

SIDEWALK FEASIBILITY STUDY

Jackson Street

From Canal View Boulevard to Madeline Avenue

City of Port Orange

FINAL Report, January 2023

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Prepared For:
River to Sea TPO



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INTRODUCTION

As of March 2022, the City of Port Orange (the City) filed a 2022 Application for Project Prioritization with the River to Sea Transportation Planning Organization (R2CTPO) for this project, a copy of which is included in **Appendix A**. The purpose of this study is to evaluate the feasibility of constructing a 5-foot-wide sidewalk along Jackson Street, starting from Canal View Boulevard and terminating at Madeline Avenue with a 140-foot extension of existing sidewalk along the south side of Herbert Street. As shown in **Figure 1**, this study corridor is approximately 3,400 feet (0.6 miles) in length. The main objective of this study is to enhance safety for pedestrians as they travel along the corridor, specifically for school children using the Jackson Street & Nixon Lane school bus stop. Improvements requested in the City's application include the construction of sidewalk, realignment of Jackson Street, reconfiguration of stormwater drainage systems, lighting & signalization improvements at intersections along Jackson Street, tree removal, and additional right-of-way (R/W).

There are no existing sidewalks located along Jackson Street. There are no paved shoulders or bicycle lanes along either side of the roadway. The sidewalk along Jackson Street will provide residents safer access to public transportation, commercial properties, and other community amenities within the area. The project purpose and scope for this study are further explained in Section 2.

Figure 1
Project Location Map



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PROJECT PURPOSE AND SCOPE

As noted in the City's application, the purpose of the City's request is to improve pedestrian access to those residents who live along Jackson Street. The proposed project's connectivity includes the enhancement of access by providing a sidewalk.

An initial scoping meeting for this project was held on June 30, 2022 with members of the City, the Florida Department of Transportation (FDOT), and R2CTPO in attendance. During the initial scoping meeting, the City reiterated their request that the study consider R/W acquisition and/or realignment & reconstruction of the existing roadway as necessary to implement sidewalk, but they also acknowledged that significant R/W constraints may be encountered along the corridor in certain areas, where it may just be too challenging to implement new sidewalk.

During the scoping meeting, the City reported that they will be completing a sidewalk and stormwater improvement project on Jackson Street in the near future (2022 / 2023) which will provide sidewalk from Oak Street to Canal View Boulevard on the west side of the road. Plans were not available at the time this report was being prepared. However, this study considers potential replacement of the existing bridge structure located at the southern limits of the corridor, as necessary to provide connection to the future sidewalk that will be constructed in that other project.

At the scoping meeting, the City also reported that the existing horse farm property at southwest corner of Jackson Street & Madeline Avenue (Parcel 633701160020) had recently sold, and that a developer was in the process of preparing site plans for a proposed Extra Space Storage facility. The plans were subsequently submitted for site plan approval and are currently being reviewed by City staff. The City anticipates this project will provide for a new public-use sidewalk to be constructed along the west side of Jackson Street and the south side of Madeline Avenue, with associated R/W dedication and/or easements as necessary. However, given that developer improvements cannot be relied upon, this study assesses feasibility of providing sidewalk independent from improvements the developer may implement in the future.

A base map was assembled with current aerial photography, record plats available from the County, and Geographic Information Services (GIS) data, including R/W, parcel limits, and LIDAR topography. Available historical records were also obtained for a desktop review of the physical features present within the project corridor, including as-built surveys, record plans, & other utility maps provided by the City, as well as record documents for roadway, site plan, & subdivision projects, etc. from the St. Johns River Water Management District (SRWMD). These items were traced for incorporation of existing elements into the base map, including R/W, roadways, sidewalks, driveways, curbing, drainage facilities, signs, traffic control devices, lighting, and utilities. A field review was then conducted to further inventory the corridor and validate existing conditions. Physical features of the corridor were investigated to identify conditions that would have impact on the proposed sidewalk improvements for development of concept plans and a cost estimate. These include R/W constraints, unusual geometrics, visual obstructions, utility conflicts, etc. Color photographs were taken along the study corridor with emphasis on obtaining visual information which would be of value to the City, R2CTPO, FDOT

and/or the designer(s) that will complete plans preparation in any subsequent design phases of the project.

Upon compiling the base map information and conducting field reviews, an initial layout of proposed improvements was completed. Considerations were made for the design requirements related to “off-system” projects, or projects not located on the State Highway System (SHS), as specified within the 2022 FDOT Design Manual (FDM), the 2018 Manual of Uniform Minimum Standards for Design, Construction and Maintenance (Florida Greenbook), and other various publications.

A Natural Resources Report was performed to identify potential impacts to wetlands and threatened and endangered species which would result from the proposed sidewalk improvements included in this study. A cultural resources desktop feasibility study was also conducted with a review of background maps and technical publications, as well as a search of relevant databases.

Based on all the research completed, Typical Sections and Concept Plans were prepared showing all existing elements and the recommended improvements, copies of which have been included in **Appendix B**. Additionally, a cost estimate was prepared for the project, as included in Section 5 of this report.

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EXISTING CONDITIONS

The following section provides a general description of the characteristics observed within the project study limits with regards to the physical conditions, environmental conditions, drainage, and utilities. Also included is an assessment of the apparent R/W.

General Description

The study corridor is approximately 3,400 feet (0.6 miles) in length, extending from Canal View Boulevard to Madeline Avenue within the City of Port Orange. Between Canal View Boulevard and Herbert Street, commercial uses are adjacent to both sides of the study corridor. In the remainder of the study corridor, apartments and condominiums occupy the properties along the west side, while single-family residential subdivisions or individual homes occupy the properties along the east side.

Jackson Street is a two-lane undivided, rural collector roadway oriented in the north-south direction, which is maintained by the City. Within the study corridor, the posted speed limit is 25 miles per hour and travel lanes are predominately 10 to 11 feet wide. The northbound travel lane contains signage reflecting a 1-ton weight limit on trucks and the southbound travel lane contains signage not allowing truck traffic.

The existing roadway is bifurcated by median islands containing large oak trees where Springwood Square intersects Jackson Street in two (2) separate locations (station 117+50 and station 121+20). No curbing is present along the corridor. Based on field observations, the roadway section is crowned in some areas, while in other areas it is sloped entirely to the west or east, but in all cases existing cross slope is commonly less than 2.0%. Existing profile grade on Jackson Street was also analyzed utilizing LIDAR topography, which revealed that a majority of the roadway maintains less than 0.3% longitudinal slope, and in some cases the roadway profile is nearly flat. Concept Profiles are provided in **Appendix C**.

There is an existing school bus stop for Horizon Elementary and Spruce Creek High School on the west side of Jackson Street near Nixon Lane. There are no sidewalk or other pedestrian facilities present along Jackson Street and there are no paved shoulders or bicycle lanes along either side of the roadway, such that school students must walk and wait within the travel lanes or adjacent drainage ditches.



