

September 2023



MARTIN MPO
Hobe Sound North Corridor
Shared-Use Nonmotorized
(SUN) Trail Feasibility Study
Bridge Road to Gomez Avenue Entrance to Seabranch Preserve

FDOT Financial Project 443500-1-54-01
A Florida East Coast Greenway (ECG) Segment

PREPARED FOR:
Martin Metropolitan
Planning Organization (MPO)

PREPARED BY:
MARLIN



East Coast
Greenway

MARTIN MPO

Hobe Sound North Corridor Shared-Use Nonmotorized (SUN) Trail Feasibility Study

South of Seabranh Preserve State Park to CR-708/Bridge Road

A Florida East Coast Greenway (ECG) Segment

PREPARED FOR:

Martin Metropolitan
Planning Organization (MPO)
2401 SE Monterey Road
Stuart, FL 34996
(772) 221-1498

PREPARED BY:

MARLIN Engineering, Inc.
Christina Fermin, AICP
Kathryn Marinace
Suom Francis

Table of Contents

ACRONYMS AND ABBREVIATIONS..... 1

EXECUTIVE SUMMARY..... 2

1. INTRODUCTION 2

 1.1. Background..... 5

 1.2. Study Area 6

 1.3. Purpose & Need Statement..... 7

 1.4. Local Agency Coordination 7

 1.4.1. Stakeholder Meetings..... 7

 1.4.2. Agency Public Meetings..... 7

 1.5. SUN Trail..... 8

 1.6. East Coast Greenway 10

2. PUBLIC INVOLVEMENT AND OUTREACH..... 10

3. LITERATURE REVIEW..... 12

 3.1. Transportation Improvement Program FY 2021/22 – 2025/26..... 12

 3.2. Martin MPO 2045 Long Range Transportation Plan (2020)..... 12

 3.3. Florida Greenways and Trails System (FGTS) Plan (2019 - 2023)..... 13

 3.4. Martin County Bicycle and Pedestrian Facility Map (2019) 14

 3.5. Martin MPO Bicycle, Pedestrian & Trails Master Plan (2017) 15

 3.6. Bicycle And Pedestrian Safety Action Plan (2016) 16

 3.7. Southeast Florida Regional Greenways and Trails Plan (2015)..... 16

 3.8. Florida SUN Trail Requirements 17

 3.8.1. Design Requirements 17

 3.8.2. Surfaces 18

 3.8.3. Asphalt..... 18

 3.8.4. Boardwalk..... 19

 3.8.5. Natural surface/crushed stone 20

 3.8.6. Width..... 20

 3.8.7. Grade..... 20

 3.8.8. Crossings and Intersections 21

 3.8.9. Bridges..... 22

 3.8.10. Separated On-Road Facilities..... 22

 3.8.11. Signage 22

 3.8.12. Traffic separated on-road facilities 24

 3.8.13. Implementing Florida’s Shared-use Nonmotorized (SUN) Trail Program 24

4. EXISTING CONDITIONS..... 25

 4.1. Demographics..... 25

 4.2. Commuting Characteristics 26

 4.3. The Built Environment 26

 4.4. Existing Roadway Conditions 27

 4.4.1. Functional Classification 27

 4.4.2. Access Management 28

 4.4.3. Context Classification 28

 4.4.4. Right-Of-Way..... 29

 4.4.5. Intersections, Signalization and Railroad Crossings 30

- 4.4.6. Typical Sections 31
 - 4.4.6.1. SE Gomez Avenue..... 31
 - 4.4.6.2. CR-A1A/SE Dixie Highway 33
 - 4.4.6.3. SR-5/ US-1/ SE Federal Highway 36
 - 4.4.6.4. CR-708 / SE Bridge Road..... 38
 - 4.4.6.5. SE Crossrip Street 40
 - 4.4.6.6. SE Osprey Street..... 41
- 4.4.7. Non-Motorized Network 43
- 4.5. Safety Review 46
 - 4.5.1. Crash Analysis for All Types of Vehicles..... 46
 - 4.5.2. Pedestrian and Bicycle crash analysis..... 48
- 5. FEASIBILITY ANALYSIS 50**
 - 5.1. Data 50
 - 5.2. Evaluation Criteria 50
 - 5.3. Potential Alignments 51
 - 5.4. Alternatives 52
 - 5.4.1. SE Gomez Avenue..... 53
 - 5.4.2. CR-A1A / SE Dixie Highway 54
 - 5.4.3. SR-5 / Federal Highway / US-1..... 55
- 6. RECOMMENDED ALTERNATIVE..... 56**
 - 6.1. Segment 1: SE Gomez Avenue..... 57
 - 6.2. Segment 2: SE Osprey Street..... 58
 - 6.3. Segment 3: Osprey Street..... 59
 - 6.4. Segment 4: SR-5/Federal Highway 60
 - 6.5. Segment 5: SR-5/Federal Highway 61
 - 6.6. Proposed Conceptual Plan..... 64
- 7. FUTURE CONSIDERATIONS..... 69**
 - 7.1. Drainage 69
 - 7.2. Utilities 70
 - 7.3. Access Management and Driveways 70
 - 7.4. Intersections..... 71
 - 7.5. Traffic Calming..... 73
 - 7.6. Environmental 74
 - 7.7. Amenities..... 75
 - 7.8. Maintenance 76
 - 7.9. Permits 76
- 8. COST ESTIMATES 76**
- 9. NEXT STEPS 77**

List of Figures

- Figure 1: Bicyclists Design User Profiles (Source: FHWA) 3
- Figure 2: SUN Trail Network Status, Martin County 4
- Figure 3: Proposed Trail Alignments..... 5
- Figure 4: Martin County Study Area Map 6

Figure 5: SUN Trail Statewide Network Map 9

Figure 6: East Coast Greenway Map..... 10

Figure 7: Life of a Transportation Project 11

Figure 8: Resident selection of Preferred Route Alignment 11

Figure 9: Photos from Public Meetings 12

Figure 10: Florida East Coast Greenway Trail 13

Figure 11: Martin County Bicycle & Pedestrian Map..... 14

Figure 12: Martin County Mode Share Infographic..... 15

Figure 13: Bicycle, Pedestrian and Trails Master Plan Project Recommendation Map 15

Figure 14: Southeast Florida Regional Greenways & Trail Facilities Map 17

Figure 15: Pedestrian/Bicyclist Safety Countermeasures, FHWA 21

Figure 16: Standard ECG Sign 23

Figure 17: Hobe Sound Age Groups (ACS 2021) 25

Figure 18: Hobe Sound Race & Ethnicity 26

Figure 19: Future Land Use Map 26

Figure 20: Street Network Functional Classification..... 27

Figure 21: FDOT Context Classifications 29

Figure 22: Right-of-Way Widths 30

Figure 23: Traffic Signals & Railroad Crossings 31

Figure 24: Existing Rural Typical Section for Gomez Avenue..... 32

Figure 25: Existing Conditions along Gomez Ave..... 33

Figure 26: Existing Rural Typical Section for CR-A1A/Dixie Hwy..... 34

Figure 27: Photo of Significant Pinch point for the Sidewalk along Dixie Hwy (Southbound)..... 35

Figure 28: Evidence of Sidewalk Flooding 35

Figure 29: Existing Rural Typical Section for SR-5/FEDERAL HWY..... 36

Figure 30: Intersection of SR-5 & Bridge Rd looking east from the northwest corner 37

Figure 31: SR-5 Frontage Rd & SE Church St, looking south 37

Figure 32: Existing Urban Typical Section for CR-708/Bridge Road 38

Figure 33: Bridge Rd, looking west 39

Figure 34: Existing Rural Typical Section for Crossrip St..... 40

Figure 35: Crossrip Street Sidewalk Improvements near CR-A1A..... 41

Figure 36: Existing Rural Typical Section for Osprey St..... 42

Figure 37: Sidewalk ends at gas station, does not connect to SR-5..... 43

Figure 38: Non-Motorized Network 43

Figure 39: Martin County Non-Motorized Network 44

Figure 40: Bicycle User Profiles & Preferred Facilities 45

Figure 41: Heat Map of All Crashes (2016-2020)..... 48

Figure 42: Bicycle & Pedestrian Crashes (2016-2020)..... 49

Figure 43: Potential Route Alignments..... 51

Figure 44: Alternative 1 SE Gomez Ave 53

Figure 45: Alternative 2 SE Gomez Ave 54

Figure 46: Alternative 1 CR-A1A/Dixie Highway 55

Figure 47: Alternative 2 CR-A1A/Dixie Highway 55

Figure 48: Alternative 1 SR-5/Federal Highway..... 56

Figure 49: Alternative 2 SR-5/Federal Highway..... 56

Figure 50: Preferred Route Alignment Map for SR-5/Federal Highway..... 57

Figure 51: Proposed Typical Section - Gomez Avenue 58

Figure 52: Proposed Typical Section, Osprey St 59

Figure 53: Proposed Typical Section, Osprey St 60

Figure 54: Proposed Typical Section, SR-5/Federal Hwy 61

Figure 55: Proposed Typical Section, SR-5/Federal Hwy 62

Figure 56: Frontage Road Proposed Typical Section 63

Figure 57: Frontage Road Proposed Typical Section 63

Figure 58: Conceptual Plan View (CR-708/Bridge Road to SE Pine Cir) 64

Figure 59: Conceptual Plan View (SE Pine Cir to SE Evergreen St)..... 65

Figure 60: Conceptual Plan View (SE Evergreen St to south of SE Medalist Pl) 65

Figure 61: Conceptual Plan View (SE Medalist Pl to Medalist Golf Course Maintenance Facility)..... 66

Figure 62: Conceptual Plan View (east border of Medalist Golf Course)..... 66

Figure 63: Conceptual Plan View (east border of Medalist Golf Course)..... 67

Figure 64: Conceptual Plan View (SE Federal Hwy to SE Osprey St) 67

Figure 65: Conceptual Plan View (SE Osprey St to SE Dixie Hwy) 67

Figure 66: Conceptual Plan View (SE Osprey Street to SE Gomez Ave) 68

Figure 67: Conceptual Plan View (east border of Loblolly Golf Course) 68

Figure 68: Conceptual Plan View (east border of Loblolly Golf Course connecting to existing SUN Trail)..... 69

Figure 69: Examples of Green Infrastructure 70

Figure 70: Bike Box (Source: NACTO) 72

Figure 71: Bicycle Intersection Crossing Markings (Source NACTO)..... 72

Figure 72: Examples of Traffic Calming..... 74

Figure 73: Port St. Lucie Multimodal Plan 74

Figure 74: Examples of Street Furniture 75

List of Tables

Table 1: Summary of Traffic Data 28

Table 2: Context Classifications 29

Table 3: Signalized & Unsignalized Intersections..... 30

Table 4: Crash Data..... 46

Table 5: Data Review for Evaluation Criteria 50

Table 6: Summary Comparative Matrix 52

Table 7: FDOT Context-Based Design Speeds for Arterials and Collectors 73

Table 8: Cost Estimate 77

Appendices

[Appendix A. Stakeholder & Agency Presentations and Meeting Notes](#)

[Appendix B. Martin MPO Meeting Minutes](#)

[Appendix C. Public Involvement & Outreach](#)

[Appendix D. Existing Condition Photos](#)

Appendix E. Evaluation Criteria

Appendix F. Concept Plan Sheet

Appendix G. Cost Estimate

Appendix H. Funding Programs

ACRONYMS AND ABBREVIATIONS

AADT	Annual Average Daily Traffic	GIS	Geographic Information Systems
AASHTO	American Association of State Highway and Transportation Officials	I-95	Interstate 95
ACS	American Community Survey	LOS	Level of Service
ADA	American with Disabilities Act	L RTP	Long Range Transportation Plan
BPAC	Bicycle & Pedestrian Advisory Committee	MPH	Miles Per Hour
CAC	Citizens' Advisory Committee	MPO	Metropolitan Planning Organization
CR-708	County Road 708	MUTCD	Manual of Uniform Traffic Control Devices
CR-A1A	County Road A1A	N/A	Not Applicable
CRA	Community Redevelopment Area	NACTO	National Association of City Transportation Officials
ECG	East Coast Greenway	PD&E	Project Development and Environment
ECGA	East Coast Greenway Alliance	ROW	Right-of-Way
FDEP	Florida Department of Environmental Protection	SE	Southeast
FDOT	Florida Department of Transportation	SR-5	State Road 5
FDM	Florida Design Manual	SUN	Shared Use Non-Motorized
FEC	Florida East Coast Railroad	SUP	Shared Use Pathway
FGTS	Florida Greenways and Trails	TAC	Technical Advisory Committee
FHWA	Florida Highway Administration	TIP	Transportation Improvement Plan
F.S.	Florida Statutes	UPWP	Unified Planning Work Program
FWC	Fish & Wildlife Commission	US-1	U.S. Highway 1

EXECUTIVE SUMMARY

The Hobe Sound North Corridor Shared Use Non-Motorized or SUN Trail Feasibility Study identified potential alignments and feasible alternatives connecting a non-motorized trail from Seabranche Preserve State Park to Jonathan Dickinson State Park in Martin County. This study was included in the Martin MPO Unified Planning Work Program (UPWP) in 2020 and included data collection, analysis, evaluation, public and stakeholder outreach.

SR-5/Federal Highway was the selected preferred route alignment for this segment of the Florida Shared Use Non-Motorized (SUN) Trail and East Coast Greenway (ECG). The proposed shared use pathway (SUP) will travel south along SE Gomez Avenue and cross over to SR-5/Federal Highway via SE Osprey Street. The proposed typical condition will include a 12-foot shared use pathway on the west side of SE Gomez Avenue, a 12-foot shared use pathway on the south side of SE Osprey Street, and a 14-foot pathway on the west side of SR-5/Federal Highway. This alternative was selected through public participation, stakeholder engagement, MPO committee meetings, and approval by the MPO Policy Board. The report outlines public involvement, a literature review, existing conditions, feasibility analysis of alternatives, recommended alternative, future considerations, a cost estimate, and next steps for this segment of the Florida SUN Trail in Martin County.

1. INTRODUCTION

On May 17, 2021, the Metropolitan Planning Organization (MPO) Policy Board approved Resolution 21-05 that authorized the execution of a SUN Trail Program Agreement between the MPO and the Florida Department of Transportation (FDOT) to fund a Feasibility Study for a SUP on SE Gomez Avenue from SE Osprey Street to CR-708/Bridge Road. This pathway when complete will serve as a segment of the ECG. The ECG is a 3,000-paved trail from Maine to Key West that will provide a safe walking and biking route along the Atlantic coast. Marlin Engineering was the selected consultant for this Feasibility Study for the proposed SUP. According to FDOT in their SUN Trail handbook, a Feasibility Study, also referred to as a planning or corridor study, includes the development of a purpose and need; an evaluation of existing conditions in the study area; the development and evaluation of trail routes, also known as corridors or alternatives; identification of logical termini; an agreed upon course of action; public involvement and agency coordination.

A SUP as defined by the Federal Highway Administration (FHWA), are facilities with exclusive right-of-way (ROW) and minimal crossflow by motorized vehicles. SUPs meet a specific design criterion that differentiate this kind of facility from a trail. Shared-use paths are improved facilities that accommodate all kinds of users including and not limited to: bicyclists, in-line skaters, roller skaters, pedestrians, and personal conveyance devices (i.e., wheelchair, scooters, etc.). Shared-use pathways contribute to a healthy and active community by providing residents and visitors with a safe and comfortable alternative mode of transportation, and are common in Low-Stress Networks.

Low-Stress Networks, also referred to as an “all ages and abilities network” are designed to be safe and comfortable for all users; SUPs are typically considered low-stress and these are the types of facilities people typically feel most comfortable using, see **Figure 1**. Low-Stress Networks have been found to increase rates of bicycling 5-15% in the U.S. and 15-50% in areas with a robust network which is complemented by transit, land

use, and other policies.¹ Additionally, Low-Stress Networks are an important component of a community’s transportation network as they provide an alternative for children, the elderly, the disabled, and others who cannot or do not want to drive a motor vehicle. In order to provide a more robust, sustainable, livable, equitable all-ages community, Low-Stress Networks are necessary for communities.

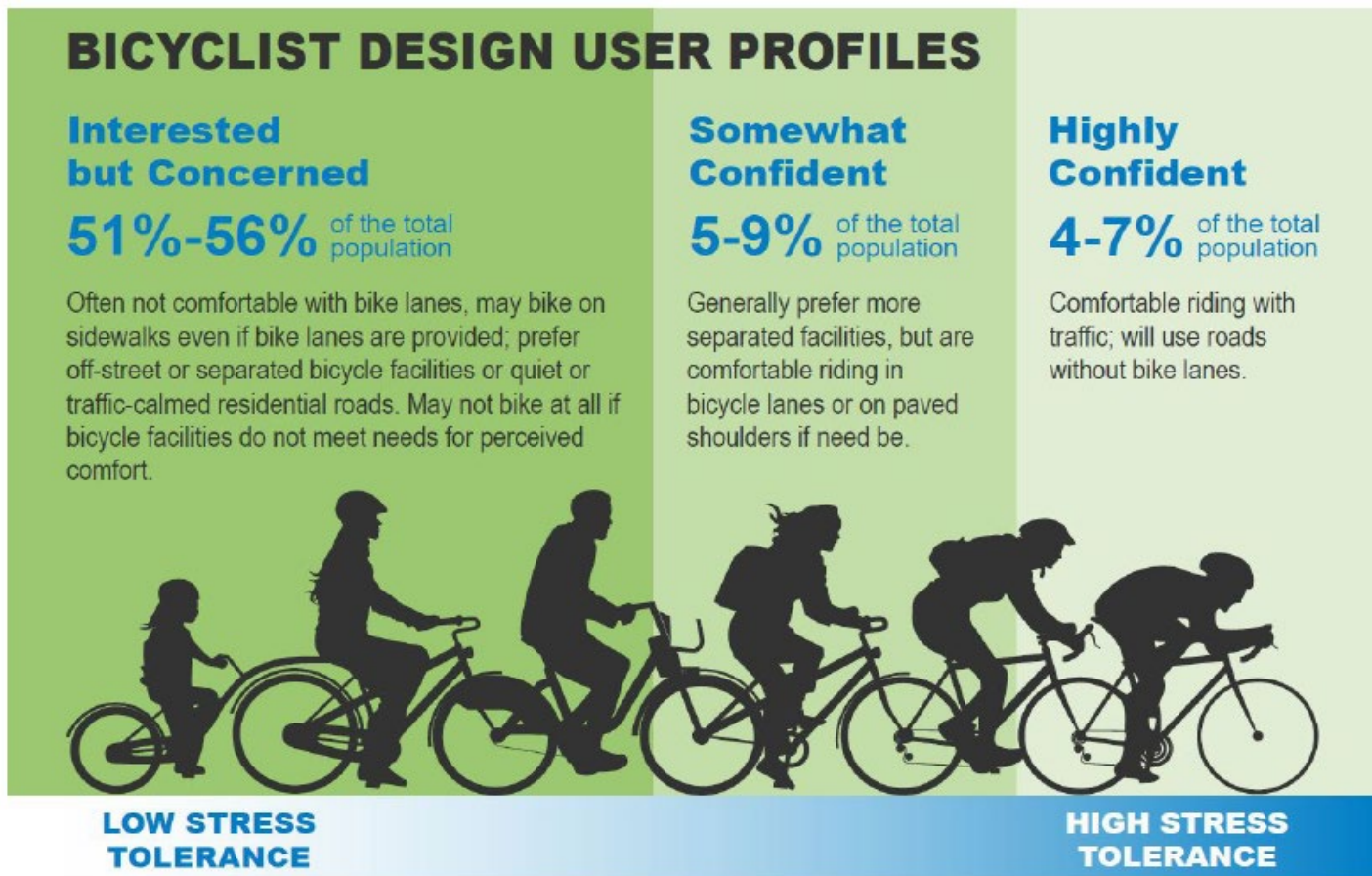


Figure 1: Bicyclists Design User Profiles (Source: FHWA)

In Florida, the SUN Trail Program provides dedicated funding through an annual allocation from new vehicle tag revenues for the development of a statewide system of interconnected paved multi-use trails (SUN Trail Network) for non-motorized users, physically separated from vehicular traffic. FDOT defines a multi-use trail as a paved, shared-use path, which is typically 12 feet wide, but may vary from 10 feet to 14 feet wide, or larger depending upon physical or environmental constraints, or usage. In some areas of extreme constraints, such as at bridges or in environmentally sensitive lands, a multi-use trail may be as narrow as eight (8) feet wide. The Department works with partners (cities, regional agencies, and counties) to advance the SUN Trail Network by closing gaps between existing multi-use trails.

The goal of this study is to determine the feasibility of extending the existing SUP from the north terminus of SE Gomez Avenue, south to CR-708/Bridge Road and SR-5/Federal Highway in Hobe Sound, Florida. Concurrently, FDOT is conducting another feasibility study to connect the trail from Jonathan Dickinson State Park to CR-708/Bridge Road and SE Federal Highway/SR-5, where this pathway will end. Once both projects are constructed

¹ Bikeway Selection Guide, U.S. DOT, FHWA, February 2019

(+/-10 years), a person will be able to travel to/from Jonathan Dickinson State Park to Seabranh Preserve State Park and have access to approximately 80-miles of a continuous paved SUP which has been programed from feasibility to construction in Martin County and St. Lucie County. **Figure 2** provides the status of the SUN Trail Network in Martin County.

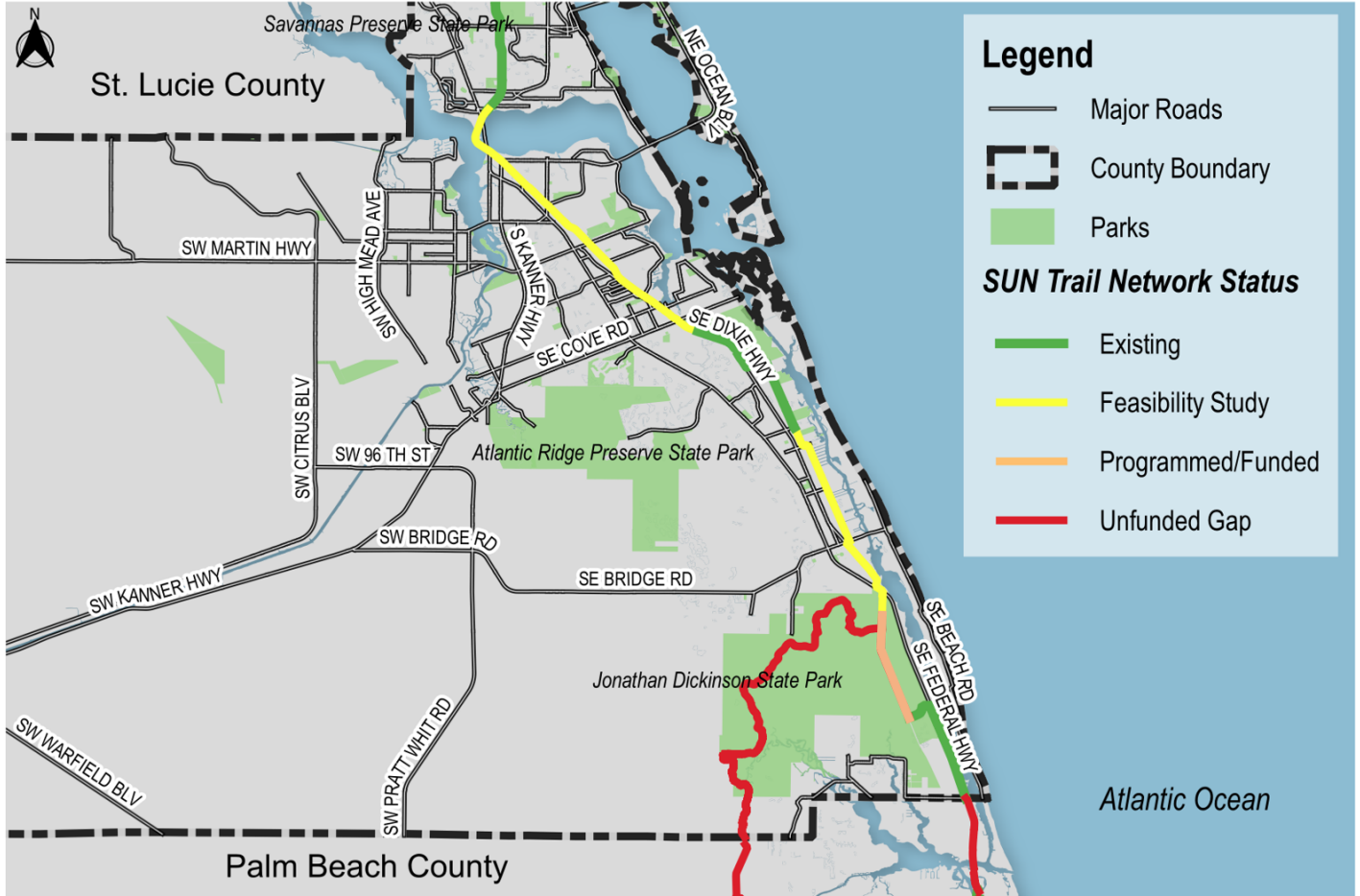


Figure 2: SUN Trail Network Status, Martin County

The FDOT has programmed a feasibility study for a 7.68-mile segment north between Seabranh Preserve State Park and north of the St. Lucie River along CR-A1A/Dixie Highway. Additionally, St. Lucie County has begun construction of a 10.6-mile segment which is to traverse through Savannas Preserve State Park and Savannas Recreation Area. Furthermore, design plans are underway for the segment through Fort Pierce. There is clearly local interest in expanding a network of SUPs.

This feasibility study includes the development of a purpose and need statement for the SUP extension, an evaluation of existing conditions in the study area, the development and evaluation of alternative SUP alignment and resulting roadway cross-section, identification of logical SUP termini; public involvement and agency coordination. The alternative SUP alignments considered were: SE Gomez Avenue, CR-A1A/Dixie Highway, and SR-5/Federal Highway, as shown in **Figure 3**. With public and stakeholder participation, a preferred SUP alignment - Gomez Avenue - was identified. This was presented at the April 18, 2022 MPO Policy Board meeting, but was not endorsed due to local opposition. This opposition was based largely on concerns with high-speed cyclists

conflicting with school children, recreational residents who utilize the existing sidewalks, and fear of attracting crime into their community.



Figure 3: Proposed Trail Alignments

SR-5/Federal Highway was then selected as the preferred SUP alignment, due primarily to ROW restrictions along CR-A1A/Dixie Highway. This alignment, presented to the MPO Policy Board in February 27, 2023, was endorsed with the provision that the Board was concerned with the volume and speed of traffic on SR-5/Federal Highway adjacent to the proposed SUP’s alignment. The study team has taken this into consideration during the development of the SUP design concept that was reflected in two alternative cross-sections. The report includes, for the endorsed SR-5/Federal Highway SUP alignment, the study team’s review and analysis of existing conditions, preferred route alignment, cost estimate, and conceptual plan of the preferred alignment.

1.1. BACKGROUND

The State of Florida established the SUN Trails program in 2015, which provides \$25 million annually for the development of regionally significant greenways and trails Projects. The SUN Trail Network is the statewide system of high priority (strategic) paved trail corridors for bicycles and pedestrians. Criteria required for projects to be eligible for funding through the SUN Trails program includes the following:

- Must be located on the SUN Trail Network (FGTS Land Trails Priority Map)

- Priority of the Metropolitan Planning Organization
- Entity must be identified that will operate and maintain the constructed trail
- Ready to be programmed and to begin first/next phase of work

The Martin MPO conducted several studies evaluating the need for bicycle and pedestrian facilities within the County including the Martin County Bicycle and Pedestrian Facility Map (2019), *Martin MPO Bicycle, Pedestrian & Trail Master Plan (2017)* and the *Bicycle and Pedestrian Safety Action Plan (2016)*. These studies, discussed later under the Literature Review section, identified the ECG, as part of the SUN Trail Network. This feasibility study includes a segment of the ECG included in the Martin MPO 2040 & 2045 Long Range Transportation Plan, the Martin County Comprehensive Plan, the *Florida Greenways and Trail System (FGTS) Plan (2019 – 2023)* and the *Southeast Florida Regional Greenways and Trails Plan (2015)*.

1.2. STUDY AREA

The study area for the SUP is located between CR-708/Bridge Road and Seabrook Preserve State Park, see **Figure 4**; with SR-5/Federal Highway as the westernmost boundary, and SE Gomez Avenue as the easternmost boundary. A portion of the study area is located within a Community Redevelopment Area (CRA) boundary, also known as the Hobe Sound CRA.

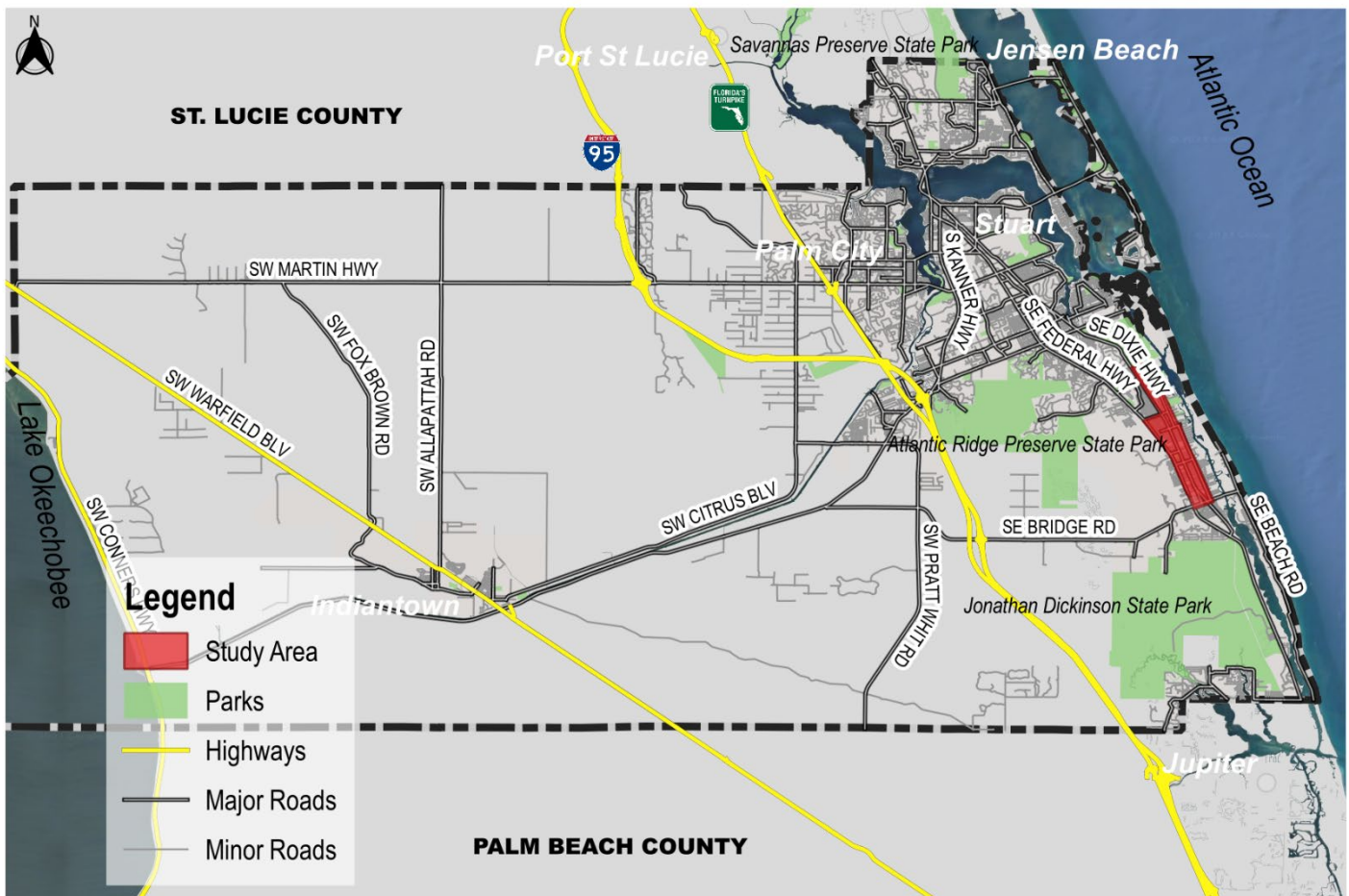
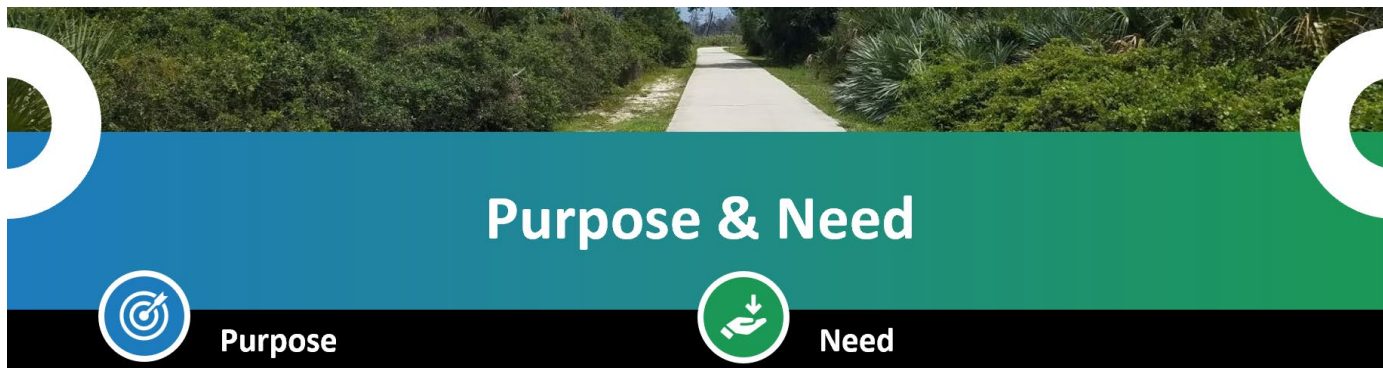


Figure 4: Martin County Study Area Map

1.3. PURPOSE & NEED STATEMENT



The **purpose** of this study is to provide for a safe, comfortable, equitable and accessible multipurpose pathway for non-motorized use.

