



BARNWELL ROAD
PEDESTRIAN AND BICYCLE SAFETY STUDY



Barnwell Road Pedestrian and Bicycle Safety Study

Prepared for:



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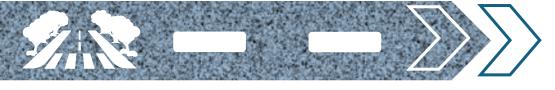


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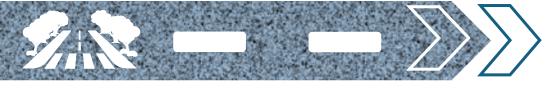
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1.0 Introduction





1.0 Introduction

Project Description

The Barnwell Road Pedestrian and Bicycle Safety Study evaluated the pedestrian and bicycle safety along Barnwell Road in Nassau County (see **Figure 1-1**). The purpose of the study was to identify potential safety countermeasures for implementation. These countermeasures may include traditional strategies such as constructing sidewalks, shared-use paths, or installing pedestrian signals as well as lower-cost improvements that are quicker to implement.

The study focused on the viability of constructing a 10-foot shared use path primarily along the east side of Barnwell Road.

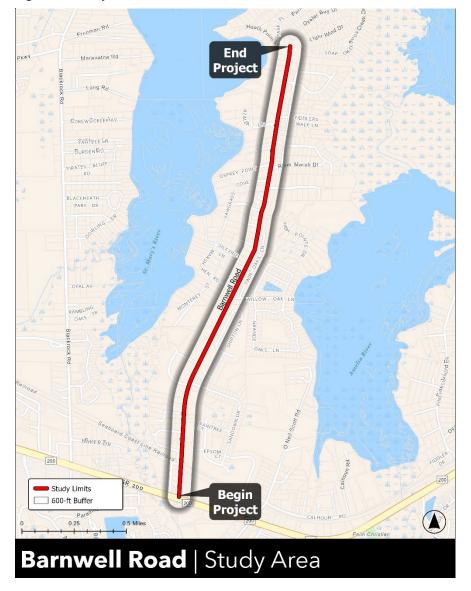
Study Limits

The study limits are Barnwell Road from SR 200 to Oyster Bay Drive (approximately 2.25 miles long). The intersection of SR 200 and Barnwell Road was not included in this study.

Purpose and Need

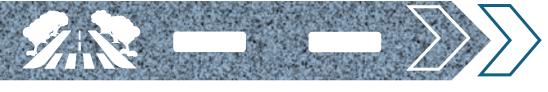
Barnwell Road serves many single-family residences and functions as the only route for those residences to access SR 200. There has been an identified demand for enhanced bicycle and pedestrian facilities along Barnwell Road to increase safety and mobility options for the community.

Figure 1-1 Study Area









Study Process

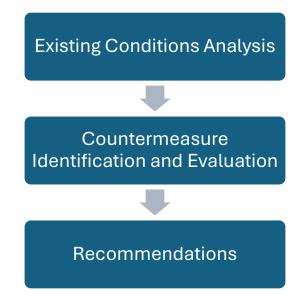
The study process consisted of the following elements:

- Existing Conditions Analysis: Gathered and analyzed data for the study area. This included cataloguing the existing characteristics of the roadway, a review of relevant local policies and safety initiatives, and a safety field review.
- Countermeasure Identification and Evaluation: Identified and evaluated potential bicycle and pedestrian safety countermeasures for the roadway.
- Recommendations: Developed a set of recommendations featuring a list of countermeasures with their description and location, general cost, and general implementation time-frame.

Study Guidance

This study was guided by the Safe Roads Element of the Federal Highway Administration's (FHWA) *Safe System Approach*, which has been unanimously recommended by leading transportation agencies including Florida Department of Transportation (FDOT), Institute of Transportation Engineers (ITE), and the National Association of City Transportation Officials (NACTO). The *Safe System Approach* works by reinforcing multiple layers of protection

to both prevent crashes from happening and minimizing the harm caused by crashes.











2.0 Existing Conditions





2.0 Existing Conditions Analysis

The existing conditions analysis included a review of the current infrastructure, land use, and relevant policies for the corridor. The purpose of this analysis was to document the existing characteristics of the corridor with a focus on bicycle and pedestrian safety and the potential for bicycle and pedestrian enhancements.

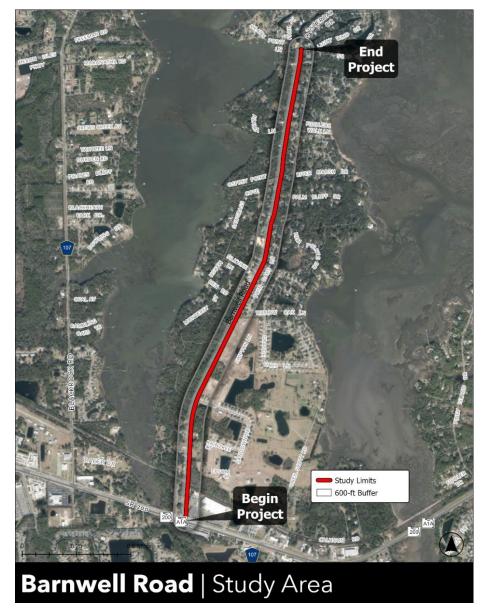
The analysis consisted of the following elements:

- 2.1 General Roadway Characteristics
- 2.2 General Environmental Characteristics
- 2.3 Planning and Policy Review
- 2.4 Field Review

Study Corridor Description

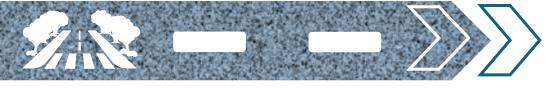
Barnwell Road is a two-lane, north-south local roadway located in Nassau County, Florida just west of the intracoastal waterway. The study limits are from SR 200 to Oyster Bay Drive. It is functionally classified as a Minor Collector by Nassau County and is approximately 2.25 miles long.

Figure 2-1 Study Area (Aerial)









2.1 General Roadway Characteristics

The following list summarizes the existing roadway characteristics for the Barnwell Road corridor:

- The Nassau County functional classification is Minor Collector.
- The facility is not within an Urbanized Area as classified by the US Census.
- The posted speed limit is 35 mph.
- Sidewalks are present on small portions of the corridor along the east side.
- There is one railroad crossing on the southern end of the corridor.
- There are no existing on-road bicycle facilities.
- There are no existing crosswalks or signalized intersections.
- There are no school zones or parks.
- There are eight school bus stops.
- There is no lighting along the corridor.
- There are between 56 and 60 driveways along the corridor.
- There are no transit stops or routes.

Typical Section

The existing roadway configuration consists of two **11-foot** travel lanes (see **Figure 2-2**). Drainage is handled through a swale system on both sides of the corridor.



Typical view of Barnwell Road. Source: Project Team.







Figure 2-2 Existing Typical Section



Barnwell Road facing south.





Bicycle and Pedestrian Facilities

Sidewalks are present for roughly o.4 miles along the corridor on the east side of the roadway, mostly as part of a new neighborhood development. The sidewalk width ranges from five to six feet. Figure 2-3 displays the map of existing sidewalk locations.

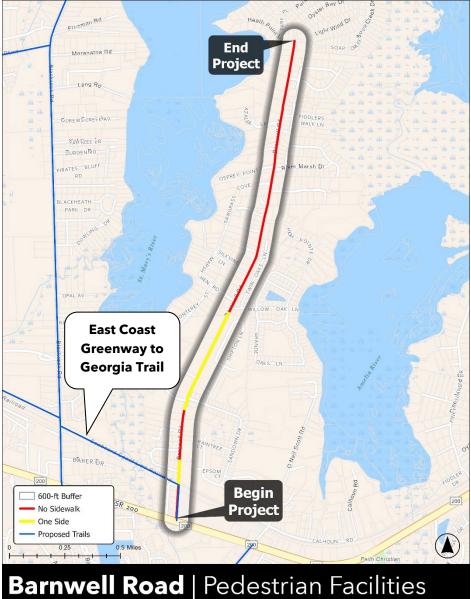
There are currently no marked crosswalks and no designated on-road or off-road bicycle facilities along Barnwell Road.

There is a planned SUN Trail crossing through the project area long the CSX rail line. The trail is called the East Coast Greenway to Georgia Trail and is currently classified as an unfunded gap in the SUN Trail system.



Existing sidewalk segment. Source: Project Team.

Figure 2-3 Bicycle and Pedestrian Facilities









School Bus Stops

There are eight school bus stops along the corridor (see **Figure 2-4**). School buses run along the corridor between 6:39 and 8:02 AM and 2:43 and 4:27 PM for Fernandina Beach High School, Fernandina Beach Middle School, Emma Love Hardee Elementary School, and Southside Elementary School.



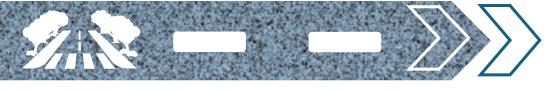
Approximate school bus stop location for the Oyster Bay Community. Photo Source: Project Team.

Figure 2-4 School Bus Stops



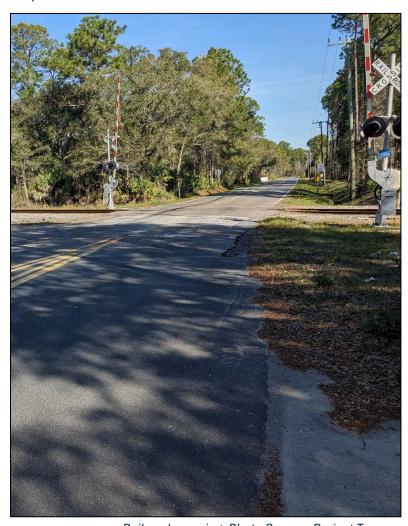






Railroad Crossings

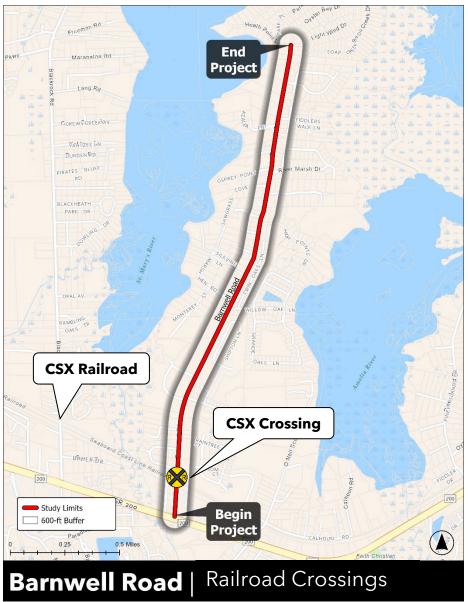
There is one active CSX railroad crossing towards the southern end of the corridor just north of SR 200 (see **Figure 2-5**).



