, utilities, right-of-way, segmentation, costs, and desirable amenities for the proposed Ridgewalk Greenway. The Town of Hillsborough will need to review the information presented and determine if they would like to proceed with identifying and pursuing potential funding sources. Once funding has been obtained a design team can be contracted to assist the Town with final design for the project, including right-of-way acquisition and utility relocations. Finally, construction on the Ridgewalk Greenway can begin.



Concept of Greenway at Beckett's Ridge Drive Crossing (Design Subject to Change)

References

Google Earth Aerial Imagery

<https://earth.google.com>

Natural Resources Conservation Service – Web Soil Survey Mapping Tool

<https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Natural Resources Conservation Service Published Soil Survey / US Geological Survey (USGS) Topographic GIS Data

<https://experience.arcgis.com/experience/a16078049de54d42a2bc384b9ceda91f>

NC Historic Preservation Office – HPOWEB 2.0 -

<https://nc.maps.arcgis.com/apps/webappviewer/index.html?id=d2d04d8d7e03403f889419526e682529>

NC Department of Environmental Quality GIS Data

<https://data-ncdenr.opendata.arcgis.com/datasets/ncdenr::ust-active-facilities/about>

Orange County GIS Data

<https://www.orangecountync.gov/2057/Download-GIS-Data>

Town of Hillsborough Community Connectivity Plan

<https://assets.hillsboroughnc.gov/media/documents/public/community-connectivity-plan.pdf>

Town of Hillsborough Draft Comprehensive Sustainability Plan

<https://assets.hillsboroughnc.gov/media/documents/public/draft-comprehensive-sustainability-plan-full-plan.pdf>

Town of Hillsborough Development Projects

<https://www.hillsboroughnc.gov/development-projects/>

Town of Hillsborough GIS Data

<https://hillsboroughnc.maps.arcgis.com/>

USDA Accessibility Guidebook for Outdoor Recreation and Trails

<https://www.fs.usda.gov/sites/default/files/Accessibility-Guide-Book.pdf>

US Environmental Protection Agency (EPA) Envirofacts/Enviromapper

<https://enviro.epa.gov/enviro/em4ef.home>

US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC)

<https://ipac.ecosphere.fws.gov/>

USFWS National Wetlands Inventory

<https://www.fws.gov/program/national-wetlands-inventory/wetlands-data>

USGS National Hydrography Dataset

<https://www.usgs.gov/national-hydrography/national-hydrography-dataset>

Appendix



EXECUTIVE SUMMARY

Prepared For: Summit Design and Engineering Services

Project Name: Town of Hillsborough Greenway Trail

Location: Town of Hillsborough Estimate Date: 5/24/2023

Project Area (SF): 1.7 ACRE Revised Date: 6/13/2023

Project #: 23188 Palacio Lead Contact: Syed Bukhari

Project Phase: Schematic Design

Project Description: Greenway Trail

CONSTRUCTION COST SNAPSHOT				
PROJECT TYPE				TOTAL
Greenway Trail Phase 1				\$6,460,343
Greenway Trail Phase 2 (I-85 & South)				\$5,180,225
TOTAL ESTIMATED CONSTRUCTION COST				\$11,640,568

ALTERNATES (INCLUDES COST OF WORK AND MARKUPS)		
1	Alternate for Mulched Tree Clearing (cost per phase)	\$30,000
2		
3		
4		

ESTIMATE ASSUMPTIONS
Anticipated Bid Date: 2nd Quarter 2024 (Add 1.5% per quarter for market escalation beyond this point)
Design-Bid-Build delivery method
Receiving bids from at least four (4) qualified general contractors
General contractors to receive bids from at least four (4) qualified subcontractors per trade
Most of the bidders will be from the local market (within 1 hour driving distance)
Assumes normal working hours