School Bus Stop at Jackson St. & Nixon Ln.
(Station 125+60, Facing North)

There are several private driveways serving commercial or residential developments, as well as public side streets that intersect Jackson Street along the study corridor. Several of these will require modification to ensure ADA compliance or otherwise accommodate the proposed sidewalks, as further described in Section 4 of this report. Below is a list of these features relevant to the proposed improvements and the locations where they intersect the study corridor:

- | | |
|----------------------------|--|
| • Station 106+10 (LT & RT) | Public R/W (Canal View Boulevard) |
| • Station 107+60 (LT) | Private Driveway (All-Aboard Storage) |
| • Station 109+65 (LT) | Private Driveway (All-Aboard Storage) |
| • Station 110+25 (LT) | Private Driveway (Bill's Transmissions) |
| • Station 112+20 (LT) | Private Driveway (Vacant) |
| • Station 112+80 (LT & RT) | Public R/W (Herbert Street) |
| • Station 114+20 (LT) | Private Driveway (South Oaks Condominiums) |
| • Station 115+50 (LT) | Private Driveway (Cobblestone Lane) |
| • Station 117+60 (LT) | Public R/W (Springwood Square) |
| • Station 121+85 (LT) | Public R/W (Springwood Square) |
| • Station 125+20 (LT) | Public R/W (Moonstone Court) |
| • Station 128+20 (LT) | Public R/W (Moonstone Court) |
| • Station 133+00 (LT) | Public R/W (Sweetgum Lane) |
| • Station 138+20 (RT) | Public R/W (Sugar House Drive) |
| • Station 138+90 (RT) | Private Driveway (Residential Home) |
| • Station 139+70 (LT & RT) | Public R/W (Madeline Avenue) |

As noted above, development review for an Extra Space Storage facility is underway at the City on the north end of the study corridor, between Sweetgum Lane and Madeline Ave. Based on latest conversations with the City, it is our understanding that the City intends to require the developer to provide sidewalks along the west side of Jackson Street, which may entail dedication of additional R/W and/or easements, removal of existing trees, and reconstruction of the existing roadway and/or roadside ditch.

Signalization and Lighting

There are no existing traffic signals present along the study corridor. Similarly, no dedicated roadway lighting systems are present within the existing corridor, though there are a few existing light fixtures attached to overhead utility poles at a few select locations along the corridor, as depicted on the Concept Plans included in **Appendix B**.

Bridge

The existing bridge was reviewed by Florida Bridge and Transportation, Inc. (FBT). Bridge Number 796412 consists of a single-span over Halifax Canal adjacent to Canal View Boulevard. The superstructure is comprised of what appears to be a flat slab supported by prestressed pile bents. The existing bridge was constructed in 1962 (60 years old) and has a sufficiency rating of 72.4 with a health index value of 81.6. This bridge has been listed as functionally obsolete and is posted with weight limit restrictions. This means that not all legal

trucks can go over this bridge. The existing bridge typical section consists of two 13-foot travel lanes. Guardrail with raised curbs shield both sides of the bridge with no approach guardrails at the north end and substandard guardrails at the south end. The overall bridge width from curb to curb is approximately 26 feet. The roadway is centered within about a 50-foot right of way at the bridge location. Existing plans and inspection reports have been requested but have not been obtained.

There are several utilities and drainage structures within the vicinity of the bridge:

- 12" water line – small two-span utility bridge adjacent to the west side of the bridge running parallel to the bridge. This water line is supported by the bridge headwalls and a single intermediate support of roughly the same diameter as the water line.
- Overhead electric – west side of the bridge running parallel to the bridge.
- Drainage structure – recently constructed curb inlet to canal on the southwest corner of the bridge.
- 36" CMP – Drain to canal. Opening in bridge headwall at southwest corner.
- 18" CMP – Drain to canal. Opening in bridge headwall at northwest corner. CMP extends to a headwall at the end of the existing north approach slab to collect water from the ditch directly adjacent to the west side of Jackson Street.
- 8" water line – small two-span utility bridge adjacent to the east side of the bridge running parallel to the bridge. This water line is supported by the bridge headwalls and a single intermediate concrete support.
- 12" DIP sewer line – small two-span utility bridge adjacent to the east side of the bridge running parallel to the bridge. This sewer line is supported by the bridge headwalls and a single intermediate concrete support.
- 24" CMP – Drain to canal. Opening in bridge headwall at northeast corner. CMP extends to a headwall at the end of the existing north approach slab to collect water from the ditch directly adjacent to the east side of Jackson Street.
- Conduit – small three-span utility bridge carrying telephone line, etc. roughly 15 feet east of the bridge running parallel to the bridge. This conduit is supported by the canal embankment and two intermediate timber piles within the canal.
- Overhead electric – north end of the bridge running perpendicular to Jackson Street.
- Buried Fiber Optic – north end of the bridge running perpendicular to Jackson Street.

Note this list of utilities is not a full comprehensive list all the utilities at the site.

Drainage and Permitting

As noted above, the pavement cross slope varies along Jackson Street and no existing curbing is present. Refer to station ranges provided on the Typical Sections in **Appendix B** for further details, as well as the Concept Profile information provided in **Appendix C**. Based on these existing conditions, predominant outfall patterns are as described below:

- From Canal View Boulevard (station 106+10) to Herbert Street (station 112+80) - Runoff from the roadway is directed towards the adjacent private properties on the east and west sides of the roadway and conveyed southerly through a series of shallow swales until it is ultimately discharged to the Halifax Canal through storm pipe penetrations in the existing bridge abutment / wing wall structure.

- From Herbert Street (station 112+80) to Sweetgum Lane (station 133+00) - Runoff from the roadway is directed towards the adjacent private properties on the west side of the roadway and conveyed (northerly from station 112+80 to station 130+00 / southerly from station 130+00 to station 133+00), through a series of shallow swales and culvert pipes to an existing privately-maintained wet detention pond (Pond 2) near station 130+30 LT, where a previously permitted outfall device ultimately discharges it westerly to the Halifax Canal adjacent to SR 5A (Nova Road).
- From Sweetgum Lane (station 133+00) to Madeline Avenue (station 139+70) – Runoff from the roadway is directed towards the adjacent private properties on the east and west sides of the roadway. A shallow swale located on the western property discharges the runoff northerly to the Madeline Avenue roadside ditch, where it is then directed westerly to the Halifax Canal in the median of SR 5A (Nova Road).

A field review was conducted on October 4, 2022, less than a week after Hurricane Ian impacted the area. It was noted that the existing swales were still inundated from the recent hurricane. It was also noted that some of the inlets and pipes in the existing drainage collection system were full of sediment, impeding the flow of runoff, and generally in need of maintenance.



Below is a summary of SJRWMD Environmental Resource Permit (ERP) records in the vicinity of the project, which contain information relevant to systems in proximity to the corridor:

- ERP No. 76110-1 - Issued July 1999 for the Springwood Village Stormwater Improvements. This permit was a continuation of the City of Port Orange Stormwater Management Program and included a stormwater retrofit design to solve flooding problems within the existing neighborhoods. (station 129+00 to station 133+40).
- ERP No. 78919-1 – Issued April 1995 for the Corson Business Park & Mini Warehouses, authorizing the construction of storage buildings, associated parking area and a retention pond. (station 107+00 to station 108+40 LT).
- ERP No. 78919-2 – Issued November 1998 for the Corson Mini Warehouses, authorizing the construction of a storage building, associated parking area and a retention pond. (station 107+00 to station 110+40 RT).

Utilities

From Canal View Boulevard (station 106+10) to Cobblestone Lane (station 115+60) and north of Moonstone Court (station 125+20), overhead utilities are predominantly located on the west side of the road within existing drainage ditches or within close proximity to the existing edge of pavement. There are several distribution lines and service drops crossing the roadway to serve existing residents on the other side of the roadway. From Cobblestone Lane (station 115+60) to Moonstone Court (station 125+20), existing overhead lines are located predominantly on the east side of the roadway outside the apparent R/W, with distribution lines and service drops crossing the roadway to poles on the east side. Refer to the Concept Plans in **Appendix B** for a depiction of relevant existing overhead utilities.

Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains a 12" force main along the west side of Jackson Street from Canal View Boulevard (station 106+00) to Herbert Street (station 112+80), as well as an 8" water main along the east side of Jackson Street.

Utility poles within drainage ditch
Station 110+00, facing south



Right-of-Way

Within the limits of the study corridor, the Jackson Street R/W is maintained by the City. Multiple sources were evaluated for determination of existing R/W including Volusia County GIS, as-built surveys / record plans obtained from the City and SJRWMD, and record plats available from the Volusia County Clerk of Court's online database of Official Records. Refer to **Appendix D** for copies of the following underlying plats, which are arranged in sequential order from south to north along the corridor:

1. Map of Dunlawton (MB M, PG 187) – 01/1882
(applies to entire corridor - original 30' R/W dedication)
2. Plantation Acres (MB 23, PGS 69-70) – 04/07/1955
(applies to entire corridor - no additional R/W dedication)
3. South Oaks Townhouses (PB38, PGS 195-198) – 03/20/1987
(station 113+00 to station 114+60 LT – no additional R/W dedication)

4. Springwood Square (MB 36, PG 178) – 04/17/1980
(station 116+00 to station 123+60 LT – additional 10-foot R/W dedication on west)
5. Springwood Village Unit 2A (PB 35, PG 192)
(station 123+60 to station 131+20 LT – additional 10-foot R/W dedication on west)
6. Banbury Subdivision (MB 37, PG 8) – 07/14/1980
(station 128+00 to station 133+00 RT – no additional R/W dedication)
7. Springwood Village Unit 1 (PB 34, PG 167) – 09/26/1977
(station 131+20 to station 133+20 LT – additional 10-foot R/W dedication on west)
8. Sugar Forest Phase III (MB 35 PGS 1-2) – 04/19/1978
(station 133+20 to station 139+60 RT – additional 20-foot R/W dedication on east)

Additionally, record plans for the Corson Mini Warehouse (All Aboard Storage) projects on both sides of on Jackson Street suggested additional R/W was dedicated to provide 50 feet of R/W north of Canal View Boulevard (from station 106+10 to station 110+40). In addition, a recent boundary and topographic survey from the Extra Space Storage project was provided by the City, which delineates the 50 feet of existing R/W between Sweetgum Lane and Madeline Avenue, with delineation of the elements on the west side of the road.

While it is clear the Map of Dunlawton originally dedicated 30 feet of R/W for Jackson Street, very little geometric detail was provided on this hand drawn map from 1882, and overlaying this original plat over the base map revealed substantial deviation from actual state plane coordinate system. Furthermore, orthographically referencing in the subsequent plats and other record documents to the base map revealed there was also substantial discrepancy amongst the various professional surveyors that completed the former projects. As depicted in the Concept Plans provided in **Appendix B**, the existing roadway is not centered within the apparent R/W in several areas, and in other areas the public improvements appear to substantially encroach onto private properties where prescriptive R/W may apply. In addition, it was noted that the north and south approaches to the existing Herbert Street intersection are substantially misaligned. Based on the discussions above, existing R/W could be significantly different from that shown on the Concept Plans. Prior to any substantial design efforts taking place, it is recommended that sufficient title work and survey be completed to confirm the location of the existing R/W or easements on private property, relative to the existing roadway elements.

Floodplain

According to FEMA FIRM Panel 12127C0369J, as last revised September 29, 2017, portions of the existing R/W lie within Special Flood Hazard Area (SFHA) Zone AE with a Base Flood Elevation (BFE) determined to be 7.00' NAVD88. The remainder of the project corridor is noted to be within Zone X, 0.2% annual chance flood hazard, 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. A copy of the referenced FEMA map is provided in **Appendix E**.

Soils

A soils map was prepared through the Web Soil Survey (WSS) operated by USDA Natural Resources Conservation Services (NRCS), a copy of which is included in **Appendix F**. Proceeding from south to north, soils within the corridor traverse through classifications of Tuscawilla fine sand and Tuscawilla-Urban Land Complex.

Environmental Resources

A Natural Resources Report for the project was completed by Terracon Consultants, Inc. (Terracon). The purpose of the investigation was to preliminarily assess the work corridor for the presence of wetlands and state and federal protected animal and plant species and their habitats. Upon completion of the in-house review, Terracon staff inspected the study area in September 2022. For further details, refer to the complete study included in **Appendix G**.

Cultural Resources Desktop Assessment

A Cultural resources report for the project was completed by Terracon Consultants, Inc. (Terracon). The purpose of the study was to determine potential effects to cultural resources listed on or eligible for the National Register of historic Places (NRHP). For further details, refer to the complete study included in **Appendix H**.

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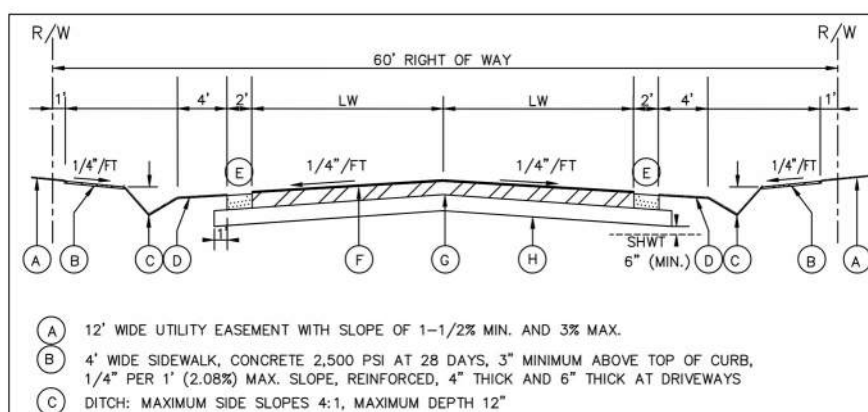
SIDEWALK CONCEPT PLAN

As previously mentioned, the purpose of this study was to evaluate the feasibility of constructing a 5-foot sidewalk on the west side of Jackson Street in order to provide safer access for pedestrians. In addition, the City desires fully compliant ADA crosswalks at all intersections within the study corridor. This section discusses the sidewalk concept plan and the supporting drainage and utilities improvements required to implement the proposed sidewalk in accordance with the FDM, the Florida Greenbook, and other various design requirements related to “off-system” projects. At this time, the source of construction funding for this project has not yet been determined.

The FDOT Design Manual (FDM) Ch. 222 and Florida Greenbook Ch. 8 were reviewed for sidewalk design requirements, including width, cross slopes, longitudinal grades, horizontal / vertical clearance, and separation from roadway. In accordance with Florida Greenbook, the minimum width for sidewalk is 5-feet. If it is adjacent to curb and gutter, the minimum width for sidewalk is 6-feet. In accordance with the requirements of FDM 222.2.1.3 and ADA, maximum cross slope on sidewalks is 2% and the maximum longitudinal grade is 5%. In accordance with Florida Greenbook, 1-foot clear areas adjacent to both sides of the sidewalk are to be maintained, with a maximum slope of 1:6. Minimum vertical clearance is 7 feet (FDM 222.2.1.2). Additionally, Florida Greenbook Ch. 3.C.5.b recommends minimum gutter grades of 0.3% for flat terrain.

As previously mentioned, Jackson Street is maintained by the City and is considered an off-system roadway. Due to the constrained R/W, the City of Port Orange Construction Standards were also reviewed. The proposed typical sections do not provide a 1-foot area with maximum slope of 1:6 where the proposed sidewalk is adjacent to the proposed shallow swales. A design exception will likely need to be submitted to the FDOT for the proposed design. The design exceptions are also listed within the Typical Sections in **Appendix B**. The City’s detail R-4 included in **Figure 2** below shows the placement of swales adjacent to the sidewalks.