The **need** is to complete a separated facility which implements a portion of the Florida SUN Trail in Martin County, connecting Jonathan Dickinson State Park to the Seabranh Preserve State Park.

1.4. LOCAL AGENCY COORDINATION

Local agency coordination was crucial for this study as the potential routes involved multiple stakeholders including public agencies, community members, bicyclists, pedestrians, and businesses. The East Coast Greenway Alliance (ECGA) was also involved in the early parts of the coordination process.

1.4.1. STAKEHOLDER MEETINGS

The Project Team held a total of three (3) stakeholder meetings. Two of which included agency stakeholders and one which included community stakeholders. These meetings were held to solicit feedback, visioning and input on November 5, 2021, November 8, 2021, and March 2, 2022. Agencies represented included the Martin MPO, the CRA, County Public Works, County Parks and Recreation, County Engineer, Growth Management, and utilities. Community stakeholders represented included the Martin MPO, Cycle Association, Chamber of Commerce, Tourist Development, Hobe Sound Community Chest, Hobe Sound Woman's Club, and Hobe Sound Neighborhood Association Committee (NAC).

The discussions among stakeholders served to inform the assessment of the initial alternative and ultimately preferred SUP alignments. The first two (agency and community) stakeholder meetings, included a discussion on existing conditions, current projects within the study area, and overview of the feasibility study. The third (agency) stakeholder meeting reviewed potential alternatives along the three proposed alignments, attendees provided insights and information, and discussed preferences for the facility type and location.

Some of the agency stakeholder comments recorded in the second meeting mentioned that cyclists and pedestrians already use Gomez Avenue and was the safest and most feasible alternative. Agency stakeholders also agreed CR-A1A/Dixie Highway is the least feasible alignment due to missing sidewalk easements and constrained ROW.

The presentation and summary notes for each of the stakeholder meetings can be found in **Appendix A**.

1.4.2. AGENCY PUBLIC MEETINGS

In addition to stakeholder coordination, several public meetings were held with the Citizen's Advisory Committee (CAC), Technical Advisory Committee (TAC), Bicycle and Pedestrian Advisory Committee (BPAC), and MPO Policy

Board. In June 2021, a scope of services for the Hobe Sound North Corridor SUN Trail Feasibility Study was reviewed by the CAC, TAC and BPAC, and approved by the MPO Policy Board on June 21, 2021.

At the April 4, 2022 Joint Advisory Board (CAC/BPAC/TAC) meeting, the Consultant Team presented an update to the existing conditions, analysis, and selected alternatives, which included the SUP alignment along SE Gomez Avenue and a proposed typical section which included a 10-foot two-way protected bikeway on the east side of SE Gomez Avenue. This was approved at the Joint Advisory Board meeting by a 22:6 vote.

On April 18, 2022, the selected alternative was presented for approval to the MPO Policy Board. This initial recommendation was denied by a 5:0 vote, due to public objection. Public objection was based primarily on concern for the placement of the pathway along Gomez Avenue by three individuals in attendance at the meeting; despite an additional two individuals in attendance who supported it, and majority who supported the alignment along Gomez Avenue at previous public meetings. The Consultant Team was then directed to do further community outreach to the Gomez Avenue community, and further review CR-A1A/Dixie Highway and SE Federal Highway as an alternative to SE Gomez Avenue.

On February 27, 2023, the Consultant Team returned to the MPO Policy Board for approval of the proposed SUP alignment along SR-5/SE Federal Highway. This alternative was approved by a 4:1 vote, with the provision that the Board may not accept the final route alignment. Concerns expressed by the Board were related to pedestrian and bicycle safety along SR-5/SE Federal Highway where vehicle speeds are posted at 45 and 55 MPH. The meeting minutes from each of the public meetings can be found in **Appendix B**.

1.5. SUN TRAIL

The SUN Trail Network is the statewide system of high-priority (strategic) paved trail corridors for bicyclists and pedestrians, see **Figure 5**. The SUN Trail Network is a refined version of the Florida Greenways and Trails System (FGTS) Plan's Land Trail Priority network.

[Section 339.81, F.S.](#) established the SUN Trail Program and [Section 335.065, F.S.](#) establishing funding for the program. [Section 339.81, F.S.](#) includes what is eligible and ineligible for funding under the SUN Trail Program, components not funded through the program include:

- Sidewalks, nature trails, or loop trails within a single park or natural area;
- On-road facilities (i.e., bike lanes no longer than ½-miles);
- Benches, trail furniture, seating areas, or tables;
- Bicycle racks or lockers, bicycle air or repair stations;
- Buildings or enclosed structures, restroom, wayside structures, shade structures, overlooks, platforms, boat ramps, ride share or transit facilities, shelters or similar;
- Kiosks, interpretive panels, or placemaking signs (safety controls are allowed);
- Landscaping;
- Litter or recycle receptacles, or dog bag dispensers;
- Parking areas, trailheads, or camping areas;
- Playground or playing fields, fitness equipment, or fitness structures;
- Promotional, marking, or educational materials;
- Sculptures, monuments, or art; and

- Water fountains, splash zones, spigots, showers, water features, or irrigation equipment.

The [Manual on Uniform Traffic Control Devices \(MUTCD\)](#), [FDOT Design Manual \(FDM\)](#), and [Construction and Maintenance for Streets and Highways \(aka Florida Greenbook\)](#) are the criteria's which are applied to SUN Trail projects. More information is available at www.FloridaSunTrail.com.

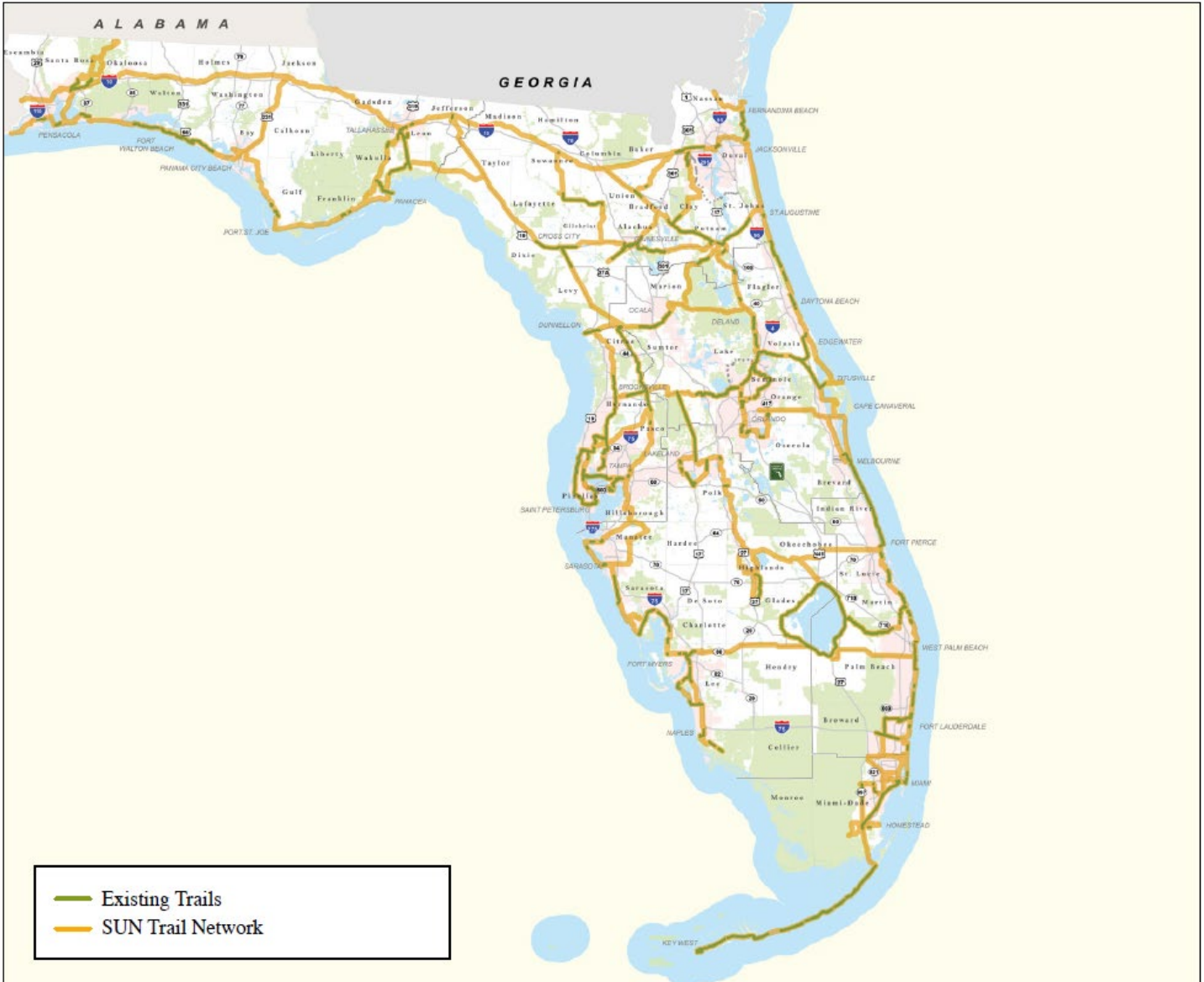


Figure 5: SUN Trail Statewide Network Map

This study encompasses a +/- 5-mile segment of the Florida SUN Trail Network that would help to connect Jonathan Dickinson State Park to the Seabranh Preserve State Park. It is important to note a parallel effort referred to as the Hobe Sound South Corridor Study is also in development to connect Jonathan Dickinson State Park to CR-708/Bridge Road.

1.6. EAST COAST GREENWAY

The [East Coast Greenway \(ECG\)](#) connects 15 states and 450 cities and towns for 3,000 miles from Calais, Maine to Key West, Florida, see **Figure 6**. The ECG is currently 35% complete with approximately 1,050 miles of off-road, protected multi-use paths now designated as part of the ECG network. Florida has the longest segment of the ECG with 651 miles of coastline, there are 268 miles of protected paved trails today. The ECG is a once-in-a-generation, ambitious linear park project that forecasts a return on investment to be ten-fold in economic, social, health and environmental benefits for millions of Americans, according to Dennis Markatos-Soriano, executive director of the ECGA. This project will complete a segment of the ECG in Martin County.

2. PUBLIC INVOLVEMENT AND OUTREACH

An important step in the process includes obtaining input from residents, public officials and other interested parties. This provides both the MPO and the consultant team an understanding of the public's vision for the project, their concerns, and any information they can share that is relevant to the project. Community outreach is made possible through open house meetings and their respective advertisement components including yard signs, brochures, emails and postcards to inform the public and encourage participation in the public process. Outreach for this project included the creation of a project brochure which was utilized by the MPO, email blasts and social media posts, and yard signs placed in strategic locations throughout the study area approximately 5 days prior to each scheduled meeting. Additionally, the second public meeting included a mailed postcard about the event to households who lived within the study area.

An initial public meeting was held on November 10, 2021. The Project Team's presentation addressed the typical life of a transportation project, from the planning phase to the construction phase (**Figure 7**), and situated the community in the current planning stage of 1-2 years. In addition, the presentation covered the project schedule, purpose, existing conditions, initial data analysis and presented route options. The presentation also included an overview of the reviewed plans and documents, a summary of potential crossings, as well as photos depicting pros and cons of various locations considered in the scope.

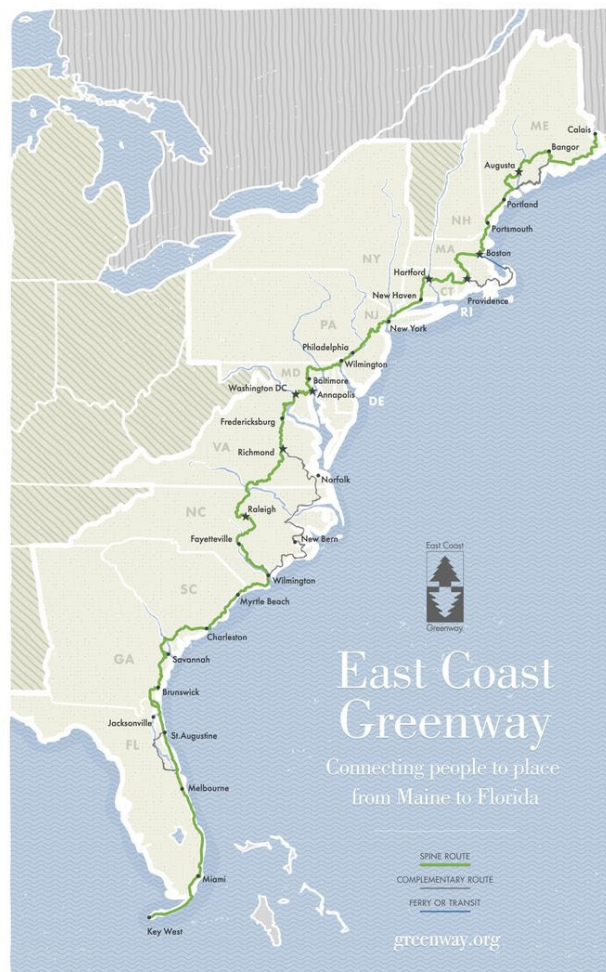


Figure 6: East Coast Greenway Map

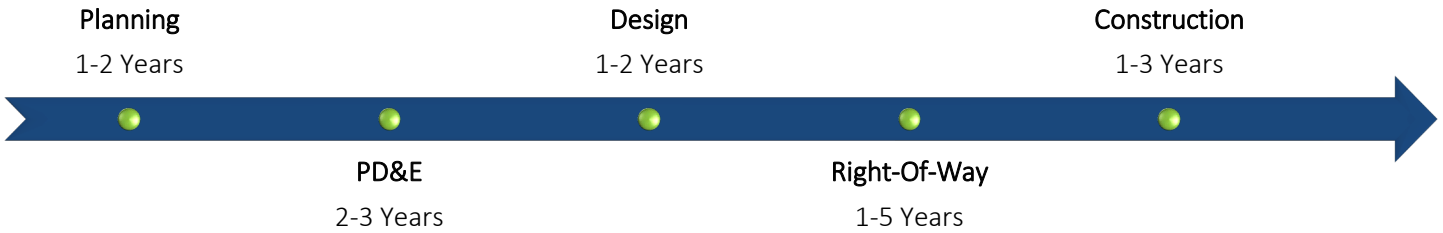


Figure 7: Life of a Transportation Project

A second public meeting was held on March 9, 2022 where proposed alignments, typical sections, and an evaluation matrix was shared with attendees. For this meeting, the Consultant Team provided posters to scale each of the three (3) proposed route alignments. Residents were given the opportunity to use the evaluation matrix and assess a variety of possible SUP alignment and typical section combinations on both sides of each of the evaluated roadways. The residents used this forum to express their concerns and discuss potential solutions with the consultant and other residents present. Additionally, residents had the opportunity to select the preferred typical section, provide alternatives via comment cards, post-it notes and dots. The majority of the attendees supporting the Gomez Avenue alignment, see Figure 8.

A third public meeting was held on January 11, 2023. The presentation provided a comprehensive recap of the first two meetings; it also highlighted how implementing the trail section would:

- Connect local and regional residents to the parks at each end of the segment
- Provide multimodal access to multiple community regional assets along the route
- Contribute to the continuous connectivity goals of the Florida SUN Trail Network and ECG
- Have the potential to contribute to social, health, and economic development



Figure 8: Resident selection of Preferred Route Alignment

During the third meeting, the Consultant Team shared the preferred selected alignment for the trail, two proposed typical section alternatives, and discussed next steps. Attendees also had the opportunity to select their preferred alternative to move forward with conceptual design. There were several in attendance who again preferred the alignment along Gomez Avenue, but overall, the majority of attendees supported Alternative 1 along SR-5/Federal Highway, which will be discussed later. Presentations, sign-in sheets, and comment cards can be found in Appendix C.



Figure 9: Photos from Public Meetings

3. LITERATURE REVIEW

3.1. TRANSPORTATION IMPROVEMENT PROGRAM FY 2021/22 – 2025/26

A Transportation Improvement Program (TIP) is a U.S. federally mandated requirement providing short-range transportation projects within an MPO's metropolitan planning area that seeks federal transportation funding within at least a four-year horizon.

The major multi-modal projects are prioritized by the Martin MPO Policy Board and included in the FDOT Tentative Work Program for federal and state funding. The 2021 – 2026 TIP includes the following projects within our study area:

- CR-708/ SW Bridge Road from Pratt Whitney to SR-5/US-1: Resurfacing and bicycle lanes construction
- FEC RR Crossings at SE Pettway Street: Pedestrian Facilities
- SE Shell Avenue Realignment
- Jonathan Dickinson State Park – Flap Grant for Trail and SR-5/US-1 Signalization

There are no projects included for Gomez Avenue or CR-A1A/Dixie Highway within the 2021/2022 to 2025/2026 TIP. FDOT has a project (FPID – 4435051) in the TIP to construct a bike path/trail starting in FY25 on SR-5/Federal Highway from CR-70/SE Bridge Road to the Hobe Sound Wildlife Refuge.

3.2. MARTIN MPO 2045 LONG RANGE TRANSPORTATION PLAN (2020)

The 2045 Long Range Transportation Plan (LRTP) is an analysis of the impact on the transportation network for current and projected conditions in the region. The Plan contains an evaluated list of transportation improvements that will be necessary to maintain an adequate level of mobility and to accommodate anticipated population growth for the county. The goals contained in the LRTP guide the transportation planning process in

the MPO Planning Area and help to establish project priorities for the TIP. The LRTP includes one project within the study area - the ECG (Main) project at SE Gomez Ave from CR-708/Bridge Road to SE Osprey Street, the length of this project is 3.28 miles. This project is a part of the ECG main or the Florida’s SUN Trail.

3.3. FLORIDA GREENWAYS AND TRAILS SYSTEM (FGTS) PLAN (2019 - 2023)

The FGTS Plan provides a new vision for the FGTS System for 2019 - 2023. Included in the Plan is a vision for implementing a connected statewide system of greenways and trails for recreation, conservation, alternative transportation, healthy lifestyles, a vibrant economy, and a high quality of life.

The ECG is a developing trail system, nearly 3,000 miles long, connecting Calais, Maine to Key West, Florida. The ECG route traverses the Atlantic coast, connecting communities, small towns, major cities and various state parks throughout the eastern coast of the U.S. Florida has the longest stretch of the ECG, with 600 miles of trails, of which 200 miles is located off-road, and is connected with shared use paths and trails, see **Figure 10**. Much of the ECG trails/shared use pathways within Florida are on side paths which run parallel to CR-A1A/Dixie Highway.



Figure 10: Florida East Coast Greenway Trail

3.4. MARTIN COUNTY BICYCLE AND PEDESTRIAN FACILITY MAP (2019)

The main purpose of the bicycle and pedestrian facilities map is to increase awareness among the general public and potential users of these facilities, see **Figure 11**.

Within our study area, the map highlights existing facilities, parks and locations of interest. These locations include a SUP on Gomez Avenue, north of SE Osprey Street to Seabranche Preserve State Park. The Gomez Avenue SUP connects to existing sidewalks along Gomez Avenue south of SE Osprey Street to CR-708/Bridge Road east to the beach.

Other facilities within our study area include bicycle lanes along CR-A1A/Dixie Highway between Seabranche Preserve State Park and SE Crossrip Street, these bike lanes are connected to paved shoulders between Crossrip Street and Pettway Street.

Points of interest within the study area include: Seabranche Preserve State Park, Gomez Preserve, Peck Lake Park, Jimmy Graham Park, Eastridge Park, William G. “Doc” Myers Park, Hobe Sound Bible College, Hobe Sound Elementary, Restrooms and a bicycle shop.



Figure 11: Martin County Bicycle & Pedestrian Map

3.5. MARTIN MPO BICYCLE, PEDESTRIAN & TRAILS MASTER PLAN (2017)

The Master Plan provides a vision for Martin County becoming a pedestrian and bicycle friendly, walkable and livable community. The main goal of the Master Plan is to establish a multimodal transportation system in the county. **Figure 12** highlights work trips in Martin County.

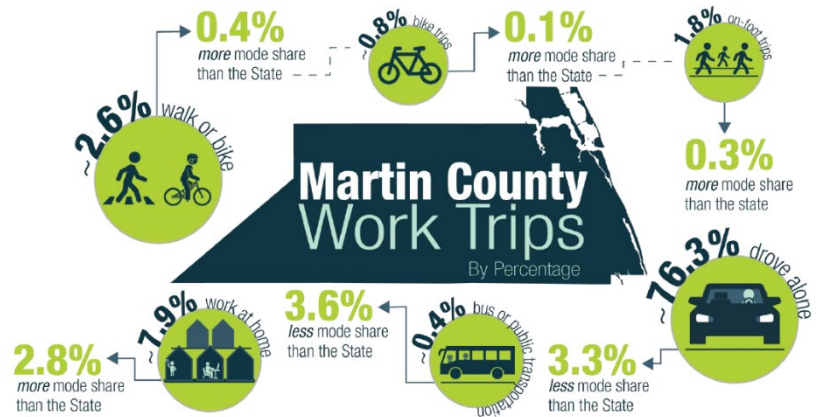


Figure 12: Martin County Mode Share Infographic

The Master Plan describes existing bicycle and pedestrian facilities in Martin County and also include recommendations for improvements. Improvements include bicycle and pedestrian facilities, safety improvements, policy recommendations, and outreach efforts to encourage people to walk and bike, see **Figure 13**.

The Master Plan also includes a few recommended projects for regional trail facilities. Project number 12 is the East Coast Greenway – Main – SE Gomez Ave from SE Bridge Rd to SE Osprey St – 3.28 miles. The approximate cost of this facility was calculated at \$323,538 per mile.

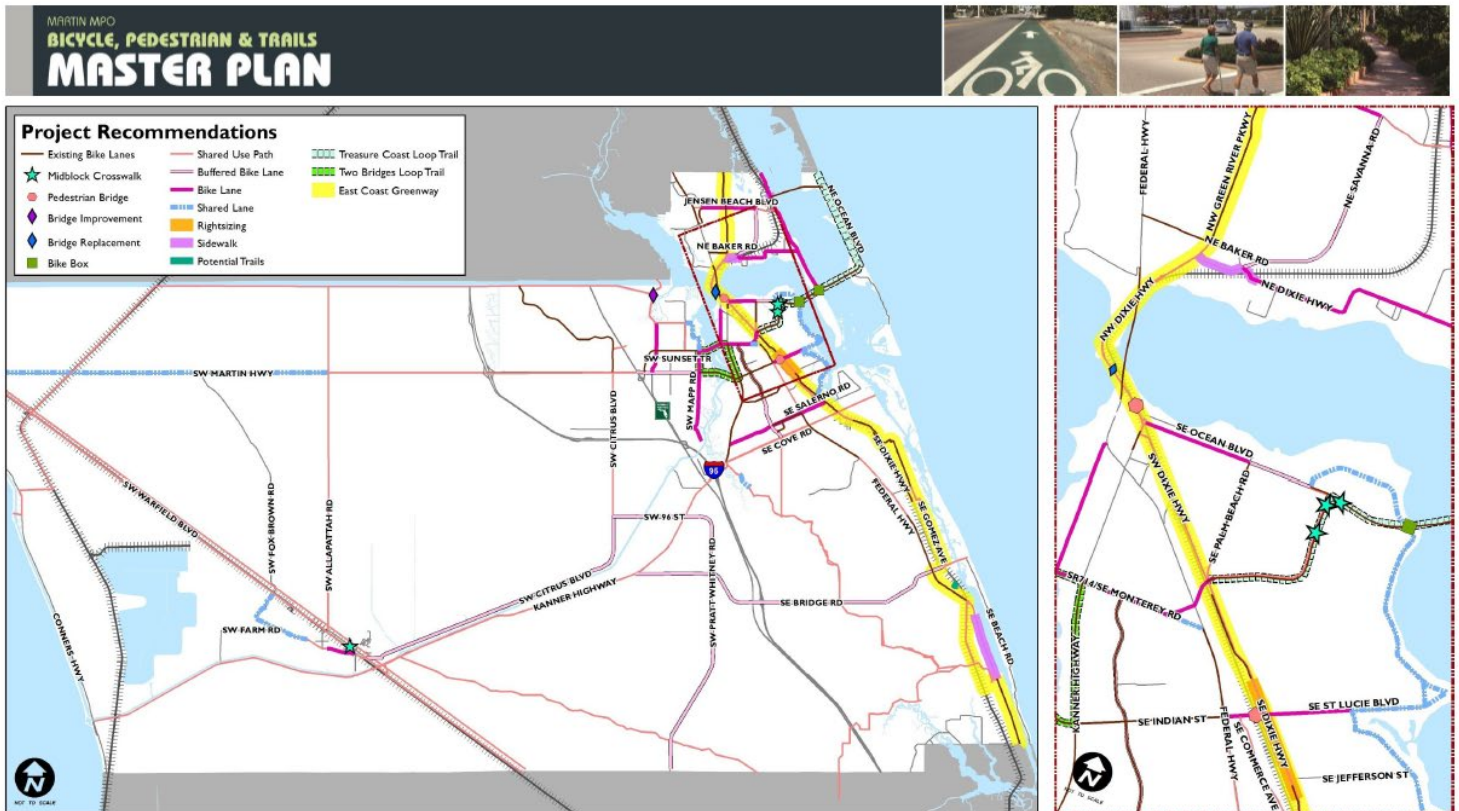


Figure 13: Bicycle, Pedestrian and Trails Master Plan Project Recommendation Map

3.6. BICYCLE AND PEDESTRIAN SAFETY ACTION PLAN (2016)

The purpose of Martin County’s Bicycle and Pedestrian Safety Action Plan is:

- To meet requirements set forth by the Florida Department of Transportation (FDOT) which require each MPO to prepare a pedestrian safety action plan.
- To identify bicycle and pedestrian safety problems and crash hot spots in Martin County, based on data-driven analysis and public input.
- To develop and select appropriate strategies using the “4Es” (Engineering, Enforcement, Encouragement, and Emergency Medical Services (EMS)) concept to enhance bicycle and pedestrian safety.
- To assist local and state agencies in further enhancing their existing bicycle and safety programs and activities.

The Plan identified nearly 68 crash hotspots (41 intersections, 12 corridors and 15 streets/roads) based on quantitative and qualitative analysis, stakeholder and public input. The Plan also includes recommended countermeasures based on the 4Es for the purpose of increasing safety and mobility in the county.

3.7. SOUTHEAST FLORIDA REGIONAL GREENWAYS AND TRAILS PLAN (2015)

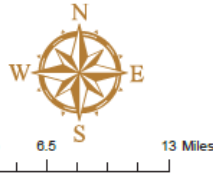
Greenways and trails are a growing part of multimodal transportation networks across Florida and the U.S. This Plan provides a desired vision for a greenways and trails system in Palm Beach County with consideration of the Southeast Florida regional context (from Indian River County to Monroe County).

The Plan is intended to serve as a conceptual guide for the Palm Beach MPO and others for prioritizing and advancing projects over time to help develop an integrated network of non-motorized connections throughout the South Florida region. Additionally, the regional perspective is designed to further inform facility development in an effort to align facilities across county lines where feasible. The Plan recommends three types of facilities:

- **Multi-Use Paved Trails:** A minimum of 10’ in width and for use by pedestrians & cyclists.
- **Multi-Use Unpaved Trails:** A minimum of 10’ in width and for use by pedestrians, cyclists, and equestrians.
- **Unpaved Hiking Trails:** A minimum of 5’ in width and for use by pedestrians exclusively.

The facilities and preferred design width based on type of users provides an overall guide to the development of trails for the region. Our study area is included as a proposed multi-use paved trail (MC8) as part of the East Coast Greenway, see **Figure 14**.

Southeast Florida
REGIONAL
GREENWAYS
& TRAILS
Multi-Use & Hiking Facilities



Existing Facilities	Proposed Facilities	Rev 9/30/2015
Multi-use, Paved 10' minimum width Pedestrians & cyclists permitted	Multi-Use, Paved 10' minimum width Pedestrians & cyclists permitted	
Multi-use, Unpaved Bicycle and pedestrian access	Multi-Use, Unpaved Bicycle and pedestrian access	
Hiking, Unpaved Pedestrians, cyclists & equestrians permitted	Hiking, Unpaved Pedestrians, cyclists & equestrians permitted	
Pedestrian access only Only pedestrians permitted	Pedestrian access only Only pedestrians permitted	



Martin County

- MC1, Allapattah Flats Management Area - Equestrian Trail
- MC2, Atlantic Ridge
- MC3, Beeline Highway Corridor
- MC4, Bridge Road
- MC5, Connector of Robert B. Jenkins C-23 & 714
- MC6, Connector of Robert B. Jenkins C-23 & Florida National Scenic Trail
- MC7, Cypress Creek Natural Area - Jesup Trail
- MC8, East Coast Greenway
- MC9, Florida National Scenic Trail
- MC10, Historic Jupiter-Indiantown Trail
- MC11, Hutchinson Island
- MC12, Indian River Drive
- MC13, Marine East/West Corridor
- MC14, Ocean-to-Lake Trail
- MC15, Robert B. Jenkins C-23 Trail Corridor
- MC16, SR714 Indian St to OK County Line
- MC17, St. Lucie Canal
- MC18, Treasure Coast Loop Trail

This information was compiled from state and local agencies including Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, Florida Trail Association, St. Johns River Water Management District, Southwest Florida Water Management District, South Florida Water Management District, Indian River County, St. Lucie County, Martin County MPO, Palm Beach MPO, Broward County, Miami-Dade County and Monroe County.

Figure 14: Southeast Florida Regional Greenways & Trail Facilities Map

3.8. FLORIDA SUN TRAIL REQUIREMENTS

3.8.1. DESIGN REQUIREMENTS

The SUN Trail Network includes a combination of existing, planned, and conceptual multiple-use trails; which is typically 12-foot wide, but may vary from 10-foot to 14-foot wide, or larger, depending upon physical or environmental constraints, or usage. In some areas of extreme constraints, such as at bridges or in environmentally sensitive lands, a multi-use trail may be as narrow as 8-foot wide. In general, development of SUN Trail funded projects will be 12-foot wide, asphalt, multi-use trails. Implementing projects in the SUN Trail network increases the reliability of Florida’s transportation system.