Railroad crossing. Photo Source: Project Team.











Neighborhood Entrances

There are five neighborhood entrances along the corridor (see **Figure 2-6**).

The entrance marked by the green dot represents the Kingsley Creek subdivision that is currently in the process of construction. The neighborhood is expected to construct 189 new homes and as of February 2024, all 189 of those homes have already been sold.



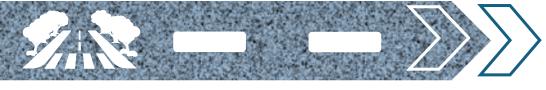
Photo Source: Project Team.

Figure 2-6 Neighborhood Entrances







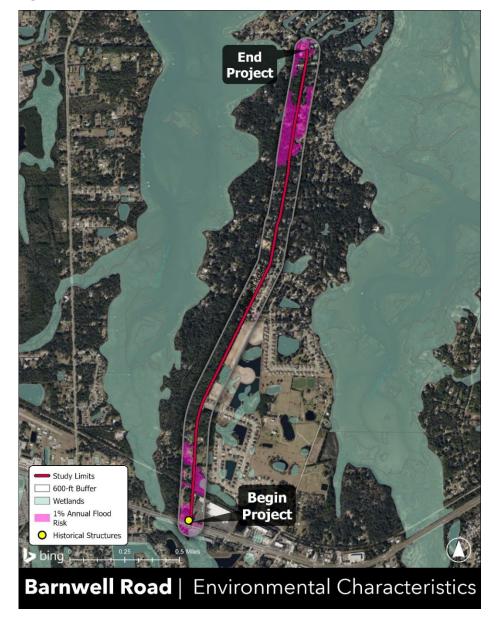


2.2 General Environmental Characteristics

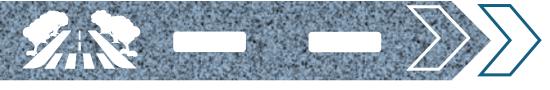
The following list summarizes the general environmental characteristics of the corridor:

- Wetlands: There are eight (8) distinct wetlands within the study area.
- Drainage: Drainage falls within the Amelia River waterbody and covers the entirety of the study area. This drainage basin covers a total of 5.56 square miles.
- Historic Structures: There is one (1) historically preserved structure within the study area. The structure is the O'Neil Baptist Church and is classified as a religious meeting house.
- Protected Waters: There are no protected waters within the study area.
- Flood Zones: The majority of the study area is within a minimal flood hazard (X) with some sections falling under the 1% chance of annual flooding (AE).
- Impaired Waters: The study area falls under the Amelia River waterbody which has been classified as an impaired water body when testing for metals (aluminum and iron).

Figure 2-7 Environmental Characteristics







2.3 Planning and Policy Review

The planning and policy review of the corridor catalogued the existing land use, zoning, and future land use designations along the corridor. A review of these policies provides context of the existing and planned built environment along the corridor. Associated maps for the policy review are provided in **Figures 2-8 through 2-10**.

Planning and policy review findings:

- The primary existing and planned land development along the corridor is residential single-family.
- There is a commercial development (Lowe's) at the southern end of the corridor adjacent to SR 200 along with some medium density residential in the same vicinity.
- The current allowable development density ranges between two and three dwelling units (du) per acre.
- The southern end of the corridor (SR 200 to the railroad tracks) falls within the SR 200 Overlay District.
 - The overlay district generally lies within 1,000 feet of each side of SR 200.
 - The overlay policies pertain to property and driveway access to SR 200 and are not relevant to this study.

Existing Policies

Nassau County 2030 Comprehensive Plan

Transportation Element:

Bicycle and pedestrian facilities shall be incorporated into transportation improvement projects (Policy T.04.01)

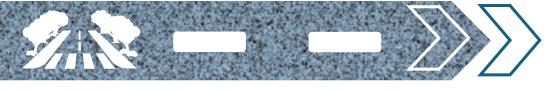
Nassau County Roadway and Drainage Standards

Section 11.7 Sidewalks and Multi-use trails:

- Minimum sidewalk width is 6 feet (11.7.3).
- Minimum multi-use trail width is 10 feet (11.7.3).
- Sidewalks shall be required along frontage of new DRC developments (11.7.1).
- Sidewalks and multi-use trails shall be designed and constructed in accordance with FDOT standards.
- Sidewalks and multi-use trails should be placed as far as possible from the roadway travel lane as practical (11.7.4)
- Sidewalks, bicycle paths, or multi-use trails shall be provided at the time of construction or reconstruction along roads which provide access from neighborhoods, residential areas, mixed-use developments containing residential units to planned or existing parks and schools (11.7.5)