Figure 2
R-4 60-Foot R/W with Ditch Road Section



Bridge

There is no feasible way to accommodate sidewalk on the west side of Jackson Street to cross over Halifax canal without either adding a separate pedestrian bridge or replacing the existing bridge. There is not adequate space on the existing bridge to safely add a sidewalk. Additionally, given that the bridge is listed as functionally obsolete, bridge widening is not an option. When considering the construction of a standalone pedestrian bridge, it would need to be constructed as far west of the roadway bridge as feasible, considering R/W constraints, to avoid as many conflicts as possible with the bridge and its associated structures/utilities. Future sidewalk along the west side of Jackson Street south of Canal View Boulevard will be provided. However, a pedestrian bridge would be too far to the west to align with this future sidewalk, and there is not adequate R/W along Canal View to provide a sidewalk connection. Conflicts with a standalone pedestrian bridge and existing 12" water line running along the north side of the canal are inevitable and would require adjustment. Further, there is very limited working space on the north side of the canal due to R/W and south side of the canal due to Canal View Boulevard being directly adjacent, providing significant constructability challenges.

A new bridge or culvert could accommodate the proposed sidewalk as well as existing utilities. The hydraulic opening/area requirements of the Halifax Canal at this bridge location would be an important variable in dictating the type of structure to replace the existing bridge. Other variables include the ease of constructability, limiting temporary works/roadway impacts, and cost. The existing bridge is approximately 25 feet long, with the existing headwalls providing a canal opening width of approximately 23' minimum. Some new bridge options include:

- Precast arched culvert type structure (CON/SPAN) supported on shallow foundations – 25-foot span, similar to recently constructed Lantern Park Drive and Oak Lea Drive bridge projects along Reed Canal Road. Existing utilities would possibly need to have separate utility bridges. Block outs in the wingwalls can be used to accommodate existing drainage structures.
- Concrete Box Culvert – Three-cell box culvert with 135 to 180-degree wingwalls. The boxes could potentially be lengthened to accommodate the existing utilities. Block outs in the wingwalls and/or cell walls can be used to accommodate existing drainage structures.
- Flat Slab Bridge supported on prestressed pile bents – Single span bridge would need to be longer than the existing 25 ft length bridge to allow proper distance between end bents and abutment walls to maintain the existing hydraulic width. If the bridge length needs to be greater than 30 to 35 feet, Florida Slab Beams may be required in lieu of a flat slab. The bridge slab could be widened to accommodate the existing utilities. Block outs in the abutment walls can be used to accommodate existing drainage structures.

Table 1 on the following page shows some preliminary costs for the three bridge replacement options including roadway work, temporary sheet pile wall, maintenance of traffic, removal of existing bridge, and embankment. **Table 2** on the following pages shows a breakdown of the roadway related work associated with the bridge replacement. The bridge's typical section would include two 12-foot travel lanes, curb and gutter, along with a 5-foot sidewalk on the west side separated by concrete barrier wall that provides protection to pedestrians for safe movements over the Halifax Canal. This bridge replacement requires full-depth excavation of the road section and a portion of the embankment in order to construct the new bridge and

wingwalls. This construction also requires the contractor to close Jackson Street in the bridge vicinity, so a detailed maintenance of traffic plan will be needed for re-directing traffic. It also requires the placement of temporary barrier wall and temporary sheet piles along the edge of Canal View Boulevard. Temporary sheet piles will also need to be installed on the north side of the bridge along with the appropriate road closure signs. It should be noted that the entire intersection of Jackson Street and Canal View Blvd may need to be closed to simplify the construction procedures. Flow of the Halifax Canal will also need to be maintained throughout the construction process.

Table 1
New Bridge Preliminary Costs

	Bridge Type	Unit	Quantity	Cost per Unit	Approximate Bridge Cost
CON/SPAN	Bridge	SF	1225	\$356.48	\$436,688.00
	Removal of Existing Bridge	SF	725	\$50.00	\$36,250.00
	Temporary Sheet Pile Wall	SF	3000	\$16.00	\$48,000.00
	Roadway Work				\$100,538.65
				Subtotal	\$621,476.65
	Construction over Water			3%	\$18,644.30
	Mobilization			10%	\$62,147.67
	MOT			10%	\$62,147.67
	Contingency			10%	\$62,147.67
				TOTAL	\$826,563.96
	Bridge Type	Unit	Quantity	Cost per Unit	Approximate Bridge Cost
Box Culvert	Concrete	CY	199.8	\$1,430.39	\$334,945.12
	Rebar	LB	40961	\$1.20	
	Removal of Existing Bridge	SF	725	\$50.00	\$36,250.00
	Temporary Sheet Pile Wall	SF	3000	\$16.00	\$48,000.00
	Roadway Work				\$100,538.65
				Subtotal	\$519,733.77
	Construction over Water			3%	\$15,592.01
	Mobilization			10%	\$51,973.38
	MOT			10%	\$51,973.38
				TOTAL	\$691,245.92
	Bridge Type	Unit	Quantity	Cost per Unit	Approximate Bridge Cost
Flat Slab	Bridge	SF	1715	\$210.00	\$360,150.00
	Removal of Existing Bridge	SF	725	\$50.00	\$36,250.00
	Temporary Sheet Pile Wall	SF	3000	\$16.00	\$48,000.00
	Roadway Work				\$100,538.65
				Subtotal	\$544,938.65
	Construction over Water			3%	\$16,348.16
	Mobilization			10%	\$54,493.87
	MOT			10%	\$54,493.87
	Contingency			10%	\$54,493.87
				TOTAL	\$724,768.42

Table 2
Roadway Work Related to Bridge Replacement Costs

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0104 10 3	SEDIMENT BARRIER	LF	120	\$1.91	\$229.20
0104 11	FLOATING TURBIDITY BARRIER	LF	100	\$49.59	\$4,959.00
0104 18	INLET PROTECTION SYSTEM	EA	1	\$167.40	\$167.40
0110 1 1	CLEARING & GRUBBING	AC	0.181	\$27,227.94	\$4,928.26
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	19	\$30.78	\$584.82
0120 1	REGULAR EXCAVATION	CY	444	\$14.35	\$6,371.40
0120 6	EMBANKMENT	CY	296	\$17.60	\$5,209.60
0160 4	TYPE B STABILIZATION	SY	394	\$8.30	\$3,270.20
285704	OPTIONAL BASE, BASE GROUP 04	SY	394	\$29.13	\$11,477.22
0334 1 12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	32.5	\$299.45	\$9,732.13
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	1	\$5,285.04	\$5,285.04
0425 2 71	MANHOLES, J-7, <10'	EA	1	\$10,360.29	\$10,360.29
430174124	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 24"SD	LF	20	\$191.07	\$3,821.40
430174136	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 36"SD	LF	24	\$213.20	\$5,116.80
430174224	PIPE CULVERT, OPTIONAL MATERIAL, OTHER SHAPE - ELLIP/ARCH, 24"SD	LF	54	\$262.05	\$14,150.70
430524100	STRAIGHT CONCRETE ENDWALLS, 24", SINGLE, 0 DEGREES, ROUND	EA	1	\$4,903.10	\$4,903.10
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	50	\$42.92	\$2,146.00
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	59	\$57.53	\$3,394.27
0527 2	DETECTABLE WARNINGS	SF	30	\$35.70	\$1,071.00
0570 1 2	PERFORMANCE TURF, SOD	SY	278	\$3.70	\$1,028.60
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	3	\$462.61	\$1,387.83
0700 1 60	SINGLE POST SIGN, REMOVE	AS	4	\$51.51	\$206.04
0711 11123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND	LF	54	\$3.63	\$196.02
0711 11125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND	LF	45	\$6.50	\$292.50
0711 16201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	GM	0.047	\$5,315.79	\$249.84
				TOTAL	\$100,538.65