The [Greenway Criteria and Design Guide](#), released by the ECGA, provides information and resources for the planning, design, construction, promotion, and maintenance of local ECG segments. This Guide defines our vision of a protected, connected series of safe facilities for a continuous non-motorized route from Maine to Florida. The Guide explains allowable on-road facilities and offers a new section on potentially allowable on-road facilities. The *Greenway Criteria and Design Guide* concludes with a list of technical resources and a glossary of common terms and acronyms related to the Greenway. The ECG’s permanent route criteria:

- **Traffic separated:** Includes a physical barrier that combines both horizontal spacing and vertical elements to protect trail users from motor vehicles.
- **Firm surface:** Easily navigable by a touring bicycle or wheelchair; may be paved or fine stone dust surface or other natural surface that a touring bicycle can easily and comfortably navigate.
- **Publicly accessible:** Open and free to the public every day of the year. In a few areas, we have incorporated fee-charging ferry service, but we seek crossings that minimize cost and provide frequent service.
- **Wide enough for shared use:** We aim for a 12-foot-wide pathway but understand that may not always be achieved initially. In more rural areas, where use may be lower, a narrower width may suffice. All new trails are expected to be designed and built according to best practices (E.g., AASHTO standards for shared-use paths).
- **Avoids steep grades and steps:** That prohibit wheelchair access and make bicycle access difficult. See AASHTO guidelines on the acceptable grade of a shared-use path.
- **Integrated recreation and transportation infrastructure:** The trail must route through a town or city center. Connects people to where they work, live, and play.
- **Responsive to new design:** In addition to shared-use path designs, an on-road facility that provides a physical barrier separating users from motor vehicles may also be designated. The term “physical barrier” will be interpreted to include firm, fixed objects such as concrete barriers, planters, guard rail or vehicle railing or bollards. Bicycle lanes separated from motor vehicle traffic by flexible vertical delineators are generally not eligible for designation, although our new design exceptions may allow for designation of such facilities upon further review of the roadway context. In an instance where the facility prohibits pedestrian and wheelchair use, it may be designated as East Coast Greenway provided that there is a parallel facility for pedestrians and wheelchair users which is designated as well.

3.8.2. SURFACES

A trail’s surface should be easily navigable by all users. It may be paved or a fine stone dust surface or other natural surface that a touring bicycle can comfortably navigate. All trails should be planned and designed to comply with the ADA, which requires trail surfaces to be firm and stable. Firmness means the surface “does not give way significantly under foot.” Stability means surfaces “do not shift from side-to-side or when turning.” For broad conceptual purposes, cost ranges for common trail surfaces (not including right-of-way acquisition) are:

- **Less expensive:** \$150k - 350k per mile
- **Moderately expensive:** \$350k - 750k per mile
- **More expensive:** \$750k - 1.5 million per mile

3.8.3. ASPHALT

Asphalt trails typically have a longer-term service life with lower required maintenance than a natural surface trail. Asphalt provides a surface that is smooth, quiet, and continuous with no joints, which is more enjoyable for bicycling, skateboard/rollerblading, pushing strollers, and people with disabilities.

Construction Considerations

- **Material type:** Hot mix asphalt, the type of mix used for a state highway, may not be the appropriate mix for a multi-use trail. The asphalt binder specified will depend on the climatic conditions of the region; check with your local DOT for material, gradation, and binder specifications. Porous or permeable asphalt can offer better drainage but can be more expensive up front and require more maintenance.
- **Proper drainage:** Efficient removal of excess water from the trail is important. Surface water runoff should be handled using swales, ditches, and sheet flow. Catch basins, drain inlets, culverts and underground piping may also be necessary. These structures should be located off of the pavement structure.
- **Proper sub-grade thickness & compaction:** Minimum thickness of a high-quality aggregate base should be a minimum of six inches for an asphalt trail. Thicker base courses should be used for poorer quality sub-grade material. Compacted sub-grade should extend a minimum of two feet beyond the edge of pavement. Sub-grade should be compacted to a minimum of 95% of standard Proctor density, AASHTO T 99, and the moisture should be maintained within 3% of optimum. If aggregate base course is used in the pavement section, it should be compacted to a minimum of 95% of modified Proctor density, AASHTO T 180, ASTM D 1557. Depending on the soil conditions, compaction and moisture criteria may vary. After compaction, a soil sterilant and/or root inhibitor should be applied. Consult your landscape architect or geotechnical engineer for site-specific information.
- **Adequate pavement thickness:** A minimum 3”.
- **Adequate pavement compaction:** It is recommended the hot mix asphalt be compacted to between 92% and 96% of the Theoretical Maximum Specific Gravity, AASHTO designation T 209, ASTM designation D 2041.

3.8.4. BOARDWALK

Boardwalks are typically considered for multi-use trails in areas that are difficult to traverse because of wetlands and waterways or rough conditions, areas prone to flooding, or where a typical trail cross section would adversely impact fragile habitats. Boardwalks allow for continuous drainage and unimpeded stream flow. They generally consist of decking, curbing or railings, and piers.

Construction Considerations

- **Common material types:** Timber, composite, concrete.
- **Railing height:** Forty-two (42) inches measured from the walking surface to be used if surface of boardwalk is 30-inches above finish grade. Extend boardwalk railing past abutment as needed to protect trail users from fall hazards, minimum 6’, typical.
- **Curb height:** Six (6) inches from walking surface to be used when boardwalk is less than 30-inches above finish grade (secondary path only).
- **Minimum rail to rail clearance:** Twelve (12) feet.
- **Minimum above water clearance:** Twelve (12) inches above anticipated 10-year storm elevation measured from the lowest structural member.

3.8.5. NATURAL SURFACE/CRUSHED STONE

Non-paved trail surfaces generally cost about the same as paved because the base preparation and materials are identical. Also, the installation is identical (dump truck, paving machine and compactors). Non-paved surfaces need to be accurately graded to avoid standing water. They are not useable during the spring thaw season. They are more prone to erosion than paved surfaces.

Construction Considerations

- **Common stone types:** Limestone, sandstone, granite.
- **Stone dust material:** Shall consist of hard, durable, uncoated particles of rock free from deleterious substances. The rock particles should range in size from dust to 3/8-inch. The stone dust surface will be prepared and placed in accordance with local DOT specifications and meet compaction requirements of 95% of optimum density (AASHTO T-180).
- **Crusher fines:** Should be applied over landscape fabric to a depth of 4 to 6-inches. The preferred geotextile is a continuous filament non-woven needle-punched engineering geo-fabric.

3.8.6. WIDTH

The aim generally is for a 12-foot-wide pathway but that may not always be achieved initially. In more rural areas, where use may be lower, a narrower width may suffice. All new trails are expected to be designed and built according to best practices. The ECGA follows AASHTO standards for SUPs:

Width and Clearance: The minimum paved width for a two-directional shared use path is 10-feet. Wider pathways, 11-to-14-feet are recommended in locations that are anticipated to serve a high percentage of pedestrians (30 percent or more of the total pathway volume) and higher user volumes (more than 300 total users in the peak hour). In very rare circumstances, a reduced width of 8-feet may be used where the following conditions prevail:

- Bicycle traffic is expected to be low, even on peak days or during peak hours.
- Pedestrian use of the facility is not expected no more than occasional.
- Horizontal and vertical alignments provide frequent, well-designed passing and resting opportunities.
- The path will not be regularly subjected to maintenance vehicle loading conditions that would cause pavement damage.

Occasionally, providing separate, parallel shoulders or treads alongside a trail for different users may be desirable. For example, a primary, hard-surfaced path (asphalt or concrete) can be provided exclusively for bicyclists, with softer shoulders set aside for pedestrians and equestrians. Single shoulders should be at least 5-feet wide, while dual shoulders (one on each side) should be a minimum of 2-feet wide.

3.8.7. GRADE

Trails should avoid steep grades and steps that prohibit wheelchair access and make bicycle access difficult. The ECGA aims to follow AASHTO guidelines on the grade of a SUP:

5.2.7 Grade - The maximum grade of a shared use path adjacent to a roadway should be 5 percent, but the grade should generally match the grade of the adjacent roadway. Grades steeper than 5 percent are undesirable because the ascents are difficult for many path users, and the descents can cause some users to exceed the speeds at which they are competent or comfortable.... Grades on paths in independent rights-of-way should also be limited to 5 percent maximum. – AASHTO

3.8.8. CROSSINGS AND INTERSECTIONS

Crossings should be marked where a trail intersects with a roadway. Crosswalk markings are also preferred where trails cross driveways and railroads. The ECGA follows AASHTO standards for crossings along shared use paths. The guide addresses various types of crossing and intersection designs and the striping and safety features associated with each crosswalk treatment. Whenever feasible, crossing should be complemented by traffic calming features, e.g., curb extensions, medians/islands, raised crosswalks, etc. In general, the more motor vehicle traffic lanes there are to cross, and/or the greater the volume and speed of motor vehicles, the greater the need for robust traffic calming treatments.

For crossings on quiet rural roads with sufficient line-of-sight distances, for instance, a “Trail Crossing” sign and striped crosswalk may be sufficient. For busier suburban and urban crossing situations, physical mid-crossing protection, demand activated signals, and proactive traffic calming treatments may be warranted. This could include “High Intensity Activated Crosswalk” (HAWK) or “Rectangular Rapid Flashing Beacon” (RRFB) signals to alert drivers.

Intersections should be well-lit (where trail use is permitted in low-light conditions) and crosswalk timers must be calibrated to allow for comfortable crossing by trail users of all abilities. AASHTO provides guidance on crosswalks, but more detail can be found in NACTO’s *Don’t Give Up at the Intersection* for protected and dedicated intersection treatments. **Figure 15** includes proven safety countermeasures for treatments that can assist to design for slow speeds. FHWA’s [Making Our Roads Safer I One Countermeasure at a Time](#) and [Safe Transportation for Every Pedestrian \(STEP\) program](#) provides guidance on safety measures for bicycle and pedestrian facilities.

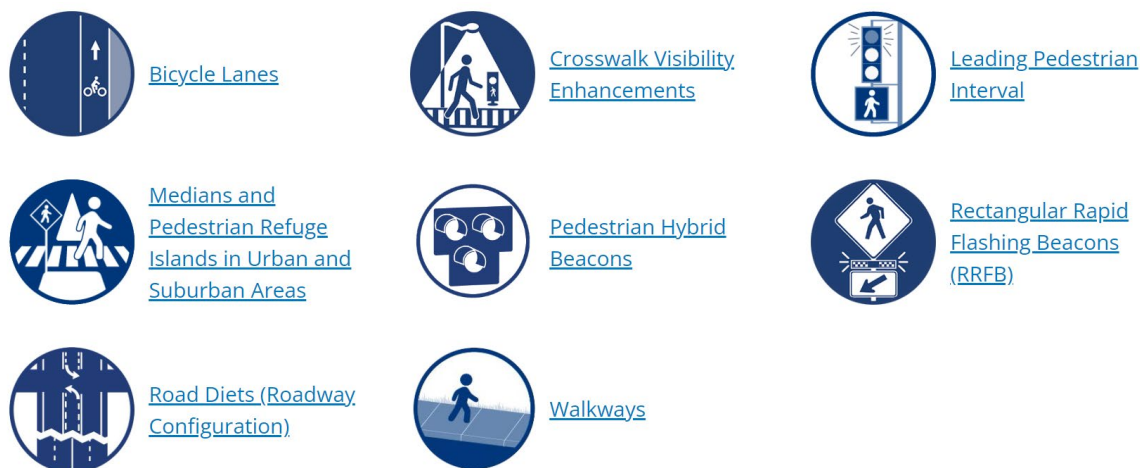


Figure 15: Pedestrian/Bicyclist Safety Countermeasures, FHWA

3.8.9. BRIDGES

Given the many waterways, highways, train tracks, and other obstacles that must be crossed on the envisioned route of the Greenway, thoughtful bridge design is important. There is no one-size-fits-all bridge design endorsed by the Alliance, as there are a wide variety of bridge types and crossing contexts communities may encounter, from getting over a small creek or canal to spanning major rivers and interstate highways. Bridges can be stand-alone or attached to existing bridges, and they may be new construction or re-purposed bridges no longer open to motor vehicles. Reallocating an automobile lane can be an option. In some circumstances, an underpass may be preferred.

In general, follow AASHTO or NACTO guidance for bridge design specifications. Ensure that transitions onto and off of bridges is safe, comfortable and intuitive for both pedestrians and bicyclists. There may be limited crossing options in some areas where the few existing bridges are narrower and deserve special consideration. These bridges should be reviewed on a case-by-case basis, but generally 8' is the minimum width for a shared-use path on a bridge. In some cases, with narrow passage, it may help to require that cyclists drastically reduce speeds or dismount and walk their bike across the bridge to reduce conflicts with other bridge users. When traversing busy roads such as arterials, at-grade design solutions should be prioritized instead of a bridge where possible. Creating a safe, direct, and convenient passage at grade for pedestrians and cyclists across these roads will benefit all users by reducing speeds and encouraging more efficient, multi-modal, and sustainable transportation. Safe at-grade crossings will provide a more convenient option to trail users, helping them avoid climbing and descending a bridge that might have inconveniently located entrances. This is particularly helpful for those with physical disabilities and issues with mobility. Additionally, at-grade crossings will formalize pedestrian and cyclist crossings that would otherwise still likely occur, despite being illegal and less safe.

3.8.10. SEPARATED ON-ROAD FACILITIES

In addition to shared-use path designs, an on-road facility that provides a physical barrier separating users from motor vehicles may also be designated. The term "physical barrier" will be interpreted to include firm, fixed objects such as concrete barriers, planters, guard rail, vehicle railing, bollards, and, in appropriate contexts, flexible vertical delineators. In an instance where the facility prohibits pedestrian and wheelchair use, it may only be designated as East Coast Greenway if there is a parallel facility for pedestrians and wheelchair users which is designated as well.

3.8.11. SIGNAGE

The primary purposes of signing the ECG are to establish a unique brand, to inform users that they are on the ECG, and to identify route direction changes, enabling proper wayfinding. Because much of the Greenway is still on road, providing appropriate route signage is crucial to guiding users along the route. Trail signs also serve to raise public awareness of the ECG by identifying a given local trail segment as part of the ECG.

Standard Greenway Route Signs



Greenway

ECGA stocks 5.5" x 15" signs to mark the route, **Figure 16**. The standard sign is our preferred model for identifying our route. These signs are made of .063-gauge aluminum with the graphic and text silkscreened onto the engineer grade reflective vinyl sheeting. Signs are pre-drilled with 3/8" holes at intervals permitting mounting on steel u-channel posts or square steel tubes. Brackets or mounting clamps may be used to attach these signs to tubular posts (aka "pipe posts"), which do not have pre-drilled holes for sign installation. These signs may be installed on trail and road segments pending permission.

Figure 16: Standard ECG Sign

Standard Greenway Arrow Plaques

Where appropriate, ECG route signs should be used in tandem with directional arrow plaques. The ECGA stocks five types of arrow plaques. Standard-sized directional arrow plaques measure 5.5" x 5.5" and have a bold black outline for visibility. They should be placed directly below the ECG standard sign.

Non-Standard ECG Wayfinding Signs

In some circumstances, signs of a different size may be preferred, or partnering agencies may want to incorporate the ECG graphic into other wayfinding signage. The ECGA only stocks the standard route sign, but following consultation with ECGA staff, artwork will be made available to agencies which wish to fabricate non-standard signs in their own sign shops.

MUTCD-Compliant ECG Route Signs

Chapter 9 of the MUTCD is specific to traffic control devices for bicycle and pedestrian facilities. Signs and plaques may be demanded in specific states and used to mark the ECG as a bicycle route, or if on shared-use paths, as a bicycle and pedestrian route. The type of MUTCD guide sign that permits the ECGA and partnering agencies to brand a route as the ECG is the M1-8a sign with the addition of the ECG logo, the letters "ECG," or the words "East Coast Greenway." Dimensions of the M1-8a are 18"x18" if installed on road and 12"x12" if installed on greenway.

MUTCD-Compliant ECG Arrow Plaques

Where appropriate, the ECG branded M1-8a signs should be used in tandem with the directional arrow plaques. The range of MUTCD directional arrow plaques to accompany M1-8a are as follows: M5-1, M5-2, M6-1, M6-2, M6-3. State DOTs may and have exempted ECG signs to include standard makers when posted on existing MUTCD sign posts.

Mileage Signs with Icons

The ECGA may provide "mileage signs" for installation on trailside kiosks or other structures. This type of sign is great for branding the length and breadth of the Greenway as well as drawing attention to the specific venue. Contact the ECGA if you have an interest in this type of signage.

Informational Kiosk

An informational kiosk is a wooden structure, typically field-fabricated of pre-cut pieces of dimensional lumber. Cedar is recommended due to its natural rot resistance. Fasteners should be stainless or galvanized steel. Where required due to local regulations (e.g., hurricane resistance standards), other designs may be implemented.

“Billboard” Signs

These types of signage are becoming popular in state and county parks.

Bridge Identification Signs

The ECGA strongly encourages the installation of special identification signs to be installed on or adjacent to trail bridges, notifying drivers passing beneath that the bridge overhead is part of the ECG. To date, all Greenway bridge ID signs have generally followed MUTCD standards and have been approved and installed by highway maintenance personnel or their contractors.

3.8.12. TRAFFIC SEPARATED ON-ROAD FACILITIES

In addition to the shared-use path design, the ECGA may also designate on-road bikeway facilities that separate users from traffic by a physical barrier, as long as the bikeway is parallel to a wheelchair-accessible sidewalk. The term “physical barrier” includes firm, fixed objects such as concrete barriers, planters, guard rail, vehicle railing, bollards, and, in appropriate contexts, flexible vertical delineators, often in tandem with parked vehicles. However, bicycle lanes separated from motor vehicle traffic by flexible vertical delineators alone are generally not eligible for designation—the ECGA staff will assist partners with further review of the roadway context to discuss options. Additionally, a design using delineators and parked vehicles should also ensure that the delineators are maintained on a frequent basis and any illegal parking or idling in the bikeway is minimized.

3.8.13. IMPLEMENTING FLORIDA’S SHARED-USE NONMOTORIZED (SUN) TRAIL PROGRAM

Ineligible project attributes for funding can be found in the handbook. “On-road facilities, such as bicycle lanes of routes other than on-road facilities that are no longer than one-half mile connecting two or more nonmotorized trails, if the provision of non-road facilities is infeasible and if such on-road facilities are signed and marked for nonmotorized use; an exception is made for on-road components of the Florida Keys Overseas Heritage Trail.”



4. EXISTING CONDITIONS

This section provides an overall review and analysis of existing conditions within the study area. Existing conditions include a review of demographics, land use, environmental, utilities and the roadway transportation network. Data was collected utilizing available data from Census, FDOT, FDEP and Martin County. Furthermore, several site visits were conducted to collect data, capture information, and assess conditions. A desktop review utilizing GIS was conducted for analysis. The following section summarize the demographics, existing roadway and environmental characteristics for the study area.

4.1. DEMOGRAPHICS

Hobe Sound is a Census Designated Place (CDP) in Martin County, Florida along Florida’s Treasure Coast. Between 2010 and 2020, the area experienced over 14% growth in population (Census 2020), and according to the 2021 ACS, the current population in Hobe Sound is 13,964. The median age in Hobe Sound is 56 years, **Figure 17** includes a breakdown of age groups who reside in Hobe Sound. Statistics show over a third of residents are over the age of 65 years, with the largest group (18.6%) between 65 to 74 years.

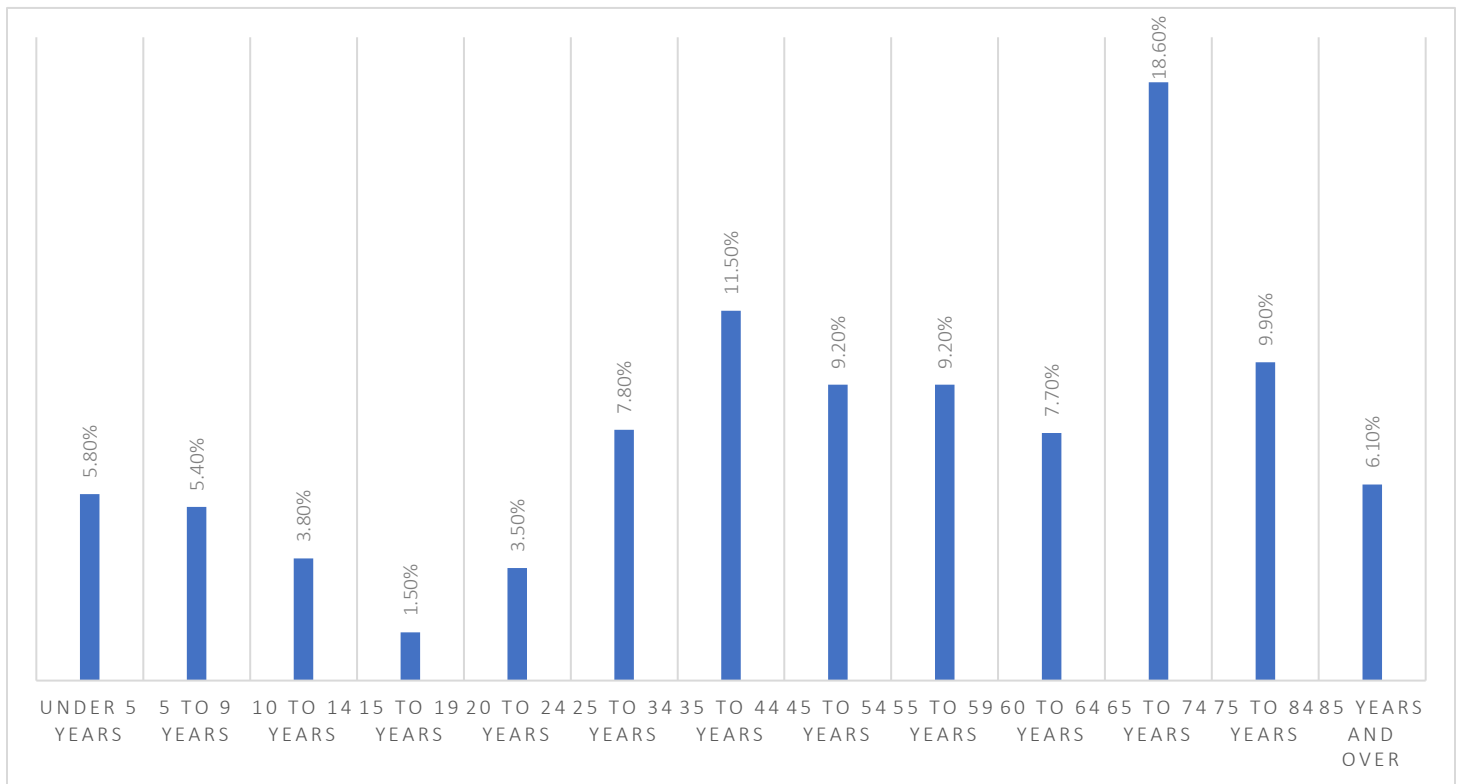


Figure 17: Hobe Sound Age Groups (ACS 2021)

Figure 18 illustrates the racial and ethnic makeup of Hobe Sound where almost 85% of residents are white, 6% of residents are black and 6% of residents are Hispanic. About 7% of households in Hobe Sound speak a language other than English at home. The poverty rate of Hobe Sound is 10% (ACS 2021).

Approximately 2% of households in Hobe Sound do not have a vehicle and almost 25% have one (1) vehicle per household. Lastly, 15.5% of residents have a disability, which is higher than the national average of 12.6%.

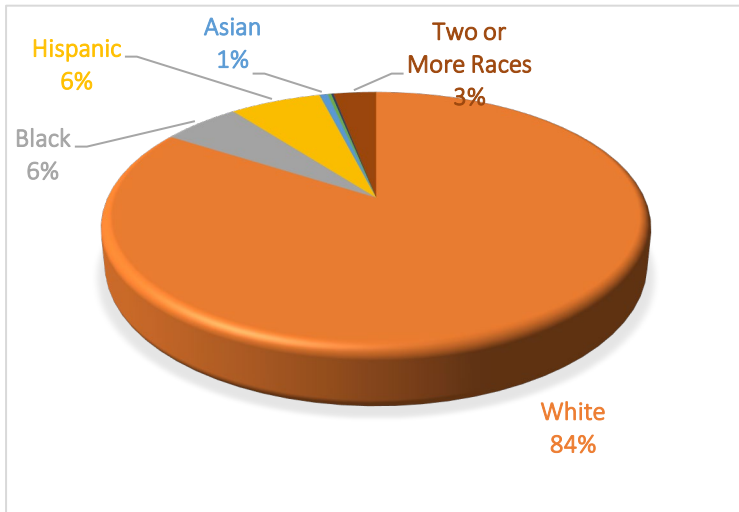


Figure 18: Hobe Sound Race & Ethnicity

4.2. COMMUTING CHARACTERISTICS

Workers 16 years and over total 5,952 or 43% of the population in Hobe Sound. Commuting characteristics for works is as follows: 70.1% of workers drive alone by car, 4.5% walk, 1.2% ride a bicycle and 14.1% work from home (ACS 2021). A review of the data illustrates more men walk and bike than women, while more women work from home than men. Mean travel time for workers in Hobe Sound is 25.5 minutes.

4.3. THE BUILT ENVIRONMENT

According to the future land use map, **Figure 19**, the study area is predominantly single-family residential uses with commercial uses concentrated along SE Federal Highway, CR-708/Bridge Road, and CR-A1A/Dixie Highway, south of CR-708/Bridge Road.

The map also highlights the numerous parks and recreational uses in the area. This includes Seabranch Preserve State Park, Indian River, Gomez Preserve, Peck Lake Park, Jimmy Graham Park, William G. “Doc” Myers Park, J.V. Reed Park, Atlantic Ridge Preserve State Park, Jonathan Dickinson State Park and Hobe Sound National Wildlife Refuge.

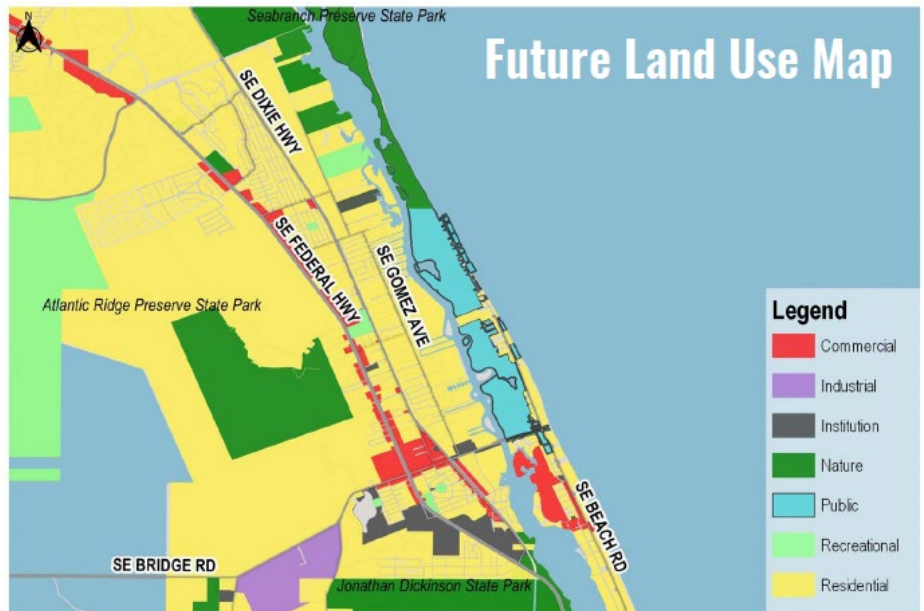


Figure 19: Future Land Use Map

The built environment within the study area includes an auto centric suburban development pattern where land uses are separated and the automobile dominates the landscape. The study area includes many vacant parcels. Gomez Avenue includes single-family housing, parks and schools; CR-A1A/Dixie Highway includes single-family housing, vacant lots, and some commercial uses with Florida East Coast (FEC) railroad parallel to CR-A1A/Dixie Highway. SR-5/Federal Highway and CR-708/Bridge Road include commercial developments with several large suburban shopping centers which include Market Place at Hobe Sound, Island Crossing, and a newly constructed Publix Shopping Center. There are several small commercial buildings peppered along SR-5/Federal Highway and

CR-708/Bridge Road. Additionally, the study area includes two large golf courses, the Loblolly Golf Course between Gomez Avenue and CR-A1A/Dixie Highway and the Medalist Golf Club west of SR-5/Federal Highway between Osprey Street and Medalist Place. Institutional uses include schools, a water treatment plant, public library, and vacant land. The study area connects to the beach and Atlantic coast via CR-708/Bridge Road.

4.4. EXISTING ROADWAY CONDITIONS

The existing roadway network in the study area consists of local roads, urban collectors and arterials. SR-5/SE Federal Highway, CR-A1A/Dixie Highway and SE Gomez Avenue are north-south oriented facilities in the study area, SR-5/Federal Highway and CR-A1A/Dixie Highway provide regional connectivity to Palm Beach and St. Lucie Counties. CR-708/SE Bridge Road, SE Pettway, SE Crossrip Street and SE Osprey are east-west oriented facilities. CR-708/Bridge Road provides access to I-95 and the Florida Turnpike. The study area includes seven signalized intersections: three along SR-5, three along CR-A1A/Dixie Highway, and one at Gomez Avenue. There are three at-grade railroad crossings at CR-708/Bridge Road, SE Crossrip Street, and SE Osprey Street.

4.4.1. FUNCTIONAL CLASSIFICATION

Within the study area, SR-5/Federal Highway is functionally classified as an Urban Principal Arterial Other, CR-A1A/Dixie Highway and CR-708/Bridge Road are Urban Minor Arterials, SE Osprey Avenue and SE Pettway are classified as Urban Major Collectors, and Gomez Avenue is classified as an Urban Minor Collector. All other roadways are considered local streets, **Figure 20** includes a map of the existing functional classification. The majority of traffic flows along SR-5/Federal Highway, with most others roadways being utilized by local traffic. **Table 1** includes the traffic summary of the existing roadways within our study area.

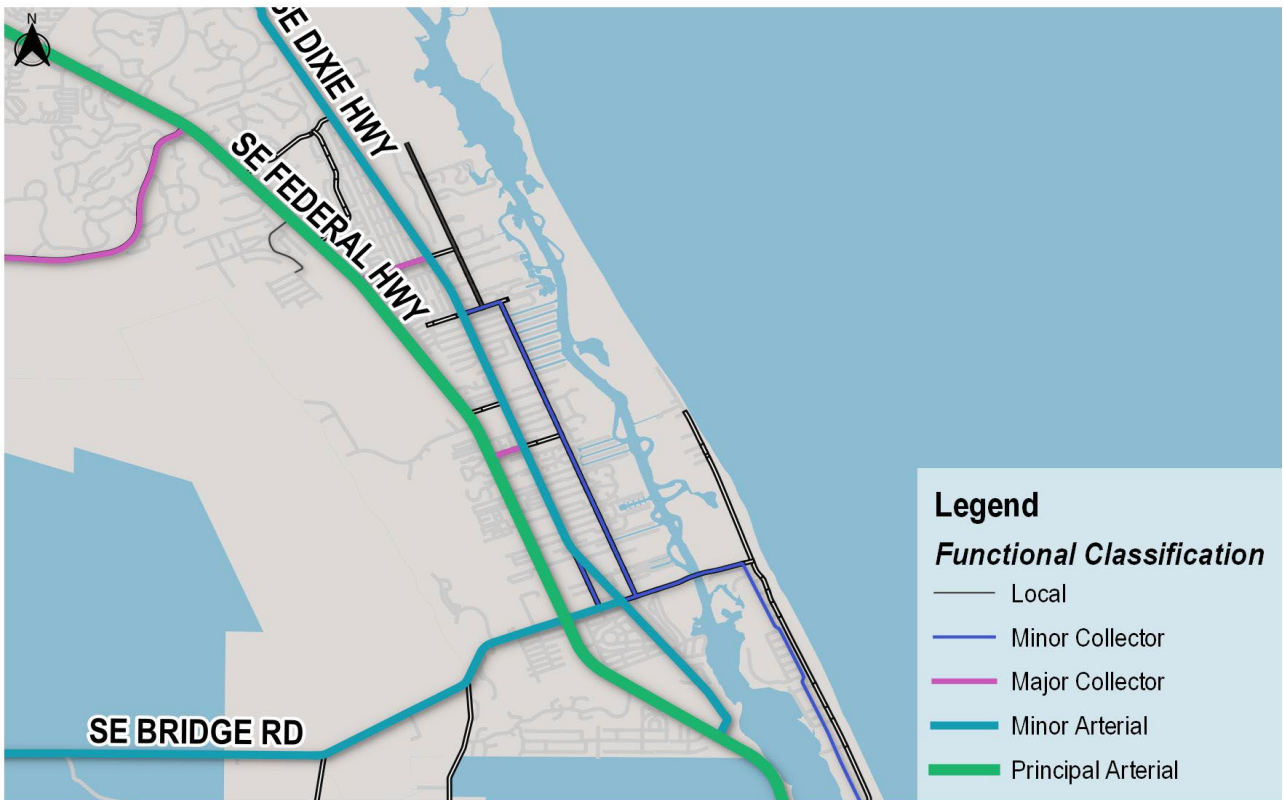


Figure 20: Street Network Functional Classification

Table 1: Summary of Traffic Data

STREET	FROM	TO	AADT (2021)	POSTED SPEED LIMIT (MPH)	NO. OF LANES (EACH DIRECTION)	LOS
CR-708/Bridge Rd	SR-5	CR-A1A	9,373*	25	1	D
	CR-A1A	Gomez Ave	8,053*	30	1	D
Pettway St	SR-5	Gomez Ave	N/A	25	1	N/A
Osprey St	SR-5	CR-A1A	4,794	35	1	C
	CR-A1A	Gomez Ave	2,042	25	1	C
SR-5/Federal Hwy	CR-708	Osprey St	24,987	45 – 55	2	C
CR-A1A/Dixie Hwy	CR-708	Osprey St	7,350	30 – 45	1	C
Gomez Ave	CR-708	Crossrip St	3,563	35	1	C
	Crossrip St	Osprey St	1,142	35	1	C
<i>Source: Martin County Roadway LOS Inventory Report, 2021 *Martin County Roadway LOS Inventory Report, 2019</i>						

Transportation in the area is predominantly performed by single-occupant vehicles. The study area includes one transit stop at SR-5/Federal Highway and CR-708/Bridge Road, which is also a transfer stop. This stop includes Routes 4 and 20x; Route 4 connects Hobe Sound north to Port Salerno with accessibility to transfer to Route 1, which connects north to Stuart and Port St. Lucie, allowing connectivity to the Treasure Coast Connector (TCC). Route 20x also connects north to Port Salerno, Cleveland Clinic and Indian River College, with accessibility to transfer to Routes 1 or 2. Route 2 connects to Indiantown located in western Martin County. Route 20x also connects south to Palm Beach County with accessibility to the Tri-Rail and Brightline stations, Palm Beach Gardens Mall, VA Medical Center and Palm Tran. There are no other transit stops in the area.