Existing Land Use

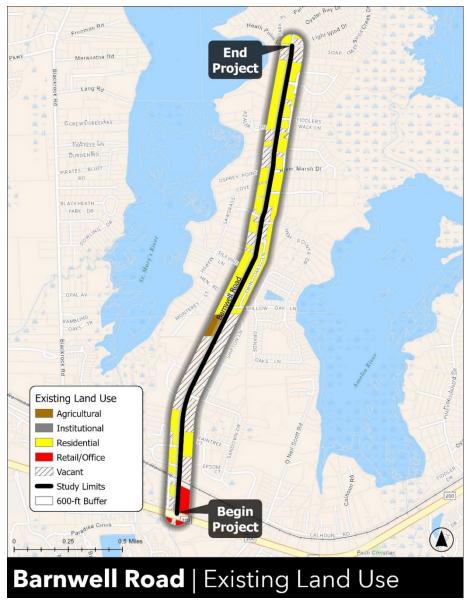
The generalized existing land use was established using the "Generalized Land Use derived from 2019 Florida Parcels" dataset from the GeoPlan Center. The data was created for FDOT and generalizes 99 available land uses into 15 land use classifications.

The existing land use along the corridor is primarily a mix of single-family residential and vacant residential (see **Figure 2-8**). There are some Agricultural land uses near the middle of the study area, and a small Institutional land use parcel at the southern end of the corridor across from Lowe's.



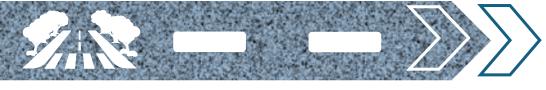
Existing single-family residential land use on Barnwell Road. Photo Source: Project Team.

Figure 2-8 Existing Land Use









Zoning

The zoning data for unincorporated Nassau County was provided by the Nassau County Property Appraiser's office and dated December 2023. The data was generalized by zoning type and displayed in **Figure 2-9**.

A significant majority of the zoning along the corridor is residential (yellow), mostly comprised of single-family. The planned unit development (PUD) zoning at the north end of the corridor is for the Oyster Bay residential development.

There is some commercial zoning (red) at the southern end of the corridor, between the railroad tracks and SR 200.

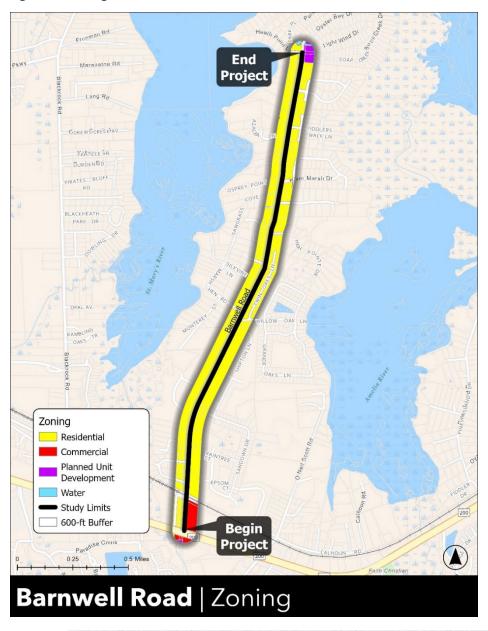


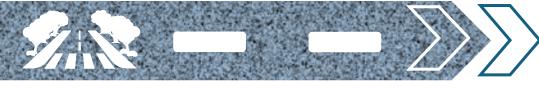
Example single-family residential along Barnwell Road. Photo Source:

Project Team.



Figure 2-9 Zoning





Future Land Use

The future land use data for unincorporated Nassau County was provided by the Nassau County Property Appraiser's office (dated December 2023). The data was generalized by future land use type and displayed in **Figure 2-10**.

Consistent with the zoning along the corridor, the majority of the future land use designations are low density residential (yellow). The low density future land use category allows for up to two dwelling units (du)/acre.

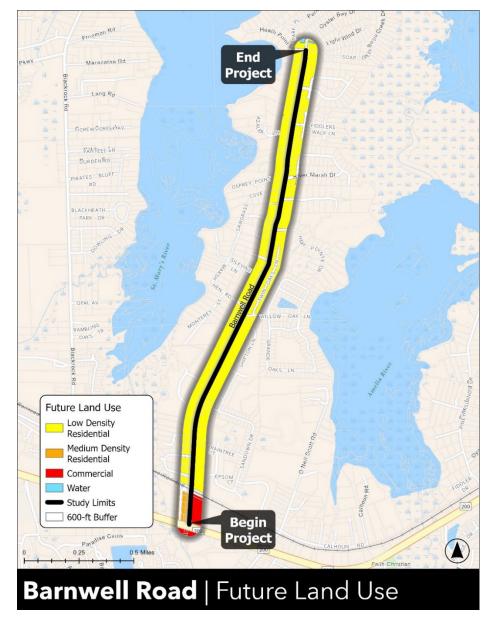
There is some medium density residential (orange) at the southern end of the corridor adjacent to SR 200 across from the commercial future land uses (red). The medium density residential land use category allows for up to three du/acre.