As a result of the preliminary review of the three bridge replacement options, the box culvert alternative is the recommended bridge of choice, it is the least costly alternative, and provides some advantages as opposed to the closest cost alternative that is the flat slab bridge. While a flat slab bridge can most feasibly support the new typical section as well as the utilities crossing the canal, it requires the driving of piles, which due to the proximity to other buildings would create a disturbance with high vibrations. This would make this alternative less favorable. One of the advantages of box culverts is also the ability to place precast cells in phases as to keep a hydraulic opening in the temporary condition. For MOT/phasing using box culverts, it would be necessary to detour the road in this section. If a detour is not an alternative and a lane must remain open, then overbuilding the culvert could be a viable solution to always keep one lane open, however, this would add additional costs to the culvert alternative. The flat slab alternative could more easily accommodate a lane during construction, but as previously mentioned, the driving of piles in the proximity to households would be required, and therefore this alternative has been excluded from selection. For these reasons, a box culvert bridge replacement alternative is the selected solution to replace the existing bridge while adding a sidewalk.

Roadway Work Related to Bridge Replacement

As mentioned above the proposed bridge's typical section will be wider than that of the existing bridge to accommodate the sidewalk and the various existing utilities. It is also anticipated that the proposed bridge will be higher than the existing bridge to accommodate the requirements of the Halifax Canal hydraulic opening/area. For these reasons full depth roadway reconstruction is anticipated before and after the bridge to accommodate the new design. The bridge is in close proximity to Canal View Boulevard, so the entire intersection will likely need to be reconstructed. Additionally, the block outs in the wingwall and/or cell walls used to accommodate the existing drainage, will require the realignment of the existing 36" pipe crossing Canal View Boulevard. This would also create a need for full depth reconstruction of the intersection.

Refer to the Typical Sections and Concept plans in **Appendix B** for a depiction of the following improvements that are recommended for the bridge replacement:

- Construct a crosswalk with appropriate signage and striping across Canal View Boulevard.
- Provide stop bars and double yellow pavement markings on all four legs of the Jackson Street and Canal View Boulevard intersection.
- Remove and replace existing street signs at the following locations:
 - Station 106+25 (RT) – Stop Sign
 - Station 106+35 (LT) – Stop Sign
 - Station 106+80 (RT) – Speed Limit Sign
- Construct new catch basins at the following approximate locations:
 - Station 107+05 (LT) – (Type C) with additional pipe connection to bridge
- Construct a 24" side drain with an end wall to connect to the drainage block out provided in the proposed bridge located at the following approximate locations:
 - Station 106+65 (RT) – approximate length: 20-feet
- Construct a 36" side drain with a manhole to connect to the drainage block out provided in the proposed bridge located at the following approximate locations:
 - Station 106+20 (LT) – approximate length: 24-feet
- Construct a concrete flume to replace the existing curb inlet to the canal located approximate at Station 106+25 (RT)
- Reconstruct the existing intersection of Jackson Street and Canal View Boulevard and the existing roadway from station 106+80 to station 107+21 to abut to the proposed bridge.

Roadway and Sidewalk Improvements

In accordance with the City's goals for this project, a 5-foot sidewalk has been considered along the west side of Jackson Street. Refer to the Typical Sections and Concept Plans in **Appendix B** for a depiction of the following roadway and sidewalk improvements that are recommended in this project:

- From Canal View Boulevard (station 106+10) to station 109+80
Refer to Typical Section No. 1. The existing roadway is neither parallel nor centered within the existing 50-foot R/W. The existing ditches will be piped since there is insufficient room between the existing edge of pavement and the proposed sidewalk. The two (2) commercial driveways will be reconstructed to ensure walkways are compliant with ADA and adequate cover is maintained over the proposed culvert pipes.



Station 107+80
Facing North

- From station 109+80 to Herbert Street (station 112+80)



Refer to Typical Section No. 2. The record documents reviewed suggest the width of the existing R/W in this section remains at only 30-feet, as originally dedicated. However, current GIS suggests a 35-foot R/W. The existing roadway is not parallel to the R/W. Given that the roadway is adjusted to the far east side of the R/W, additional R/W is proposed on the west to accommodate proposed sidewalks. Shallow swales are proposed between the sidewalk and the existing edge of pavement. The two (2) existing driveways will be reconstructed to ensure proposed walkways are compliant with ADA and adequate cover is maintained over the proposed side drains. Two (2) existing mailboxes will be removed and replaced near station 110+35. Numerous trees will need to be removed for the construction of the sidewalk and swales.

- From Herbert Street (station 112+80) to Cobblestone Lane (station 115+60)

Refer to Typical Section No. 3. The record documents reviewed suggest the width of the existing R/W in this section remains at only 30-feet, as originally dedicated. The existing roadway appears to be very close to the eastern R/W line, and a dry retention stormwater management pond with control structure is also located immediately adjacent to the western R/W line on the South Oaks Townhouses property. The existing southbound travel lane is proposed to be reconstructed to provide a minimum 0.3% longitudinal gutter slope, with proposed sidewalk to be placed adjacent to the proposed curb and gutter. The South Oaks private driveway, a portion of the existing parking lot, along with the Cobblestone Lane private driveway will need to be reconstructed to ensure proposed walkways are compliant with ADA and adequate cover is maintained over the proposed culvert pipes. Three (3) existing mailboxes will be removed and replaced near station 150+00. Numerous trees will also need to be removed for the road reconstruction and proposed sidewalks.



- From Cobblestone Lane (station 115+60) to Springview Square (station 117+50)



Refer to Typical Section No. 4. The existing roadway is bifurcated by a median island containing a large Live Oak tree and the traveled way appears to be encroaching on private property along the eastern R/W. Excess pavement along the southbound travel lane will be sawcut and removed to provide additional room for the proposed drainage swale. The Springview Square driveway will be reconstructed to ensure ADA compliant walkways and complete tie grading. During design, the sidewalk alignment should be refined to avoid impacting the larger trees, but many trees may still need to be removed for the construction of the sidewalk and swales.

- From Springview Square (station 117+50) to Sweetgum Lane (station 133+00)

Refer to Typical Section No. 4. The existing roadway is bifurcated by a median island containing a large Live Oak tree. The traveled way appears to encroach heavily onto private property along the eastern R/W. The public side streets will be reconstructed to ensure ADA compliant walkways and complete tie grading. As part of the reconfiguration of the Moonstone Court connection at station 125+20, an existing parking stall will need to be eliminated to make room for the proposed sidewalk. As part of the reconfiguration of the additional Moonstone Court connection at station 128+20, an existing retaining wall will need to be removed to make way for the proposed sidewalk. During design, the sidewalk alignment should be refined to avoid impacting the larger trees, but many trees may still need to be removed for the construction of the sidewalk and swales.