4.4.2. ACCESS MANAGEMENT

The FDOT currently identifies the SR-5/Federal Highway corridor within the study area as an Access Classification 3, which allows full median openings and signalized intersections with a minimum spacing of 2,640 feet and directional median openings at a minimum space of 1,320 feet. Minimum connection spacing is also allowed at 660 feet for sections posted above 45 MPH. Current speed limits posted on SR-5/Federal Highway are between 45 and 55 MPH.

4.4.3. CONTEXT CLASSIFICATION

The FDOT Context Classification system applies to all FDOT highways functionally classified as arterials or collectors and ensures projects along these highways are developed in a manner which is in context with the surrounding communities' characteristics and intended uses of the roadway. This process assists professionals about the type and intensity of uses along various segments of a roadway, allowing roadway facilities to be planned, designed and maintained to be supportive of safe and comfortable travel for users.

There are eight (8) FDOT context classifications used to describe unique land use contexts in Florida. These contexts range from "C1-Natural" to "C6-Urban Core," see **Figure 21**. The context classification provides insight to the types of road users that can be expected, and corresponding design criteria reflect their diversity of needs. **Table 2** summarize the context classification determinations for the study area as provided by FDOT.



Figure 21: FDOT Context Classifications

Table 2: Context Classifications

ROADWAY	FROM	TO	EXISTING CONTEXT CLASSIFICATION
SR-5/Federal Hwy	SE Osprey Street	SE Crossrip Street	C3R
SR-5/Federal Hwy	SE Crossrip Street	CR-708	C4
CR-A1A/Dixie Hwy	SE Osprey Street	CR-708	C4
SE Lares Ave	CR-708	SE Kingsley Street	C3C
Gomez Ave	SE Crossrip Street	CR-708	C3R
CR-708	SR-5	Gomez Avenue	C4
SE Pettway St	SR-5	CR-A1A	C3R
SE Osprey St	SR-5	CR-A1A	C4

4.4.4. RIGHT-OF-WAY

A review of the study area’s ROW was conducted utilizing Martin County Property Appraiser, FDOT line diagrams, and available as-built roadway plans. **Figure 22** includes a map of the ROW illustrating the differences in ROW within the study area. SR-5/Federal Highway has over 200 feet of ROW, while CR-A1A/Dixie Highway ROW varies between 30 and up to 90 feet, ROW along Gomez Avenue also varies between 60 and 90-feet. Several constraints are illustrated along CR-A1A/Dixie Highway where the ROW is limited to 30 feet, particularly between CR-708/Bridge Road and Dharlys Street where the ROW is the most constrained.

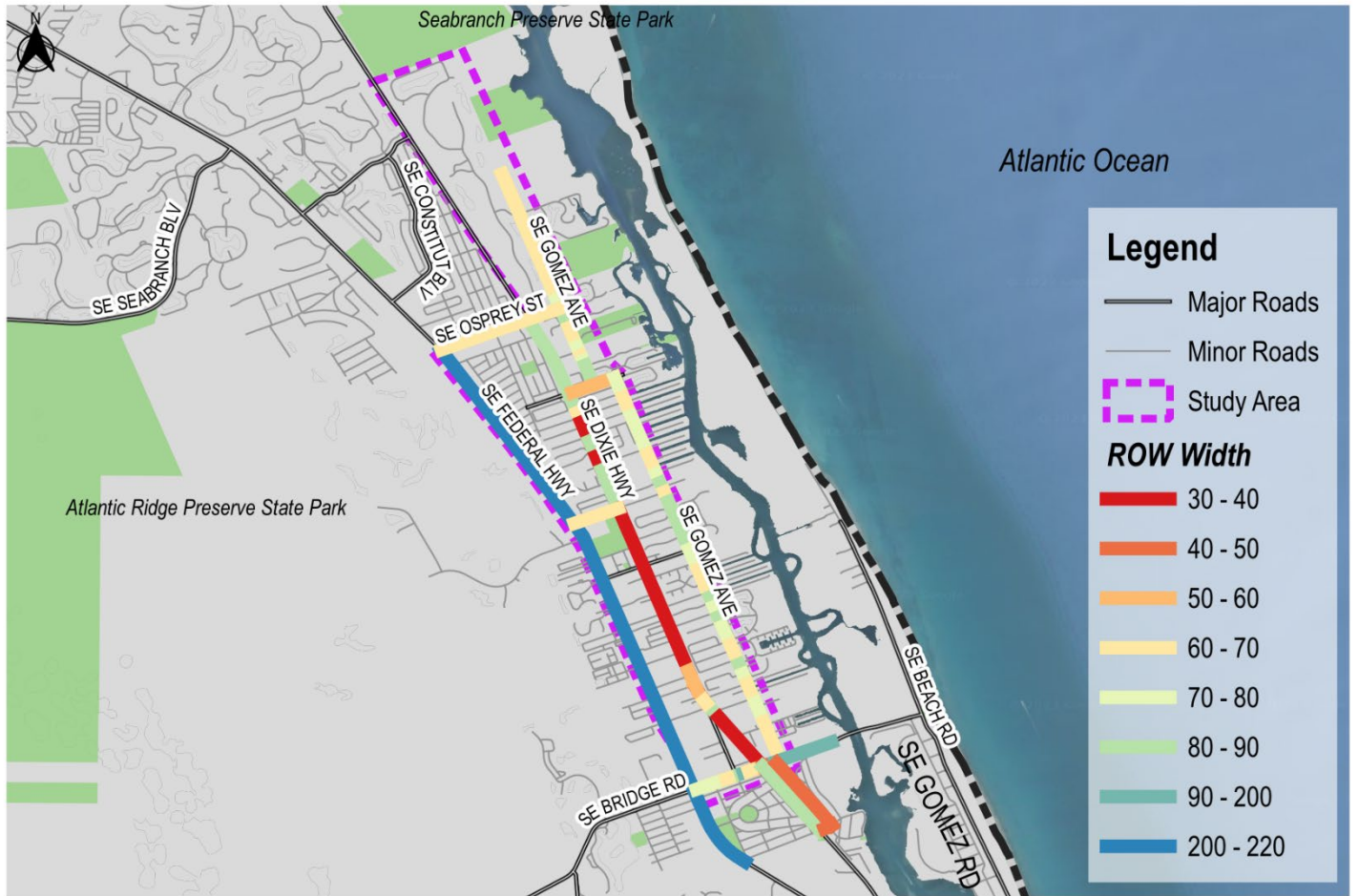


Figure 22: Right-of-Way Widths

4.4.5. INTERSECTIONS, SIGNALIZATION AND RAILROAD CROSSINGS

Figure 23 includes a map of signalized intersections within the study area. SR-5/Federal Highway and CR-A1A/Dixie Highway includes three signalized intersections, while Gomez Avenue has one signalized intersection and a school zone near CR-708/Bridge Road. Additionally, CR-708/Bridge Road, Pettway Street and Osprey Street have at-grade rail crossings. Recent safety improvements have been completed by the FEC which includes markings, signage, gates and sidewalks. Table 3 includes the number of T-intersections and signalized intersections within the study area.

Table 3: Signalized & Unsignalized Intersections

ROADWAY	FROM	TO	UNSIGNALIZED INTERSECTIONS	SIGNALIZED INTERSECTIONS
SR-5/Federal Hwy	SE Osprey St	CR-708	42	3
CR-A1A/Dixie Hwy	SE Osprey St	CR-708	30	3
Gomez Ave	SE Crossrip St	CR-708	44	1
CR-708/Bridge Rd	SR-5	Gomez Ave	5	3
SE Crossrip St	CR-A1A	Gomez Ave	4	0
SE Pettway St	SR-5	CR-A1A	2	2
SE Osprey St	SR-5	CR-A1A	6	2

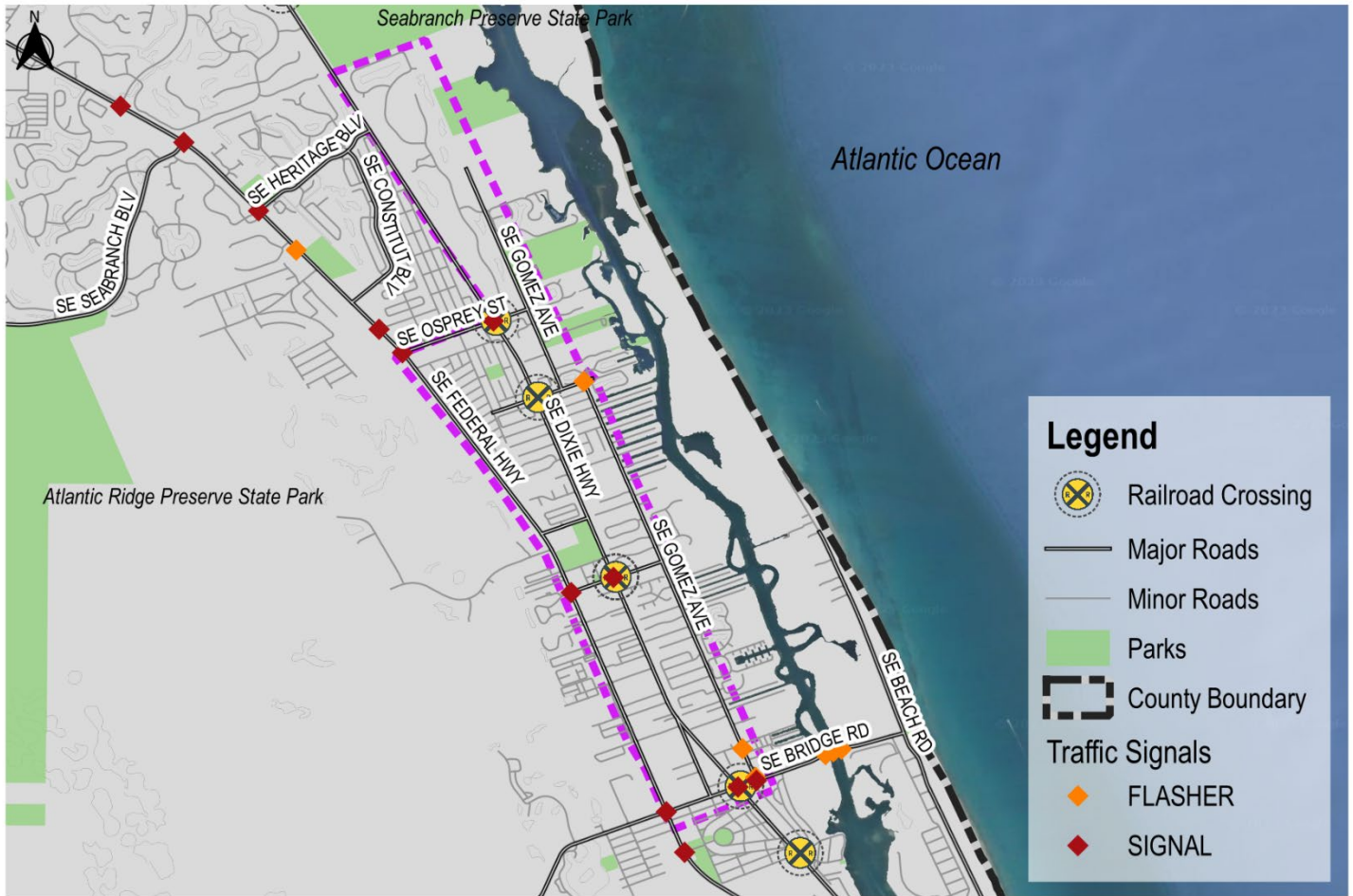


Figure 23: Traffic Signals & Railroad Crossings

4.4.6. TYPICAL SECTIONS

Typical sections were developed for the study area roadways Gomez Avenue, CR-A1A/Dixie Highway, SR-5/Federal Highway, CR-708/Bridge Road, Pettway Street, Crossrip Street and Osprey Street. This section provides an overview of the existing conditions and typical section for the study roadways.

4.4.6.1. SE GOMEZ AVENUE

Gomez Avenue is a county roadway classified as an Urban Minor Collector that runs parallel to SR-5/Federal Highway and CR-A1A/Dixie Highway. Gomez Avenue is a two-lane roadway with 11-foot vehicular travel lanes. The segment included in this study is approximately 4 miles in length between CR-708/Bridge Road and the end of the existing SUP (on Gomez Avenue). The ROW varies in width, where the minimum width is 60 feet and the maximum width is 90 feet, the posted speed limit of Gomez Avenue is 35 MPH. SE Gomez Avenue is surrounded by primarily single-family residential uses, the FDOT Context Classification is Suburban Residential (C3R), the roadway has AADT volume of 1,142 vehicles per day between SE Crossrip and SE Osprey Streets and 3,563 vehicles per day between CR-708/Bridge Road and SE Crossrip Street.

Gomez Avenue is largely a rural typical section, absent of curb and gutter, with swales for stormwater management. For the most part, there are 5 to 6-foot-wide concrete sidewalks on at least one side of the corridor

setback at least 5 feet from vehicular traffic. **Figure 24** below illustrates the typical section for existing conditions along Gomez Avenue.

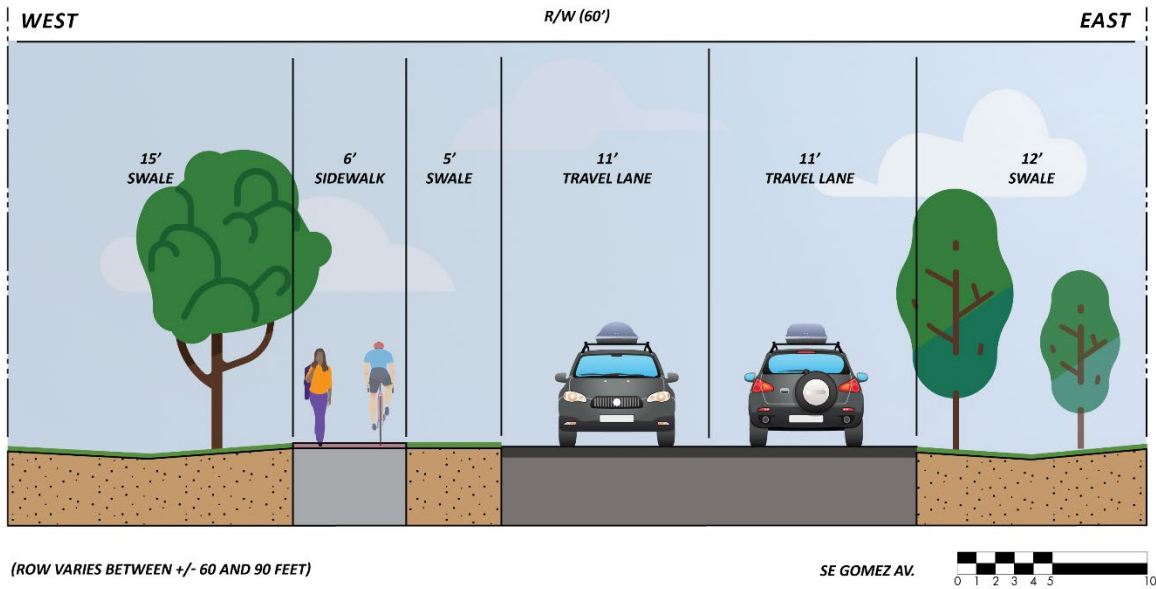


Figure 24: Existing Rural Typical Section for Gomez Avenue

Gomez Avenue is surrounded by single-family residential development, wildlife preserves and schools. Gomez Avenue does not directly connect to the south terminus at SR-5/Federal Highway and CR-708/Bridge Road, but directly connects to the north terminus south of Seabranh Preserve State Park. The parks and preserves accessible on Gomez Avenue include Jimmy Graham Park, Seabranh Preserve State Park, Peck Lake Park, and the Gomez Preserve Nature Trail. North of Hill Terrace there is a 50-foot wetland buffer that stops at the edge of the ROW near the Gomez Preserve Nature Trail. Both Seabranh Preserve State Park and Gomez Preserve Nature Trail are accessible by bike or foot only. Through and to the south of Seabranh Preserve State Park is an existing segment of the ECG and Florida SUN Trail network.

Schools along Gomez Avenue are between CR-708/Bridge Road and SE Pine Cone Lane and include: Hobe Sound Child Care Center, Hobe Sound Elementary School, Hobe Sound Bible College, and Hobe Sound Christian Academy. School crossing guards are present in this area during morning arrival and afternoon dismissal. Observations during school dismissal reported various children walking and biking, while most children are dropped off or take a bus to/from school. During the site visit conducted, there were several vehicles parked along SE Shell Avenue and CR-708/Bridge Road, where parents were observed parking their vehicles and walking to the elementary school to pick up their children.

Gomez Avenue has 5 to 6-foot-wide concrete sidewalks on at least one side of the corridor, with some segments having sidewalks on both sides of the roadway. Sidewalks are typically setback an average of 10 feet from vehicular travel lanes and are shaded along portions of the corridor. The sidewalk near SE Sabal Lane is the narrowest area along the corridor, see **Figure 25**.

There are a total of 10 midblock crossings with crosswalks and signage placed throughout the corridor, providing crossings to the sidewalk as it switches from one side of the roadway to the other. The westside of Gomez Avenue has a total of 24 single-family residential driveways, while the eastside has 6 single-family residential driveways.

There is one signalized intersection at Gomez Avenue and CR-708/Bridge Road with high-emphasis crosswalks, push-buttons, detectable warning surfaces and signals. Gomez Avenue also includes a school zone. The pavement markings for the crosswalks are in poor condition due to fading pavement markings. There is one pedestrian crossing sign alerting westbound motorists at the CR-708/Bridge Road and Gomez Avenue intersection.

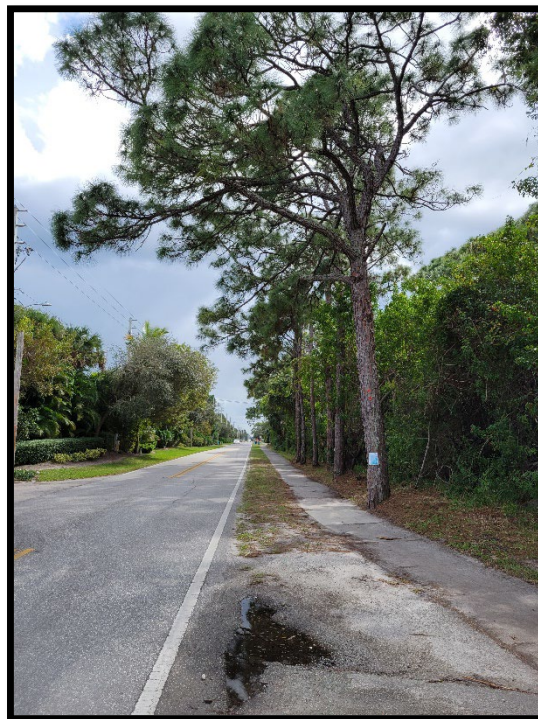


Figure 25: Existing Conditions along Gomez Ave

Between 2016 and 2020, there were three (3) crashes that involved two (2) bicyclists and one pedestrian, all three crashes were injury related crashes; there were no reported fatalities. Roadway signage is in overall good condition. Utilities include overhead powerlines which begin on the eastside of Gomez Avenue between CR-708/Bridge Road and SE Crossrip Street, then switch to the westside of Gomez Avenue north of SE Crossrip Street. Utilities include electric power poles for power transmission lines, fire hydrants, drainage and some lighting throughout the corridor.

Gomez Avenue was undergoing drainage improvements between CR-708/Bridge Road and SE Pilots Cove Terrace at the time we began conducting site visits and data collection, this project has since been completed. Gomez Avenue has also been identified as a potential route alignment for the East Coast Greenway in the *Martin County 2045 Long Range Transportation Plan (LRTP)*, *Martin County Bicycle and Pedestrian Facility Map*, and the *Martin MPO Bicycle and Pedestrian & Trails Master Plan (2016)*.

4.4.6.2. CR-A1A/SE DIXIE HIGHWAY

CR-A1A/Dixie Highway is a county road classified as an Urban Minor Arterial, parallel and in between SR-5/Federal Highway and SE Gomez Avenue. A1A is a two-lane road with 12-foot-wide vehicle lanes, and a 4-foot paved shoulder marked for bicycle use along portions of the corridor. The segment included in this study is approximately 3 miles in length between CR-708/Bridge Road and SE Osprey Street, and does not connect directly to the north or south terminus of the planned SUN Trail corridor at the north (Gomez Avenue) or south (SR-5/Federal Highway & CR-708/Bridge Road) terminus. The ROW width varies between a minimum width of 30 feet to a maximum width of 85 feet, the speed limit also varies between 30 and 45 MPH. CR-A1A/Dixie Highway is

surrounded by primarily single-family residential development with some commercial and institutional uses, the FDOT Context Classification is Urban General (C4) and Suburban Residential (C3C). CR-A1A/Dixie Highway has an AADT volume of 7,350 vehicles per day, it is also parallel and adjacent to the FEC Railroad. The FEC railroad actively operates 21 freight trains per day, and has at least 100 feet of ROW. The number of trains is due to increase with the development of the Orlando Brightline Station, slated to open in the Summer of 2023, which will provide none stop service from West Palm Beach to Orlando.

CR-A1A/Dixie Highway is largely a rural typical section, absent of curb and gutter, with swales for stormwater management. Between CR-708/Bridge Road and SE Crossrip Street there are no paved shoulders available for cyclists. North of SE Crossrip Street there are four-foot paved shoulders marked for bicycle lanes with no buffer between motorized vehicles. Residents and stakeholders indicated these bike lanes are utilized by recreational cyclists, especially during the weekend. For the most part, there are 4 to 5-foot-wide concrete sidewalks located along the westside of CR-A1A/Dixie Highway typically setback at least 5 feet from vehicular traffic. **Figure 26** below provides the typical section for existing conditions along CR-A1A/Dixie Highway.

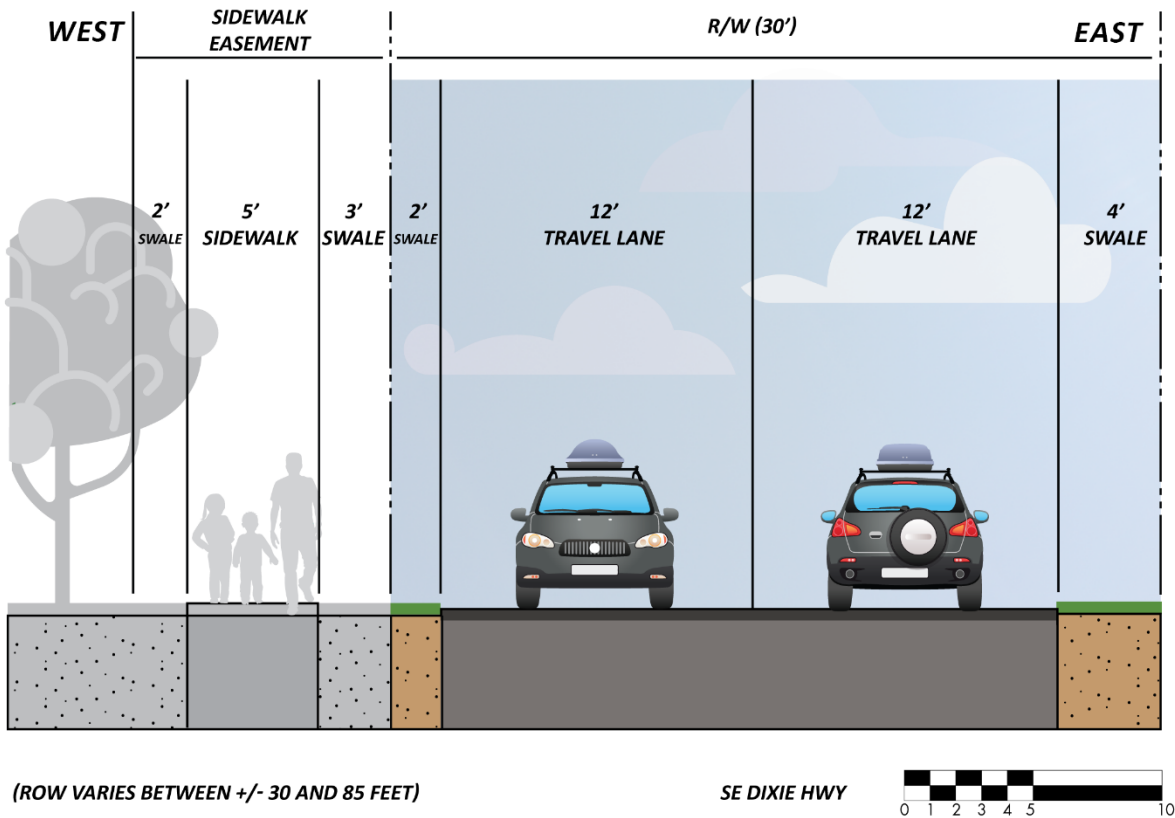


Figure 26: Existing Rural Typical Section for CR-A1A/Dixie Hwy

The existing sidewalks along the westside of CR-A1A/Dixie Highway are located outside the ROW and within a 10-foot-wide sidewalk easement along the corridor. Properties missing this easement have the sidewalk within the ROW, adjacent to vehicular traffic, see **Figure 27**. There are some areas missing sidewalks and existing sidewalks are in fair to poor condition. Few trees are planted along the sidewalks for shade. There are no sidewalks on the eastside of the roadway, where the FEC railroad is located. Utilities include electric power poles for transmission lines which are located on the westside of CR-A1A/Dixie Highway, fire hydrants, and a few light poles throughout the corridor.



Figure 27: Photo of Significant Pinch point for the Sidewalk along Dixie Hwy (Southbound)

There are historic light poles between CR-708/Bridge Road and SE Algozzini Place partially obstructing the sidewalk, this area was also missing detectable warning surfaces at many of the crosswalks. Between SE Dharlys and SE Osprey Streets, the sidewalk is 5 to 6-feet in width and in fair to good condition with few obstructions, some areas may experience flooding during the rainy season as portions of the sidewalk appeared to have been underwater after a rain event during the site visit, see **Figure 28**. North of SE Osprey Street there are no sidewalks on either side of CR-A1A/DIXIE HIGHWAY until the Seabranh Preserve State Park, where there is an existing SUP that traverses the border of the park parallel to CR-A1A/DIXIE HIGHWAY.



Figure 28: Evidence of Sidewalk Flooding

South of CR-708/Bridge Road, the ROW is approximately 85 feet and includes a frontage road with parking between SE Gleason Avenue (Saturn Avenue) and CR-708/Bridge Road. This area is walkable and includes a number of shops, restaurants and commercial establishments, there are also several mature trees that provide shade along the frontage road.

Between SE Dharlys and SE Osprey Streets, the ROW is approximately 85 feet, but there are two areas where the ROW narrows to about 30 feet. Between CR-708/Bridge Road and SE Dharlys Street, the ROW is mostly narrow with a width of 30 to 35 feet, except for an area near SE Kinsley Street, where the road curves north and the ROW widens up to about 70 feet before it narrows again to 30 feet.

The signalized intersections along CR-A1A/Dixie Highway include CR-708/Bridge Road, SE Pettway Street and SE Osprey Street – most of which do not have crosswalks, push buttons and signals. There is a high-emphasis crosswalk at the CR-A1A/CR-708 intersection along the south leg in good condition, this is the only crosswalk along CR-A1A/Dixie Highway within the

study area. Both SE Pettway and SE Osprey Street did not have pedestrian or bicycle facilities for crossings at the time the site visit was conducted. The CR-708/Bridge Road, SE Pettway Street, SE Crossrip Street and SE Osprey Street intersections along CR-A1A/Dixie Highway have railroad crossings, which recently completed safety improvements for vehicles and pedestrians. These improvements include signage, pavement markings, sidewalks and safety gates.

There are a total of 26 driveways along the westside of CR-A1A/Dixie Highway between CR-708/Bridge Road and SE Osprey Street, many of which belong to single-family homes. William G “Doc” Myers Park, Pettway Grocery, Hobe Sound Office Plaza and a number of commercial establishments can be accessed from CR-A1A.

South of CR-708/Bridge Road the speed limit is 35 MPH. Between CR-708/Bridge Road and SE Porter Boulevard the speed limit is decreased to 30 MPH, then increases to 40 MPH between SE Porter Boulevard and SE Crossrip Street, and again to 45 MPH between SE Crossrip and SE Osprey Streets. Between 2016 and 2020, there were five (5) crashes which involved two (2) bicyclists and three (3) pedestrians, four (4) of the five (5) crashes were injury related crashes and the remaining one included property damage only. Roadway signage is in overall good condition. Utilities include electric power poles for transmission lines which are located on the westside of CR-A1A/Dixie Highway, fire hydrants, and a few light poles throughout the corridor.

4.4.6.3. SR-5/ US-1/ SE FEDERAL HIGHWAY

SR-5/Federal Highway is a state roadway classified as an Urban Principal Arterial Other that runs parallel to CR-A1A and SE Gomez Avenue. SR-5/Federal Highway is a four to six-lane roadway which is divided by a curbed center island median with 12-foot lanes and a 4-foot paved shoulder marked for bicycle use along portions of the roadway, see Figure 29. The segment included in this study is approximately 3 miles in length between CR-708/Bridge Road and SE Osprey Street. The ROW width is typically 215 feet with posted speed limits of 45 and 55 MPH. SR-5/Federal Highway is lined with commercial and residential land uses and has an FDOT Context Classification of Urban General (C4) and Suburban Residential (C3R). The AADT volume for SR-5/Federal Highway is 24,897 vehicles per day.

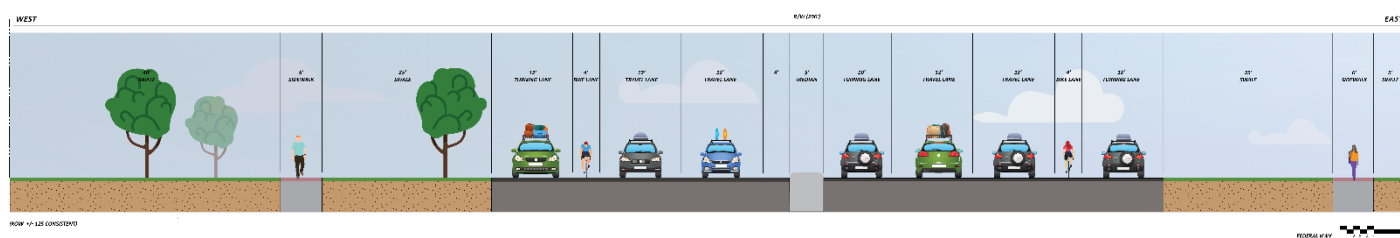


Figure 29: Existing Rural Typical Section for SR-5/FEDERAL HWY

SR-5/Federal Highway is largely a rural typical section, absent of curb and gutter, with swales for stormwater management. South of SE Dharlys Street and north of SE Osprey Street there are four-foot paved shoulders marked for bicycle lanes with no buffer between motorized vehicles. Between SE Dharlys and SE Osprey Streets there are narrow paved shoulders, not for bicycle use. For the most part, there are 5 to 6-foot-wide concrete sidewalks located on both sides of SR-5/Federal Highway setback at an average 20-foot or more from vehicular traffic. Utilities include electric power poles for power transmission lines, fire hydrants, manholes and lighting which are located on both sides of SR-5/Federal Highway throughout the corridor.