Commercial development (Lowe's) on southern end of the corridor.

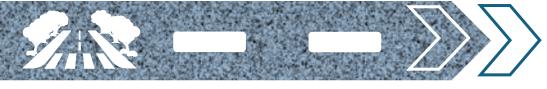
Photo Source: Project Team.

Figure 2-10 Future Land Use









2.4 Field Review

A field review of the corridor was conducted on February 27, 2024. Members of AtkinsRéalis staff, TPO staff, and Nassau County staff participated in the field review.

The purpose of the field review was to provide an on-theground perspective of the corridor to observe existing characteristics and identify fatal flaws that may impact the installation of a shared use path or sidewalks throughout the length of the corridor.

The results of the field review have been structured as a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis for the corridor.



Field review. Photo Source: Project Team.







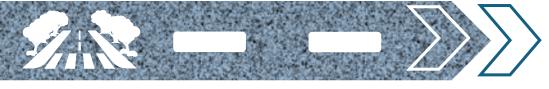
Strengths

- Roadway Characteristics: Barnwell Road is a lowspeed roadway with low traffic volumes making it a favorable location for walking and biking.
- Aesthetics: A majority of the corridor is scenic, shaded, and naturally landscaped making it an appealing location for walking, biking, and recreation.
- Connectivity: As Barnwell Road is located on a peninsula between the St. Mary's River and the Amelia River, it provides the only access to new, planned, and existing residences to commercial areas and SR 200.
- Local Support: Residents living along Barnwell Road frequent the existing sidewalks along the corridor. There have been requests from residents to enhance bicycle and pedestrian facilities.
- * ROW Availability: A majority of the right-of-way required to construct a 10-foot multi-use trail or six-foot sidewalks is already owned by Nassau County.
- Existing Sidewalks: There are some planned and existing five to six foot sidewalks along the corridor to provide the basis for future infrastructure.







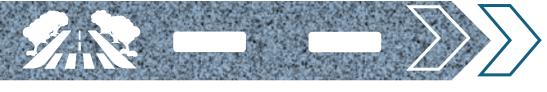


Weaknesses

- Environmental Constraints: In addition to swales, other environmental constraints such as minor creek crossings, trees and vegetation adjacent to and within the right-of-way, and minor changes in elevation will need to be accounted for during design and implementation.
- Lighting: There is limited to no existing street lighting along the corridor. Limited lighting decreases roadway safety, especially for walking and biking.
- ❖ Driveways: There are more than 50 driveway locations intersecting the Barnwell Road. Crossing these driveways as well as bicycle and pedestrian safety considerations will have to be accounted for when designing the future multi-use trail or sidewalk.
- ❖ Oyster Bay Harbour Transition: The transition from Barnwell Road (public ROW) to the Oyster Bay Harbour neighborhood entrance (private ROW) will need to be accounted for to provide access to the multi-use trail or sidewalk to the residents of the neighborhood. This may involve transitioning the sidewalk or multi-use path onto the road, and/or working with the neighborhood on potential transition options.







Opportunities

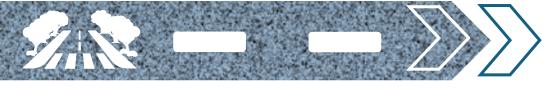
- Enhanced Railroad Crossing: Increasing bicycle and pedestrian mobility and infrastructure in the corridor provides an opportunity to enhance the existing railroad crossing. Enhancing the visibility and functionality of the railroad crossing will increase the safety of the corridor for all road users.
- ❖ Boardwalk Potential: Due to the existing drainage and environmental features of Barnwell Road, there is the potential to utilize boardwalks in some locations. Boardwalks offer enhanced aesthetics and versatility while preserving the existing drainage system and natural landscaping.
- Regional Trail Connectivity: Building a multiuse trail or sidewalk along Barnwell Road will provide connectivity to the regional trail crossing the corridor either via SR 200 or along the rail line (East Coast Greenway/Trans Nassau Trail).
- Enhanced Safety: Adding a multiuse trail or sidewalk along the length of Barnwell Road will increase the bicycle and pedestrian safety of the corridor by separating people walking or biking from vehicles.

- Expanded Transportation Options: Constructing a multiuse trail or sidewalk will provide additional transportation options to the residents and users of the corridor.
- Midblock Crossings: Increasing bicycle and pedestrian infrastructure will provide the opportunity for midblock crossing locations. A midblock crossing will provide a safer and more visible location for residents to cross Barnwell Road.



Existing railroad crossing. Photo source: Project Team.





