Bicycle/Pedestrian Feasibility Study

DeLand West Greenway

Final Report

City of Deland, Florida
December 30, 2022

Prepared For:

RIVER TO SEA TPO
Transportation P anning Organization
VISION - PLAN - IMPLEMENT

Executive Summary

The River to Sea Transportation Planning Organization (R2CTPO) is evaluating the feasibility of a new shared use path along West Euclid Avenue between Grand Avenue and Alabama Avenue, approximately 2.8 miles in length. This is a City of DeLand project that spans land in both the City and Volusia County. This shared use path would connect the proposed Spring to Spring trail along Grand Avenue and the future DeLand SunRail Station to downtown DeLand, the existing DeLand Greenway Trail along Alabama Avenue, and the DeLand Intermodal Transportation Facility. This study also addresses potential crossing locations (either midblock or at intersections), where the path needs to switch sides of the road, along with appropriate traffic control.

The conceptual alignment was developed with best currently available Right-Of-Way (ROW) information, field collected data, and the latest FDOT design guidelines from the Florida Greenbook. The corridor has many geometric and apparent ROW constraints that were factors in the proposed concept design which impacted the alignment including which side of the street to use in which parts of the corridor.

The proposed typical sections keep the existing two vehicle lanes across the project limits. The proposed shared use path follows the south side of Euclid Avenue from Grand Avenue to Boundary Avenue, the north side of Euclid Avenue from Boundary Avenue to Delaware Avenue, and the south side of Euclid Avenue from Delaware Avenue to Alabama Avenue. The proposed shared use path is primarily 12 feet in width but varies in some locations to as little as eight feet depending on specific geometric constraints such as existing mature trees and topography.

The front of the proposed shared use is proposed to have five feet of separation from existing road shoulders. Where there is curb proposed, the front of the proposed shared use path will be between zero and five feet from the curb. A total of 50 parcels have been identified with ROW impacts based on the proposed concept and the apparent ROW lines, totaling approximately 1.45 acres. The western half of the corridor west of Spring Garden Avenue (SR 15A) has more restrictive ROW, with more than 60% of the parcels and more than 80% of the overall anticipated acreage requiring acquisition. Once a final design survey is performed, a more accurate understanding of ROW acquisition will be known. It is likely that numerous right-of-entries will be needed to tie in reconstructed driveways to properties.

In addition to the more significant ROW acquisition in the western half of the corridor, significant amounts of coordination will also be required in this section to implement a new crossing of the existing CSX railroad spur adjacent to Old New York Avenue. In coordination with CSX there were three criteria provided by the railroad to consider crossing CSX ROW feasible. The first is narrowing the path to six feet wide within 50 feet of the tracks, the second is to install gates for the pedestrian path, and the third was a review and decision by the CSX real estate division. For this concept, the path was narrowed to six feet and the gates were included. The real estate coordination will need to occur between CSX, FDOT, and the maintaining agencies to gain CSX approval. The FDOT Railroad Coordinator can assist in future coordination efforts with CSX.

Based on the results of this study, it has been determined that a proposed shared use path from Grand Avenue to Alabama Avenue along Euclid Avenue is physically feasible. However, due to the length of the corridor, the magnitude of the anticipated costs, and the significant implementation

challenges in the western half of the study corridor, the overall corridor was split at Spring Garden Avenue (SR 15A) into two approximately equal length segments for the purpose of the recommendations and cost estimates. The total estimated opinion of probable costs for design, ROW acquisition, and construction in 2022 dollars of Segment 1 (Grand Avenue to Spring Garden Avenue) and Segment 2 (Spring Garden Avenue to Alabama Avenue) is $5.82 million and $5.88 million, respectively, for an overall estimated project cost of $11.7 million.

It is recommended that Segment 2 between Spring Garden Avenue (SR 15A) and Alabama Avenue be advanced for implementation, while initial work such as a ROW survey be completed for the entire corridor to help better understand the full magnitude of ROW acquisition needs for the western half. The full design, ROW acquisition, and construction of Segment 1 from Grand Avenue to Spring Garden Avenue (SR 15A) is recommended for advancement as a second project phase.

Contents

Tables

Figures

Appendices

Appendix A – Concept Plan
Appendix B – Typical Sections
Appendix C – FEMA FIRM Map
Appendix D – NRCS Soil Survey Map
Appendix E – FDOT Inflation Factors
Appendix F – Sunshine One Call Ticket and Utility Information
Appendix G – Field Observations Inventory
Appendix H – ROW Research and Cost Estimate
Appendix I – Responses to Comments

(this page intentionally blank)

1 Introduction

The River to Sea Transportation Planning Organization (R2CTPO) is evaluating the feasibility of a new shared use path in the City of DeLand and Volusia County along West Euclid Avenue between Grand Avenue and Alabama Avenue, a distance of approximately 2.8 miles. The portion of the corridor between Grand Avenue and Boundary Avenue is within unincorporated Volusia County, while the rest of the corridor east of Boundary Avenue to Alabama Avenue is within the City of DeLand limits. The feasibility study application was submitted by the City of DeLand, and therefore this is considered a City of DeLand project. The study also addresses potential crossing locations (either midblock or at intersections), if the path needs to switch sides of the road, along with appropriate traffic control. The work was determined by the R2CTPO.

The main purpose of this shared use path is to provide a critical non-motorized connection between downtown DeLand, the existing Charles Pavia Trail, the existing trailhead at the City of DeLand's Intermodal Transit Facility (ITF) on the east, and the future Volusia County Spring-to-Spring Trail and the DeLand SunRail Station on the west. Note that this feasibility study does not specifically include the connection between Grand Avenue and the DeLand SunRail Station, as this section is being evaluated and planned as part of a future development.

The existing sidewalk alternates between the north and south side throughout the entire corridor at a width of five (5) feet. Sidewalk gaps exist from Grand Avenue to Old New York Avenue and Ridgewood Avenue to east of Westwood Avenue.

2 Project Purpose and Scope

The purpose of this study is to determine the feasibility of providing a twelve-foot shared use path within the study limits from Grand Avenue to Alabama Avenue along Euclid Avenue that provides a safer route and enhanced connectivity for users to access nearby destinations including downtown DeLand, the Charles Pavia Trail, the City of DeLand's Intermodal Transit Facility (ITF), and the future Volusia County Spring-to-Spring Trail. The primary benefits of this project are to expand the City's multimodal transportation network, connect the City's local trail to the regional trail network (a connection that has been contemplated since the adoption of the City's Greenway Plan in 2004) increase access to the SunRail Station for more people (including those in low-income groups or without access to vehicles) and expand recreational and employment opportunities.

A field review was conducted during the study to collect data, evaluate corridor characteristics, help develop concept plans, and produce an opinion of probable costs. In addition, Americans with Disabilities Act (ADA) requirements were used as guidance for the development of all concept plans.

The project team would like to extend appreciation to all agency representatives and stakeholders whose assistance in this project proved invaluable.