PALACIO

Name: Town of Hillsborough Greenway Trail

Location: Town of Hillsborough

Date: 5/24/2023

Area (SF): 1.7 ACRE

Rev. Date: _____

Phase 1

ESTIMATE SUMMARY					
GROUP	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
	Clearing and Grubbing	1.7	ACRE	16,000.00	27,200
	Unclassified Excavation	1,210	CY	30.00	36,300
	Borrow Excavation	730	CY	60.00	43,800
	Erosion Control	1	LS	50,000.00	50,000
	Culvert Extension	1	EACH	10,000.00	10,000
	New Pipe	100	LF	150.00	15,000
	Bioretention Site	1	EACH	100,000.00	100,000
	3" Asphalt Paving Greenway Trail	2,775	SY	45.00	124,875
	Concrete Boardwalk spread footings & Piling	17,850	SF	120.00	2,142,000
	Concrete Bench Pad	15	SY	90.00	1,350
	Curb Ramps	4	EACH	7,500.00	30,000
	Prefabricated Bridge including railings	160	LF	6,965.06	1,114,410
	Bridge Piers	2	EA	50,000.00	100,000
	Metal Railing by Boardwalk Both Side	1,642	LF	175.00	287,350
	Benches	4	EACH	1,500.00	6,000
	Picnic Tables	2	EACH	2,000.00	4,000
	Trash Can	4	EACH	950.00	3,800
	Dog Waste	4	EACH	951.00	3,804
	Bollards	1	EACH	850.00	850
	Bike Racks	2	EACH	2,500.00	5,000
	Lighting	3,900	LF	75.00	292,500
	Plantings	1	LS	100,000.00	100,000
	Trailhead Signs	2	EACH	5,000.00	10,000
	Destination Signs	6	EACH	5,000.00	30,000
	Route Makers	8	EACH	1,000.00	8,000
	Wayfinding Signs	3	EACH	3,600.00	10,800
	Interpretive Signs	2	EACH	2,000.00	4,000
	Crosswalk	85	LF	64.00	5,440
	Retaining Wall (4.7' avg height)	450	LF	750.00	337,500
SUBTOTAL					\$4,903,979
	General Condition as %	7%			\$343,279
	Bonds as %	1%			\$52,473
	Insurance as %	1.50%			\$79,496
	Contractor Fee as %	3%			\$161,377
	Design/Market Conditions Contingency as %	10%			\$554,060
	Escalation as %	6%			\$365,680
TOTAL PROBABLE CONSTRUCTION COST					\$6,460,343

Additional percentages are included as an estimate of the General Contractors costs for the project including:
 General Condition - Project staff and maintenance
 Bond - Payment and performance bonds
 Insurance - Liability insurance
 Fee - General Contractor's profit
 Design/Market Conditions Contingency - Estimators contingency for items not yet designed or may be discovered
 Escalation - Increase for estimate from today's price to estimated bid date (2nd Quarter 2024)



PALACIO

Name: **Town of Hillsborough Greenway Trail**

Location: Town of Hillsborough

Date: 5/24/2023

Area (SF): 2.1 Acre

Rev. Date: _____

Phase 2 South of I-85

ESTIMATE SUMMARY					
GROUP	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
	Clearing and Grubbing	2.1	ACRE	16,000.00	33,600
	Unclassified Excavation	7,730	CY	30.00	231,900
	Borrow Excavation	3,470	CY	60.00	208,200
	Erosion Control	1	LS	75,000.00	75,000
	New Pipe	200	LF	150.00	30,000
	3" Asphalt Paving Greenway Trail (2572' x 10')	2,725	SY	45.00	122,625
	Concrete Boardwalk (1012' x 10') spread footings & Piling	3,205	SF	120.00	384,600
	Concrete Sidewalk	76	SY	72.00	5,472
	Concrete Bench Pad	11	SY	72.00	792
	Curb Ramps	1	EACH	7,500.00	7,500
	Prefabricated Bridge including railings(I-85)	170	LF	10,447.59	1,776,091
	Bridge Piers	3	EA	75,000.00	225,000
	Metal Railing by Boardwalk Both Sides	641	LF	175.00	112,175
	Traffic Control	1	LS	100,000.00	100,000
	Benches	3	EACH	1,500.00	4,500
	Picnic Tables	2	EACH	2,000.00	4,000
	Trash Can	3	EACH	950.00	2,850
	Dog Waste	3	EACH	500.00	1,500
	Bollards	1	EACH	850.00	850
	Bike Racks	2	EACH	2,500.00	5,000
	Lighting	2,920	LF	75.00	219,000
	Plantings	1	LS	100,000.00	100,000
	Trailhead Signs	1	EACH	5,000.00	5,000
	Destination Signs	3	EACH	5,000.00	15,000
	Route Makers	6	EACH	1,000.00	6,000
	Interpretive Signs	2	EACH	2,000.00	4,000
	Crosswalk	25	LF	64.00	1,600
	Retaining Wall, 9.5 Avg	200	LF	1,250.00	250,000
SUBTOTAL					\$3,932,255
	General Condition as %	7%			\$275,258
	Bonds as %	1%			\$42,075
	Insurance as %	1.50%			\$63,744
	Contractor Fee as %	3%			\$129,400
	Design/Market Conditions Contingency as %	10%			\$444,273
	Escalation as %	6%			\$293,220
TOTAL PROBABLE CONSTRUCTION COST					\$5,180,225