- From Sweetgum Lane (station 133+00) to Madeline Avenue (station 139+70)

Refer to Typical Section No. 5. Per the recent survey from the Extra Space Storage project, the existing roadway is located within the western half of the existing 50-foot R/W. Moreover, the existing conveyance ditch serving the western side of the roadway is located predominantly on private property. The preferred alternative would be for the sidewalk to remain on the west side of Jackson Street, to eliminate the need for a mid-block crosswalk and to avoid the congested southeast quadrant of the intersection with Madeline Avenue, i.e. the removal of a very large oak tree and the existing resident's fencing. Constructing the sidewalk on the west would include the removal of the existing trees which are within the existing roadway's clear



zone and currently preventing roadway runoff from reaching the existing conveyance ditch. Given the uncertainty that the developer will complete the construction of the sidewalk on the west during the private project, sidewalk is proposed on the east side of Jackson Street with a proposed crosswalk located just north of Sweetgum Lane.

On the east side of the R/W, there is an existing driveway at station 138+90 RT serving the single-family residence at 784 Sugar House Drive (Parcel 633708030830). This concrete driveway contains cracks and will be reconstructed to ensure proposed walkways are compliant with ADA. It is noted that a significant portion of the existing landscaping and perimeter fencing encroaches significantly into the existing R/W. Additionally, there is a very large Live Oak tree located very close to the edge of pavement.

Signing & Pavement Marking, Pedestrian Signalization, and Lighting

The proposed sidewalk will cross from the west side of Jackson Street to the east side near Sweetgum Lane (station 133+35) requiring a pedestrian crosswalk with appropriate signing and pavement markings (and recommended rectangular rapid flashing beacons (RRFB)). In addition, a pedestrian crosswalk will be constructed across Madeline Avenue.

Three (3) luminaires should be provided at each of the proposed crosswalk locations, with one (1) in front of the crosswalk, one (1) immediately before the cross walk, and one (1) immediately after the crosswalk. There are currently existing luminaires in the vicinity of each intersection, and therefore four (4) additional luminaires will be needed. The additional luminaires required should be installed by the power company and included in the City's existing street lighting inventory.

Refer to the Typical Sections and Concept plans in **Appendix B** for a depiction of the following signing & pavement marking, signalization, and lighting improvements that are recommended in this project:

- Construct a crosswalk with appropriate signage and striping near Sweetgum Lane (station 133+35) where the proposed sidewalk crosses from the east side to the west side of Jackson Street.
- Construct a crosswalk with appropriate signage and striping across Madeline Avenue.
- Install crosswalks and stop bars at all side streets that the sidewalk traverses through.
- Remove and replace existing stop and street name signs at the following locations:
 - Station 117+50 (LT) – Springwood Square
 - Station 121-80 (LT) – Springwood Square
 - Station 125+20 (LT) – Moonstone Court
 - Station 139+75 (LT) – Madeline Avenue

Drainage and Permitting

The existing drainage system is comprised of a mixture of inlets and pipes, as well as a series of ditches and side drains. As shown in the Concept Plans provided in **Appendix B**, several of the existing drainage system components will need to be modified, replaced, or supplemented, including piping of the existing ditch from station 106+80 (LT) to station 110+20 (LT) and along Herbert Street to make room for the sidewalk. However, in these areas there appears to be

adequate room within the R/W to provide a conventional shallow ditch, located between the proposed sidewalk on the west side of the road and the existing west edge of pavement, to receive runoff from the existing roadway and proposed sidewalk, such that it can continue to be directed to the Halifax Canal to maintain existing drainage patterns.

Under provision in FAC 62-330.051, the construction of pedestrian paths less than 8 feet in width typically qualifies for exemption from ERP. However, the designer will need to analyze the extent of reduction in the capacity of existing swales / ditches and compare it to the increase in capacity of swales / ditches that will be created. An Application for Verification of Exemption should be submitted to SJRWMD during the design phase, though a pre-application may be necessary in the event that exemption is not granted and permitting is necessary.

Refer to the Typical Sections and Concept plans in **Appendix B** for a depiction of the following drainage improvements that are recommended in this project:

- Construct shallow swales at the following approximate station ranges:
 - Station 106+80 (LT) to Station 112+40 (LT)
 - Station 116+00 (LT) to Station 128+80 (LT)
 - Station 133+40 (LT) to Station 139+30 (LT)
- Construct side drains with mitered end sections for proposed swales at driveway crossings located at the following approximate locations:
 - Station 111+30 (LT) – approximate length: 20-feet
 - Station 117+60 (LT) – approximate length: 120-feet
 - Station 121+80 (LT) – approximate length: 170-feet
 - Station 125+20 (LT) – approximate length: 75-feet
- Construct new mitered end sections at the following approximate locations:
 - Station 110+20 (LT) – end piped ditch and begin shallow swale
 - Station 112+00 (LT) – end shallow swale and begin piped ditch
 - Station 116+00 (LT) – end piped ditch and begin shallow swale
 - Station 127+80 (LT) – end shallow swale and begin stormwater pipe
- Construct new gutter inlets at the following approximate locations:
 - Station 114+25 (LT) – (Type V) with additional pipe to make connection as shown
- Construct new catch basins at the following approximate locations:
 - Station 108+65 (LT) – (Type C) with additional pipe as shown
 - Station 110+00 (LT) – (Type C) with additional pipe as shown
 - Station 112+40 (LT) – (Type C) with additional pipe as shown
 - Herbert Street (35' LT) – (Type C) with additional pipe connection as shown
 - Herbert Street (100' LT) – (Type C) with additional pipe as shown
 - Herbert Street (140' LT) – (Type C) replace mitered end section
 - Station 128+50 (LT) – (Type C) with additional pipe as shown
 - Station 129+20 (LT) – (Type C) connect to existing side drain
 - Station 129+80 (LT) – (Type C) with additional pipe as shown
 - Station 133+30 (LT) – (Type C) replace existing catch basin
- Construct new endwalls at the following approximate locations:
 - Station 130+00 (LT)
- Remove existing endwalls at the following approximate locations:
 - Station 106+60 (LT)
 - Station 118+05 (LT)

- Station 122+35 (LT)
- Station 139+50 (LT)

Utilities

As noted above, the overhead utilities alternate from the west side of the road to the east and back to the west. Many of the existing poles are located within the 6-foot clear zone set forth in the FDM Table 215.2.1 and the Florida Greenbook. These poles should be relocated to the R/W. The proposed trail alignment can be designed to meander around the relocated poles, or the poles can be set adjacent to the proposed sidewalk as long as a minimum of 48" of unobstructed sidewalk width is provided, as required by the Florida Greenbook.

Refer to the Typical Sections and Concept plans in **Appendix B** for a depiction of the following utility pole relocations that are recommended in this project:

- Station 106+95 (LT) – potential conflict with proposed drainage improvements
- Station 108+15 (LT) – potential conflict with proposed drainage improvements
- Station 108+90 (LT) – potential conflict with proposed drainage improvements
- Station 109+90 (LT) – potential conflict with proposed drainage improvements
- Station 110+70 (LT) – potential conflict with proposed drainage improvements
- Station 112+65 (LT) – located within clear zone limits
- Station 114+70 (LT) – potential conflict with proposed curb and gutter
- Station 134+40 (LT) – located within clear zone limits
- Station 139+35 (LT) – located within clear zone limits

While there are potable water mains, force mains, and other underground communication utilities located along Jackson Street within the limits of proposed work, significant impact to these systems is not anticipated since much of the improvements will be constructed with only minimal depth of proposed excavation, as required for construction the proposed sidewalk and shallow swales. It is noted that the existing force main between Canal View Boulevard and Herbert Street is roughly located between the proposed sidewalk and the existing edge of pavement in the area where the existing ditch is proposed to be piped. It is recommended that sufficient Subsurface Utility Engineering (SUE) be completed to have the existing force main adequately located to identify what relocations will be necessary. Based on limited field observations, several other utility appurtenances will also need to be adjusted to finished grade as a result of the proposed improvements, including meters and valve boxes, as they are located within, or in close proximity to, the proposed sidewalk alignment. Minor adjustment or relocation of utilities, such as telecommunication risers, may also be necessary.