Mr. Stephan Harris - *River to Sea Transportation Planning Organization*

Mr. Mike Holmes - *City of DeLand*

Mr. Ray Bahrami - *City of DeLand*

Mr. Chad Gamble - *City of DeLand*

Mr. Tuan Huynh – *City of DeLand*

Ms. Carol Kuhn – *City of DeLand*

Mr. Travis Terpstra – *Volusia County*

Mr. Tim Baylie – *Volusia County*

Mr. David Padgett – *Volusia County*

Ms. Shannon Minchew – *Volusia County*

Mr. Eric Brule – *Florida Department of Transportation (FDOT) / HNTB*

Ms. Melissa Winsett, City of DeLand

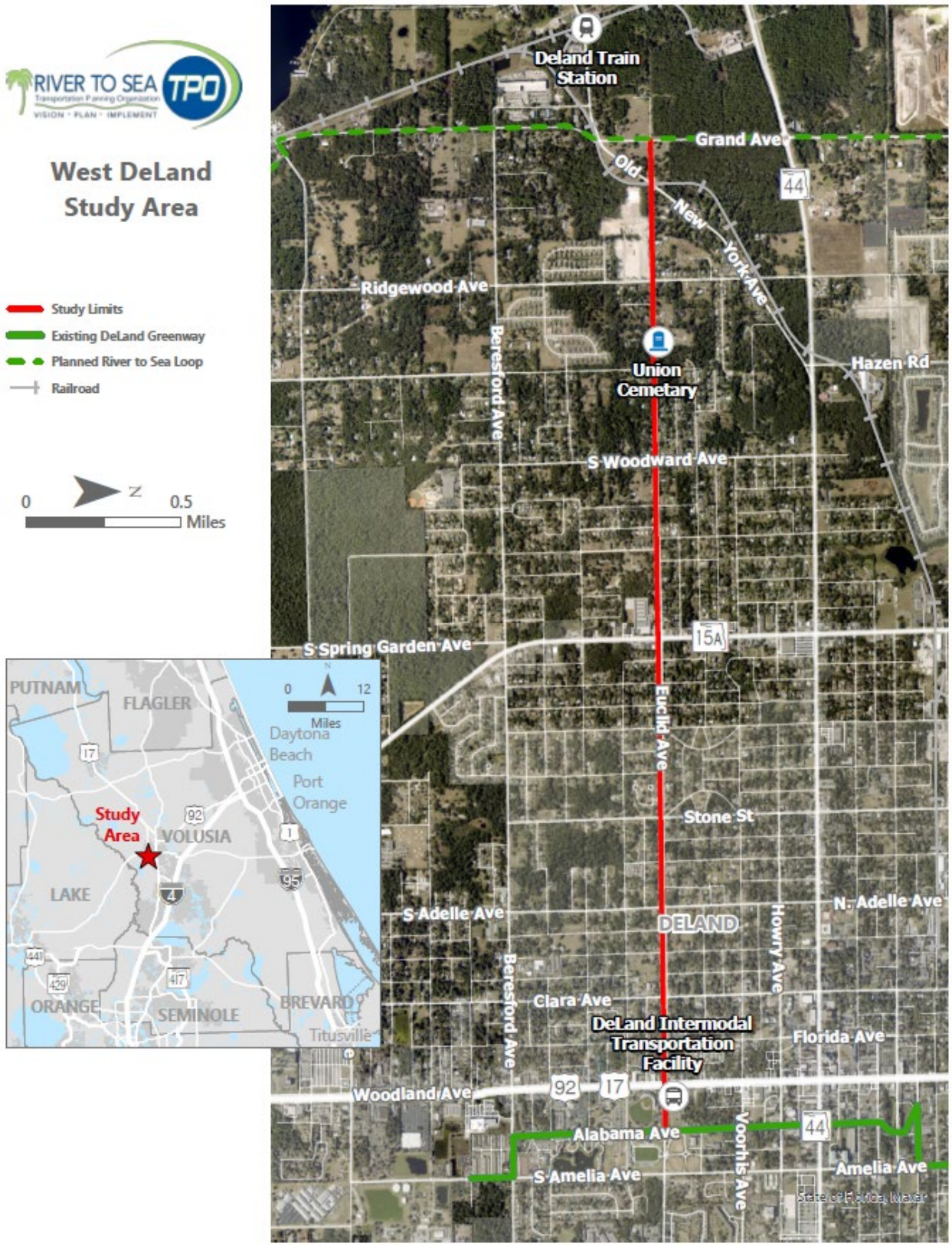
Ms. Sofie Liatsos, FDOT

Mr. Dave Mixon, FDOT

Mr. Scott Willis, CSX

A project location map is supplied in Figure 2-1.

Figure 2-1. Project Location Map



3 Existing Conditions

The following section details the characteristics observed within the project study limits regarding physical conditions, environmental concerns, drainage, utilities, and Right-Of-Way (ROW) assessment.

3.1 General Description

Euclid Avenue is a county maintained roadway located within unincorporated Volusia County between Grand Avenue and Boundary Avenue, and within the City of DeLand, Florida between Boundary Avenue and the eastern project limit at Alabama Avenue, representing a total project distance of approximately 2.8 miles. The entire study segment on Euclid Avenue is a two-lane undivided roadway.

A field review was conducted by the project team on October 5, 2022. During the field review, the team inspected existing sidewalk conditions, land use, and potential obstacles related to a proposed shared use path including utilities, drainage structures, and roadside ditches. Existing conditions and observations, including photographs, were documented using a mobile geographic information services (GIS) data collection app. A link to the data collected via a publicly available GIS interface is provided in the References section of the report. Additionally, an inventory of the observations and photos is included in Appendix G. The posted speed limit is 35 MPH from Grand Avenue to Fatio Road, where the posted speed limit decreases to 30 MPH through the east end of the study corridor. Euclid Avenue is a low volume road with an annual average daily traffic (AADT) of 1250 in 2021 per Florida Traffic Online. There is a CSX spur railroad crossing at Old New York Ave.

3.1.1 Streets and Intersections

Existing sidewalk limits vary along Euclid Avenue, and is typically five (5) feet in width where present. The limits of existing sidewalk from west to east along Euclid Avenue in the study limits are as following:

- South side from Old New York Avenue to Ridgewood Avenue
- North side from Spring Garden Avenue (SR 15A) to Orange Avenue
- South side from Orange Avenue to Adelle Avenue
- North side from Adelle Avenue to Alabama Avenue
- South side from Florida Avenue to Alabama Avenue

Existing intersection control is all-way stop control on Euclid Avenue at Woodward Avenue, Adelle Avenue, and Clara Avenue.

A shared-use path on Euclid Avenue would be uncontrolled as it crosses Grand Avenue, Old New York Avenue, Woodland Boulevard (SR 15 / US 17-92), and Alabama Avenue.

3.1.2 Existing Transit

One bus stop has been identified within the study corridor for VOTRAN, the Volusia County Public Transit System. The bus stop is the DeLand Intermodal Transit Facility, located at East Euclid Avenue, between Woodland Boulevard (SR 15 / US 17-92) and South Alabama Avenue. During the design and permitting phase, there is no need for coordination with VOTRAN for routes with the study area. The City of DeLand's Intermodal Transit Facility (ITF) has a sidewalk that connects to the existing sidewalk along the north side of Euclid Avenue.

3.1.3 Signalization

There is only one signalized intersection along the corridor located at Spring Garden Avenue (SR 15A). There are existing pedestrian push buttons at each corner of the intersection to provide safety at each crosswalk on the east and west sides of Spring Garden Avenue (SR 15A) for pedestrian use. The only existing sidewalk along Euclid Avenue is located on the northeast corner of the intersection. The existing signal phasing is a simple two-phase signal with permissive left turns only.

3.1.4 Land Use

Land use along the corridor is mostly residential with professional and public land distributed mainly throughout the eastern portion of the study. Destinations along the corridor include:

- Union Cemetery (north side of Euclid Avenue, between Fairfield Avenue and Fatio Road)
- Discount Market (south side of Euclid Avenue and Spring Garden Avenue (SR 15A))
- St Paul Holiness Church (north side of Euclid Avenue and Clara Avenue)
- Pronto Auto Repair (south side of Euclid Avenue, between Clara Avenue and Florida Avenue)
- Carniceria La Calentana Dos (north side of Euclid Avenue and Florida Avenue)
- AAMCO Transmissions & Total Car Care (north side of Euclid Avenue and Woodland Boulevard (SR15 / US 17-92))
- Florida Wild Veterinary Hospital (north side of Euclid Avenue, between Woodland Boulevard (SR15 / US 17-92) and Alabama Avenue)
- Melching Field (south side of Euclid Avenue, between Woodland Boulevard (SR15 / US 17-92) and Alabama Avenue)
- Veterans of Foreign Wars Post 2380 (south side of Euclid Avenue and Alabama Avenue)

3.2 Right-of-Way

Parcel boundaries were obtained from Volusia County's GIS website and used for apparent ROW width along the study corridor. The boundaries are not considered

precise. A ROW survey and title searches will be required during a later phase to verify the areas and exact limits where ROW acquisition will be required to implement the proposed shared use path.