Additional percentages are included as an estimate of the General Contractors costs for the project including:
 General Condition - Project staff and maintenance
 Bond - Payment and performance bonds
 Insurance - Liability insurance
 Fee - General Contractor's profit
 Design/Market Conditions Contingency - Estimators contingency for items not yet designed or may be discovered
 Escalation - Increase for estimate from today's price to estimated bid date (2nd Quarter 2024)



UTILITY COST ESTIMATE

Project: **Hillsborough Greenway**

County: Orange

Description: Greenway Extension through the Town of Hillsborough

Field Inspection: **Evidence of Utilities**

Gas: Yes Electric: Yes Telephone: Yes CATV: Yes

Water: Yes Sewer: Yes Drainage: Yes Other: Yes

Anticipated Relocation:

Gas: Yes Electric: Yes Telephone: Yes CATV: Yes

Water: Yes Sewer: Yes Drainage: Yes Other: Yes

Relocation Totals	Construction Totals	Alternate Totals
Power Poles: \$ 181,344.00	Power Poles:	Relocation Total: \$ 350,213.00
Power Items: \$ 28,500.00	Power Items:	Construction Total: \$ 49,350.00
Telephone Poles: \$ 24,516.00	Telephone Poles:	
Telephone Items: \$ 3,060.00	Telephone Items:	Alternate Total: \$ 399,563.00
Gas Line: \$ 42,750.00	Gas Line:	
Gas Items:	Gas Items:	
Water Line:	Water Line: \$ 17,850.00	
Water Items:	Water Items: \$ 6,000.00	
Sewer Line:	Sewer Line: \$ 25,500.00	
Sewer Items:	Sewer Items:	
Misc. Items: \$ 70,043.00	Misc. Items:	

REQUEST FOR R/W COST ESTIMATE / RELOCATION EIS

COST ESTIMATE REQUEST

RELOCATION EIS REPORT

NEW REQUEST:

UPDATE REQUEST:

REVISION REQUEST:

Update to ____ Estimate

Revision to ____ Estimate

Revision No.: ____

DATE RECEIVED: 5/10/2023

DATE ASSIGNED: 5/10/2023 # of Alternates Requested: 1

DATE DUE: 5/25/2023

TIP No.:	DESCRIPTION: <u>Hillsborough Greenway Feasibility Study</u>
-----------------	--

WBS ELEMENT: **COUNTY:** Wake **DIV:** 7 **APPRAISAL OFFICE:** 3

REQUESTOR: Faith Jahnke, PE **DEPT:** Summit, Transportation Project Manager

TYPE OF PLANS: HEARING MAPS | LOCATION MAP | AERIAL | VICINITY | PRELIMINARY | CONCEPTUAL

** Based on past project historical data, the land and damage figures have been adjusted to include condemnation and administrative increases that occur during settlement of all parcels.**