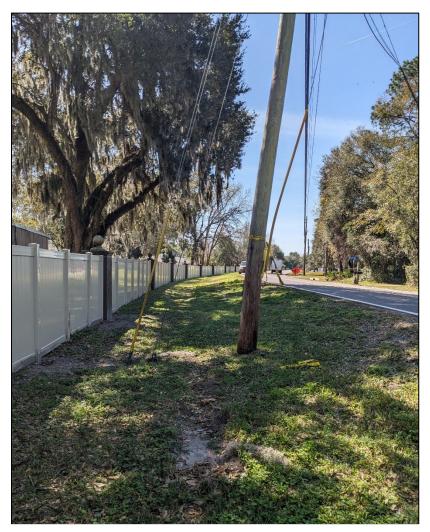
Threats

Existing Utility Poles: Utility poles are present along Barnwell Road on both sides of the corridor within the right-of-way. There are several locations where the placement of the utility poles is centered in the ideal location of a multi-use trail or sidewalk. The trail or sidewalk would either to be routed around the utility pole(s), or the pole(s) would need to be relocated.

Additionally, the poles switch sides of right-of-way along Barnwell Road, which means that routing the trail or sidewalk to avoid the utility poles altogether would result in the trail or sidewalk crossing the street. However, the goal of the project would be to keep the trail or sidewalk consistently on one side of the road and avoid crossing Barnwell Road.

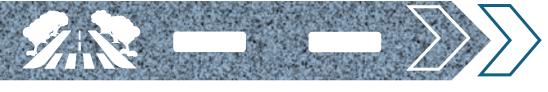


Utility poles near ROW. Photo source: Project Team.



Problematic utility pole and anchor wire location where the poles switch from the west to east side of the road along a curve. Photo source: Project Team.





Threats

Drainage: The drainage along the corridor is handled by swales. Swale location can limit the land area available within the right-of-way to construct a multiuse trail or sidewalk.

The design and location of these facilities will have to work around the existing swale system.

Triangle Property (SR 200/Barnwell Road): There may be some right-of-way issues with a privatelyowned triangle-shaped parcel at the corner of SR 200/Barnwell Road between Barnwell Road and Lowe's.

Based on the final configuration of the sidewalk or trail, collaboration with this property owner may be necessary if there is not sufficient room for the trail or sidewalk within the existing right-of-way.

Another alternative would be to route the trail closer to Lowe's along the parking lot. This would involve collaboration with Lowe's as it would be along their property.



Photos from the field review displaying existing swales and the triangle property at SR 200/Barnwell Road.

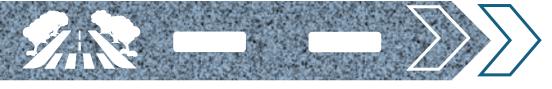






3.0 Recommendations





3.0 Recommendations

As a result of the Existing Conditions Analysis and Safety Field Review, a set of proposed corridor improvements were developed. The proposed improvements are summarized in **Figure 3-1** and briefly described in this section. These improvements focus on the construction of a shared use path on Barnwell Road and are intended to make the facility safer for non-motorized users, specifically bicyclists and pedestrians. Generalized planning cost estimates are provided for the proposed improvements.

Figure 3-1 Proposed Recommendations

Proposed Recommendations

Construct a Shared Use Path

Improve Pedestrian Crossing at Railroad

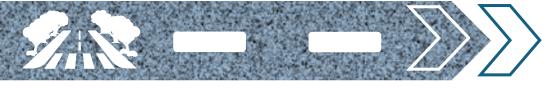
Widen Existing Sidewalks

Construct Pedestrian Lane at the Entrance to the Oyster Bay Harbour Neighborhood

Install Shared Use Path Signage and Amenities







3.1 Construct a Shared Use Path

It is proposed that a 10' shared use path be constructed along the entirety of the east side of the corridor. Currently there are some sidewalks located adjacent to the subdivisions that have been recently constructed. However, these sidewalks do not connect to SR 200 and do not connect to each other. Construction of a shared use path would provide residents living along the corridor with a safe path that would be wide enough to accommodate multiple modes of transportation such as walkers, runners, and bicyclists. It would also provide safe access linking the residential areas of Barnwell Road to the commercial areas along SR 200. Various options could be utilized for the construction of the shared use path including tapering the shared use path to 5' and joining to the existing sidewalks, widening the existing sidewalks from 5' to 10', or creating a separate shared use path and maintaining the existing sidewalks where they currently exist.

Key features that would need to be considered for the shared use path include constructing an enhanced pedestrian crossing at the existing railroad and creating a safe transition from a separated path to an on-road facility to access the gated Oyster Bay Harbour community at the far northern portion of the corridor.

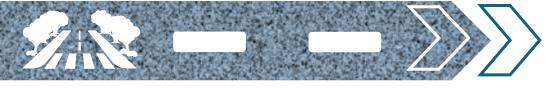
Drainage is another major concern with the construction an any new path. The existing roadway and adjacent properties

are served by existing roadside ditches. The ditches convey the stormwater runoff and provide flood protection for the existing drainage basin including adjacent developments. All the driveways along the roadway are built with culverts so that the ditch flow is not impacted. The proposed shared use path along the roadway must not impact the existing ditch flow. The conversion of existing ditch with large drainage pipes and structures will cause significant cost to the project including design, permitting, and construction.