Research performed by Volusia County during this study identified numerous easements along the study corridor (see Appendix H), although no information is available at this time about the potential allowable uses on the various easements. The easement boundaries are shown on the concept plan based on the information provided by the County. In many cases, the easements represent wider areas compared to the apparent ROW lines and may represent additional space that could be used to place a shared use path. Additional research is needed to confirm if easements allow for a shared use path.

3.3 Utilities

The project team completed a utilities assessment on the study corridor. Overhead power lines exist along the south side of Euclid Avenue behind trees for the full extents of the study corridor. The north side of Euclid Avenue has utility poles in some areas as well. The distance of utility poles from the pavement edge varies from approximately 6 feet to 20 feet on both sides of Euclid Avenue. The relocation of existing utilities, such as poles, is anticipated. Other utilities on the corridor included fire hydrants, control boxes, and pull boxes for a variety of different owners.

A Sunshine One Call Ticket identified the following utilities along the corridor. The precise impacts to any utility would be determined in final design through utility coordination:

- City of DeLand: Reclaimed Water, Sewer, Water
- Charter Communications: CATV
- ZAYO Group: Fiber
- Duke Energy: Electric
- FL Public Utilities: Gas
- Centurylink: fiber
- Lake Beresford Water Association Inc.: Water
- Crown Castle NG: Fiber
- AT-&-T Distribution: Telephone
- Uniti Fiber LLC: Fiber

The Sunshine One Call Ticket, and utility information received from the City of DeLand, is supplied in Appendix F.

3.4 Drainage and Permitting

From a typical section perspective, Euclid Avenue can be separated into three distinct segments for drainage.

Segment 1 from Grand Avenue to Spring Garden Avenue (SR 15A) can be characterized by a rural typical section with roadside swales and properties typically below the roadway's elevation. Segment 2 from Spring Garden Avenue (SR 15A) to Adelle Avenue can be characterized by a rural typical section with roadside swales, occasional inlets, and in some areas stormwater runs off from properties towards the roadway. Segment 3 from Adelle Avenue to Alabama Avenue can be characterized into two (2) distinct areas. From Adelle Avenue to Florida Avenue there is a rural section that only has a five (5) foot sidewalk on the north side of Euclid Avenue, whereas from Florida Avenue to Alabama Avenue there is curb and gutter throughout and a five (5) foot sidewalk along both the north and south side of this section of the corridor.

The field assessment of the study area found the following related to existing drainage:

- Segment 1 corridor drainage observations can be seen below:

- Segment 2 corridor drainage inlets observed in the field found between Boundary Avenue and Stone Street are shown below:

- Segment 3 has existing curb and gutter from Florida Avenue to Alabama Avenue on both the north and south sides of Euclid Avenue. Two inlets and drains serve a low point east of Woodland Boulevard (SR 15 / US 17-92) as seen in the left and center pictures below:

- Across all segments there are occasional areas with significant drop offs from the edge of pavement to the ROW that convey water runoff. One example is the south side of Euclid Avenue to the immediate east of Pearl Street as seen below.

The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRMs) for the study area in Volusia County and the City of DeLand were reviewed, showing minimal flood hazards along the corridor. The area of interest is on Euclid Avenue from Grand Avenue to Alabama Avenue which FEMA identifies as Zone X, an area of minimal flood hazard. The impact to this area of interest from work performed are expected to be negligible. The FIRM for the study area is provided in Appendix C.

This shared use path project is anticipated to be exempt from permitting under 62-330.051(10) (c), F.A.C. for having a width of 14 feet or less for multi-use recreational paths, depending on the level of wetland impacts. Based on preliminary findings, there is no anticipated impact to wetlands. During the design and permitting phase, a pre-application meeting should be held with the St. Johns River Water Management District's (SJRWMD) to verify whether the project qualifies for an exemption. A permit determination letter will need to be submitted through the SJRWMD permitting portal.

3.5 Soils

The sidewalk subsurface consists of the soil types Apopka Fine Sand, Astatula Fine Sand, Astatula-Urban Land Complex, and Tavares Fine Sand. The Apopka Fine Sand is a well-drained sand and is part of the Hydrologic Soil Group A. The Astatula Fine Sand is an excessively drained sand and is part of the Hydrologic Soil Group A. The Astatula-

Urban Land Complex is an excessively drained sand and is part of the Hydrologic Soil Group A. The Tavares Fine Sand is a moderately well drained sand and is part of the Hydrologic Soil Group A. A soil map is provided in Appendix D. The map was prepared using GIS data from the USDA Natural Resources Conservation Services (NRCS).

3.6 Environmental

Impacts to any endangered or protected species is expected to be negligible. There are no known bald eagle nests within 600 feet of the project corridor. The Florida Natural Areas Inventory (FNAI) Element Occurrence data does not identify any documented listed species within the project area. The FNAI does not identify any part of the corridor as being conservation land. Volusia County is within a Central (Ocala) Bear Management Unit (BMU). The limited scope of this project makes it unlikely that protected species or any wildlife will be affected by this project. During the design and permitting phase, potential impacts to any species should be reevaluated.

3.7 Lighting

Existing lighting was noted during the daytime field visit on October 5, 2022. No nighttime lighting observations or photometric readings were completed as part of this project. Existing lighting is typically post-mounted across the entire south side of the study area except for Grand Avenue to Ridgewood Avenue, where there is no visible lighting. Between Fairfield Avenue and Cass Street, light posts were mounted to face private property rather than Euclid Avenue.

Existing lighting infrastructure at two-way stop control intersections along the corridor is generally non-existent or likely insufficient. At the Spring Garden Avenue (SR 15A) and Euclid Avenue signalized intersection, the existing lighting is defined by a single light post in the southwest corner.

3.8 Other Programmed Improvements

FDOT project 449467-2 is a pedestrian safety improvement project on Woodland Boulevard (SR 15 / US 17-92) from East Beresford Avenue to Plymouth Avenue in DeLand, FL. Recommended improvements for the project include upgrading existing crossings and adding six (6) new pedestrian crossings, including at the Intermodal Transportation Facility (ITF). The six new crossings would be equipped with rectangular rapid flashing beacons (RRFBs). Based on the Work Program's website, this project had funding for design in FY22, but there is no funding currently programmed for construction.

Source: FDOT KMZ

The image to the right shows the current FDOT provided concept which was given in KMZ form.

A new midblock crossing at the ITF will likely be placed approximately 150 feet north of the Euclid Avenue intersection (aligning just north of the sidewalk that goes

into the ITF). This location may potentially preclude another crosswalk with RRFBs close by although per the FDOT Traffic Engineering Manual (TEM) Section 5.2.5.1 (3)(b), crossings with RRFBs can be as close together as 100 feet if it makes sense for pedestrians. As such, a proposed trail route that is diverted to go through the ITF could be considered as an alternate. A midblock crossing at the ITF offers some advantages compared to crossing at Euclid Avenue, such as including a median refuge island, whereas Euclid Avenue cannot accommodate a refuge island due to the left turn lanes.

There is also another project (no. 438980-1) listed in the Work Program history that plans to add paved shoulders to Old New York Avenue from RR/DeLand Amtrak to SR 44. This project had construction (CST) cost in FY22. Based on construction materials observed in this area during the field visit, this project appeared to be underway.

Euclid Avenue between the railroad tracks at Old New York Avenue and Grand Avenue is within the SunRail DeLand Area Activity Center as seen below in a snippet from Volusia County Growth & Resource Management Department. This may require different agencies to coordinate who could be responsible for a shared use path construction in this area, including possibly developers.