APPRAISER: TELICS **COMPLETED:** 5/25/2023 # of Alternates Completed: 1

	Hillsborough Greenway							
	NONE: <input type="checkbox"/>	LIMITED: <input type="checkbox"/>	NONE: <input type="checkbox"/>	LIMITED: <input type="checkbox"/>	NONE: <input type="checkbox"/>	LIMITED: <input type="checkbox"/>	NONE: <input type="checkbox"/>	LIMITED: <input type="checkbox"/>
	PARTIAL: <input type="checkbox"/>	FULL: <input checked="" type="checkbox"/>	PARTIAL: <input type="checkbox"/>	FULL: <input type="checkbox"/>	PARTIAL: <input type="checkbox"/>	FULL: <input type="checkbox"/>	PARTIAL: <input type="checkbox"/>	FULL: <input type="checkbox"/>
ESTIMATED NO. OF PARCELS:	6							
RESIDENTIAL RELOCATEES:	0	\$ 0		\$		\$		\$
BUSINESS RELOCATEES:	0	\$ 0		\$		\$		\$
GRAVES:	0	\$ 0		\$		\$		\$
CHURCH / NON – PROFIT:	0	\$ 0		\$		\$		\$
MISC:	0	\$ 0		\$		\$		\$
SIGNS:	0	\$ 0		\$		\$		\$
LAND, IMPROVEMENTS, & DAMAGES:	\$ 55,000			\$		\$		\$
ACQUISITION:	\$ 38,000			\$		\$		\$
TOTAL ESTIMATED R/W COST:	\$ 93,000			\$		\$		\$

** The estimated number of above relocatees includes those parcels where the proposed acquisition areas involve relocation of livable or business units only. **

NOTES: Estimate assumes 50% of the parcels will require appraisals/titles/attorney closings.

Ridgewalk Detailed Right-of-Way Estimate

Number	TAX ID	Owner Name	Property Address	Land Size (AC)	Value/AC	ROW (SF)	ROW (AC)	TCE (SF)	TCE (AC)	\$\$ ROW ACQ	Easements	Improvements	Value	ROW Costs
001	9.874E+09	KNIGHTON GLORIA E HRSFARIBAULT WALTER JR	115 FARIBAULT LN162 EXC	3.03	\$349,464.03			6123	0.140564738	\$0.00	\$14,736.70	\$380,380.00	\$1,424,519.30	\$14,736.70
002	9.865E+09	WHITTED CHARLES KWHITTED JAPONICA L	281 EXCHANGE PARK LN	1.27	\$46,001.57			740	0.016988062	\$0.00	\$234.44	\$301,574.00	\$359,761.56	\$234.44
003	9.874E+09	PARSLEY JAMES M A	240 S CHURTON ST	3.01	\$59,134.88			2349	0.053925620	\$0.00	\$956.67	\$635,726.00	\$812,765.33	\$956.67
004	9.874E+09	PARSLEY JAMES MPARSLEY CAROLYN C	S CHURTON ST	2.08	\$62,212.50			4565	0.104797980	\$0.00	\$1,955.92	\$0.00	\$127,446.08	\$1,955.92
005	9.874E+09	GOODE ELIZABETH C W	205 US 70A203 US 70A	6.92	\$53,127.17	11629	0.266965106	193	0.004430670	\$14,183.10	\$70.62	\$694,148.00	\$1,047,534.28	\$14,253.72
006	9.873E+09	OLD MILL PROPERTIES LLC	BECKETTS RIDGE DR	1.79	\$1,931.84	6367	0.146166208	9703	0.222750230	\$282.37	\$129.10	\$0.00	\$3,046.53	\$411.47

\$32,548.91
X 1.7 **\$55,333.15**

		Appraisals /
Number of Appraisals	3	\$13,215.00
		Negotiation Cost
Total Parcels	6	\$25,200.00
		Relocation
Res Relo	0	\$0.00
Corn Relo	0	\$0.00
Sign Relo	0	\$0.00
Misc Move	0	\$0.00
		\$0.00
		Appraisals
		\$13,215.00
		Negotiations
		\$25,200.00
		Relocations
		\$0.00
Acquisition Consultant Costs Total		\$38,415.00
		Rounded
		\$38,000.00
		Factor
RoW Acq Cost	\$32,549	\$55,333.15
		\$55,000.00
Land, Imp, & Damages		\$55,000.00
Acquisition		\$38,000.00
		\$93,000.00