The SR-5/Federal Highway corridor directly connects to the south terminus at the SR-5/Federal Highway and CR-708/Bridge Road intersection. SR-5/Federal Highway does not connect directly to the north terminus of the planned SUN Trail corridor at Seabranh Preserve entrance on Gomez Avenue. Note that FDOT is currently performing a PD&E study to connect the SUN Trail network between the Hobe Sound Preserve and Jonathan Dickinson State Park to SR-5/Federal Highway. This study is near completion.

The signalized intersections along SR-5/Federal Highway include, CR-708/Bridge Road, SE Pettway Street and SE Osprey Street— all of which have crosswalks, push buttons and signals. The high-emphasis crosswalks at the SR-5/Federal Highway and CR-708/Bridge Road intersection are in fair to poor condition, as the pavement markings are faded and many of the flexible delineators marking pedestrian areas were missing or damaged at the time of the initial site visit. Both the SE Pettway Street and SE Osprey Street intersections include standard crosswalks in good condition, some of the ramps and push-buttons do not meet ADA requirements.

The intersection of SR-5/Federal Highway and CR-708/Bridge Road is a large intersection spanning approximately 110-feet, with various suburban style commercial developments on all four corners. The intersection experiences the highest levels of vehicular crashes within the study area, with over 100 incidents reported between 2016 and 2020. The intersection has been retrofitted with flexible delineators at the corners which appear to have been implemented as a visual separator between pedestrians and vehicles. There were observations in the field that many of the delineators have been struck multiple times and as a result many were missing, and damaged at the time of the site visit, see **Figure 30**. The northeast corner of the SR-5/Federal Highway and CR-708/Bridge Road intersection has a drainage grate partially within the walking path to/from the north leg crosswalk, tactile pads are also missing on all four corners, this should be reported to FDOT.



Figure 30: Intersection of SR-5 & Bridge Rd looking east from the northwest corner

There are no single-family residential driveways along SR-5/Federal Highway between CR-708/Bridge Road and SE Osprey Street, instead the area has several driveway accesses for the various commercial developments along both sides of SR-5/Federal Highway, with the eastside having more driveways than the westside, these driveways all have stop signs.

Additionally, there is a frontage road on the westside of SR-5/Federal Highway between SE Lake Drive (Church Street) and SE Pine Circle, see **Figure 31**. The Hobe Sound Library, William G. “Doc” Myers Park and the United State Post Office can also be accessed from SR-5/Federal Highway. Also, on the westside of SR-5/Federal Highway between SE Medalist Place and SE



Figure 31: SR-5 Frontage Rd & SE Church St, looking south

Osprey Street there is the eastern border of the Medalist Golf Club.

Shade throughout the study segment is sparse along the sidewalks, which are in fair to poor condition throughout the area. On the westside, between CR-708/Bridge Road and SE Plutos Avenue, the sidewalk measures at 9-feet 9-inches and could be classified as a shared use path.

The speed limit between CR-708/Bridge Road and SE Pettway Street is 45 MPH and increases to 55 MPH between SE Pettway Street and SE Osprey Street. Between 2016 and 2020, there were a total of 13 crashes that involved seven (7) bicyclists and six (6) pedestrians, ten (10) of the thirteen crashes were injury related crashes, and the remaining three (3) included property damage only. Roadway signage is in overall good condition. Utilities include electric power poles for power transmission lines, fire hydrants, utility boxes, manholes and lighting which are located on both sides of SR-5/Federal Highway throughout the corridor.

4.4.6.4. CR-708 / SE BRIDGE ROAD

CR-708/Bridge Road is a county road classified as an Urban Minor Arterial west of CR-A1A and an Urban Minor Collector east of CR-A1A. CR-708/Bridge Road is two-lane roadway with 10 to 11-foot lanes. The segment included in this study is approximately half a mile in length between SR-5/Federal Highway and SE Gomez Avenue. The ROW width varies between a minimum width of 40 feet and a maximum width of 80 feet and has a posted speed limit of 25 to 30 MPH. CR-708/Bridge Road is surrounded by primarily commercial uses and has an FDOT Context Classification of Urban General (C4), it also intersects the FEC railroad and includes a crossing at CR-A1A. CR-708/Bridge Road has an AADT volume of 9,373 vehicles per day west of CR-A1A, and 4,633 vehicles per day between CR-A1A and SE Gomez Avenue.

CR-708/Bridge Road between SR-5/Federal Highway and CR-A1A/Dixie Highway has an urban typical section with curb and gutter for stormwater management and a rural typical section between CR-A1A/Dixie Highway and SE Gomez Avenue. The segment with a rural typical section is absent of curb and gutter and has swales for stormwater management. For the most part, there are 5 to 9-foot-wide concrete sidewalks located on at least one side of CR-708/Bridge Road typically setback at least 10 feet from vehicular traffic. **Figure 32** illustrates the existing typical section for CR-708/Bridge Road.

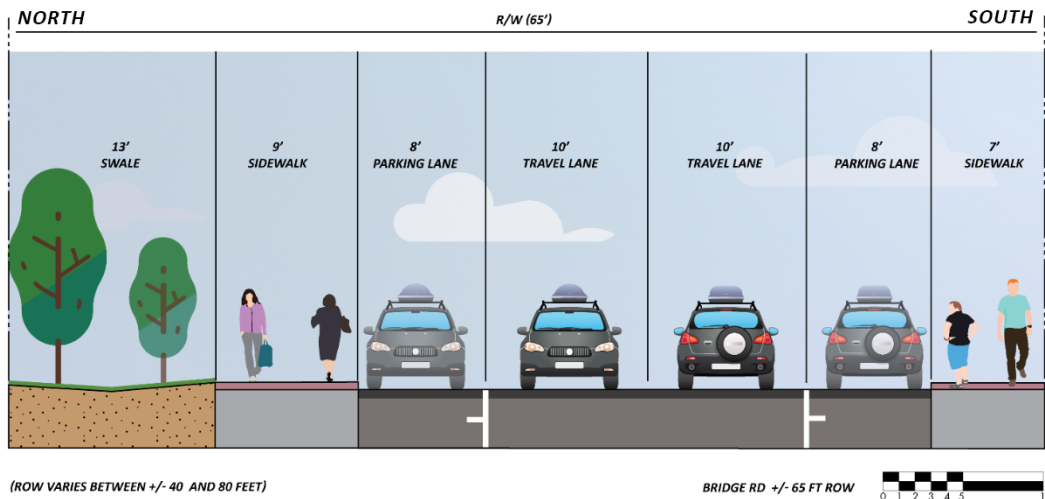


Figure 32: Existing Urban Typical Section for CR-708/Bridge Road

CR-708/Bridge Road has several commercial establishments between SR-5/Federal Highway and CR-A1A/Dixie Highway, but land is vacant between CR-A1A/Dixie Highway and SE Gomez Avenue. CR-708/Bridge Road directly connects to the south terminus of the planned SUN Trail corridor at SR-5/Federal Highway. The segment between SR-5/Federal Highway and SE Hercules Avenue includes a 5-foot concrete sidewalk in good condition on the southside, canopy trees have recently been planted here and when matured will provide shade to users. The sidewalk on the northside along the border of the Marketplace at Hobe Sound Shopping Center is missing, see **Figure 33**.

Between SE Hercules Avenue and CR-A1A, Martin County completed its main street improvements which included undergrounding the overhead utilities, improving drainage, promoting walkability through sidewalk additions, landscape and lighting enhancements, on-street parking, and roadway resurfacing. This segment is walkable and includes compact development that is pedestrian friendly. This segment also includes a recently constructed 9-foot-wide concrete sidewalk which narrows to a 5-foot upon approaching SE Plutos Avenue on the northside due to ROW restrictions, the sidewalk is in excellent condition. There are 5 to 6-foot-wide concrete sidewalks on the south side also in excellent condition. Parking in this segment consists of parallel parking and back-in angled parking utilizing pavers on both sides of the road. Other utilities include utility boxes, fire hydrants and light poles scattered throughout the corridor.

Between CR-A1A and SE Gomez Avenue there is a 5-foot-wide concrete sidewalk on the southside, canopy trees have recently been planted here and again when matured will provide shade to users, the sidewalk is in good to fair condition. East of SE Gomez Avenue there are no sidewalks on the southside. The northside of this segment is missing a sidewalk, but there is a sidewalk east of SE Gomez Avenue connecting to the beach.

The signalized intersections along CR-708/Bridge Road include SR-5/Federal Highway, CR-A1A and SE Gomez Avenue, both intersections at SR-5/Federal Highway and CR-708/Bridge Road have crosswalks, push-buttons and signals on all approaches. The CR-A1A/CR-708 intersection has only one high-emphasis crosswalk, signal, and detectable warning surfaces on the south leg of the intersection. It is important to note that the northwest corner includes a historic building with no sidewalks or easements to build a sidewalk, therefore there is a missing sidewalk segment +/-135 feet. Many of the intersection crosswalks are in fair to poor condition due to fading pavement markings.

Between SR-5/Federal Highway and SE Gomez Avenue, there are a total of 7 driveways on the southside and 7 driveways on the northside. CR-708/Bridge Road provides options for residents and visitors to different businesses and amenities which includes a grocery store, hardware store, laundry facilities, drugstore, Hobe Sound Chamber of Commerce, bicycle store, restaurants and personal services.



Figure 33: Bridge Rd, looking west

The speed limit between SR-5/Federal Highway and CR-A1A is 25 MPH and increases to 30 MPH east of CR-A1A. Between 2016 and 2020, there were a total of four (4) crashes involving pedestrians and bicyclists, two (2) of the four (4) crashes were injury related crashes, and the remaining two (2) included property damage only; there were no reported fatalities during this timeframe. Roadway signage is in overall good condition. Utilities include electric power poles for transmission lines which are located on the east side of CR-708/ Bridge Road between SR-5/Federal Highway and SE Hercules Avenue and again between CR-A1A and SE Gomez Avenue. The powerlines between SE Hercules Avenue and CR-A1A have been undergrounded, this segment also includes roadway lighting, and streetscaping. Other utilities include utility boxes, fire hydrants and light poles scattered throughout the corridor.

CR-708/Bridge Road has been identified for resurfacing and bicycle lane construction between Pratt Whitney and SR-5/Federal Highway, which is west of our study area, in the FY22 TIP. CR-708/Bridge Road is one of three potential east/west alignments for the SUP.

4.4.6.5. SE CROSSRIP STREET

Crossrip Street is a county roadway classified as a local street which runs parallel to CR-708/Bridge Road and SE Osprey Street. SE Crossrip Street is a two-lane road with 10-foot lanes, the segment included in this study is approximately one quarter mile in length between CR-A1A/DIXIE HIGHWAY and SE Gomez Avenue. The ROW is estimated between a minimum of 50 feet to a maximum width of 60 feet, and has a posted speed limit of 25 MPH. Crossrip Street is surrounding by single-family residential uses, the FDOT Context Classification for SE Crossrip Street is Suburban Residential (C3R). Traffic volumes/data was not available for this segment.

Crossrip Street has a rural typical section, absent of curb and gutter, with swales for stormwater management. The roadway transects the FEC railroad, where several safety improvements have been completed and include signage, pavement markings, safety gates and a sidewalk on the northside. There is a 5 to 6-foot-wide concrete sidewalk on the northside of SE Crossrip Street in good to fair condition, setback at least 20-feet from vehicular traffic. **Figure 34** illustrates the typical section for existing conditions along SE Crossrip Street.

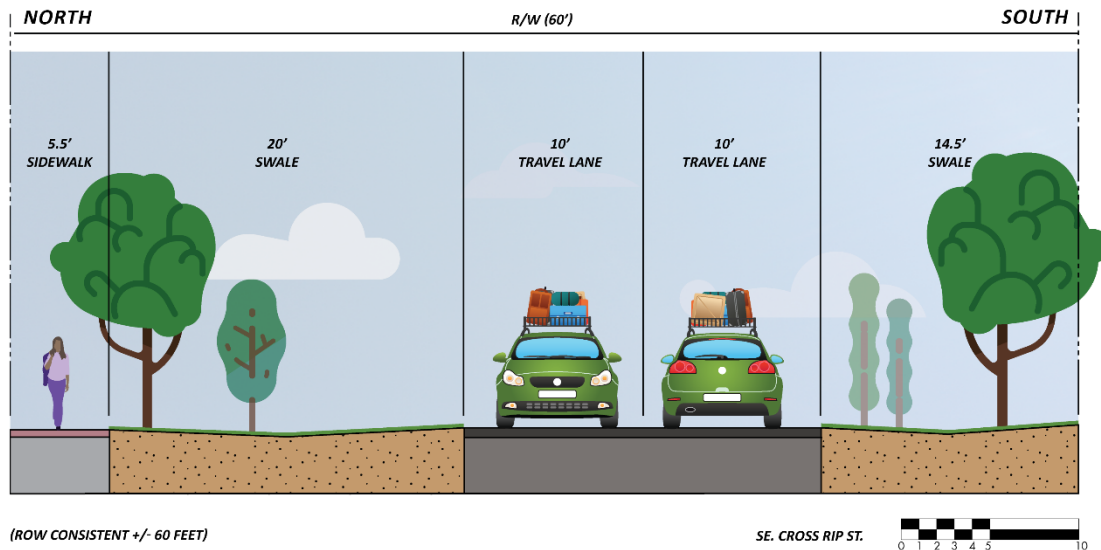


Figure 34: Existing Rural Typical Section for Crossrip St

Crossrip Street does not connect to either terminus of the planned SUN Trail corridor. There are no signalized intersections along SE Crossrip Street. The intersection at CR-A1A/Crossrip Street is stop controlled for traffic flowing east/west. Traffic flowing south and north along CR-A1A is free flowing. There are no crosswalks or signage for pedestrians to cross this intersection, but there are recent safety improvements which have been constructed at the railroad tracks and includes a sidewalk with detectable warning surfaces and gates for pedestrians on the northside of SE Crossrip Street, see **Figure 35**. The Gomez Avenue intersections includes standard crosswalks.



Figure 35: Crossrip Street Sidewalk Improvements near CR-A1A

The southside of this segment includes fifteen (15) residential driveways, the northside includes only the sidewalk with some existing canopy trees along portions of the sidewalk.

Between 2016 and 2020 there were no reported injuries involving pedestrians or bicyclists. Roadway signage is in overall good condition. Utilities include electric power poles for transmission lines which are located on the southside of SE Crossrip Street, the northside of SE Crossrip includes several mailboxes for the homes located on the southside. SE Crossrip Street is one of three potential east/west alignments for the SUP.

4.4.6.6. SE OSPREY STREET

Osprey Street is a county roadway classified as an Urban Major Collector west of CR-A1A, and a local road east of CR-A1A/Dixie Highway, Osprey Street runs parallel to CR-708/Bridge Road and SE Crossrip Street. Osprey Street is a two-lane roadway with 10-foot travel lanes, the segment included in this study is less than one-mile in length between SR-5/Federal Highway and SE Gomez Avenue. The ROW is approximately 65 to 70 feet with a posted speed limit of 25 to 35 MPH. Osprey Street is surrounded primarily by single-family residential development. The FDOT Context Classification is Suburban Residential (C3R). The AADT volumes between SR-5/Federal Highway and CR-A1A/Dixie Highway is 4,794 vehicles per day, and 2,042 vehicles per day between CR-A1A/Dixie Highway and SE Gomez Avenue.

Osprey Street is largely a rural typical section, absent of curb and gutter, with swales for stormwater management. For the most part, there is a 5 to 6-foot-wide concrete sidewalk on the southside of Osprey Street, setback at least 20-feet from vehicular traffic. **Figure 36** illustrates the typical section for existing conditions along SE Osprey Street.

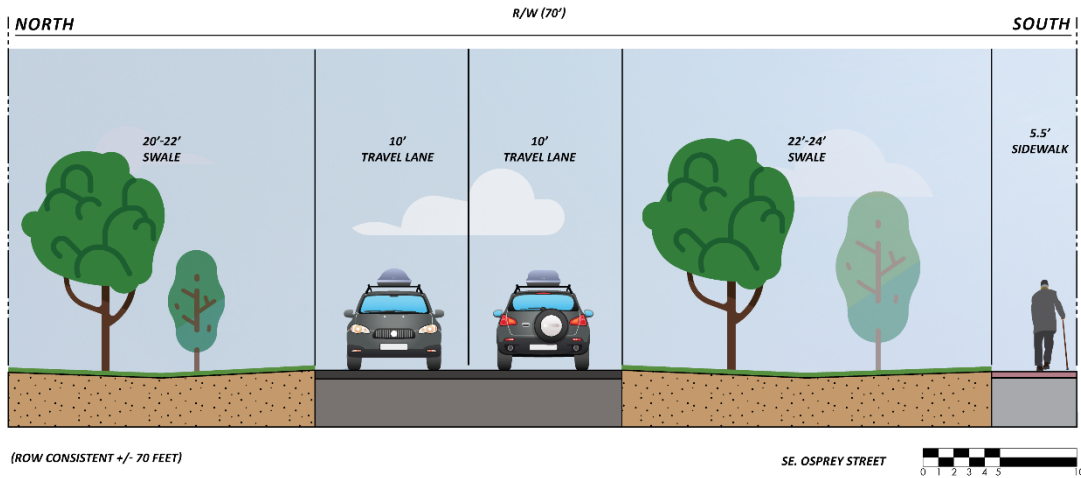


Figure 36: Existing Rural Typical Section for Osprey St.

Osprey Street has some commercial uses at the SR-5/Federal Highway and Osprey Street intersection. The southern border of the Loblolly Golf Course is on the northside of Osprey Street, between CR-A1A/Dixie Highway and SE Gomez Avenue. Osprey Street does not directly connect to the north or south terminus of the planned SUN Trail corridor.

The signalized intersections along Osprey Street include SR-5/Federal Highway and CR-A1A. The SR-5/Federal Highway and Osprey Street intersection includes standard crosswalks, push buttons, detectable warning surfaces, signals, and a guardrail on the southeast corner. The northeast corner of this intersection recently underwent development of a Publix Shopping Center. The CR-A1A/Osprey Street intersection does not have crosswalks, signals, or push-buttons for pedestrians crossing at this time, but has recently completed improvements at the railroad crossing which includes sidewalks, pavement markings, safety gates, ADA and safety improvements. These improvements include a sidewalk which begins at the northeast corner of the intersection near the railroad crossing and dead ends just east of the railroad. The northwest corner of the intersection is vacant land.

There is a 6-foot-wide concrete sidewalk on the southside of Osprey Street with a sidewalk gap +/-160 feet near SR-5/Federal Highway, see **Figure 37**, in good to fair condition. There are no sidewalks on the northside, with the exception of the recently developed Publix parcel. Between SR-5/Federal Highway and CR-A1A there is a mobile home park and seven (7) driveways along the northside of the corridor, there are no driveways on the southside of the corridor. The posted speed limit for this segment is 35 MPH and there is little shade along this segment of Osprey Street.



Figure 37: Sidewalk ends at gas station, does not connect to SR-5

The segment between CR-A1A and SE Gomez Avenue includes an existing southside concrete sidewalk 6-feet in width and in good condition, this segment is well shaded by canopy trees. There are no driveways in this segment and the posted speed limit is 25 MPH. At the intersection of Osprey Street/Gomez Avenue, two crosswalks lead to the southside sidewalk of Osprey Street.

Between 2016 and 2020, there were a total of two (2) crashes involving pedestrians, both crashes were injury related; there were no reported fatalities during this timeframe. Osprey Street is one of three potential east/west alignments for the SUP.

4.4.7. NON-MOTORIZED NETWORK

The non-motorized network in our study area includes sidewalks, a SUP, and bicycle lanes. There are trails within the major parks and a paddle trail along the Intracoastal Waterway. Figure 38 includes a map of the existing network within and around the study area illustrating the lack of sidewalks throughout the community. Bike lanes are available along SR-5/Federal Highway and CR-A1A, but both roadways have gaps with the bike lane ending. Additionally, there is a SUP along the western and southern border of Seabranh Preserve State Park, where our pathway will connect.

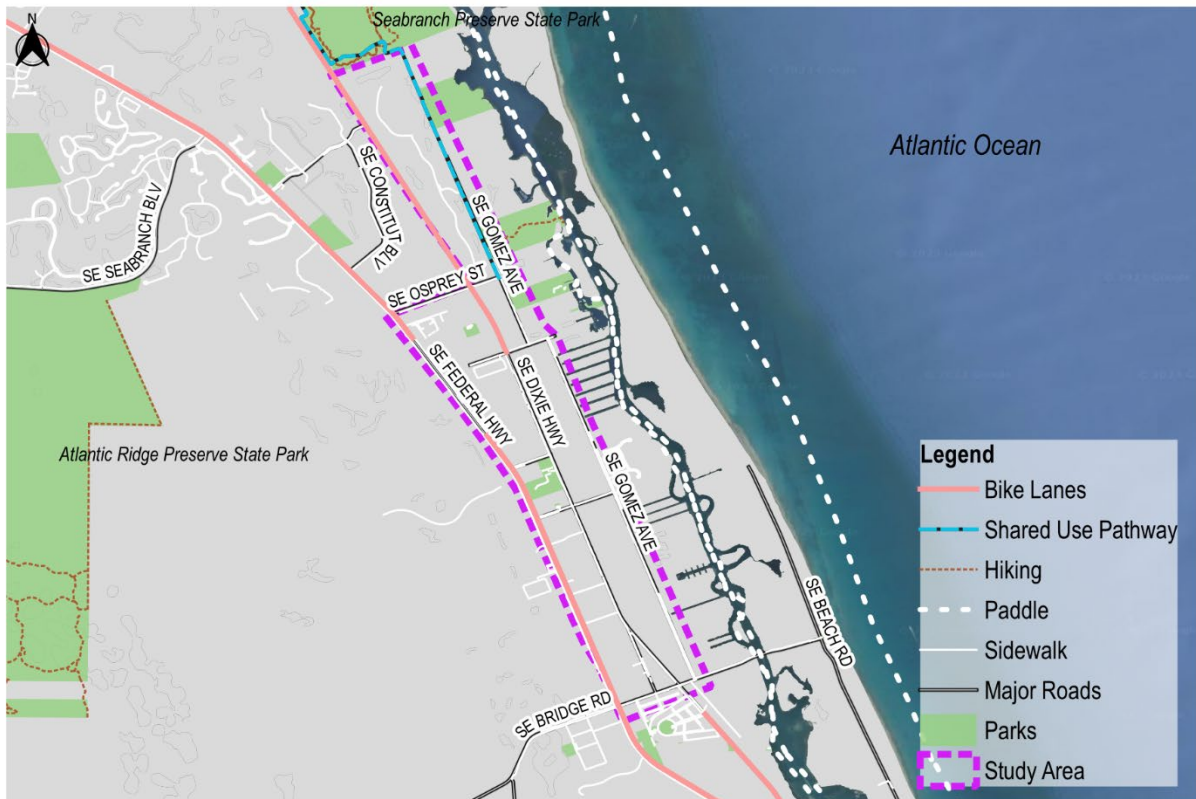


Figure 38: Non-Motorized Network

Figure 39 illustrates the regional multimodal network within Martin County which lacks connectivity and adequate facilities for bicyclists and pedestrians. Many areas lack a connected sidewalk network, and many of the bicycle facilities include 4 to 7-foot on-road bike lane adjacent to vehicular traffic. Research conducted by the U.S. DOT show these facilities often serve the highly confident bicycle user who will bike in the road with or without a facility present, these cycle enthusiasts represent a small segment of the population (5-10%). According to the FHWA, the majority of individuals who are interested (51-56%) in biking prefer a facility separated from traffic, such as a SUP (Figure 40). Providing Low-Stress Networks is an important component of transportation networks and ensuring communities have access to facilities that are safe, comfortable, convenient, and inclusive to accommodate individuals who cannot drive and allow for people of all ages and abilities to utilize. The Center for Disease Control (CDC) estimates that 1 in 4 Americans have a disability, many of whom cannot drive, therefore are dependent upon other modes of travel. Constructing facilities which can accommodate all users despite their age or ability is an important role which public agencies are beginning to address.

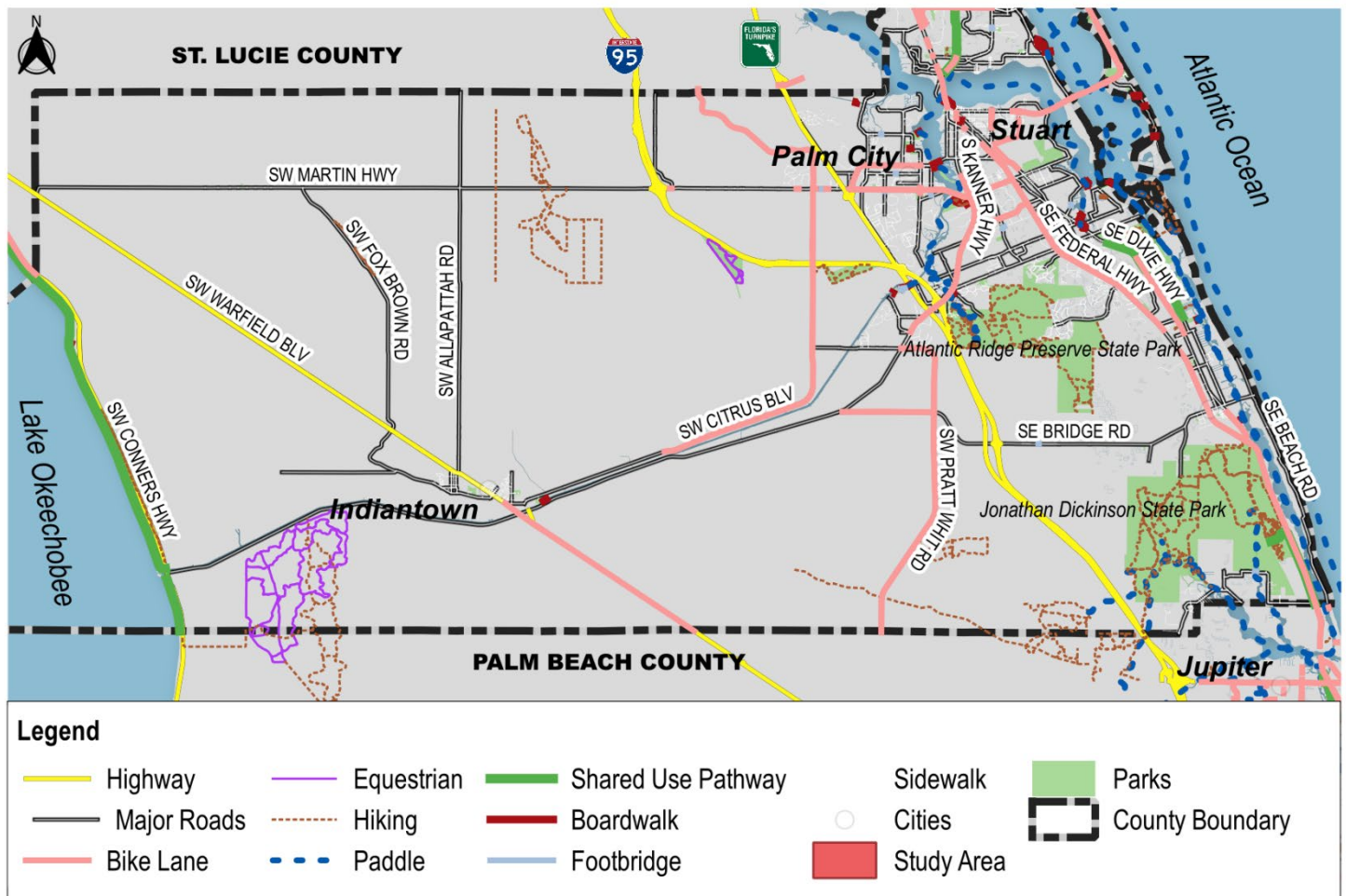
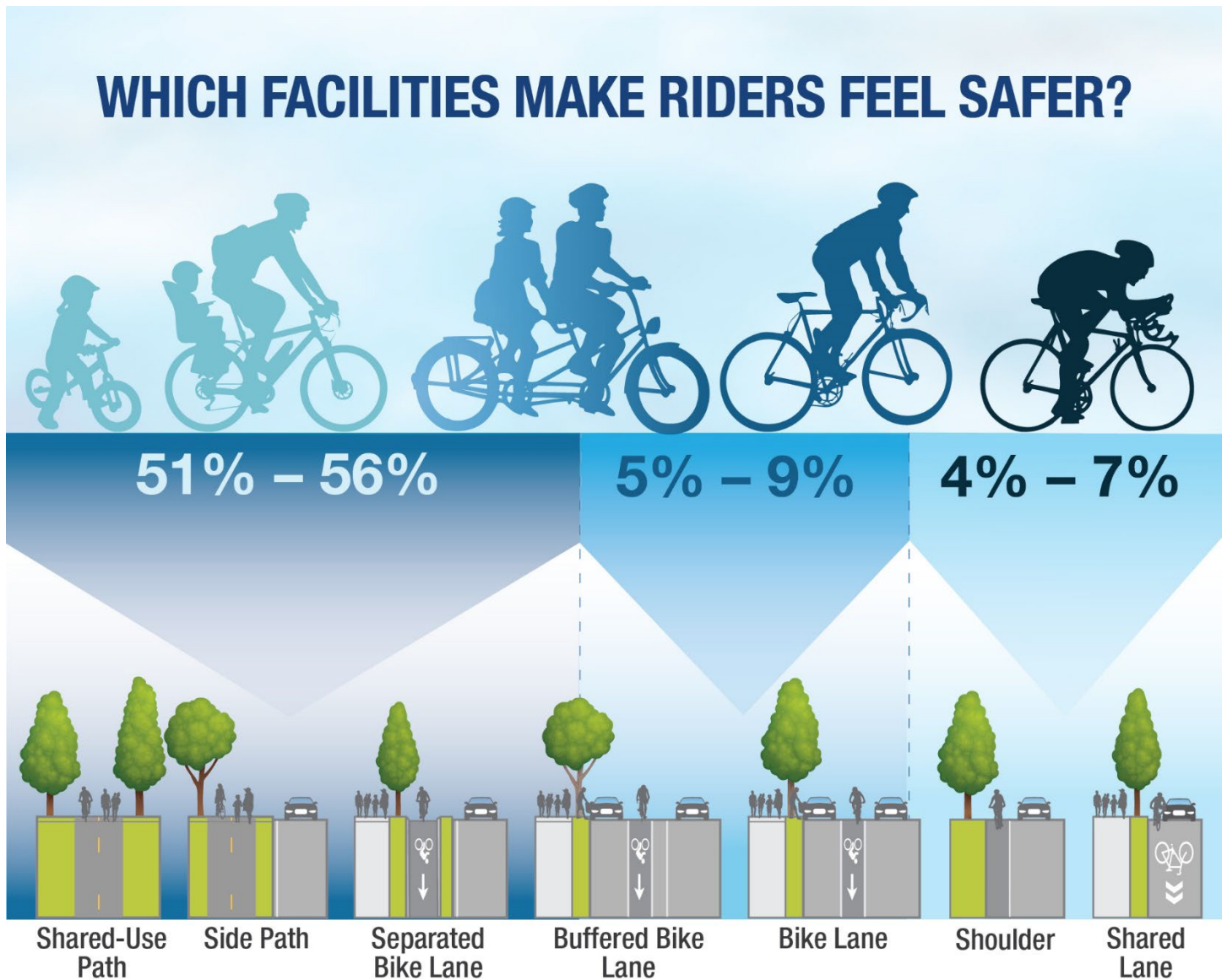


Figure 39: Martin County Non-Motorized Network

The implementation of the SUN Trail segment in east central Martin County is planned to connect from the SR-5/CR-708 intersection to the north terminus of SE Gomez Avenue. There are three potential south/north corridors including SR-5/Federal Highway, CR-A1A/Dixie Highway, and SE Gomez Avenue that are candidates to complete the segment. Additionally, CR-708/Bridge Road, SE Crossrip Street and SE Osprey Street are potential east/west

connector segments. Implementation of this segment of the SUN Trail will enhance connectivity and walkability in the area, while also providing additional mobility options for those interested in walking and biking for health, personal or economic reasons.



Note: Percentages represent the level of comfort that people feel bicycling, according to peer-reviewed surveys as recently as 2016.