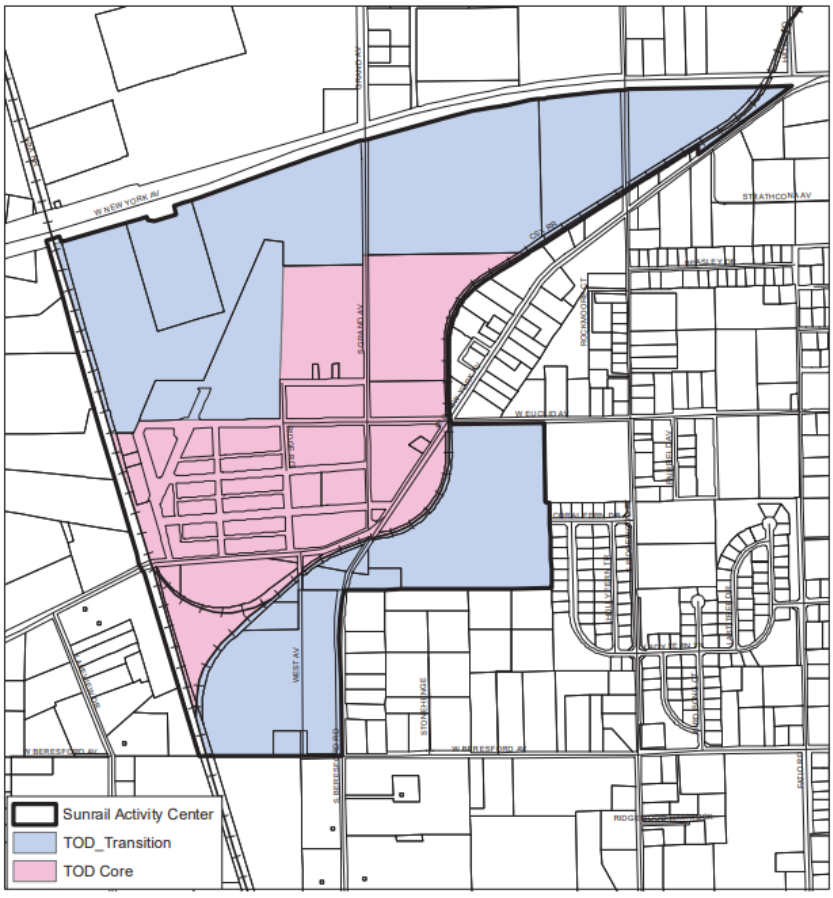


FIGURE 1-12O

SUNRAIL DELAND AREA ACTIVITY CENTER

4 Shared Use Path Concept Plan

The following section outlines the concept plans for the corridor which are attached in Appendix A. Typical Sections are located in Appendix B. The concept plan shows a 12-foot-wide shared use path beginning at Grand Avenue and crossing the south side of the T-junction, following the south side of Euclid Avenue until Boundary Avenue, where the path switches to the north side of the road. The shared use path then continues on the north side of Euclid Avenue from Boundary Avenue to Delaware Avenue, where the path switches to the south side again. From Delaware Avenue to Alabama Avenue, the proposed shared use path again follows the south side of Euclid Avenue. Periodically, the 12-foot-wide shared use path reduces in width to as narrow as eight feet to avoid obstacles such as mature trees.

4.1 Sidewalk, Driveways, and Cross Streets

This section reviews the concept plans for the sidewalks, cross streets, and driveways. Criteria from the Florida Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (Florida Greenbook) were followed for minimum standards and design criteria.

The Florida Greenbook (Chapter 9, Section C.2) states that shared use paths adjacent to the roadway should have separation of five feet from face of path to face of curb, or in an area without curb, five feet from outside edge of shoulder to front of path. If the separation is less than five feet, a physical barrier or railing is recommended to be provided between the face of path and edge of pavement/curb. However, given the likely ROW impacts to tie in at the back of shared use path to existing ground, the already constrained roadway width, and possible resident pushback having railing and/or barriers of some form in their front yards, it is recommended to maintain the five feet of separation in areas without existing or proposed curbing.

It is recommended to plant small shrubs and trees in the five-foot-wide area as needed to reinforce the separation and add an aesthetic to the corridor. Exact planting locations and species is to be determined during final design by a landscape architect and a cost for the procurement and planting of plants is included as a line item in the opinion of probable cost in the next section.

Occasionally, a shared use path can be as narrow as 8 feet (Section C.1) due to physical constraints such as utility structures, fencing, environmental features, and more. However, 10 feet is the desired minimum, and for this study, 12 feet is preferred.

The proposed shared use path will be required to have a cross slope of 2% or less. Existing landscape and trees within the ROW will be considered for removal as required to accommodate the eight-to-twelve-foot-wide shared use path. This would include the removal of small trees and bushes.

Volusia County trail guidelines state that for rural roads with no curb and gutter (which exists within part of our project limits), adequate separation between the proposed shared use path and existing roadway should be provided in case of a future shoulder widening. This corridor is not considered to be rural, therefore, the potential addition of future shoulders is not considered in determining offsets. The draft 2022 Florida

Greenbook in Chapter 9 Section C.2 states that for unpaved shoulders, the separation measurement is from outside edge of traveled way to inside edge of path.

The concept shows driveways and road crossings. In the concept, re-constructed driveways are shown and designed to meet FDOT turn out standards. Road crossings include ramps, markings, signage, and anything else needed to meet the latest and most appropriate FDOT standards.

The concept plans in Appendix A meets Florida Greenbook guidance. In addition to the proposed shared use path, the following improvements are proposed for Euclid Avenue from Grand Avenue to Alabama Avenue:

- Driveway reconstruction wherever the proposed shared use path crosses an existing driveway.
- At minor roadway crossings where the roadway approaches operate with stop control, enhanced signage and striping, and resetting existing intersection control such as stop signs to accommodate the shared use path.
- Refreshed crosswalk markings at intersections (Spring Garden Avenue (SR 15A), Adelle Avenue, Florida Avenue).
- Install crosswalks across Euclid Avenue to connect the proposed shared use path to existing sidewalk and at locations the shared use path switches between the north and south sides of Euclid Avenue (Boundary Avenue, Delaware Avenue, east of Woodland Boulevard (SR 15 / US 17-92) adjacent to the ITF). Where the path crosses Euclid Avenue at Boundary Avenue, a raised crossing is proposed to help slow speeds at the uncontrolled crossing. At Delaware Avenue, it is proposed to also add all-way stop control and a diagonal crosswalk to better facilitate the crossing of the path between the north and south sides of the street.
- A potential amenity area with facilities such as landscaping, benches, and art at the northwest corner of Euclid Avenue and Stone Street.
- Reconstructing existing sidewalk on the north side of Euclid Avenue to the west of Woodland Boulevard (SR 15 / US 17-92) to meet ADA cross slopes.
- Narrowing Euclid Avenue to 20 feet wide between Florida Avenue and Woodland Boulevard (SR 15 / US 17-92) to provide more space for a shared use path while maintaining lane assignments.

4.2 Drainage

Volusia County has a set of guidelines for trails and sidewalks within county ROW that advises to keep drainage patterns unchanged and neither conveyance capacity nor storage capacity are reduced. Following these guidelines, the concept attempts to maintain existing drainage patterns. During design, a survey will be performed which can help further delineate existing drainage patterns.

The proposed drainage elements for the corridor maintains existing drainage patterns. The concept does not direct more stormwater towards any property than existing

conditions. The concept includes the installation of Type F curb and gutter in limits that previously did not have any curb. For estimating purposes, a small number of new inlets and length piping is assumed in the eastern limits of the concept where curb and gutter is being introduced in areas not previously having curbing.

4.3 Lighting and Signalization

The concept includes enhanced lighting at uncontrolled shared use path crossings for better visibility. Outside of these locations, the designer should maintain existing lighting at a minimum.