Alternatively, additional right-of-way (ROW) along the roadway will be needed to accommodate drainage ponds. ROW acquisition may also be required to accommodate a 10' wide path in some areas of the corridor unless the path is narrowed in these areas. Water quality and quantity requirements by the State and Local Agencies must be met by the proposed project. A combination of shallow swales and roadside ditches may provide the required water quality treatment volume as well as discharge attenuation however ponds may also be needed.







Generalized cost estimates were developed using the FDOT per mile average cost for a shared-use path and are listed below. The cost estimate for the construction of the shared-use path is based on construction of a 10' path along the entirety of the corridor. If existing sidewalks are used for portions of the shared-use path, costs would be decreased. Drainage cost estimates do not include any ROW acquisition that may be required for pond siting.

Shared Use Path Construction Cost Estimate: \$1,035,000 Drainage Cost Estimate: \$2,000,000-\$4,000,000

Figures 3-2 through 3-9 illustrate a proposed concept for a shared use path along Barnwell Road.



View South along Barnwell Road near the Northern Terminus of the Project: Project Team.



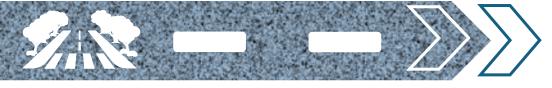


Figure 3-2 Shared Use Path Concept Plan (Sheet 1 of 8)





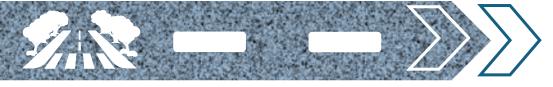


Figure 3-3 Shared Use Path Concept Plan (Sheet 2 of 8)





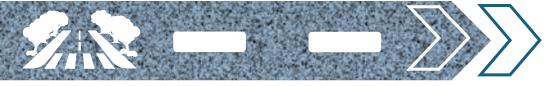


Figure 3-4 Shared Use Path Concept Plan (Sheet 3 of 8)





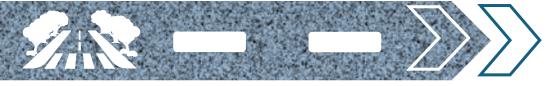


Figure 3-5 Shared Use Path Concept Plan (Sheet 4 of 8)





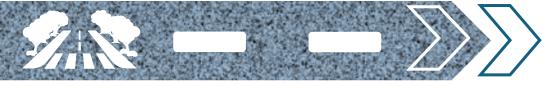


Figure 3-6 Shared Use Path Concept Plan (Sheet 5 of 8)





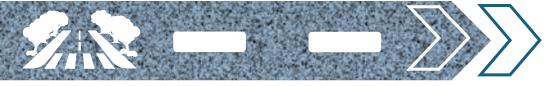


Figure 3-7 Shared Use Path Concept Plan (Sheet 6 of 8)





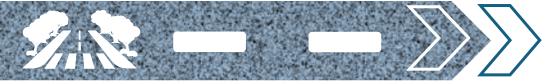


Figure 3-8 Shared Use Path Concept Plan (Sheet 7 of 8)





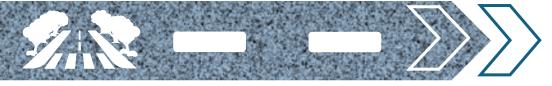
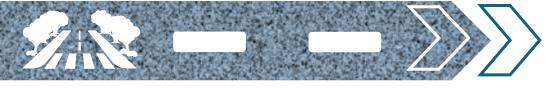


Figure 3-9 Shared Use Path Concept Plan (Sheet 8 of 8)







3.2 Improve Pedestrian Crossing at Railroad

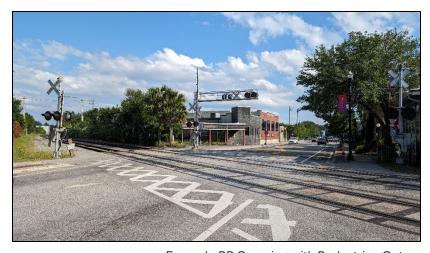
The intersection of the railroad and Barnwell Road does not currently have any features that allow for safe crossings for pedestrians. Pedestrians must cross the railroad in the lane of traffic or traverse tracks off to the side. If the construction of a shared use path moves forward, it will be imperative to construct an enhanced railroad crossing that will provide a safe route for pedestrians and bicyclists to cross. This crossing could consist of signage and pavement markings alerting individuals of the crossing, or it could be a full gated crossing that is actuated when a train is present. Either option will require coordination with CSX who is the owner of the railroad as well as the First Coast Railroad (owed by Genesee and Wyoming) who operates the trains along that stretch of tracks.



Existing railroad crossing. Photo Source: Project Team.



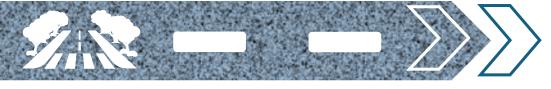
Example Shared Used Path Crossing without Gates.
Photo Source: American Trails.



Example RR Crossing with Pedestrian Gates.
Photo Source: Project Team.