Right-of-Way

As shown in the Concept Plans, R/W will need to be obtained from three (3) different private property owners from station 109+90 to station 112+50 to construct the proposed sidewalk, swales, and side drains, in areas where the width of the existing R/W remains at 30-feet, as originally dedicated. It is noted that while the City's Land Development Code (LDC) Chapter 12 Section 9, specifies an *Ultimate Right-of-Way Width* of 50-feet for this segment of Jackson Street (Madeline Avenue to Oak Street), the proposed R/W depicted in the Concept Plan has

been maintained at only the amount that is expected to allow construction of the proposed sidewalk and associated improvements.

Right of entry agreements or temporary construction easements are expected be required for construction of harmonizing improvements and tie grading on several adjacent properties. This is predominantly anticipated in areas where reconstruction of the southbound travel lanes (with associated curb and gutter) is proposed, as well as at areas where reconstruction of existing driveways and/or parking lots is required. There are likely to be costs associated with coordinating these agreements or easements, such as survey(s), appraisal(s), legal fee(s), etc. These costs are difficult to project until such time design has been completed and negotiations have occurred, but they have been preliminarily estimated at \$250,000, as reported within the cost estimate.

Floodplain

As noted previously in this report, portions of the existing R/W lie within Special Flood Hazard Area (SFHA). As shown on the typical sections included in **Appendix B**, portions of the proposed sidewalk will be constructed above existing grade such that impacts to the existing floodplain may be incurred, and compensating storage analysis may therefore be required. The designer will need to confirm the extents of the impacts after groundwater analysis and cross-sections have been completed. The sodded area along the east side of Jackson Street from Sweetgum Lane (station 133+00) to Sugar House Drive (station 138+20) may serve as a good area to host any required compensating storage, as it is located predominantly outside the SFHA, but could remain directly connected to the existing floodplain.

Environmental Resources

Based on the Natural Resources Report performed by Terracon, no wetlands were identified within the R/W, and any work that should occur within the R/W or just outside of the existing R/W is not expected to impact any wetlands. Surface waters were identified on the southern portion of the project (the Halifax Canal) and any proposed impacts to the canal will require additional environmental considerations be included in the ERP application. For further details, refer to the complete Natural Resources Report included in **Appendix G**.

Cultural Resources Desktop Assessment

Based on the Cultural Resources Desktop assessment performed by Terracon, there are seven (7) historic structures within one mile of the project corridor, however all were determined ineligible for the NRHP. For further details, refer to the complete environmental feasibility study included in **Appendix H**.

5

FINANCIAL FEASIBILITY

This section summarizes the preliminary cost estimates prepared for the design and construction of the proposed sidewalk improvements along Jackson Street, from Canal View Boulevard to Madeline Avenue. As completed in the feasibility study, these estimates are intended to facilitate the R2CTPO and the City of Port Orange with prioritizing the proposed sidewalk improvements. The costs for replacing the existing bridge and all associated roadwork have been provided separately. Given the extensive costs of the bridge, this provides the option to implement the improvements as two separate projects. The overall improvement costs were estimated based on FDOT historical unit prices from the FDOT Basis of Estimates. To adjust for potential future increases in the project's cost estimates, an annual inflation factor was applied based on FDOT guidelines. FDOT provides annual inflation factors for roadway construction costs. A listing of the FDOT approved inflation factors through 2059 is available in **Appendix I**.

The total cost of the sidewalk improvements, including engineering and Construction Engineering Inspection (CEI), is estimated at approximately \$1,631,260.26, as presented in **Table 3** on the following page. Using FDOT inflation factors, the three-year breakdown for cost estimates is provided below:

- Year 1 (2023) cost estimate adjusted for inflation – \$1,675,304.29
- Year 2 (2024) cost estimate adjusted for inflation – \$1,722,610.84
- Year 3 (2025) cost estimate adjusted for inflation – \$1,771,548.65

The total cost of the bridge replacement improvements, including engineering and Construction Engineering Inspection (CEI), is estimated at approximately \$1,158,563.95, as presented in **Table 4** on the following pages. Recognizing that upon detailed assessment of field conditions during the design stage a different bridge type may be desired, for varying reasons, the costs associated for the bridge are based on the most costly option (Con/Span). FDOT inflation factors, the three-year breakdown for cost estimates is provided below:

- Year 1 (2023) cost estimate adjusted for inflation – \$1,189,845.18
- Year 2 (2024) cost estimate adjusted for inflation – \$1,223,443.53
- Year 3 (2025) cost estimate adjusted for inflation – \$1,258,200.45

The total costs for both the sidewalk improvements and the bridge replacement improvements, including engineering and Construction Engineering Inspection (CEI), is estimated at approximately \$2,789,824.21. FDOT inflation factors, the three-year breakdown for cost estimates is provided below:

- Year 1 (2023) cost estimate adjusted for inflation – \$2,865,149.46
- Year 2 (2024) cost estimate adjusted for inflation – \$2,946,054.37
- Year 3 (2025) cost estimate adjusted for inflation – \$3,029,749.09

Table 3
Sidewalk Cost Estimate
Jackson Street Sidewalk Feasibility Study
From Canal View Boulevard to Madeline Avenue

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$121,472.34	\$121,472.34
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$121,472.34	\$121,472.34
0104 10 3	SEDIMENT BARRIER	LF	3,300	\$1.91	\$6,303.00
0104 18	INLET PROTECTION SYSTEM	EA	18	\$167.40	\$3,013.20
0110 1 1	CLEARING & GRUBBING	AC	1.309	\$27,227.94	\$35,641.37
0110 23	TREE REMOVAL	EA	25	\$579.48	\$14,487.00
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	208	\$30.78	\$6,402.24
0110 7 1	MAILBOX, F&I SINGLE	EA	5	\$235.91	\$1,179.55
0120 1	REGULAR EXCAVATION	CY	783	\$14.35	\$11,236.05
0120 6	EMBANKMENT	CY	42	\$17.60	\$739.20
0160 4	TYPE B STABILIZATION	SY	806	\$8.30	\$6,689.80
285704	OPTIONAL BASE, BASE GROUP 04	SY	806	\$29.13	\$23,478.78
0334 1 12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	66.5	\$299.45	\$19,913.43
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	11	\$5,285.04	\$58,135.44
0425 1711	INLETS, GUTTER, TYPE V, <10'	EA	1	\$6,705.96	\$6,705.96
0425 6	VALVE BOXES, ADJUST	EA	1	\$1,276.97	\$1,276.97
430174218	PIPE CULVERT, OPTIONAL MATERIAL, OTHER SHAPE - ELLIP/ARCH, 18"SD	LF	180	\$409.59	\$73,726.20
430174224	PIPE CULVERT, OPTIONAL MATERIAL, OTHER SHAPE - ELLIP/ARCH, 24"SD	LF	1060	\$262.05	\$277,773.00
430524102	STRAIGHT CONCRETE ENDWALLS, 24", SINGLE, 0 DEGREES, ELLIPTICAL	EA	1	\$5,975.44	\$5,975.44
430984625	MITERED END SECT, OPTIONAL - ELLIPTICAL / ARCH, 18" SD	EA	4	\$2,214.35	\$8,857.40
430984629	MITERED END SECT, OPTIONAL - ELLIPTICAL / ARCH, 24" SD	EA	8	\$3,331.00	\$26,648.00
0515 2311	PEDESTRIAN/ BICYCLE RAILING, ALUMINUM ONLY, 42" TYPE 1	LF	36	\$106.67	\$3,840.12
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	117	\$42.92	\$5,021.64
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	1,657	\$57.53	\$95,327.21
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	242	\$70.76	\$17,123.92
0527 2	DETECTABLE WARNINGS	SF	338	\$35.70	\$12,066.60
0570 1 2	PERFORMANCE TURF, SOD	SY	4,678	\$3.70	\$17,308.60
0654 2 12	MIDBLOCK CROSSWALK: RECTANGULAR RAPID FLASHING BEACON, FURNISH & INSTALL- AC, COMPLETE SIGN ASSEMBLY- BACK TO BACK	AS	4	\$10,444.88	\$41,779.52
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	17	\$462.61	\$7,864.37
0700 1 60	SINGLE POST SIGN, REMOVE	AS	7	\$51.51	\$360.57
0711 11123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND ROUNDABOUT	LF	527	\$3.63	\$1,913.01
0711 11125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	LF	112	\$6.50	\$728.00
-	FENCING, RESET EXISTING	LF	110	\$30.00	\$3,300.00
-	LIGHT POLE BY POWER COMPANY	EA	5	\$3,000.00	\$15,000.00
TOTAL					\$1,052,760.26