The signalized intersection at Euclid Avenue and Spring Garden Avenue (SR 15A) is proposed to replace the existing single pedestrian pedestals and push buttons with two separate pedestals and push buttons adjacent to each crosswalk approach on all four corners that will have accessible pedestrian signal (APS) technology and leading pedestrian intervals (LPIs). An example of an existing pedestrian pedestal and push buttons is shown in the image to the right (NE corner).

Source: HDR Photo

The intersection of Euclid Avenue at Woodland Boulevard (SR 15 / US 17-92) currently operates with two-way stop control. With the proposed shared use path crossing the uncontrolled Woodland Boulevard approaches, some form of improvement will need to be made.

Given this location is a C4 context classification and has a speed of 35 MPH or less, there is no minimum pedestrian demand level needed to justify a marked crosswalk (FDOT TEM Section 5.2.5.1). This location also meets criteria such as proximity to significant generators and attractions (downtown DeLand, the trail itself, ITF, etc.) and the minimum location characteristics of having more than 2,000 average daily traffic (ADT), being outside the influence of a signal, and not within 300 feet of another crossing. There are also no sight distance concerns due to the area's flatness. As mentioned earlier in this report, there is an FDOT project along the US 17-92 corridor adding new crossings and RRFBs. This could impact the ideal trail alignment depending on the latest plans and further coordination with FDOT would be needed.

For crossing a 30-mph roadway with three-lane section without a raised median, and average annual daily traffic (AADT) greater than 15,000 (2021 AADT is 17,900 based on FDOT Florida Traffic Online), the Federal Highway Administration (FHWA) Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations recommends considering the following roadway treatment options:

- A high-visibility crosswalk with enhanced markings, parking restrictions on approaches, adequate nighttime lighting levels, and crossing warning signs
- An advance yield here (or stop) pedestrian sign and yield (or stop) line
- In-Street pedestrian crossing sign

- Curb Extensions
- Pedestrian Refuge Island
- Rectangular Rapid-Flashing Beacon (RRFB)
- Pedestrian Hybrid Beacon (PHB)

For this concept, it was determined that there is no room for curb extensions. Keeping the northbound and southbound left turn lanes is desirable given the destinations to the east and immediate west along Euclid Avenue. A PHB can be expensive, and it is uncertain whether this location would meet the necessary minimum pedestrian crossing volume to warrant a PHB.

The installation of RRFBs is recommended along with enhancing existing lighting and installing reflective pavement markings, and advance stop lines and signs. This site meets the FDOT requirements from the Traffic Engineering Manual for installation of RRFBs, including marked special emphasis crosswalk (proposed), posted speed of 35 mph or less (30 mph), and four or fewer lanes (three lanes).

Below in Table 4-1 is a summary of other proposed treatments at other intersections along the corridor.

Table 4-1. Recommend Crossing Treatments at Uncontrolled Crossings

Intersection of Euclid Ave at	AADT	Speed Limit (MPH)	Lanes	Proposed Treatment (See Plans)
Grand Ave	1,950	30	2 Lane	High-Visibility Crosswalk Markings, Enhanced Lighting, & Signage
Old New York Ave	3,200	40	2 Lane	High-Visibility Crosswalk Markings, Enhanced Lighting, & Signage
Boundary Ave (uncontrolled crossing of Euclid Avenue)	1,250	30	2 Lane	Raised Crosswalk, High-Visibility Crosswalk Markings, Enhanced Lighting, & Signage
Woodland Blvd (SR 15 / US 17-92)	17,900	30	3 Lane, No Raised Median	Rectangular Rapid-Flashing Beacons, High-Visibility Crosswalk Markings, Enhanced Lighting, Advance Stop Lines, & Signage
300’ West of Alabama Ave (uncontrolled crossing of Euclid Ave)	1,250	30	2 Lane	*Rectangular Rapid-Flashing Beacons, High-Visibility Crosswalk Markings, Lighting & Signage
Alabama Ave	<9,000	25	2 Lane, Divided	Raised Crosswalk, High-Visibility Crosswalk Markings, Enhanced Lighting, & Signage

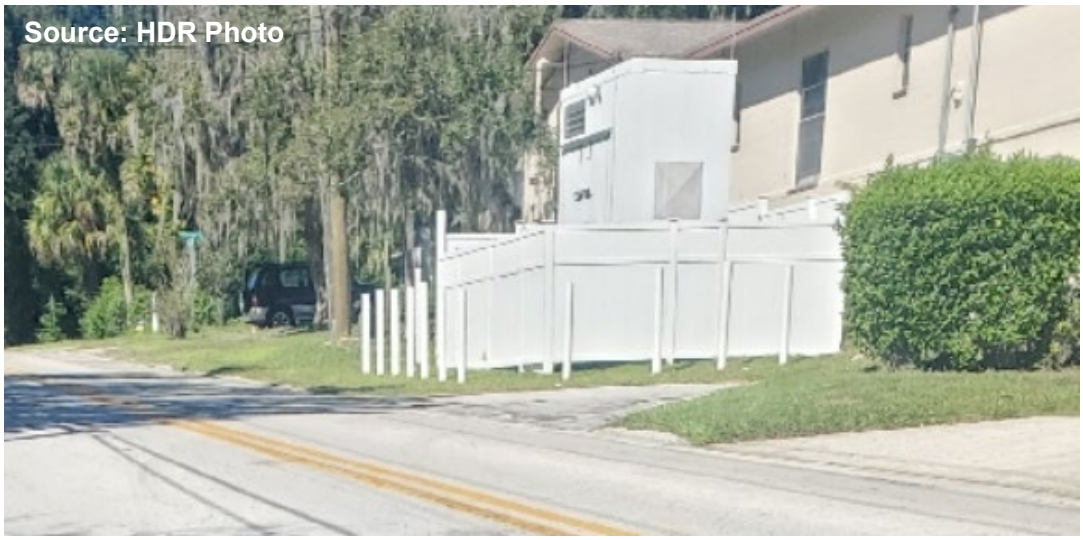
Proposed treatments based on FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations.

**City of DeLand will need to receive approval from FHWA to install this RRFB*

4.4 Utilities

There will be several utility poles, smaller utilities, fire hydrants, and other utility impacts across the study corridor. The concept plans in Appendix A identify utilities visible during the field visit along Euclid Avenue that will be impacted. During final design, more precise impacts and relocation coordination can be determined.

It appeared during the field visit that many utility poles may have recently been replaced or moved and the proposed concept would require many of those poles being moved. The proposed concept requires an existing utility on the north side of Euclid Avenue east of Orange Avenue to be relocated (see below image). The relocation will require coordination with the apparent owner being the University Center West Nursing and Rehabilitation Center.



4.5 Right-Of-Way

Research conducted by Volusia County identified numerous easements that exist along the study corridor. This research is provided in Appendix H. The proposed concept may require ROW acquisition, but during final design, the research performed should help inform the true ROW available during the survey. The parcel numbers, and approximate area of each parcel, are provided in Table 4-2 below for parcels that may require acquisition. The acquisition area is measured by the space between the apparent ROW line and the proposed ROW line since it is unlikely every easement can be utilized for the shared use path. A total of 50 parcels and approximately 1.45 acres would be impacted by the proposed concept plan, with all the parcels located between Old New York Avenue and Florida Avenue, and within those 50 parcels, 31 parcels make up 1.19 Acres located between Fairfield Avenue and Spring Garden Avenue (SR 15A). All potential impacts are labeled in the concept plans.