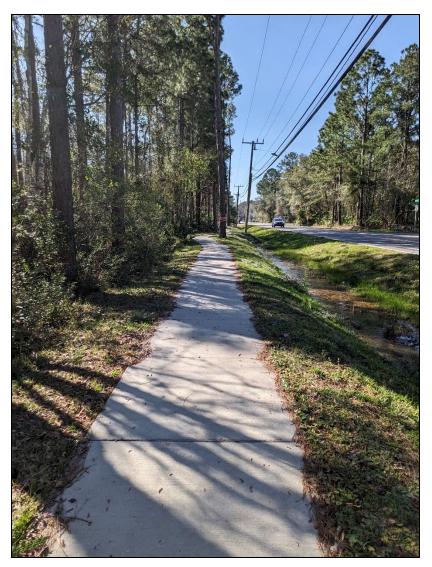


3.3 Widen Existing Sidewalks

The shared use path concept developed in this report would connect to the existing portions of sidewalk on the east side of Barnwell Road. As such, the shared use path would transition from 10 feet, in areas where there is no existing sidewalk, to 5 feet in areas where there is an existing sidewalk. A long-term goal would be to widen the existing sidewalks to 10 feet so that there would be a continuous, uniform width, path along the entirety of Barnwell Road. If funding is not available during the construction of the shared use path to widen these sidewalks, it is important to create a phasing plan that will allow future funding to be allocated to this project.

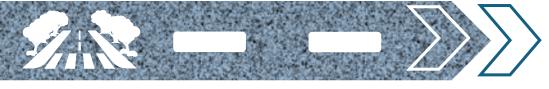


End of Existing Sidewalk in the Vicinity of Barnwell Circle.
Photo Source: Project Team.



Existing Sidewalk along Barnwell Road. Photo Source: Project Team.





3.4 Pedestrian Lane at Oyster Bay Harbour

The Oyster Bay Harbour Neighborhood is a gated community located at the northern terminus of Barnwell Road. In order to access the community, one must pass through the vehicular gate. This includes pedestrians and bicyclists as there is no separate entrance for these modes of transportation. A shared use path will need to transition from a separate, off-road facility to an on-road facility to allow individuals who live in the Oyster Bay Harbour community access. To accomplish this, it is recommended that a Pedestrian Lane be constructed on Barnwell Road at the entrance to the Oyster Bay Harbour Neighborhood. A

Pedestrian Lanes is a designated space on the roadway for exclusive use of The pedestrians. Pedestrian Lane would be visually separated and could include some form physical of separation such as flexible delineators.



Entrance to Oyster Bay Harbour Neighborhood. Photo Source: Project Team.

While some Pedestrian Lanes are exclusively for pedestrians (see Figure 3-10), others can accommodate bicyclists as well.





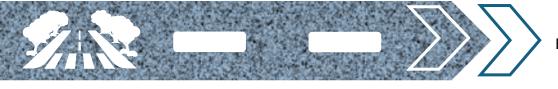


Example of a Pedestrian Bicycle Lane (SR 699, Indian Shores).

Photo Source: Project Team.







3.5 Install Shared Use Path Signage and Amenities

It is recommended that if a shared use path is constructed, that signage, mile markers, and amenities be included. Signage will provide guidance for indivduals on the trail about how to safely navigate the trail when mulitple modes are involved. Effective signage will help to safely separate bicyclists and pedstrian on the path.

Installation of mile markers can provide the user the ability to determine how far they have traveled on the trail. Additional wayfinding signage could also be installed at strategic locations to show users where various points of interest are.

Some ameneities such as benches could also be installed to provide individuals with a resting spot. Benches could be colocated with existing school bus routes. Bicycle racks can also be added adjacent to benches.

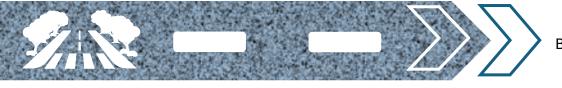






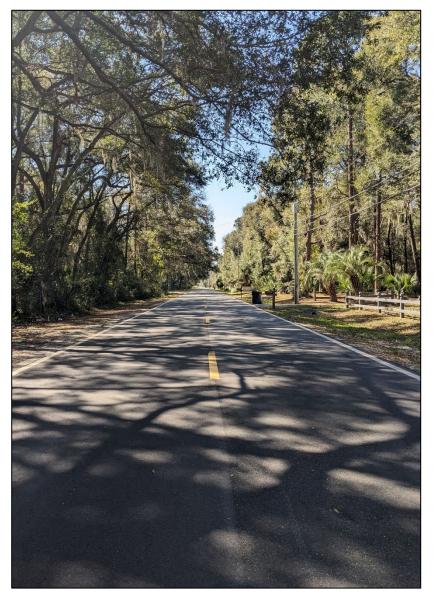






3.6 Conclusion

The construction of a shared use path is a pivotal investment which will help in enhancing community connectivity, promoting sustainable transportation alternatives, and encouraging a healthier lifestyle for community members. By providing a safe and accessible route for pedestrians, cyclists, and other non-motorized users, such infrastructure not only reduces traffic congestion and carbon emissions but also encourages active living and outdoor recreation. The significant effort involved in planning and implementing such a project illustrates the commitment to creating inclusive and livable communities for all citizens of Nassau County.









BARNWELL ROAD
PEDESTRIAN AND BICYCLE SAFETY STUDY