Source: FHWA Bikeway Selection Guide: https://safety.fhwa.dot.gov/ped_bike/tools_solve/docs/fhwasa18077.pdf

For more information, please visit FHWA's Bicycle and Pedestrian Program webpage: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/



U.S. Department of Transportation
Federal Highway Administration

Figure 40: Bicycle User Profiles & Preferred Facilities

4.5. SAFETY REVIEW

The primary purpose of this crash analysis is to identify crash trends and identify non-motorized crashes and the severity of those crashes. This crash analysis will assist this feasibility study to identify the safest route within the study area to connect the SUN Trail segment in Hobe Sound, Florida.

Various crash data sources such as FDOT's Crash Analysis Reporting (CAR) System, the State Safety Office GIS (SSOGIS), and the University of Florida's Signal Four Analytics (S4A) were accessed to capture all the crashes within a 5-year period. Crash data was collected from Signal Four Analytics (S4A) and reviewed from 2016 to 2020.

4.5.1. CRASH ANALYSIS FOR ALL TYPES OF VEHICLES

Crash statistics and crash histograms (by time of day, month, crash type, and severity, lighting, and surface conditions) were created and presented in the below **Tables and Figures**.

Table 4: Crash Data

Sun Trail Feasibility Study		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2016	2017	2018	2019	2020			
CRASH TYPE	Rear End	69	48	60	67	53	297	59.40	27.2%
	Head On	6	3	1	3	2	15	3.00	1.4%
	Angle	19	26	20	17	22	104	20.80	9.5%
	Left Turn	23	29	23	23	28	126	25.20	11.5%
	Right Turn	3	3	3	5	3	17	3.40	1.6%
	Sideswipe	12	17	16	24	15	84	16.80	7.7%
	Coll. w/ Pedestrian	1	2	1	5	5	14	2.40	1.1%
	Coll. w/ Bicycle	6	4	2	2	2	16	2.00	0.9%
	Ran Off Road	7	8	21	34	35	105	21.00	9.6%
	Overtuned	2	0	2	1	1	6	1.20	0.5%
	Animal	1	0	3	0	0	4	0.80	0.4%
	Unknown	3	6	2	6	9	26	5.20	2.4%
	Other	52	46	54	65	60	277	57.00	26.1%
	Total Crashes	204	192	208	252	235	1091	218.20	100.0%
SEVERITY	PDO Crashes	156	144	170	189	183	842	168.40	77.2%
	Fatal Crashes	1	1	1	1	0	4	0.80	0.4%
	Injury Crashes	47	47	37	62	52	245	49.00	22.5%
LIGHTING CONDITIONS	Daylight	159	158	178	194	190	879	175.80	80.6%
	Dusk	9	2	4	8	6	29	5.80	2.7%
	Dawn	2	3	3	2	3	13	2.60	1.2%
	Dark	34	29	22	47	36	168	33.60	15.4%
	Unknown	0	0	1	1	0	2	0.40	0.2%
SURFACE CONDITIONS	Dry	174	176	191	215	206	962	192.40	88.2%
	Wet	29	15	17	36	28	125	25.00	11.5%
	Others	1	1	0	0	1	3	0.60	0.3%
MONTH OF YEAR	January	18	21	16	12	28	95	19.00	8.7%
	February	21	21	17	23	26	108	21.60	9.9%
	March	19	15	19	19	20	92	18.40	8.4%
	April	13	20	13	28	17	91	18.20	8.3%
	May	17	12	18	24	21	92	18.40	8.4%
	June	18	11	17	19	18	83	16.60	7.6%

Sun Trail Feasibility Study		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2016	2017	2018	2019	2020			
	July	13	10	16	14	23	76	15.20	7.0%
	August	16	14	12	20	14	76	15.20	7.0%
	September	14	7	18	18	12	69	13.80	6.3%
	October	17	17	23	33	23	113	22.60	10.4%
	November	22	20	19	19	17	97	19.40	8.9%
	December	16	24	20	23	16	99	19.80	9.1%
DAY OF WEEK	Sunday	21	33	14	18	19	105	21.00	9.6%
	Monday	21	28	25	42	42	158	31.60	14.5%
	Tuesday	33	28	30	33	37	161	32.20	14.8%
	Wednesday	36	25	40	43	33	177	35.40	16.2%
	Thursday	44	26	35	40	37	182	36.40	16.7%
	Friday	24	31	37	38	46	176	35.20	16.1%
	Saturday	25	21	27	38	21	132	26.40	12.1%
HOUR OF DAY	00:00-06:00	12	9	2	10	8	41	8.20	3.8%
	06:00-09:00	33	31	38	36	22	160	32.00	14.7%
	09:00-11:00	14	25	20	26	25	110	22.00	10.1%
	11:00-13:00	26	30	27	41	34	158	31.60	14.5%
	13:00-15:00	29	26	30	40	39	164	32.80	15.0%
	15:00-18:00	58	45	59	56	67	285	57.00	26.1%
	18:00-24:00	32	26	32	43	40	173	34.60	15.9%

Notes

- 1) Collision with Bicycle Crashes include Collision with Bicycle/Collision with Bicycle in Bike Lane (Codes 11 and 12).
- 2) Fixed Object Crashes include collisions with sign/sign post, utility/light pole, guardrail, fence, concrete barrier wall, bridge, pier, Fixed Object Crashes include collisions with sign/sign post, utility/light pole, guardrail, fence, concrete barrier wall, bridge, pier, abutment, rail, tree, shrubbery, construction barricade/sign, traffic gate, crash attenuators, other fixed objects (incl. above road).
- 3) Ran-off-Road Crashes include Ran in Ditch/Culvert and Ran off road into water (Codes 29 and 30).
- 4) Other crashes include crashes not categorized as the crash types shown in the table.
- 5) Dark Crashes include both scenarios - with and without street lighting.

A total of 1,091 crashes occurred within the Hobe Sound study area (North – SE Heritage Blvd; South - Jonathan Dickson State Park, West – 1 mile from SR-5/Federal Highway; and East – SE Ocean Road), from 2016 to 2020.

Rear-end (27.2%) crashes, followed by left-turn crashes (11.5%) and angled (9.5%) crashes were the top three crash types in the area. Four (4) fatal crashes occurred in 2016, 2017, 2018 and 2019. Most crashes (77.2%) were property damage only, and occurred during clear daylight conditions (80.6%). Despite adverse weather conditions in Florida, there were 28 or 11.5% of crashes that occurred on wet pavement conditions.

During the 5-year period, October (10.4%) was the month with the highest number of crashes. When compared to other days of the week Wednesday, Thursday, and Friday had the highest percentage of average crashes (16%) documented per year. Lastly, more crashes were recorded during the evening-time, particularly between 3 PM to 12 AM (42%).

Figure 41 illustrates a heat map of all crashes within the study area, as indicated by the heat map, the majority of crashes are concentrated along SR-5/Federal Highway, particularly at the intersection of SR-5/Federal Highway and CR-708/Bridge Road. CR-A1A/Dixie Highway has several ‘hot spot’ locations for crashes, particularly at the intersections of SE Osprey Street, SE Crossrip Street, SE Pettway Street, SE Lares Avenue, CR-708/Bridge Road,

and SE Saturn Avenue. The heat map also indicates, SE Gomez Avenue had the least number of crashes in comparison to SR-5/Federal Highway and CR-A1A/Dixie Highway. Hotspots for crashes along Gomez Avenue include the intersections at SE Crossrip, SE Pettway and CR-708/Bridge Road.

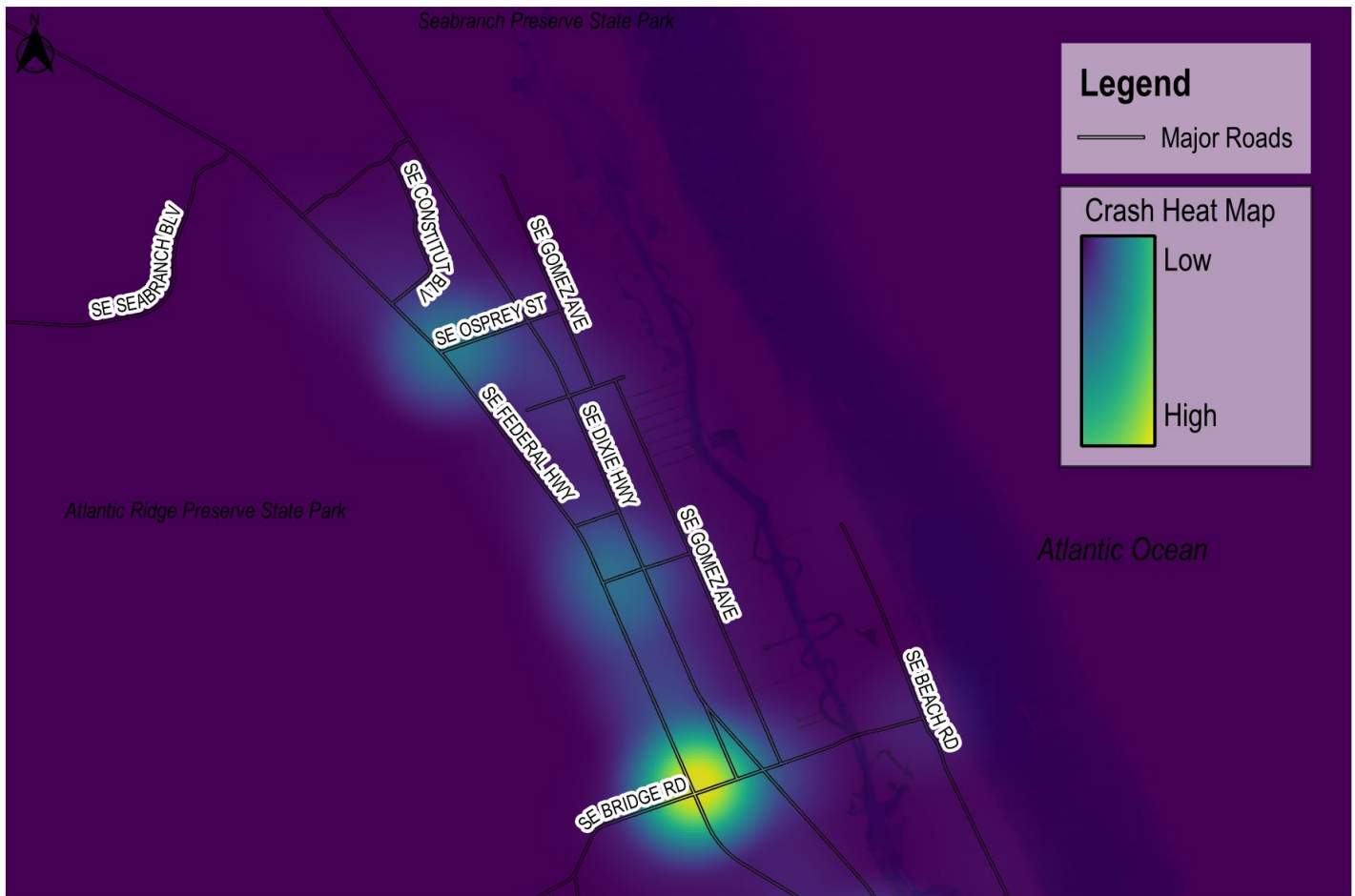


Figure 41: Heat Map of All Crashes (2016-2020)

The data reviewed indicates the majority of crashes are property damage only. While there are crashes that resulted in injuries along CR-A1A/Dixie Highway and SE Gomez Avenue, the majority of these types of crashes occurred along SR-5/Federal Highway, particularly at the intersection of SR-5/Federal Highway and CR-708/Bridge Road. For the purpose of this study, it is important to note that SE Osprey Street, SE Lares Avenue and CR-708/Bridge Road also had a significant concentration of injury related crashes. SE Gomez Avenue had the least number of injury related crashes in the study area.

Of the four (4) crashes that resulted in a fatality, two (2) occurred along SR-5/Federal Highway, one (1) occurred on CR-A1A/Dixie Highway at SE Osprey Street and one (1) other occurred on SE Gomez Avenue near SE Jupiter Narrows Place.

4.5.2. PEDESTRIAN AND BICYCLE CRASH ANALYSIS

There were 14 pedestrian crashes within the area from 2016 to 2020, see **Figure 42**. Five (5) pedestrian crashes occurred in 2019, and 2020, two (2) occurred in 2017, and one (1) occurred in 2016 and 2018. All 14 of the pedestrian crashes occurred during clear weather conditions, nine (9) of the 14 crashes occurred during daylight

conditions. Ten (10) crashes resulted in injuries and four (4) crashes were property damage only. Five (5) of the pedestrian crashes occurred on Monday, three (3) occurred on Wednesday, the remaining six (6) pedestrian crashes occurred on a Friday (2), Saturday (2) and Sunday (2). Five (5) pedestrian crashes occurred along or near CR-A1A/Dixie Highway at SE Osprey Street, SE Lars Avenue and CR-708/Bridge Road, four (4) of the five (5) crashes resulted in injury.

There were 16 bicycle crashes within the area. Six (6) bicycle crashes occurred in 2016, Four (4) bicycle crashes occurred in 2017, two (2) occurred in 2018, 2019 and 2020. Fourteen (14) bicycle crashes occurred in clear weather conditions, one occurred in cloudy weather conditions, and the other occurred in rainy weather conditions. Twelve (12) crashes occurred during daylight and four (4) occurred during dark light conditions. Fourteen (14) of the bicycle crashes were injury related crashes and two (2) included property damage only. Three (3) of the bicycle crashes occurred along SE Gomez Avenue near SE Pettway Street, SE Alabama Place and SE Colony Street, all three (3) of those crashes resulted in injuries. Two (2) of the bicycle crashes occurred along CR-A1A/Dixie Highway near CR-708/Bridge Road and SE Pettway Street both crashes resulted in injuries

It is important to note that during the analysis of this data, there was one pedestrian crash which was incorrectly categorized as a bicycle crash, the correction was reflected in the above analysis.



Figure 42: Bicycle & Pedestrian Crashes (2016-2020)

5. FEASIBILITY ANALYSIS

A feasibility analysis was conducted to identify several route alignments connecting the existing SUP to CR-708/Bridge Road. The analysis reviewed several factors to identify the pros and cons of each potential alignment option, which can be used to inform any subsequent design concepts. Per the AASHTO guide for the development of bicycle facilities, the factors to consider when deciding where bicycle improvements are needed to develop a connected bicycle transportation network include:

- User needs
- Traffic volume, vehicle mix, and speeds
- Identifying major barriers
- Connection to land uses
- Logical route
- Intersections
- Aesthetics
- Spacing and density of bikeways
- Safety and security
- Overall feasibility

The above information was compiled and input into an evaluation criterion, data collected, and analysis of each alignment alternative, discussed further in this section.

5.1. DATA

Data was gathered at the beginning of the study through a public records request for plans, reports, easements, right-of-way, utilities, infrastructure, and as-built plans through Martin County. Additional data was downloaded from the FDOT, FDEP, and Martin County.

Demographic data utilized was from the 2017-2021 ACS 5-Year Estimates. Environmental data included sources from Martin County, State Historic Preservation Officers (SHPO) database, and FDEP. Roadway data sources were obtained from FDOT and Martin County. Once data was collected, a desktop review of the information was conducted utilizing GIS and aerial imagery. Field visits were also conducted at the beginning of this project to note the existing conditions of the study corridors and to confirm the desktop review. A photo summary of existing conditions can be found in **Appendix D**.

5.2. EVALUATION CRITERIA

We began this study with three (3) alignment alternatives guided by the need to complete a separated facility which implements a portion of the Florida SUN Trail in Martin County, connecting Jonathan Dickinson State Park to Seabranh Preserve State Park. The purpose of this study focused on providing safe, comfortable and equitable access for bicycle, pedestrian and personal conveyance devices. Three primary categories of criteria were developed for feasibility analysis of the alignments, the categories include safety, infrastructure, and connectivity. **Table 5** includes the information and data that was collected, reviewed and analyzed for the criteria.

Table 5: Data Review for Evaluation Criteria

SAFETY	INFRASTRUCTURE	CONNECTIVITY
Pedestrian Crash Severity	No. of Driveways	No. of Schools
Bicycle Crash Severity	Existing Pedestrian Facilities	No. of Transit Routes & Bus Stops
Posted Speed Limit	Existing Bicycle Facilities	No. of Key Destinations
AADT	Existing Shared Use Pathway	No. of Parks
	Existing Shade	
	Right-of-Way	

Once this data was gathered, a score was assigned to each criterion. The scores ranged from 0 to 20, with a higher score having a drawback. The alignments with higher scores are considered to be less feasible than alignments with a lower score. A breakdown of scoring definitions, data sources, and points is provided in **Appendix E**.

5.3. POTENTIAL ALIGNMENTS

Three potential south/north alignments have been identified for a SUP within the study area boundaries connecting to SR-5/Federal Highway at CR-708/Bridge Road to the existing SUP south on SE Gomez Avenue and connects through Seabranche Preserve State Park. The alignments were selected based on review of corridor data, planning documents, available right-of-way and connections to the identified logical termini, see **Figure 43**.



Figure 43: Potential Route Alignments

The alignments include SR-5/Federal Highway, CR-A1A/Dixie Highway, and SE Gomez Avenue. There are also three potential east/west cross street connections for the pathway, these cross streets have been identified as CR-708/Bridge Road, SE Crossrip Steet, and SE Osprey Street. It is important to note that the cross streets selected are based on intersections that have sidewalks and pedestrian crossing gates over and along the FEC railroad tracks. The three potential alignments identified and include:

1. Gomez Avenue to Osprey Street to SR-5/Federal Hwy to CR-708/Bridge Rd (Yellow)

2. Gomez Avenue to Osprey Street or Crossrip Street to CR-A1A/Dixie Hwy to CR-708/Bridge Rd (Purple)
3. Gomez Avenue to CR-708/Bridge Rd (Orange)

A preferred route was selected through a comparative matrix, agency coordination, and public input. The comparative matrix utilizes crash data, pedestrian and bicycle infrastructure, traffic volumes, ROW information, connectivity and the number of driveways to identify the best possible route alignment for this study, see **Appendix E** for a detailed evaluation criterion - it is important to note that some factors were applied to the west, east, south, north portions of the corridor, while other factors accounted for the roadway as a whole. **Table 6** includes a summary of the comparative matrix, the lower the total score, the more feasible it is to implement.

Table 6: Summary Comparative Matrix

FACTOR	GOMEZ AVE ROUTE	CR-A1A/DIXIE HWY ROUTE	SR-5/FEDERAL HWY ROUTE
Safety	9	12	21
Infrastructure	14 (E) / 15 (W)	36 (E) / 41 (W)	15 (E) / 20 (W)
Connectivity	5	8	7
TOTAL SCORE	28 (E) / 29 (W)	56 (E) / 61 (W)	43 (E) / 48 (W)

The above referenced table is a summary of the final scores for each of the proposed alignments. Per the evaluation criteria, SE Gomez Avenue scored the lowest (most feasible) due the posted speed limit, AADT, bicycle/pedestrian crashes, shade, schools, and parks. CR-A1A/Dixie Highway scored the highest due to the many ROW restrictions.

Furthermore, at the March 9, 2022 second public meeting, the majority of attendees selected Gomez Avenue as the preferred route alignment, where attendees were provided with colored dots and given instructions to select their preferred alignment. The results include eight (8) who selected Gomez Avenue, four (4) selected CR-A1A, and four (4) selected SR-5/Federal Highway. The individuals who expressed opposition to Gomez Avenue cited issues with the existing cyclists utilizing Gomez Avenue, students' safety concerns, flooding caused by additional pavement, fear of strangers, and increased crime. The majority of attendees were in favor the Gomez Avenue route alignment. Individuals who preferred the Gomez Avenue alignment expressed their support due to potential conflicts, traffic volumes and speeds on SR-5/Federal Highway and CR-A1A/Dixie Highway.

5.4. ALTERNATIVES

In addition to the route alignment options, a total of two alternatives were presented, reviewed and analyzed for each of the three proposed alignments. The alternatives were selected by the agency stakeholders to present to the public for additional input and feedback at the March 9, 2022 public meeting, where Gomez Avenue Alternative 2 was the selected preferred route alignment and typical section alternative.

The Consultant Team presented these findings, data and analysis at the April 18, 2022 MPO Policy Board meeting where the recommendation for Alternative 2 for the Gomez Avenue corridor was denied. The Board approved a motion for the project team to revisit and get additional local input on the remaining alternatives assessed and return to the Board with it recommended alternative. See **Appendix B** for the April 18, 2022 meeting minutes.

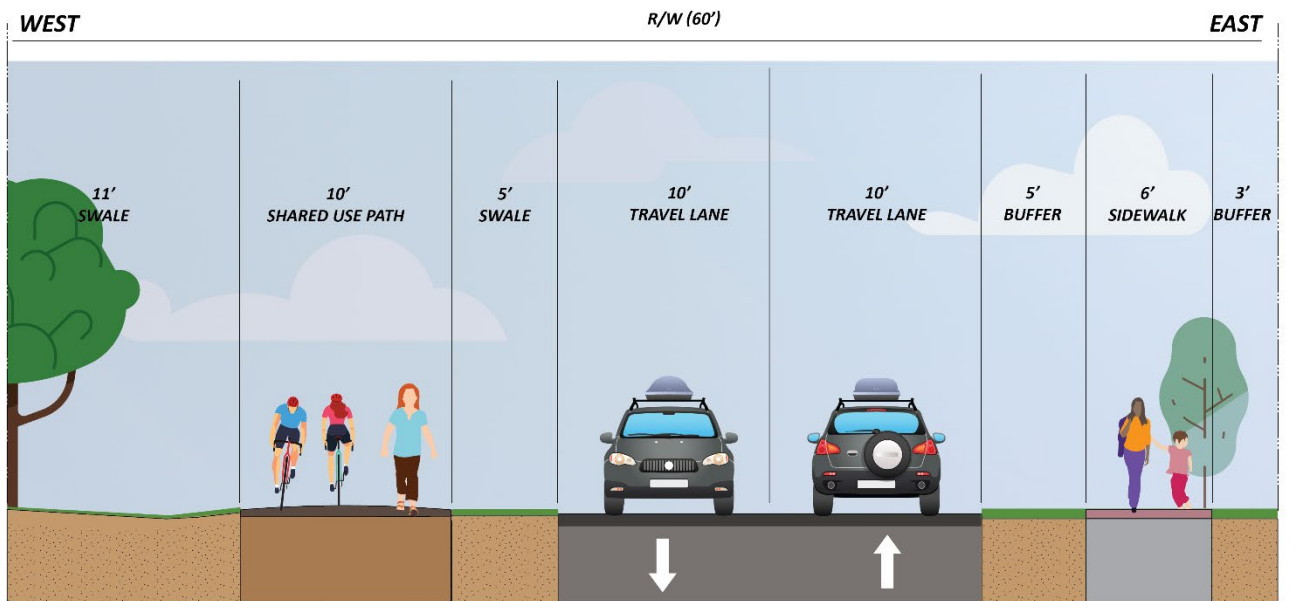
This resulted in the Consultant Team analyzing the other two corridors for the route alignment, the consultant team in coordination with MPO staff, selected SR-5/Federal Highway as the preferred route alignment due to various issues and challenges identified along CR-A1A/Dixie Highway. At a third public workshop, on January 11,

2023, two alternatives were presented to the public for selection of a preferred typical section alternative. Alternative 1 was the selected typical section alternative by a majority of the attendees (14 to 5). Alternative 1 was then presented to the MPO Policy Board at their February 27, 2023 meeting, as the selected preferred alternative to move forward to conceptual design. The alternative SUP roadways and typical sections assessed are presented in the next sections.

5.4.1. SE GOMEZ AVENUE

Gomez Avenue was identified as a likely and feasible alternative early in the process through data analysis, stakeholders, and community members. Gomez Avenue today is popular among local residents and regional cyclists due to its character and low speed limit. However, public objection at the April 18, 2022 MPO Policy Board meeting resulted in this route alignment being rejected by the Board.

Alternative 1 for Gomez Avenue includes a 10-foot SUP on the west side, initial analysis indicates the available right-of-way could fit a 10-foot pathway separated from traffic, but would explore a larger pathway, if feasible. **Figure 44** includes the proposed typical section for Alternative 1 on Gomez Avenue.

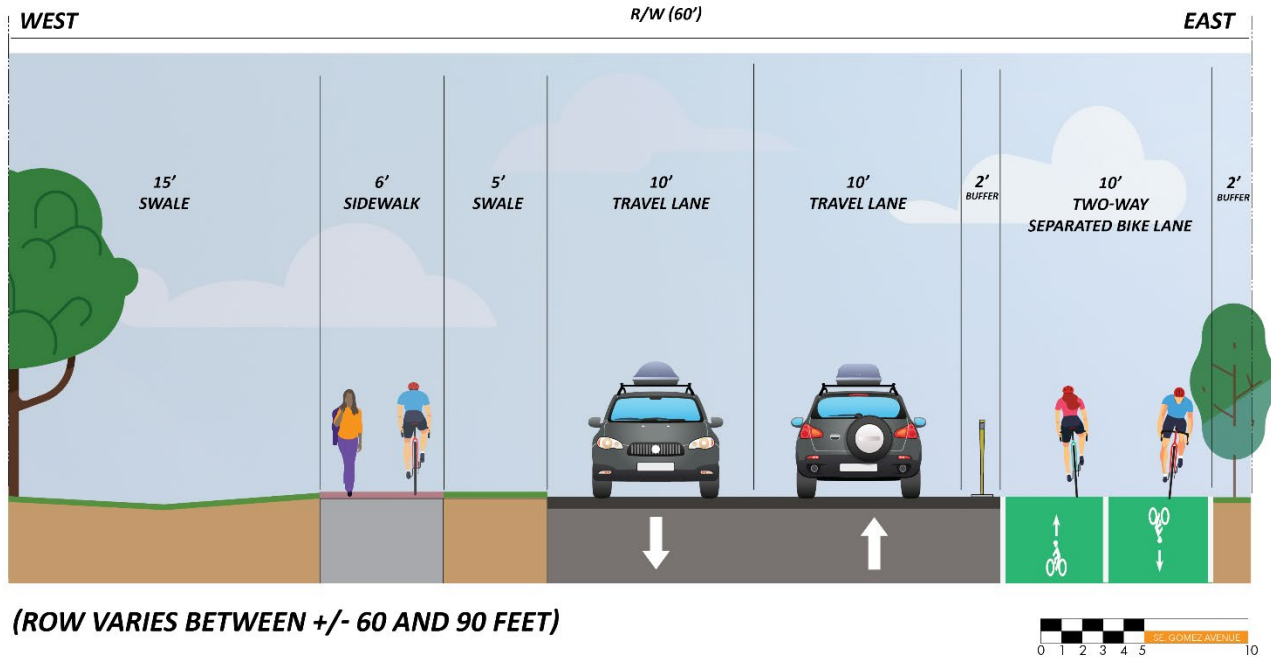


(ROW VARIES BETWEEN +/- 60 AND 90 FEET)



Figure 44: Alternative 1 SE Gomez Ave

Alternative 2 for Gomez Avenue includes a 10-foot two way separated bicycle lane with a two-foot physical barrier, separating the facility from vehicular traffic, see **Figure 45**. This was the preferred alternative selected by agency stakeholders and community members who attended the March 9, 2022 public meeting.



(ROW VARIES BETWEEN +/- 60 AND 90 FEET)

Figure 45: Alternative 2 SE Gomez Ave

5.4.2. CR-A1A / SE DIXIE HIGHWAY

CR-A1A /Dixie Highway was identified as the least feasible alignment option due to the many ROW constraints identified during the analysis of existing conditions. While CR-A1A/Dixie Highway has been voiced as one of the preferred route alignments by residents, stakeholders, and MPO board members, especially since the existing SUN Trail north of the study area is along CR-A1A/Dixie Highway. The typical right-of-way along CR-A1A/Dixie Highway is 30 to 85-feet, with severe constraints between CR-708/Bridge Road and SE Dharlys Street, as discussed in Section 5.4.6.2.

Alternatives for CR-A1A/Dixie Highway were presented with the understanding that the county would be required to acquire the missing 10-foot sidewalk easement and/or enter into a contracted agreement with the FEC Railway Corporation to allow for a SUP within their property. During stakeholder meetings, the various County representatives made clear that the County was attempting to minimize the number of contracts and agreements it had with the FEC due to costs associated with these lease agreements.

Alternative 1 included a 10-foot SUP within the existing 10-foot sidewalk easement, with the understanding that additional easements would need to be acquired to ensure a continuous pathway, see Figure 46.

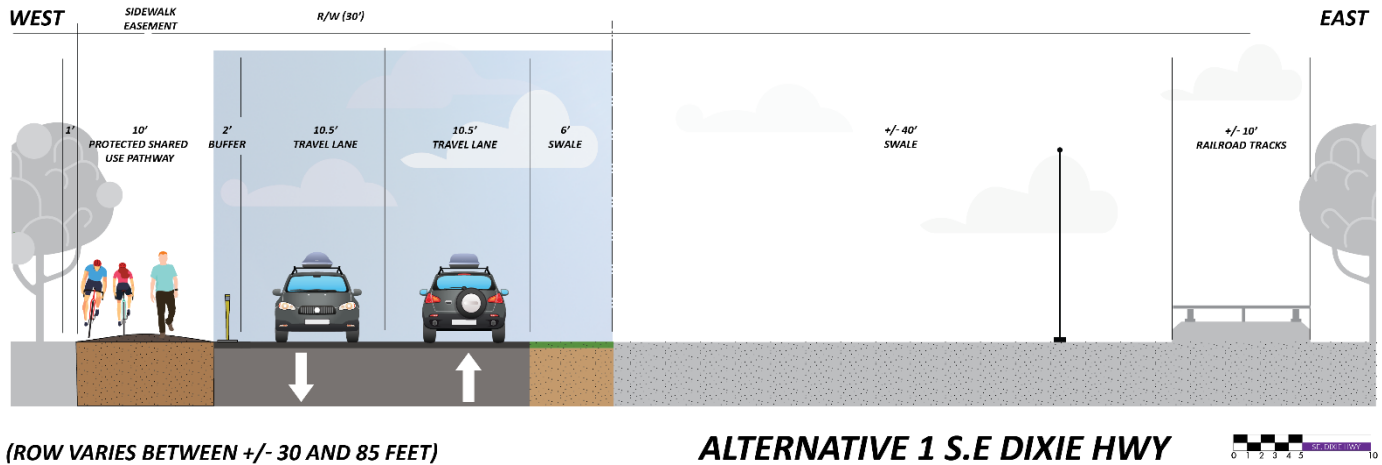


Figure 46: Alternative 1 CR-A1A/Dixie Highway

Alternative 2 includes a 10-foot pathway with two-foot physical barrier to separate the facility from vehicular traffic along the east side of CR-A1A/Dixie Highway, see **Figure 47**. This alignment would require the county to enter into negotiations and a lease agreement with the FEC Railroad Corporation. It is important to note through agency stakeholder engagement, Martin County is in the process of reducing their lease agreements with the FEC.

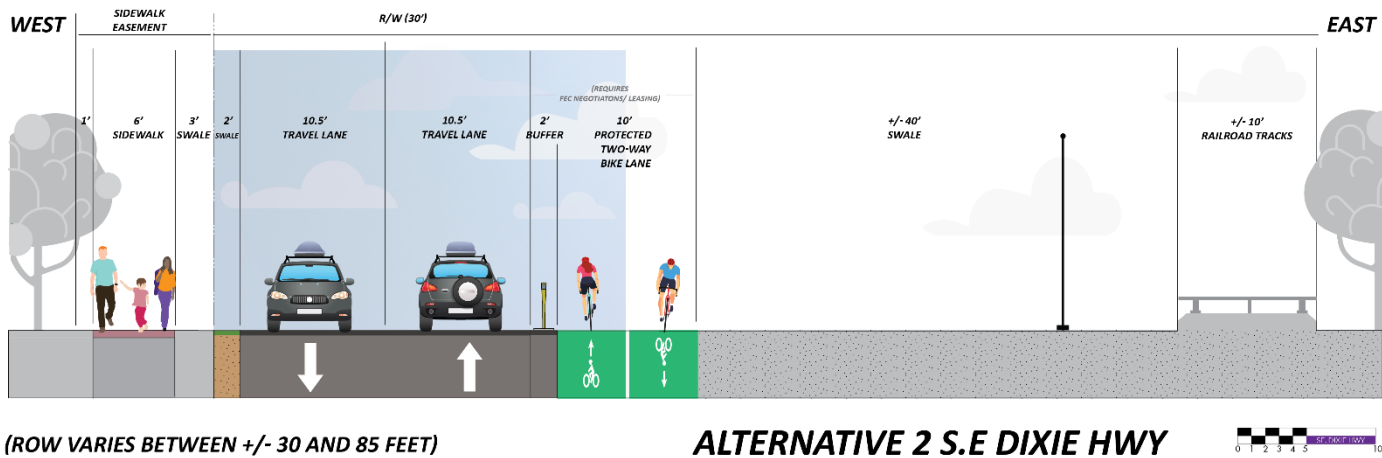


Figure 47: Alternative 2 CR-A1A/Dixie Highway

5.4.3. SR-5 / FEDERAL HIGHWAY / US-1

SR-5/Federal Highway scored in between Gomez Avenue and CR-A1A/Dixie Highway primarily due to traffic volumes, speeds, and crashes. The existing right-of-way indicates a SUP separated from traffic is feasible. This alignment also ranked the same number of votes as CR-A1A/Dixie Highway at the March 9, 2022 public meeting. The SR-5/Federal Highway route alignment was again presented to the community at a third and final public meeting on January 11, 2023, where the attendees were again encouraged to select their preferred typical section alternative.