Table 4-2. Potential Parcel Impact Summary

Parcel Number	*Appx. Acquisition Area (Acres)	Street Address
79130700000B	0.133	Pelham Park Drive DeLand, FL 32720
79130700000A	0.053	Pelham Park Drive DeLand, FL 32720
701800001210	0.101	1666 W Euclid Avenue DeLand, FL 32720
701800001200	0.083	550 Fatio Road DeLand, FL 32720
701800000988	0.028	1592 W Euclid Avenue DeLand, FL 32720
701800000985	0.026	1582 W Euclid Avenue DeLand, FL 32720
701800000984	0.039	1572 W Euclid Avenue DeLand, FL 32720
701800000986	0.033	1560 W Euclid Avenue DeLand, FL 32720
701800000981	0.034	1536 W Euclid Avenue DeLand, FL 32720
701825000110	0.017	1532 W Euclid Avenue DeLand, FL 32720
701825000130	0.018	1528 W Euclid Avenue DeLand, FL 32720
701825000150	0.019	1524 W Euclid Avenue DeLand, FL 32720
701825000170	0.023	1520 W Euclid Avenue DeLand, FL 32720
701825000190	0.025	1516 W Euclid Avenue DeLand, FL 32720
701800000284	0.008	1460 W Euclid Avenue DeLand, FL 32720
701800000283	0.009	1454 W Euclid Avenue DeLand, FL 32720
701800000280	0.018	1450 W Euclid Avenue DeLand, FL 32720
701800000285	0.012	1444 W Euclid Avenue DeLand, FL 32720
701800000282	0.012	1440 W Euclid Avenue DeLand, FL 32720

Parcel Number	*Appx. Acquisition Area (Acres)	Street Address
701819000110	0.048	1400 W Euclid Avenue DeLand, FL 32720
701819000070	0.053	1250 W Euclid Avenue DeLand, FL 32720
701819000050	0.034	1224 W Euclid Avenue DeLand, FL 32720
701819000030	0.032	1218 W Euclid Avenue DeLand, FL 32720
701819000010	0.030	1210 W Euclid Avenue DeLand, FL 327200
701800000110	0.121	1152 W Euclid Avenue DeLand, FL 32720
701800000090	0.019	1150 W Euclid Avenue DeLand, FL 32720
701800000100	0.025	1148 W Euclid Avenue DeLand, FL 32720
701800000060	0.061	1138 W Euclid Avenue DeLand, FL 32720
701800000010	0.046	530 S Spring Garden Avenue (SR 15A) DeLand, FL 32720
701800000030	0.023	1120 W Euclid Avenue DeLand, FL 32720
701800000020	0.007	1106 W Euclid Avenue DeLand, FL 32720
701714060090	0.015	425 Kingsbury Boulevard DeLand, FL 32720
701714060100	0.012	817 W Euclid Avenue DeLand, FL 32720
701714060120	0.006	815 W Euclid Avenue DeLand, FL 32720
701714060130	0.006	813 W Euclid Avenue DeLand, FL 32720
701714060150	0.008	811 W Euclid Avenue DeLand, FL 32720
701714060170	0.007	807 W Euclid Avenue DeLand, FL 32720
701714060190	0.004	721 W Euclid Avenue DeLand, FL 32720

Parcel Number	*Appx. Acquisition Area (Acres)	Street Address
701714070090	0.002	719 E Euclid Avenue DeLand, FL 32720
701715000330	0.022	435 S Stone St DeLand, FL 32720
701715000360	0.007	621 W Euclid Avenue DeLand, FL 32720
701715000350	0.008	434 S Salisbury Avenue DeLand, FL 32720
701715000770	0.006	S Salisbury Avenue DeLand, FL 32720
701717000260	0.047	545 W Euclid Avenue DeLand, FL 32720
701717000230	0.034	525 W Euclid Avenue DeLand, FL 32720
701717000100	0.052	515 W Euclid Avenue DeLand, FL 32720
701730000010	0.004	304 W Euclid Avenue DeLand, FL 32720
701625000060	0.007	210 W Euclid Avenue DeLand, FL 32720
701625000090	0.004	208 W Euclid Avenue DeLand, FL 32720
701625000100	0.009	W Euclid Avenue DeLand, FL 32720
Total Parcels: 50	**Total Approximate Acquisition Area: 1.45 Acres**	

*Note: Apparent ROW lines are based on Volusia County GIS. The approximate acquisition areas represent the impacted area by parcel outside the apparent ROW line to the approximate tie-in point beyond the outside edge the proposed shared use path. A ROW survey and title searches will be required during the design phase to confirm the exact locations of the existing ROW lines and the potential applicability and usage of easements outside the apparent ROW to accommodate the shared use path.

To tie-in driveways being reconstructed, right-of-entries will likely be required in multiple locations but should be confirmed during final design when a survey can be performed to determine exact tie in locations relative to the true ROW line.

4.6 Railroads

There is an active railroad spur owned by CSX at the intersection of Euclid Avenue and Old New York Avenue that the proposed shared use path must cross. Per FDM 220.2.5, a new crossing being added to an existing roadway is considered new only if it is separated from the roadway. The concept includes separation and follows FDM 222.2.4 for at-grade railroad crossings. In addition, there will need to be early coordination during design and construction in accordance with Section 335.141, Florida Statues. This includes coordination with the District Rail Coordinator, District Traffic Operations Engineer, FDOT's Central Office Freight and Multimodal Operations Office, and more.

The shared use path will very likely be considered a separate new facility. The exact traffic control needed for the shared use path at the railroad crossing will need to be determined during final design through performing a crossing diagnostic that will review the safety aspects of the crossing. An agreement with the railroad will require paying the railroad to review any plans and develop or modify any existing agreements. The crossing diagnostic will involve a grade crossing engineer, client representative, and an owner representative. Given the existing railroad traffic control at the intersection is likely not current, the entire intersection may need to be upgraded.

In coordination with CSX there were three criteria provided by the railroad to consider crossing CSX ROW feasible. The first is narrowing the path to six feet wide within 50 feet of the tracks, the second is to install gates for the pedestrian path, and the third was a review and decision by the CSX real estate division. For this concept, the path was narrowed to six feet and the gates were included. The real estate coordination will need to occur between CSX, FDOT, and the maintaining agencies to gain CSX approval. The FDOT Railroad Coordinator can assist in future coordination efforts with CSX.

For the purposes of this concept, the opinion of probable cost includes gates/flashers for the shared use path and stop signs when the trains are not activated. The existing advance warning signs of the railroad should be updated to modified W10-2's to show the tracks in the middle of the intersection. Dynamic envelop cross hatching for the whole intersection would also be desirable and would be a part of discussions in final design. FDOT is planning to resurface this rail crossing using a pre-cast concrete "tub" structure. Because the rail crossing resurfacing project is planned to occur prior to the implementation of this shared-use path, the cost of replacing the tub structure with a larger structure that would accommodate the additional surface needed for the shared-use path crossing is included in the opinion of probable cost.

Sight distance at this intersection is poor and clearing and grubbing is recommended. The proposed crossing location is shown in the image below.

Source: HDR Photo

5 Financial Feasibility

This section outlines the preliminary opinion of probable cost for the design and construction of the proposed shared use path along the Euclid Avenue corridor. The opinion of probable cost, item numbers, and units of measurement are based on FDOT's Basis of Estimates Manual. This opinion of probable cost is completed for the feasibility study to allow the R2CTPO and City of DeLand to determine the priority of any planned improvements. The cost for utility adjustments or relocations may be reimbursable to the utility owners for non-county projects within county ROW. Utility relocations are anticipated and must be confirmed during final design. For the opinion of probable cost, a there are no assumed costs for utility adjustments.

Unit prices for pay items are determined from historical average costs provided through FDOT. There are no item numbers that are anticipated to need to be split out into costs that different agencies would cover the said difference of. To accommodate future increases in the opinion of probable cost, an inflation factor was applied based on FDOT guidelines for roadway construction costs. A list of FDOT approved inflation factors through 2059 is provided in Appendix E.

Due to the length of the corridor, the magnitude of the anticipated costs, and the significant implementation challenges in the western half of the study corridor, the overall corridor was split into two segments for the purpose of the recommendations and cost estimates. The division between the two segments is at the approximate halfway point along the study corridor at Spring Garden Avenue (SR 15A), with Segment 1 from Grand Avenue to Spring Garden Avenue, and Segment 2 from Spring Garden Avenue to Alabama Avenue. The implementation challenges in Segment 1 are upgrading the railroad crossing of Euclid Avenue to include new infrastructure and a separated path crossing, likely ROW impacts to at least 32 parcels in the segment, and a number of significant shade trees that the path may need to either meander around or possibly narrow at the trees. As noted in the previous section, FDOT is planning to resurface the rail crossing at Old New York Avenue with a pre-cast concrete "tub" structure and to be conservative, the opinion of probable cost assumes that the separate shared use path will require the removal and replacement of the proposed tub with larger dimensions.

Table 5-1 and Table 5-2 summarize the design and construction cost estimates for the corridor for segments 1 and 2, respectively. The total estimated opinion of probable costs in 2022 dollars of Segment 1 and Segment 2 is $5.82 million and $5.88 million, respectively, for an overall estimated project cost of $11.7 million. These values include assumed ROW acquisition costs that take into account land value and soft costs including, but not limited to, administration, appraisals, and litigation. A more detailed breakdown of the ROW costs is provided in Appendix H.

Table 5-3 summarizes the inflation factors and inflation-adjusted estimates for the corridor segments through 2025.

Table 5-1. Opinion of Probable Cost, Segment 1

ENGINEERS OPINION OF PROBABLE COST						
West DeLand Greenway Feasibility Study for R2CTPO Segment 1 - Grand Ave to Spring Garden Ave (SR 15A)						
FDOT Item No.	**Description**	**Unit**	**Unit Cost**	**Unit Cost Source**	**Quantity**	**Cost**
INCIDENTAL ITEMS AND EARTHWORK						
0101 1	MOBILIZATION	LS	10% OF SUBTOTAL	Assumed	10% OF SUBTOTAL	$ 255,347.48
0102 1	MAINTENANCE OF TRAFFIC	LS	10% OF SUBTOTAL	Assumed	10% OF SUBTOTAL	$ 255,347.48
0104 10 3	SEDIMENT BARRIER	LF	$ 1.80	Area 6 Moving Average	7,400.0	$ 13,320.00
0104 18	INLET PROTECTION SYSTEM	EA	$ 135.07	Area 6 Moving Average	8.0	$ 1,080.56
0110 1 1	CLEARING & GRUBBING	AC	$ 15,821.23	Area 6 Moving Average	3.7	$ 59,129.85
0110 4 10	REMOVAL OF EXIST CONC	SY	$ 28.02	Area 6 Moving Average	1,734.9	$ 48,611.59
0110 7 1	MAILBOX, F&I SINGLE	EA	$ 152.48	Area 6 Moving Average	29.0	$ 4,421.92
0120 1	REGULAR EXCAVATION	CY	$ 14.35	Area 6 Moving Average	5,481.5	$ 78,659.26
0120 6	EMBANKMENT	CY	$ 17.60	Area 6 Moving Average	10,963.0	$ 192,948.15
CONCRETE AND ASSOCIATED ITEMS						
0400 0 11	CONC CLASS NS, GRAVITY WALL (4' HEIGHT, SCHEME 1)	CY	$ 2,266.87	Area 6 Moving Average	44.8	$ 101,555.78
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	SY	$ 56.45	Area 6 Moving Average	8,508.9	$ 480,326.78
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	SY	$ 70.76	Area 6 Moving Average	957.1	$ 67,725.18
0527 2	DETECTABLE WARNINGS	SF	$ 33.46	Area 6 Moving Average	528.0	$ 17,666.88
0570 1 2	PERFORMANCE TURF, SOD	SY	$ 3.70	Area 6 Moving Average	7,804.8	$ 28,877.68
SIGNING, SIGNALS, AND PAVEMENT MARKINGS						
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	$ 462.61	Area 6 Moving Average	81.0	$ 37,471.41
0700 1 50	SINGLE POST SIGN, RELOCATE	AS	$ 386.31	Area 6 Moving Average	36.0	$ 13,907.16
0700 1 60	SINGLE POST SIGN, REMOVE	AS	$ 51.51	Area 6 Moving Average	15.0	$ 772.65
SPECIAL CATEGORIES						
SPECIAL 1	LIGHTING ENHANCEMENTS AND INSTALLATION PER INTERSECTION	EA	$ 50,000.00	Assumed	2.0	$ 100,000.00
SPECIAL 2	RAILROAD CROSS. UPGRADES AT EACH LEG & PATH CROSSINGS	EA	$ 150,000.00	Assumed	6.0	$ 900,000.00
SPECIAL 3	REPLACEMENT OF TUB FOR PEDESTRIAN CROSSING AT RAILROAD	EA	$ 407,000.00	Assumed	1.0	$ 407,000.00
					SUBTOTAL	$ 3,064,169.80
					PAVEMENT MARKINGS (3% OF SUBTOTAL)	$ 91,925.09
					LANDSCAPING (5% OF SUBTOTAL)	$ 153,208.49
					CONSTRUCTION TOTAL	$ 3,309,303.39
					CEI (10% OF CONSTRUCTION TOTAL)	$ 330,930.34
					ENGINEERING DESIGN (15% OF CONSTRUCTION TOTAL)	$ 496,395.51
					SURVEY AND R/W MAPPING ($0.40 PER SQ. FT)	$ 177,600.00
					ASSUMED ROW ACQUISITION COSTS	$ 1,499,800.00
					TOTAL	$ 5,814,029.24
					ROUNDED TOTAL	**$ 5,820,000**

NOTE 1: UTILITY RELOCATION COSTS NOT INCLUDED.

Table 5-2. Opinion of Probable Cost, Segment 2

ENGINEERS OPINION OF PROBABLE COST						
West DeLand Greenway Feasibility Study for R2CTPO Segment 2 - Spring Garden Ave (SR 15A) to Alabama Ave						
FDOT Item No.	**Description**	**Unit**	**Unit Cost**	**Unit Cost Source**	**Quantity**	**Cost**
INCIDENTAL ITEMS AND EARTHWORK						
0101 1	MOBILIZATION	LS	10% OF SUBTOTAL	Assumed	10% OF SUBTOTAL	$ 285,345.37
0102 1	MAINTENANCE OF TRAFFIC	LS	10% OF SUBTOTAL	Assumed	10% OF SUBTOTAL	$ 285,345.37
0104 10 3	SEDIMENT BARRIER	LF	$ 1.80	Area 6 Moving Average	7,400.0	$ 13,320.00
0104 18	INLET PROTECTION SYSTEM	EA	$ 135.07	Area 6 Moving Average	7.0	$ 945.49
0110 1 1	CLEARING & GRUBBING	AC	$ 15,821.23	Area 6 Moving Average	3.7	$ 59,129.85
0110 4 10	REMOVAL OF EXIST CONC	SY	$ 28.02	Area 6 Moving Average	4,328.2	$ 121,276.79
0110 7 1	MAILBOX, F&I SINGLE	EA	$ 152.48	Area 6 Moving Average	50.0	$ 7,624.00
0120 1	REGULAR EXCAVATION	CY	$ 14.35	Area 6 Moving Average	5,481.5	$ 78,659.26
0120 6	EMBANKMENT	CY	$ 17.60	Area 6 Moving Average	10,963.0	$ 192,948.15
DRAINAGE						
0425 1361	INLETS, CURB, TYPE P-6, <10'	EA	$ 7,490.31	Area 6 Moving Average	11.0	$ 82,393.41
430174124	PIPE CULV, OPT MATL, ROUND,24"SD	LF	$ 191.07	Area 6 Moving Average	2,091.0	$ 399,527.37
CONCRETE AND ASSOCIATED ITEMS						
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	$ 42.92	Area 6 Moving Average	2,770.0	$ 118,888.40
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	SY	$ 56.45	Area 6 Moving Average	8,010.6	$ 452,195.86
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	SY	$ 70.76	Area 6 Moving Average	1,808.4	$ 127,965.53
0527 2	DETECTABLE WARNINGS	SF	$ 33.46	Area 6 Moving Average	1,200.0	$ 40,152.00
0570 1 2	PERFORMANCE TURF, SOD	SY	$ 3.70	Area 6 Moving Average	2,988.2	$ 11,056.42
SIGNING, SIGNALS, AND PAVEMENT MARKINGS						
0635-2-11	PULL & SPLICE BOX, F&I, 13"x24" COVER SIZE	EA	$ 1,138.61	Area 6 Moving Average	8.0	$ 9,108.88
0646-1-12	ALUMINUM SIGNALS POLE, F&I PED DETECTOR POST	EA	$ 1,853.27	Area 6 Moving Average	8.0	$ 14,826.16
0654 2 22	RRFB, F&I - SOLAR, COMPLETE SIGN ASSEMBLY- BACK TO BACK	AS	$ 12,223.16	State 12 Moving Avg.	4.0	$ 48,892.64
665-1-12	PEDESTRIAN DETECTOR, (F&I), ACCESSIBLE	EA	$ 1,384.72	Area 6 Moving Average	8.0	$ 11,077.76
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	$ 462.61	Area 6 Moving Average	137.0	$ 63,377.57
0700 1 50	SINGLE POST SIGN, RELOCATE	AS	$ 386.31	Area 6 Moving Average	50.0	$ 19,315.50
0700 1 60	SINGLE POST SIGN, REMOVE	AS	$ 51.51	Area 6 Moving Average	15.0	$ 772.65
SPECIAL CATEGORIES						
SPECIAL 1	LIGHTING ENHANCEMENTS AND INSTALLATION PER INTERSECTION	EA	$ 50,000.00	Assumed	4.0	$ 200,000.00
SPECIAL 2	RAISED CROSSWALK	EA	$ 15,000.00	Assumed	2.0	$ 30,000.00
					SUBTOTAL	$ 3,424,144.42
					PAVEMENT MARKINGS (3% OF SUBTOTAL)	$ 102,724.33
					LANDSCAPING (5% OF SUBTOTAL)	$ 171,207.22
					CONSTRUCTION TOTAL	$ 3,698,075.98
					CEI (10% OF CONSTRUCTION TOTAL)	$ 369,807.60
					ENGINEERING DESIGN (15% OF CONSTRUCTION TOTAL)	$ 554,711.40
					SURVEY AND R/W MAPPING ($0.40 PER SQ. FT)	$ 177,600.00
					ASSUMED ROW ACQUISITION COSTS	$ 1,070,900.00
					TOTAL	$ 5,871,094.97
					ROUNDED TOTAL	**$ 5,880,000**