Alternative 1 was the selected preferred alternative to move forward to conceptual design, see **Figure 48**. This typical section alternative includes a 14-foot SUP along the west side of SR-5/Federal Highway, most of which would be comfortably setback 20 or more feet from vehicular traffic.

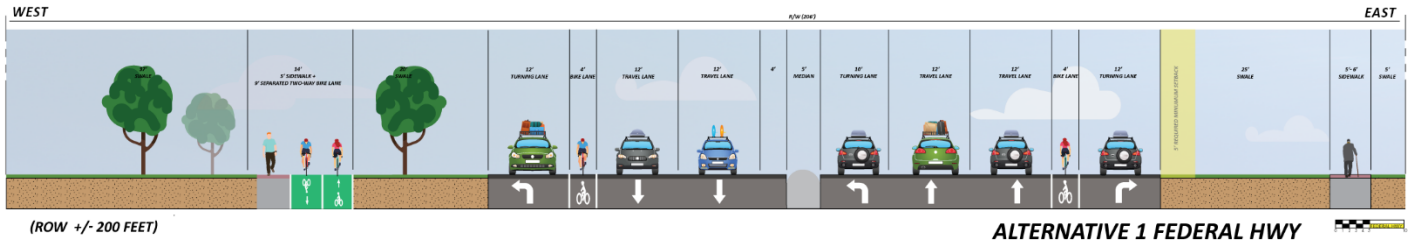


Figure 48: Alternative 1 SR-5/Federal Highway

Alternative 2 included two SUPs: a 12-foot SUP on the westside and an 8-foot SUP on the eastside, see **Figure 49**. It is important to note the Florida SUN Trail program funds one facility, the other facility would require funding from elsewhere. While residents expressed their interest in Alternative 2, Alternative 1 was ultimately selected due to cost.

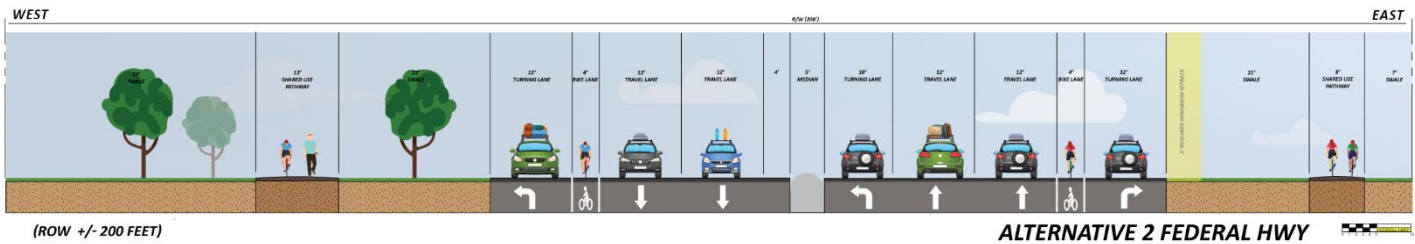


Figure 49: Alternative 2 SR-5/Federal Highway

6. RECOMMENDED ALTERNATIVE

As discussed, the recommended alternative was selected through public participation, stakeholder involvement, and meetings with the MPO Policy Board who approved the recommended alternative at the February 27, 2023 MPO Policy Board meeting. Several concerns were discussed by the board prior to approval, these concerns include safety, use, and comfort. Safety concerns included the number of conflict points (due to the number of driveways and intersections), the posted speed limits, and traffic volumes along SR-5/Federal Highway.

For the purpose of this study, the SR-5/Federal Highway alignment was divided into five (5) segments for planning and analysis purposes, these segments include:

1. SE Gomez Avenue from SUP to SE Osprey Street.
2. SE Osprey Street from SE Gomez Avenue to CR-A1A/Dixie Highway
3. SE Osprey Street from CR-A1A/Dixie Highway to SR-5/Federal Highway
4. SR-5/Federal Highway from SE Osprey Street to SE Pettway Street
5. SR-5/Federal Highway from SE Pettway Street to CR-708/Bridge Road

Figure 50 includes a map of the preferred route alignment by segment.



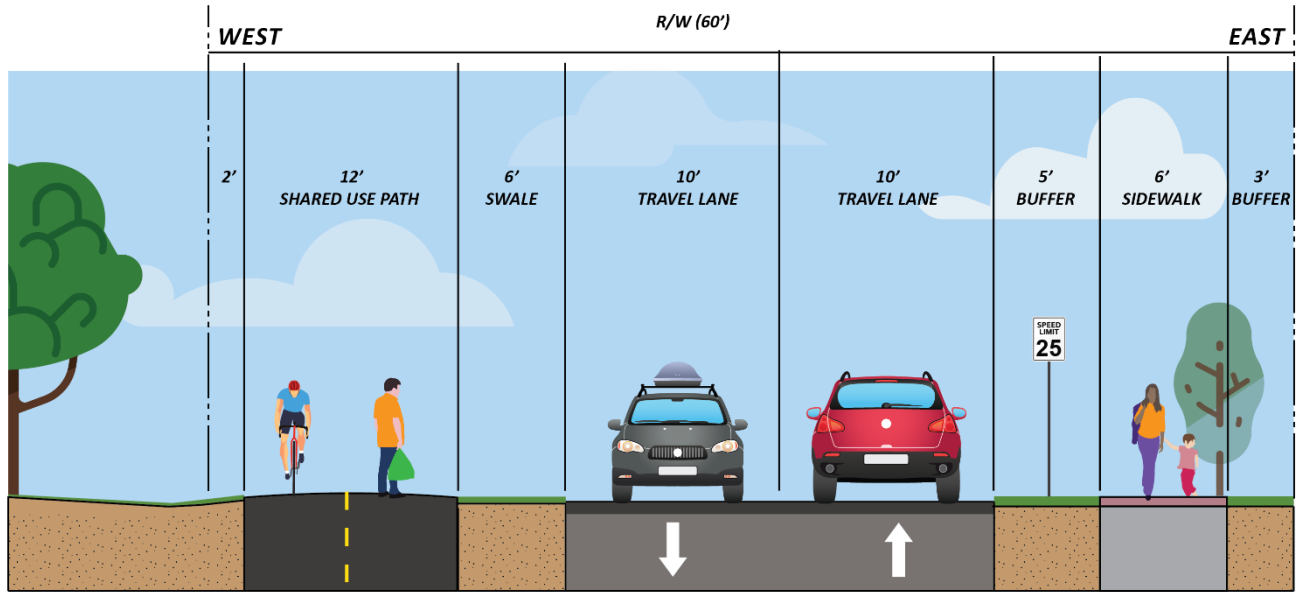
Figure 50: Preferred Route Alignment Map for SR-5/Federal Highway

6.1.SEGMENT 1: SE GOMEZ AVENUE

From the North Terminus to SE Osprey Street

The first identified segment of the alignment begins south of Seabranh Preserve State Park, midway to SE Osprey Street along Gomez Avenue. The existing 8-foot SUP is part of the ECG and Florida SUN Trail network, traversing between the Loblolly Golf Course and Gomez Preserve. The pathway connects into an existing 6-foot concrete sidewalk on the west side with a 10-foot swale. The ROW is approximately 60-feet in this segment, vehicular traffic is low, while pedestrian and bicycle traffic can be seen at all times of the day. There is one driveway, one community entrance, and one intersection in this segment. The design proposal for this segment removes the existing concrete sidewalk on the west to construct a 12-foot SUP, signage and enhanced crosswalks at the community entrance, and enhanced crosswalks and signage at the Gomez Avenue/Osprey Street intersection. The typical section is illustrated in **Figure 51** and concept design for this area includes:

- Remove existing 6-foot concrete sidewalk
- Construct 12-foot shared use asphalt pathway on west side
- Provide signage and high emphasis crosswalks at Hill Terrace and SE Osprey Street



(ROW VARIES BETWEEN +/- 60 AND 90 FEET)



Figure 51: Proposed Typical Section - Gomez Avenue

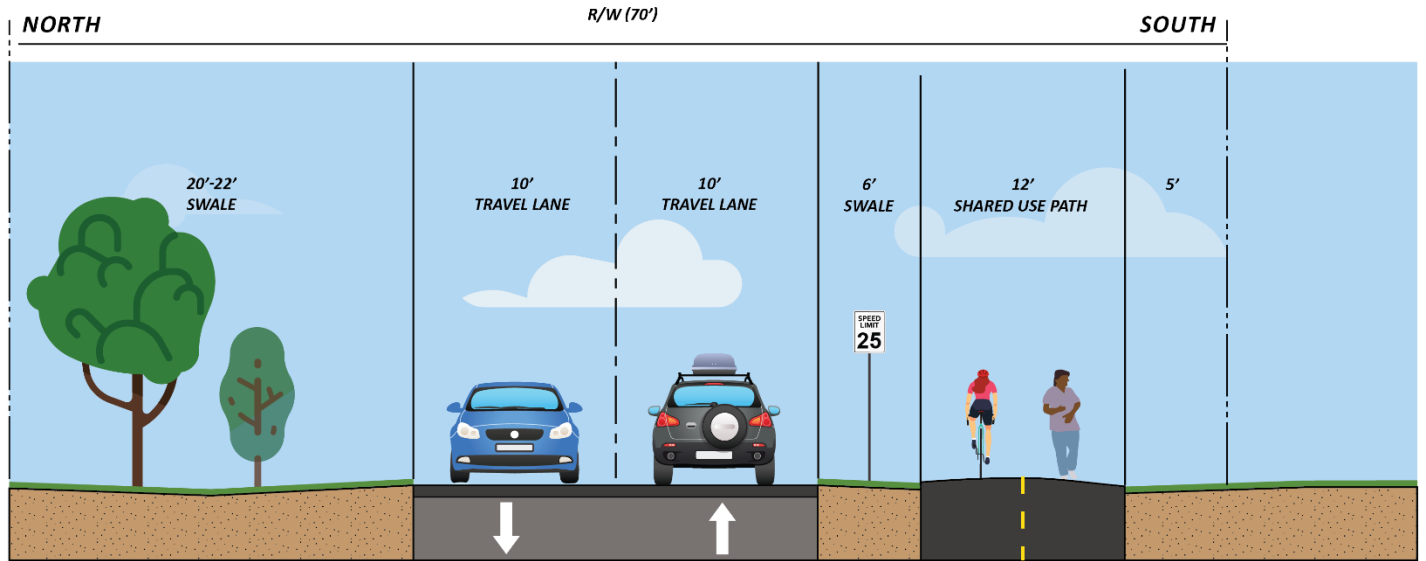
6.2.SEGMENT 2: SE OSPREY STREET

From SE Gomez Avenue to CR-A1A/SE Dixie Highway

The next segment, **Figure 52**, connects users traveling from SE Gomez Avenue to CR-A1A/Dixie Highway via SE Osprey Street, crossing the railroad tracks. The ROW is approximately 70 feet wide and it presents an approximate 22-foot swale, vehicular traffic is higher than Gomez Avenue, but remains low. The design proposed for this segment removes the existing 5.5-foot sidewalk on the southside to construct a 12-foot SUP. There are no driveways or community entrances in this segment, but this segment does include a railroad crossing owned and operated by the FEC Railroad Corporation which has an agreement with the county for crossing the railroad tracks.

This segment also includes a signalized intersection at CR-A1A/Dixie Highway. Recent improvements by the FEC include the addition of 5-foot sidewalks, safety gates, signage and pavement markings at the railroad crossing. It is recommended that the County work with the FEC to widen the pathway to accommodate users. Otherwise, the county will be required to request a variance from FDOT for the railroad crossing since the existing condition does not meet SUN Trail requirements. The typical section is illustrated in **Figure 52** and concept design for this area includes:

- Coordinate with FEC for improvements
- Removal of existing 5.5-foot concrete sidewalk
- Construct a 12-foot SUP on the south side
- Provide signage and high emphasis crosswalk at CR-A1A/Dixie Highway



(ROW VARIES BETWEEN +/- 60 AND 90 FEET)

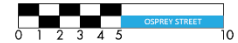


Figure 52: Proposed Typical Section, Osprey St

6.3. SEGMENT 3: OSPREY STREET

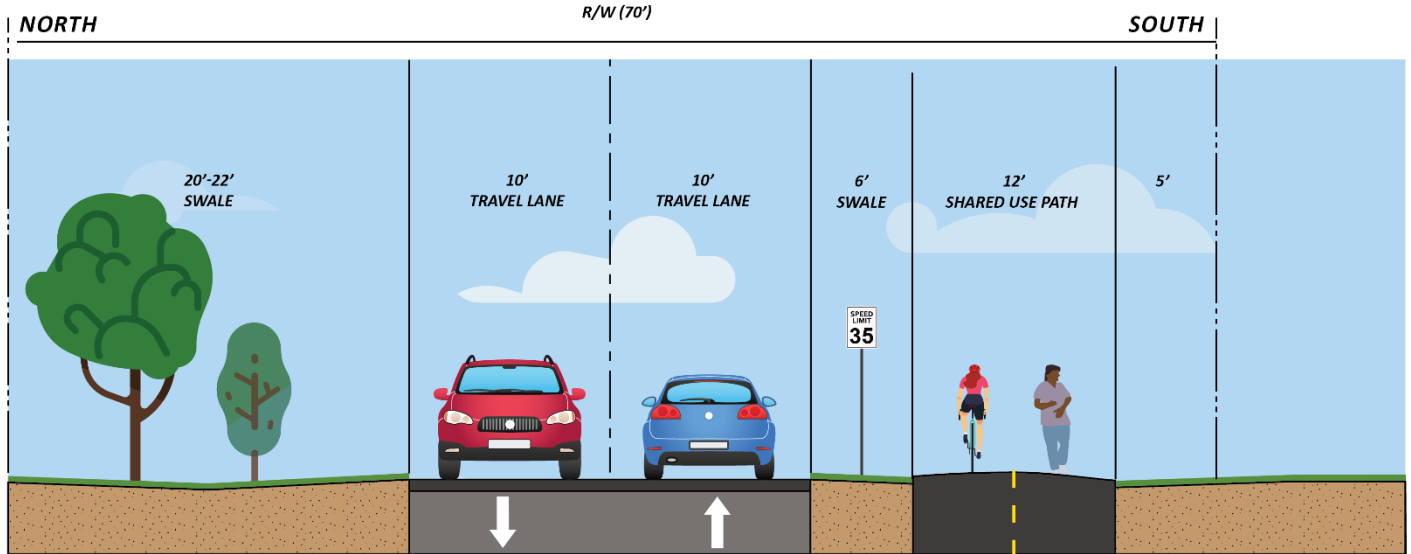
From CR-708/SE Dixie Highway to SR-5/SE Federal Highway

The third segment of the path is located along SE Osprey Street between CR-A1A/Dixie Highway and SR-5/Federal Highway. The ROW is approximately 70-feet wide and it presents an approximate 17-foot swale, vehicular traffic is higher than the first and second segments, but remains low. In order to connect the previously mentioned segments to SR-5/Federal Highway, the existing 5.5 concrete sidewalk on the south side will be removed and replaced with a 12-foot SUP.

This segment includes four driveways, one of which may be consolidated (at the Cumberland Farms Gas Station), two intersections at SE Eagle Avenue and SE Sandy Lane which would require signage, stop signs, and enhanced crosswalk markings; and one signalized intersection at SR-5/Federal Highway. Furthermore, there are also areas where utilities would need to be considered when designing this pathway as there are fire hydrants, sewer and drainage grates present in the swale in some areas of this segment. Power poles are also located on the southside. This segment also has some elevation differences as one approaches SR-5/Federal Highway, there is also a guardrail on the southeast corner of SE Osprey Street and SR-5/Federal Highway intersection which may need to be reconfigured. The typical section is illustrated in **Figure 53** and concept design for this area includes:

- Coordination with gas station on southeast corner of Osprey Street & SR-5/Federal Highway for driveway consolidation
- Coordination with FDOT on intersection improvements at Osprey Street & SR-5/Federal Highway:
 - Explore turn radii reduction
 - Lead pedestrian interval (LPI)
 - Crosswalk timing
 - High emphasis or patterned crosswalks
- Removal of existing 5.5-foot concrete sidewalk

- Construct 12-foot SUP on south side
- Install signage and high emphasis crosswalks at SE Sandy Lane, SE Eagle Ave, and SR-5/Federal Highway
- Utilities may need to be relocated
- Consider a midblock crossing to connect community on the north side



(ROW VARIES BETWEEN +/- 60 AND 90 FEET)

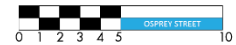


Figure 53: Proposed Typical Section, Osprey St

6.4. SEGMENT 4: SR-5/FEDERAL HIGHWAY

From SE Osprey Street to SE Pettway Street

The fourth segment of the path presents the highest posted speed limit of the alignment at 55 MPH with high traffic volumes. However, the street condition of Segment 4 has swales that vary on average between 20-35 or more feet. The ROW is over 200-feet in width, with the west side of the roadway having more available ROW than the east side. The swale’s width allows for a clear distinction from vehicular travel lanes, allowing users to be and feel protected. Furthermore, the swale area presents the opportunity for planting native shade trees in the future, thus enhancing the experience for users along the path.

This segment includes four driveways, one signalized intersection at SE Pettway Street, four intersections at SE Fairchild Way, SE Arrance Street, SE Wagon Trail, and SE Medalist Place. There is also a +/-287-foot frontage road between SE Medalist Place and SE Wagon Trail with one-way traffic, an auto repair shop, and diagonal parking. Most of this segment borders the Medalist Golf Club. Crossings would need to be enhanced to minimize conflicts, include stop signs for the SUP, signage to inform motorists, and enhanced or raised crosswalks. The design could widen the existing concrete sidewalk or replace it with a 14-foot asphalt pathway. The proposal also would require reducing the travel lane along the one-way frontage road and modifying existing parking to fit the 14-foot pathway. Bicycle, pedestrian and ADA improvements would also be required for the SE Pettway Street signalized intersection. This segment also includes elevation changes that would need to be taken into account for sloping and ADA purposes. The typical section is illustrated in **Figure 54** and concept design for this area includes:

- Coordination with property owners located on the northwest corner of SR-5/Federal Highway and SE Wagon Trail for reconfigured angled parking due to pathway
- Coordination with FDOT on safety study to lower design speed, consider reducing speed limit to 30-35 MPH
- Coordination with FDOT on intersection improvements at Pettway Street & SR-5/Federal Highway:
 - Explore turn radii reduction
 - Lead pedestrian interval (LPI)
 - Crosswalk timing
 - High emphasis or patterned crosswalks
 - Raised crosswalk across SE Croft Cir
- Removal of existing 5-foot concrete sidewalk
- Construct 14-foot SUP on west side
- Install signage and high emphasis/raised crosswalks at Medalist Golf Course maintenance driveway, SE Medalist Place, SE Wagon Trail, SE Arrance Street, SE Fairchild Way
- Consider a signalized midblock crosswalk to connect pathway to or near Doc Myers Park and residential community on east side

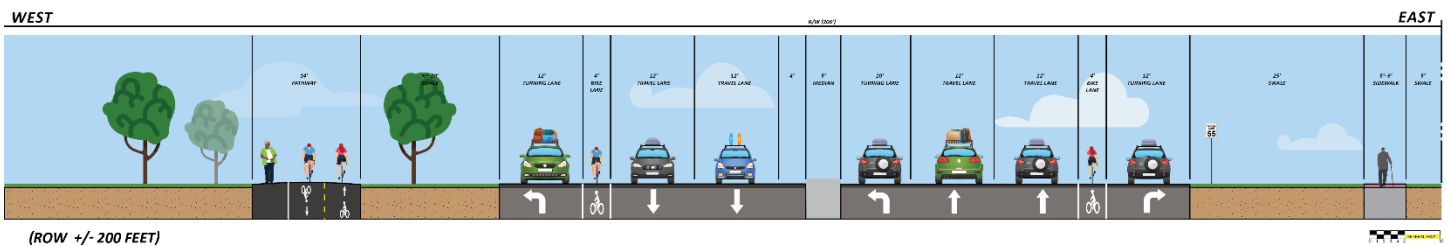


Figure 54: Proposed Typical Section, SR-5/Federal Hwy

6.5. SEGMENT 5: SR-5/FEDERAL HIGHWAY

From SE Pettway Street to CR-708/Bridge Road

The fifth and final segment of the project continues along SR-5/Federal Highway between SE Pettway Street and CR-708/Bridge Road, which also has a swale varying between 20-35 feet on average. The ROW is similar to Segment 4 with over 200 feet available, again, the west side of the roadway has more available ROW than the east. This segment includes a number of shade trees along the swale. The posted speed limit in this segment is 45 MPH with high traffic volumes. This segment includes various driveways and intersections. There are also multiple areas where there is a frontage road, which at times is one-way, but the largest section is two-way. This segment also includes the CR-708/Bridge Road signalized intersection. This area includes three typical sections due to the frontage road and is illustrated in **Figures 55 through 57**, general concept design for this area includes:

- Coordination with property owners located on the northwest corner of SR-5/Federal Highway and SE Mansion Lane for reconfigured angled parking due to pathway
- Coordination with FDOT on safety studies to lower design speed, consider reducing speed limit to 30-35 MPH
- Coordination with FDOT on intersection improvements at CR-708/Bridge Road & SR-5/Federal Highway:
 - Explore turn radii reduction

- Lead pedestrian interval (LPI)
- Crosswalk timing
- High emphasis or patterned crosswalks
- Removal of existing 5-to-9-foot concrete sidewalk
- Construct 14-foot SUP on west side
- Install signage and high emphasis/raised crosswalks at SE Mansion Lane, SE Sugar Pines Way, SE Evergreen Street, SE Woodland Road, SE Lake Drive, SE Sunset Street, SE Pine Circle, and Island Crossings Shopping Center driveways
- Consider a signalized midblock crosswalk to connect the pathway between CR-708/Bridge Road and SE Pettway to the residential community on the east side

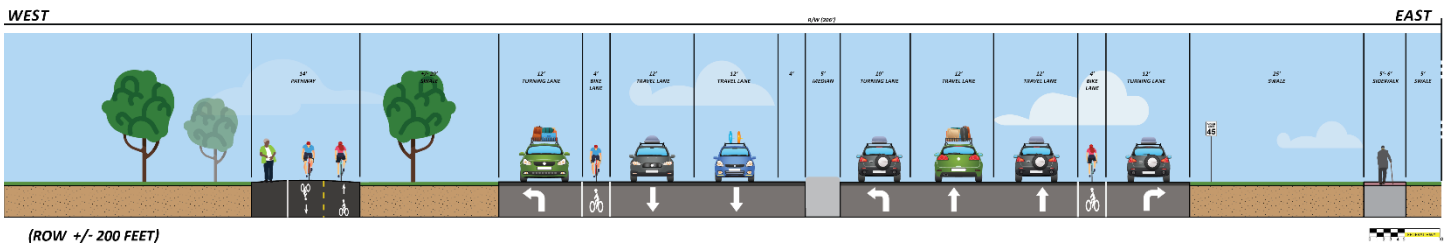


Figure 55: Proposed Typical Section, SR-5/Federal Hwy

Driveway and intersection crossings would need to include enhanced crosswalks, stop signs on the SUP, and signage for motorists. Another tactic can include raised crosswalks which would act as traffic calming across driveways and/or local streets, while elevating the non-motorized user to the view of motorists. Segment 5 includes various areas where this is a frontage road, these areas include:

- SE Fairchild to SE Mansion Lane (One-way)
- SE Sand/Surf Street (Two-way)
- SE Lake Drive to SE Pine Circle (Two-way)
- Catfish House Restaurant Circulation & Parking (One-way)

SE Fairchild to SE Mansion Lane is a frontage road for several marine related businesses, this area is a one-way road with diagonal parking. The roadway can be reconfigured to narrow the travel lane and place the pathway in front of the businesses, see **Figure 56**. The proposed typical section includes a 14-foot SUP, reconfigured angled parking, and narrows the travel lane to 11-feet with no impacts to the existing swale.

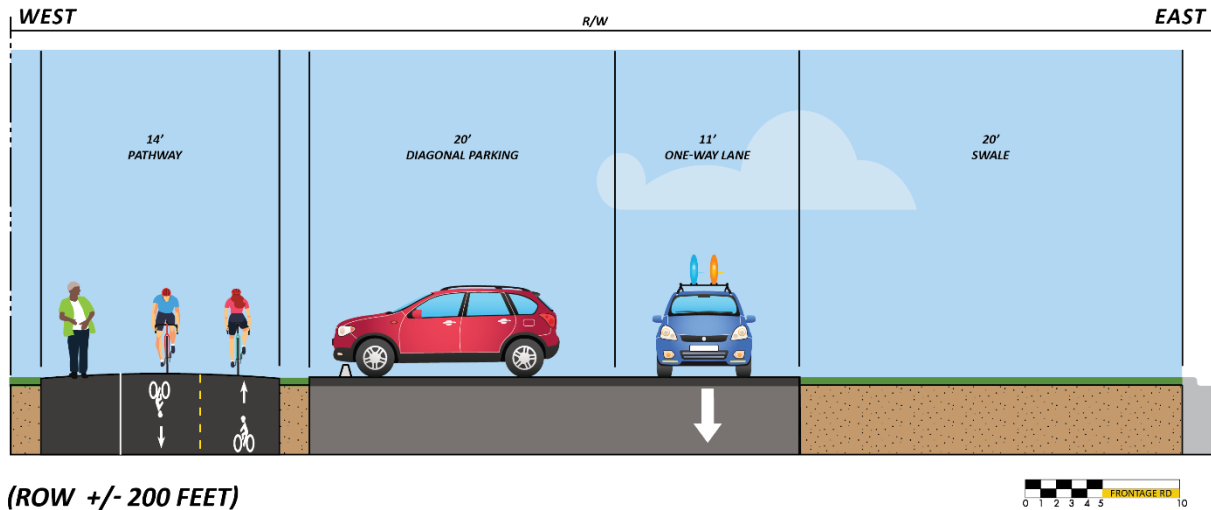


Figure 56: Frontage Road Proposed Typical Section

SE Sand/Surf Street can be avoided by designing the pathway within the swale, instead of where the existing sidewalk is today. The proposed pathway alignment for the SUP is within the existing swale to reduce conflicts.

SE Lake Drive to SE Pine Circle is the longest stretch of the frontage road and there are several businesses along this roadway with parking in the ROW. The County may want to work with the businesses to consolidate parking on site, rather within the public ROW. For the proposed alignment, the pathway would be placed within the swale between the Frontage Road and SR-5/Federal Highway to minimize conflicts with vehicles, parking, and businesses. This is also true for the Catfish House Restaurant area where the majority of the restaurants parking is in the public ROW. The parking area would need to be reconfigured near SE Sunset Street to allow for the SUP, this area is proposed to be parallel parking instead of 90° parking, therefore a total of 8 parking spaces would be lost. The proposed typical section keeps the existing 5-6-foot sidewalk intact, two 12-foot travel lanes with 90° and parallel parking, and a 14-foot SUP within the swale.

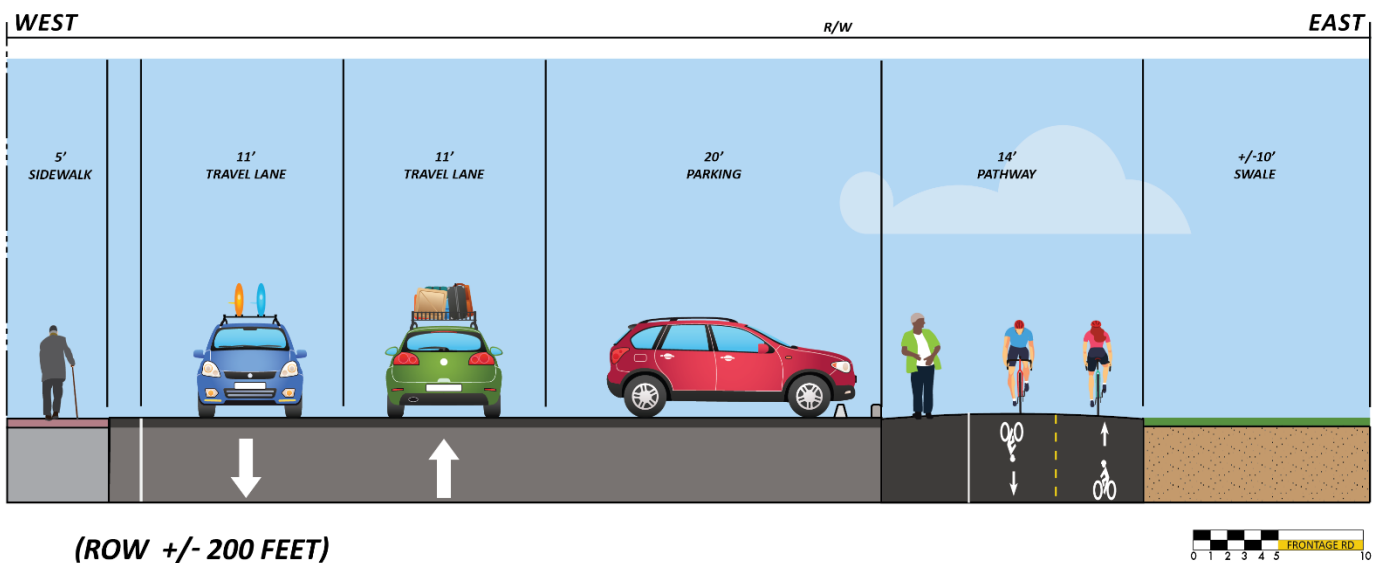


Figure 57: Frontage Road Proposed Typical Section

6.6. PROPOSED CONCEPTUAL PLAN

The proposed conceptual plan for SE Federal Highway for this segment of the Florida SUN Trail and ECG is illustrated in Figures 58 through 63, a full-page view of the proposed trail is available in Appendix F.