NOTE 1: UTILITY RELOCATION COSTS NOT INCLUDED.

Table 5-3. FDOT Inflation Factors and Inflation-Adjusted Estimates

FDOT Inflation-Adjusted Estimate	Inflation Factor	PDC Multiplier	Adjusted Cost Estimate	
			Segment 1: Grand Ave to Spring Garden Ave (SR 15)	Segment 2: Spring Garden Ave (SR 15) to Alabama Ave
Year 1 Inflation-Adjusted Estimate (2023)	2.70%	1.027	**$5,977,000**	**$6,039,000**
Year 2 Inflation-Adjusted Estimate (2024)	2.80%	1.056	**$6,144,000**	**$6,208,000**
Year 3 Inflation-Adjusted Estimate (2025)	2.90%	1.086	**$6,323,000**	**$6,388,000**

6 Conclusions

The purpose of this study was to evaluate the feasibility of constructing a shared use path in the City of DeLand and Volusia County along Euclid Avenue from Grand Avenue to Alabama Avenue. This shared use path would connect the proposed Spring to Spring Trail along Grand Avenue and the future DeLand SunRail Station to downtown DeLand, the existing DeLand Greenway Trail along Alabama Avenue, and the DeLand Intermodal Transportation Facility.

The proposed shared use path concept plans are presented within this study to help the R2CTPO, City of DeLand, and Volusia County plan for the design and construction phases and prioritize funding for the planned improvements. Additional improvements including new driveway turnouts, lighting, and ADA improvements are recommended along the study corridor to meet federal accessibility and Florida bicycle and pedestrian guidelines.

The proposed conceptual layout has the shared use path following the south side of Euclid Avenue from Grand Avenue to Boundary Avenue, where it switches to the north side until Delaware Avenue, and then finally the south side from Delaware Avenue to Alabama Avenue. Certain constraints with ROW, existing mature trees, utilities, and more were considered in the layout. Further research will be needed to determine precise ROW impacts and further inform potential costs. Based on the concept plan and the apparent ROW lines, the shared use path would impact 50 parcels and require approximately 1.45 acres of ROW acquisition. With more restrictive ROW, more than 60% of these parcels and more than 80% of the total acquisition area would be west of Spring Garden Avenue (SR 15A). In addition to the more significant ROW challenges on the western half of the corridor, there will also be significant levels of coordination to implement a new crossing of the existing CSX railroad spur. In coordination with CSX there were three criteria provided by the railroad to consider crossing CSX ROW feasible. The first is narrowing the path to six feet wide within 50 feet of the tracks, the second is to install gates for the pedestrian path, and the third was a review and decision by the CSX real estate division. For this concept, the path was narrowed to six feet and the gates were included. The real estate coordination will need to occur between CSX, FDOT, and the maintaining agencies to gain CSX approval. The FDOT Railroad Coordinator can assist in future coordination efforts with CSX.

Based on the results of this study, it has been determined that a proposed shared use path from Grand Avenue to Alabama Avenue along Euclid Avenue is physically feasible. However, due to the length of the corridor, the magnitude of the anticipated costs, and the significant implementation challenges in the western half of the study corridor, the overall corridor was split at Spring Garden Avenue (SR 15A) into two approximately equal length segments for the purpose of the recommendations and cost estimates. The total estimated opinion of probable costs for design and construction in 2022 dollars of Segment 1 (Grand Avenue to Spring Garden Avenue) and Segment 2 (Spring Garden Avenue to Alabama Avenue) is $5.82 million and $5.88 million, respectively, for an overall estimated project cost of $11.7 million. These values include ROW acquisition costs based on the estimated land needed to implement the concept as well as land costs and soft costs such as administration, appraisals, and litigation.

It is recommended that Segment 2 between Spring Garden Avenue (SR 15A) and Alabama Avenue be advanced for implementation, while initial work such as a ROW survey be completed for the entire corridor to help better understand the full magnitude of ROW acquisition needed for the western half. The full design, ROW acquisition, and construction of Segment 1 from Grand Avenue to Spring Garden Avenue (SR 15A) is recommended for advancement as a second phase.

7 References

ArcGIS ESRI Base maps public interface
2022 West DeLand Field Collection (arcgis.com)

FDOT 2021/2022 Basis of Estimates Manual
2022 https://www.fdot.gov/programmanagement/estimates/documents/boemanual

FEMA Maps Service Center (FIRM Maps)
2022 https://msc.fema.gov/portal/search

Florida Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (Florida Greenbook)
2018 https://www.fdot.gov/roadway/floridagreenbook/fgb.shtm

Florida Fish and Wildlife Conservation Commission. Bald Eagle Nest Locator.
2021 https://geodata.myfwc.com/datasets/myfwc::eagle-nesting/about

Florida Fish and Wildlife Conservation Commission. Bear Management Units.
2021 https://myfwc.com/wildlifehabitats/wildlife/bear/bmu/

Florida Natural Areas Inventory (FNAI) Florida Biodiversity Matrix
2022 https://www.fnai.org/BiodiversityMatrix/index.html

National Resources Conservation Service. Web Soil Survey.
2019 https://websoilsurvey.nrcs.usda.gov/app/

River to Sea Transportation Planning Organization
2022 https://www.r2ctpo.org/

City of Deland
2022 https://www.deland.org/

Volusia County Code of Ordinances
2018 https://library.municode.com/fl/volusia_county/

Volusia County Property Appraiser's Land Mapping System
2018 https://vcpa.vcgov.org/searches

DeLand Zoning
2020 https://www.deland.org/184/Zoning-Information

Appendix