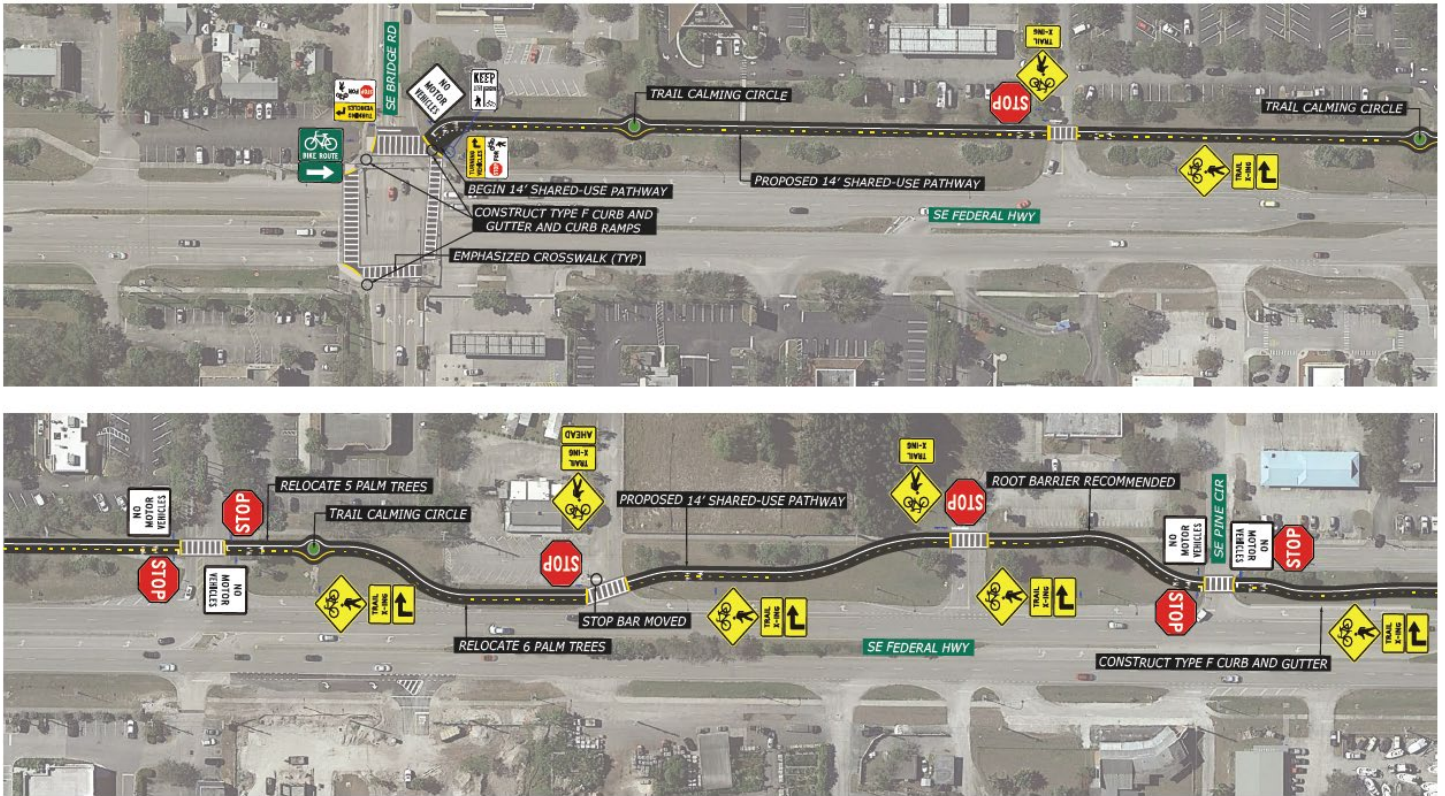


Figure 58: Conceptual Plan View (CR-708/Bridge Road to SE Pine Cir)

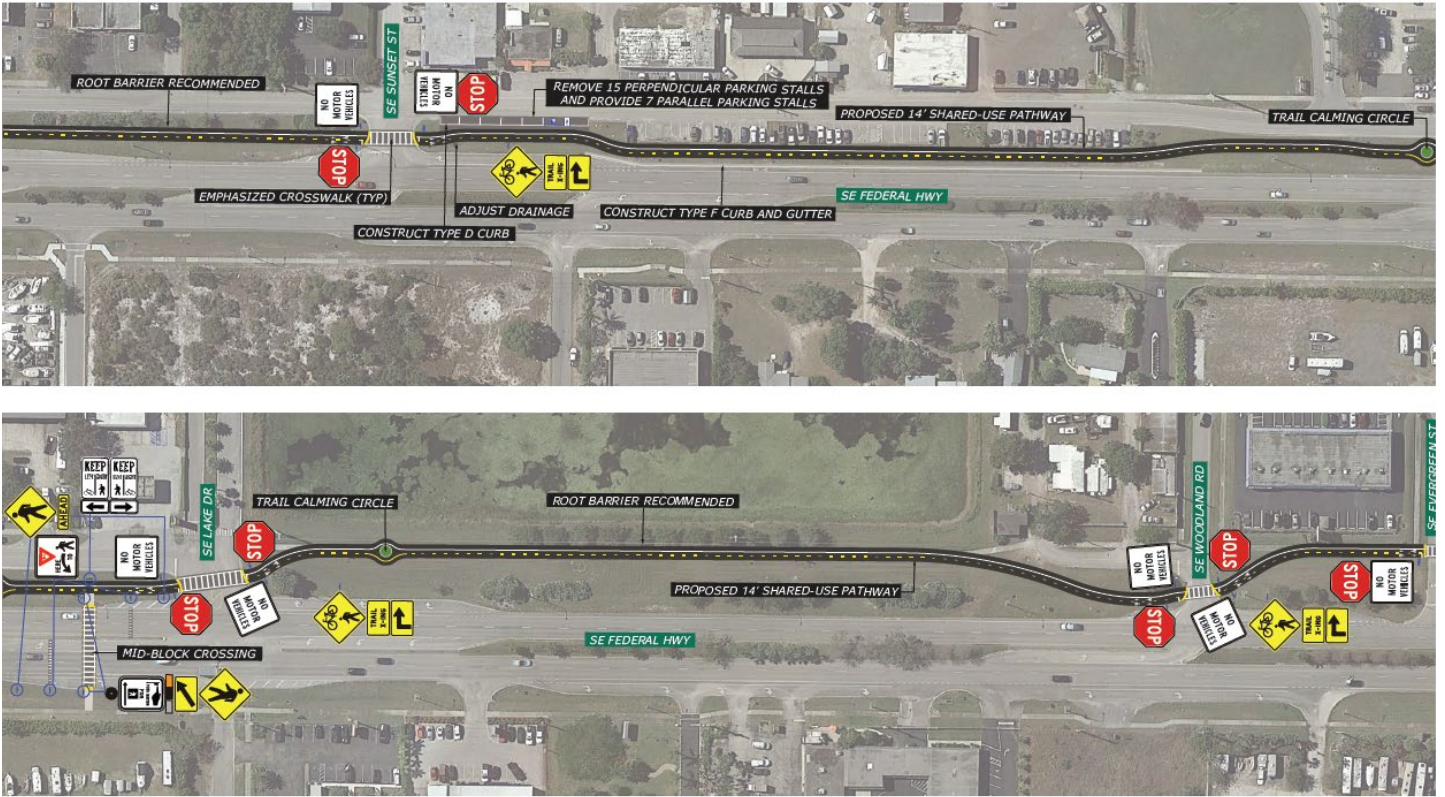


Figure 59: Conceptual Plan View (SE Pine Cir to SE Evergreen St)

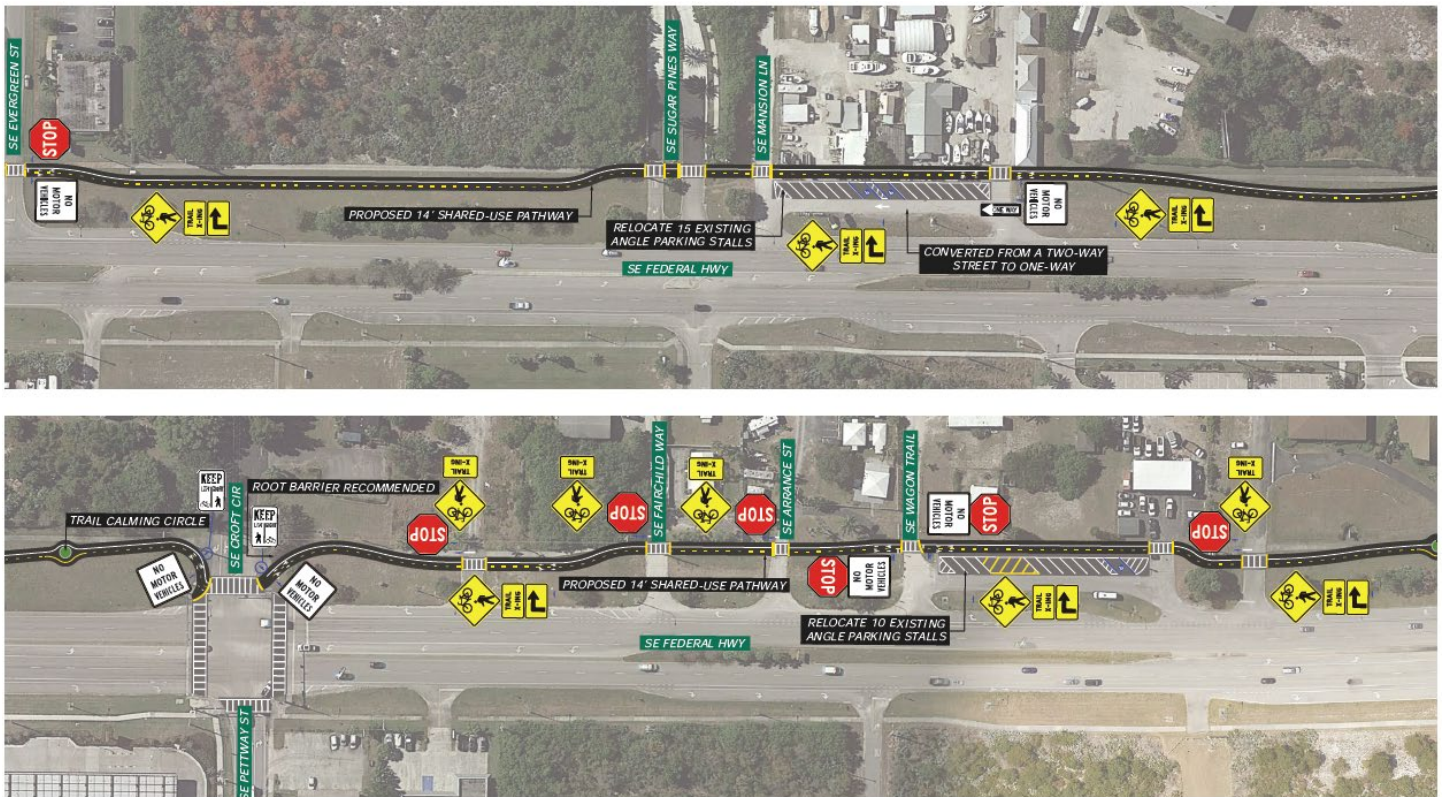


Figure 60: Conceptual Plan View (SE Evergreen St to south of SE Medalist Pl)



Figure 61: Conceptual Plan View (SE Medalist Pl to Medalist Golf Course Maintenance Facility)



Figure 62: Conceptual Plan View (east border of Medalist Golf Course)



Figure 63: Conceptual Plan View (east border of Medalist Golf Course)

The next segment of the proposed conceptual plan is for SE Osprey Street for this segment of the Florida SUN Trail and ECG, and is illustrated in Figures 64 through 66, a full-page view of the proposed trail is available in Appendix F.

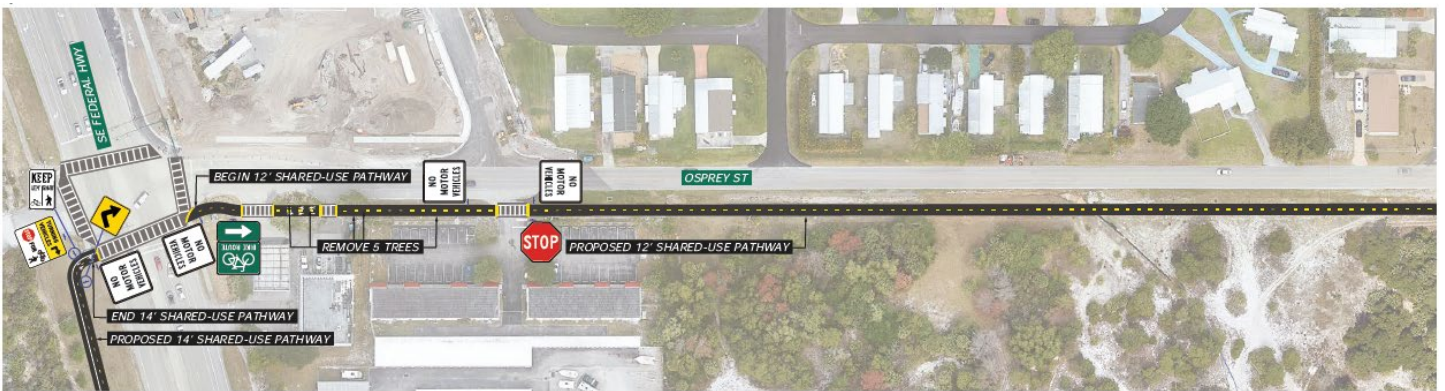


Figure 64: Conceptual Plan View (SE Federal Hwy to SE Osprey St)



Figure 65: Conceptual Plan View (SE Osprey St to SE Dixie Hwy)



Figure 66: Conceptual Plan View (SE Osprey Street to SE Gomez Ave)

The next segment of the proposed conceptual plan is for SE Gomez Avenue for this segment of the Florida SUN Trail and ECG, and is illustrated in Figures 67 and 68, a full-page view of the proposed trail is available in Appendix F.



Figure 67: Conceptual Plan View (east border of Loblolly Golf Course)



Figure 68: Conceptual Plan View (east border of Loblolly Golf Course connecting to existing SUN Trail)

7. FUTURE CONSIDERATIONS

Future considerations are for the next phase of this process and consider long-term use and sustainability of the proposed facility. This section includes information and recommendations on drainage, utilities, access management and driveways, intersections, traffic calming, environmental, amenities, maintenance and permits. It is important to note that the Martin MPO and County should coordinate with FDOT to conduct safety analysis to further understand the speed at which vehicles are traveling along SR-5/Federal Highway and conduct an in-depth analysis to understand the bicycle and pedestrian crashes along this corridor. Further studies are needed to inform the design of the proposed SUN Trail pathway.

7.1. DRAINAGE

Added impervious area from the proposed facility will generate additional stormwater runoff within the corridor. To minimize the risk of flood encroachment into the travel lanes in areas where drainage may be blocked by a rise in elevation near the ROW, a few potential runoff storage sites may need to be taken into consideration. Future designers may also want to consider the use of Green Infrastructure² to mitigate the effects of stormwater runoff. This can include the use of pervious materials to offset additional surface area.

Green infrastructure is a sustainable way to manage stormwater and can include rain gardens, planter boxes, bioswales, permeable pavement, green parking, tree canopy and land conservation. Utilizing these techniques into the SUP is a sustainable cost-effective resilient solution to stormwater management, vegetation, trees, trails, parking and streetscape by providing numerous benefits to the community, **Figure 69** includes examples of green infrastructure techniques.

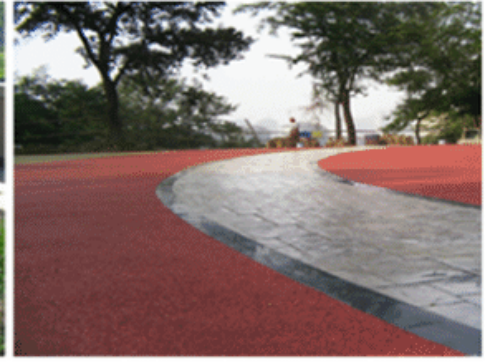
² Green infrastructure refers to planned, interconnected systems of green spaces, parks and natural elements that conserve natural ecosystem values and functions (Benedicts, M.A. and E.T. McMahon, 2002).



Rain garden



Green roof



Permeable pavement



Infiltration trench



Landscape water body



Grassed swale

Figure 69: Examples of Green Infrastructure

For future considerations, the County should explore the use of Green Infrastructure and work with FDOT to incorporate these elements along the SUP. It is important to note that SUN Trail funding will not cover landscaping, perhaps if these techniques were realized FDOT may take this approach into consideration rather than the use of traditional hardening techniques such as drainage systems and grates, which can be very expensive to install and maintain.

7.2. UTILITIES

Florida Power & Light has overhead power lines throughout the corridor. Power line locations are highlighted in the previous section describing the five segments. FDM Section 224.7 encourages a minimum of four feet of horizontal clearance from above grade obstacles to the edge of a multi-use trail. The location of the power poles and other utility structures will need to be further evaluated during future design phases to mitigate potential impacts. Other utilities include underground fiber optic, sewage and drainage, fire hydrants, utility boxes, and light poles.

7.3. ACCESS MANAGEMENT AND DRIVEWAYS

Access management is the coordinated planning, regulation, and design of access between roadways and land development (*FDOT Access Management Guidebook, 2019*). Thoughtful access management along a corridor can enhance safety for all modes, facilitate walking and biking, and reduce trip delay and congestion.

Access management can reduce injury and fatal crashes by as much as 31%.³ Every intersection, from a signalized intersection to an unpaved driveway, has the potential for conflicts between vehicles, pedestrians, and bicyclists. The number and types of conflict points where the travel paths of two user's intersection influence the safety performance of the intersection or driveway. Access management strategies include:

- Driveway closure, consolidation, or relocation
- Limited-movement designs for driveways (such as right-in/right-out only)
- Raised medians that preclude across-roadway movements
- Intersection designs such as roundabouts or those with reduced left-turn conflicts
- Turn lanes (i.e., left-only, right-only, or interior two-way left)
- Lower speed one-way or two-way off-arterial circulation roads

Successful corridor access management involves balancing overall safety and corridor mobility for all users along with the access needs of adjacent land uses. The construction of the proposed pathway will impact approximately 15 driveways and 16 side streets. It is anticipated that many of these paved connections will need to be rebuilt to ensure ADA compliance, some of these areas include landscaping. Avoidance of vegetation impacts should be considered, especially in areas with wider ROW. Future considerations should include raised crosswalks, additional signage for motorists, and stop signs along the pathway to inform users of potential conflicts. In addition to County collaboration with land owners and FDOT to consolidate driveways along SR-5/Federal Highway to reduce conflicts, improve operations, accessibility and safety.

7.4. INTERSECTIONS

The construction of the proposed pathway will impact four (4) signalized intersections. Many of these intersections do not meet ADA requirements and require safety improvements to ensure pedestrian and bicycle safety. As an example, the CR-708/Bridge Road and SR-5/Federal Highway intersection has a high concentration of motorized and non-motorized crashes, wide turn radius, lack of tactile pads, and vertical delineators separating the sidewalk from the roadway (which are often replaced as motorist continually run them over).

Future considerations include collaboration with FDOT to redesign signalized intersections along SR-5/Federal Highway to ensure safety and improve operations. Additional considerations include the use of bike boxes (**Figure 70**) or crosswalk markings for bicycles (**Figure 71**), as recommended per NACTO and is currently in the draft version of the MUTCD guidelines, which is currently pending approval.

³ Highway Safety Manual



Figure 70: Bike Box (Source: NACTO)

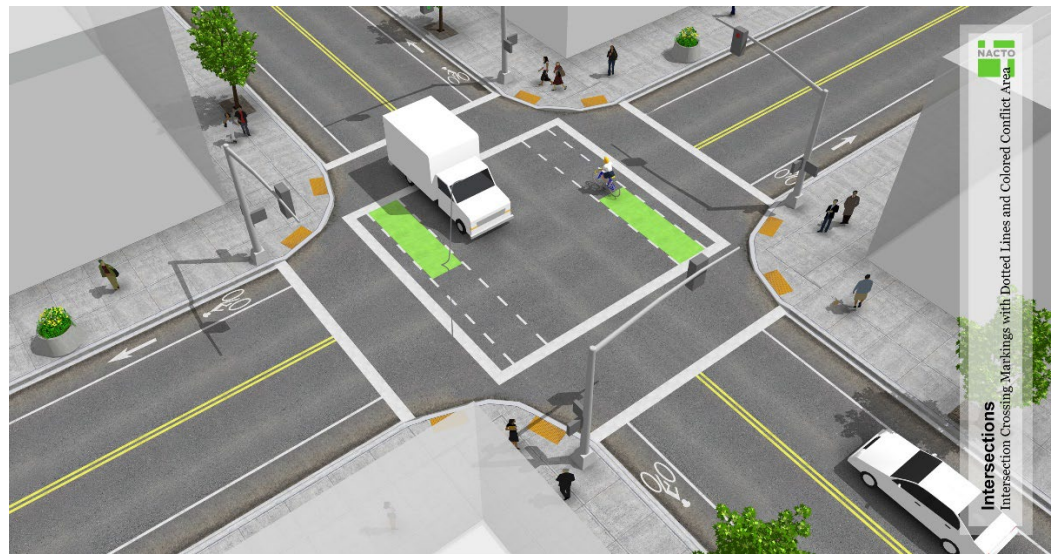


Figure 71: Bicycle Intersection Crossing Markings (Source NACTO)

Furthermore, the County and FDOT will need to review pedestrian signal timing at these intersections to ensure there is adequate time for crossing. Agencies should consider a LPI which has shown to reduce non-motorized crashes as much as 60%⁴. This would require adjustments to existing signal timing and should be taken into account at future design phases.

⁴ Van Houten R, Retting RA, Farmer C, Van Houten J. Field evaluation of a leading pedestrian interval signal phase at three urban intersections. *Transportation Res Rec.* 2000

Vehicle speed concepts can be classified into four types:



Design speed—the selected speed used to determine various geometric elements of the roadway.¹



Operating speed—the speed at which drivers are observed traveling during free flow conditions.²



Posted speed limit—established by methods described in the Speed Zoning for Highways, Roads, and Streets in Florida Manual. This manual is adopted by Rule 14-15.012, F.A.C.



Target speed—the highest speed at which vehicles should operate in a specific context, consistent with the level of multimodal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a supportive environment for pedestrians, bicyclists, and public transit users.³

¹ American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, 6th Edition, 2011
² American Association of State Highway and Transportation Officials, A Policy on Geometric Design of Highways and Streets, 6th Edition, 2011
³ FDOT Design Manual, 2021.

7.5. TRAFFIC CALMING

Vehicle speed concepts can be classified into four types: Design Speed, Posted Speed Limit, Operating Speed, and Target Speed. The *FDOT Context Classification Guide* provides guidance to agencies and professionals to manage speeds along roadways within their communities. **Table 7** includes the design speeds for arterials and collectors based on context classification, this guidance should be considered to lower speed limits along SR-5/Federal Highway to ensure the safety, comfort, and convenience of residents and users of the proposed SUN Trail alignment. Please note, SR-5/Federal Highway is classified as a C3R and C4 context and the lower allowable design speeds should be considered when programming for this project. It is important that the MPO and County Commission work closely with FDOT to redesign SR-5/Federal Highway for future projects and projected growth to ensure all users can be accommodated.

Table 7: FDOT Context-Based Design Speeds for Arterials and Collectors

CONTEXT CLASSIFICATION	ALLOWABLE DESIGN SPEED RANGE (MPH)	SIS MINIMUM (MPH)
C1 Natural	55-70	65
C2 Rural	55-70	65
C2T Rural Town	25-45	40
C3 Suburban	35-55	50
C4 Urban General	25-45	45
C5 Urban Center	25-35	35
C6 Urban Core	25-30	30

Road design can influence both driver and pedestrian behavior and there are a number of countermeasures that can be adopted to ensure the safety of all users. Curb extensions, median islands, chicanes, roundabouts, textured crossings, and speed humps are all countermeasures which can be utilized to reduce traffic speeds, improve safety, and improve driver awareness of the presence of non-motorized users, see **Figure 72** for examples.



Intersection Curb Extensions



Center Median Island / Chicane



Chicane



Roundabout w/ Public Art



Enhanced Crosswalk w/ Textured Pavement & Street Furniture



Raised Pedestrian Crossing

Figure 72: Examples of Traffic Calming

During discussions with residents and stakeholders, concern for speeding was a topic which came up numerous times. Traffic was also a reason highlighted in the *Bicycle, Pedestrian & Trails Master Plan (2017)* for reasons why residents do not walk or bike today. Vehicle speed is an important component of pedestrian safety, because as speed increases, the likelihood of a fatality or serious injury also increases, for both motorized and non-motorized users, see **Figure 73**.

Future design considerations should include a review of the design speed of SR-5/Federal Highway and consider reducing the existing 55 and 45 MPH posted speed limits between CR-708/Bridge Road and SE Osprey Street to enhance safety and minimize risks. It is recommended that operating speed data be collected on SR-5/Federal Highway and a thorough review of crash data along this segment be review to inform the future design of the SUP.

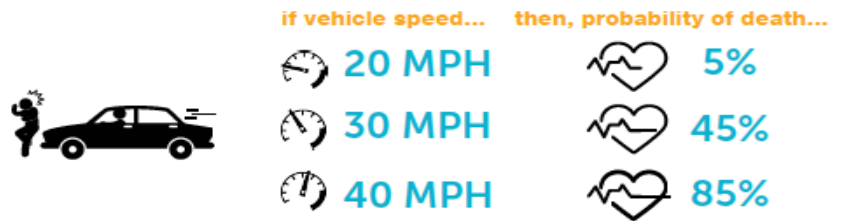


Figure 73: Port St. Lucie Multimodal Plan

7.6. ENVIRONMENTAL

Potential impacts which need to be further evaluated include wetlands, Florida Bonnet Bats and Gopher Tortoise sites. The county data indicates potential wetlands along Gomez Avenue, the location of wetlands, Bonnet Bats and Gopher Tortoise sites will need to be further evaluated during the future design phase to reduce or mitigate impacts. For locations where Gopher Tortoises are discovered, the County will need to apply for a relocation permit through FDEP.

Additional future considerations to include is landscaping which can not only provide shade, but several ecosystem services⁵. Trees can also assist in removing harmful pollutants like carbon dioxide (CO²) from the atmosphere, they also lower temperatures and assist with the reduction of the heat island effect, a condition of excessive accumulation of heat associated with impervious surface areas.

Landscaping has been found to provide benefits in human welfare and well-being, cognitive health, community development, and driver comfort⁶. Shade or canopy trees have numerous benefits including reducing peak temperatures and air pollution, enhancing property values, providing wildlife habitat, aesthetics improvements, and can attract businesses and people. Future considerations should include shade trees on both sides of the pathway, when feasible, to ensure coverage from the sun and elements. It is important to note that the Florida SUN Trail program does not pay for these features, therefore the County would be required to fund these amenities or apply for different grant program.

7.7. AMENITIES

Amenities are an important part of the walking and biking experience and can include signage, bathrooms, a water fountain, parking, street furniture, lighting, repair stations, shade, public art and/or pocket parks. The State of Washington conducted a study to review the economic, environmental, social and health benefits of trails in 2019, the report included several recommendations, including a policy recommendation for the addition of new and improved amenities since it was found that amenities increase visitation.⁷ **Figure 74** includes various types of street furniture which can be considered when designing for the facility.

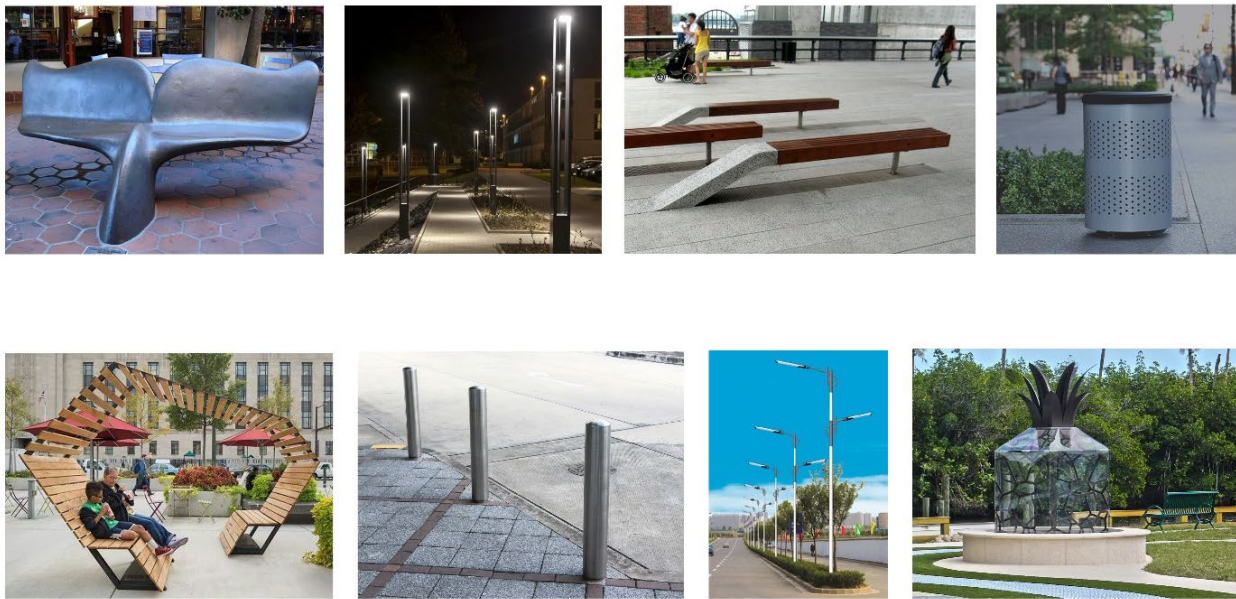


Figure 74: Examples of Street Furniture

⁵ Any positive benefit that wildlife ecosystems provide (National Wildlife Fund)

⁶ Dixon, K.K., and K.L. Wolf. 2007. Benefits and Risks of Urban Roadside Landscape: Finding a Livable, Balanced Response. Proceedings of the 3rd Urban Street Symposium (June 24-27, 2007; Seattle, WA). Washington D.C.: Transportation Research Board of the National Academics of Science

⁷ Washington State Recreation and Conservation Office. Economic and Health Benefits of Walking, Hiking and Bicycling on recreational Trails in Washington. 2019.

Future considerations should include the identification of locations for pocket parks or areas of respite which should include seating, lighting, an emergency callbox, bicycle repair station, shade water, and a waste/recycling receptacle. These areas should serve as areas to rest and enjoy the surrounding area. In important ecological areas, education signage can be placed to inform the user of important foliage, fauna, wildlife or ecosystems to better educate about the natural area.

Signage is an important amenity which can direct vehicles and non-motorized users to the location of destinations, improve navigation and accessibility to the area. Future considerations should include signage for motorist informing them of the facility at important sections and crossroads, but should also include wayfinding signage for the user to ensure the direction of the pathway and locations of key points of interest. It is important to note that the Florida SUN Trail program does not pay for these features, therefore the County would be required to fund these amenities or apply for other grant programs. The county should consider policy adoption of updates as it relates to amenities along trails and walking or biking routes.

7.8. MAINTENANCE

Maintenance is a necessary component of non-motorized facilities and includes day-to-day upkeep, removal of trash and debris, soil and weed control, maintenance of drainage, graffiti removal, mowing, sweeping, sign replacement, shrub trimming, and maintaining amenities to ensure lights, benches, trash cans, etc. are in good working condition. Future considerations need to include identification of who will be responsible for the operation and maintenance of this facility. Coordination and collaboration between the County, FDOT and any other responsible parties or affected agencies to ensure cooperation. Additionally, FDOT will require a Maintenance Memorandum of Agreement (MMA) with Martin County to ensure commitment to long-term trail maintenance prior to funding.

An additional future consideration includes funding for maintenance and improvements. **Appendix H** includes funding programs for trails and non-motorized facilities the county can explore, but the county should consider amending the Comprehensive Plan as it relates to development fees and/or property taxes to include funding for new and existing multimodal facilities. This ensures a guaranteed revenue stream for the maintenance and construction of multimodal facilities, including trails, sidewalks, SUPs, and bicycle facilities.

7.9. PERMITS

All development requires permits, future permit considerations include coordination and permit collaboration with FDEP, FDOT, FWC, SFWMD, and Martin County. This includes drainage, environmental, National Pollutant Discharge Elimination System (NPDES), and the County Building Department. Additional considerations should include the identification of utility structures which may be impacted and coordination with agencies involved. This may include FPL, Martin County Utilities - including South Martin Regional Utility, AT&T, Elite Gas Contractors, and Paulie Propane-Natural Gas, Inc. Coordination with the FEC will also be required for the railroad crossing along SE Osprey Street.

8. COST ESTIMATES

Preliminary planning estimates were developed to provide a rough estimate of the proposed pathway alignments for the second and third public meeting using the FDOT Cost Per Mile Model Reports. These estimates were included in public meetings with a note that they were estimates and included only the pathway and not the earthwork, cost of removing existing sidewalk, relocation of utilities (if any), etc. Once the trail alignment and

preferred typical section alternative was chosen, the Consultant Team developed an FDOT Long Range Estimate (LRE) for this project. **Table 8** includes a cost estimate summary of the pathway from CR-708/Bridge Road to Gomez Avenue. A more detailed cost estimate can be found in **Appendix G**.

Table 8: Cost Estimate

TYPE	COST ESTIMATE
Earthwork	\$807,252.41
Roadway	\$3,769,493.90
Shoulder	\$285,696.88
Drainage	\$925,390.84
Signing	\$74,442.84
Signalization	\$212,092.19
Maintenance of Traffic	\$485,949.52
Mobilization	\$656,031.86
Contingency	\$70,683.27
PROJECT TOTAL	\$7,287,033.71

9. NEXT STEPS

With the completion of this study the Hobe Sound North Corridor is ready to move into the next phase of the process, this phase is anticipated to take approximately two (2) years. As there is no ROW anticipated in need for acquisition, once the design plans are completed, the project will be ready for construction. On April 11, 2023 the Florida Governor approved Senate Bill 106 increasing the amount FDOT is required to allocate for purposes of funding and maintaining projects within the Florida SUN Trail Network, this additional appropriation included an additional \$200,000,000 in funding for the program, which may expediate the design and construction of this segment of the Florida SUN Trail Network and ECG. A list of funding programs is provided in **Appendix H**. The County may want to explore the funding programs to install amenities, landscaping, and additional wayfinding features to the proposed SUP alignment.