RIGHT-OF-WAY ACQUISITION					\$250,000.00
-	SURVEYING & R/W MAPPING	LS	1	\$36,000.00	\$36,000.00
-	ARCHAEOLOGY RECONNAISSANCE	LS	1	\$4,500.00	\$4,500.00
-	ENVIRONMENTAL (PERMITTING)	LS	1	\$10,000.00	\$10,000.00
-	ENGINEERING	LS	1	\$111,000.00	\$111,000.00
-	SUE	LS	1	\$9,000.00	\$9,000.00
-	CEI	LS	1	\$158,000.00	\$158,000.00
SURVEY / DESIGN / CEI SUBTOTAL					\$328,500.00
TOTAL PROJECT COSTS					\$1,631,260.26
FDOT INFLATION-ADJUSTED ESTIMATE			INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST			BASE	1	\$1,631,260.26
2023 ESTIMATED PROJECT COST			2.7%	1.027	\$1,675,304.29
2024 ESTIMATED PROJECT COST			2.8%	1.056	\$1,722,610.84
2025 ESTIMATED PROJECT COST			2.9%	1.086	\$1,771,548.65
2026 ESTIMATED PROJECT COST			3.0%	1.119	\$1,825,380.24

* No costs have been included for the bridge replacement

* No costs have been included for wetland mitigation

Table 4
Con/Span Bridge Replacement Cost Estimate
Jackson Street Sidewalk Feasibility Study
From Canal View Boulevard to Madeline Avenue

BRIDGE TYPE		UNIT	QUANTITY	UNIT PRICE	AMOUNT
CON/SPAN	BRIDGE	SF	1,225	\$356.48	\$436,688.00
	REMOVAL OF EXISTING BRIDGE	SF	725	\$50.00	\$36,250.00
	TEMPORARY SHEET PILE WALL	SF	3,000	\$16.00	\$48,000.00
	ROADWAY WORK (SEE BREAKDOWN BELOW)				\$100,538.65
	SUBTOTAL				\$621,476.65
	CONSTRUCTION OVER WATER			3%	\$18,644.30
	MOBILIZATION			10%	\$62,147.67
	MOT			10%	\$62,147.67
	CONTINGENCY			10%	\$62,147.67
TOTAL					\$826,563.95

ROADWAY WORK					
PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0104 10 3	SEDIMENT BARRIER	LF	120	\$1.91	\$229.20
0104 11	FLOATING TURBIDITY BARRIER	LF	100	\$49.59	\$4,959.00
0104 18	INLET PROTECTION SYSTEM	EA	1	\$167.40	\$167.40
0110 1 1	CLEARING & GRUBBING	AC	0.181	\$27,227.94	\$4,928.26
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	19	\$30.78	\$584.82
0120 1	REGULAR EXCAVATION	CY	444	\$14.35	\$6,371.40
0120 6	EMBANKMENT	CY	296	\$17.60	\$5,209.60
0160 4	TYPE B STABILIZATION	SY	394	\$8.30	\$3,270.20
285704	OPTIONAL BASE, BASE GROUP 04	SY	394	\$29.13	\$11,477.22
0334 1 12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	32.5	\$299.45	\$9,732.13
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	1	\$5,285.04	\$5,285.04
0425 2 71	MANHOLES, J-7, <10'	EA	1	\$10,360.29	\$10,360.29
430174124	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 24"SD	LF	20	\$191.07	\$3,821.40
430174136	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 36"SD	LF	24	\$213.20	\$5,116.80
430174224	PIPE CULVERT, OPTIONAL MATERIAL, OTHER SHAPE - ELLIP/ARCH, 24"SD	LF	54	\$262.05	\$14,150.70
430524100	STRAIGHT CONCRETE ENDWALLS, 24", SINGLE, 0 DEGREES, ROUND	EA	1	\$4,903.10	\$4,903.10
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	50	\$42.92	\$2,146.00
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	59	\$57.53	\$3,394.27
0527 2	DETECTABLE WARNINGS	SF	30	\$35.70	\$1,071.00
0570 1 2	PERFORMANCE TURF, SOD	SY	278	\$3.70	\$1,028.60
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	3	\$462.61	\$1,387.83
0700 1 60	SINGLE POST SIGN, REMOVE	AS	4	\$51.51	\$206.04
0711 11123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND	LF	54	\$3.63	\$196.02
0711 11125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND	LF	45	\$6.50	\$292.50
0711 16201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	GM	0.047	\$5,315.79	\$249.84
TOTAL ROADWAY WORK					\$100,538.65

-	SURVEYING & R/W MAPPING	LS	1	\$4,000.00	\$4,000.00
-	ENVIRONMENTAL (PERMITTING)	LS	1	\$10,000.00	\$10,000.00
-	STRUCTURAL ENGINEERING	LS	1	\$100,000.00	\$100,000.00
-	ENGINEERING	LS	1	\$90,000.00	\$90,000.00
-	SUE	LS	1	\$3,000.00	\$3,000.00
-	CEI	LS	1	\$125,000.00	\$125,000.00
SURVEY / DESIGN / CEI SUBTOTAL					\$332,000.00
TOTAL PROJECT COSTS					\$1,158,563.95

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	BASE	1	\$1,158,563.95
2023 ESTIMATED PROJECT COST	2.7%	1.027	\$1,189,845.18
2024 ESTIMATED PROJECT COST	2.8%	1.056	\$1,223,443.53
2025 ESTIMATED PROJECT COST	2.9%	1.086	\$1,258,200.45
2026 ESTIMATED PROJECT COST	3.0%	1.119	\$1,296,433.06

* No costs have been included for wetland mitigation

6

CONCLUSION

The purpose of this study was to evaluate the feasibility of placing 5-foot sidewalk on the west side of Jackson Street from Canal View boulevard to Madeline Avenue in the City of Port Orange, in order to provide increased pedestrian safety. In summary from the preliminary investigation, there is no feasible way to accommodate a sidewalk on the west side of Jackson Street to cross over Halifax canal without either adding a separate pedestrian bridge or replacing the existing bridge. The following recommendations and conditions have been determined along the study corridor:

It is recommended to replace the existing bridge with one of the new bridge options discussed previously, which will incorporate a new typical section that includes the sidewalk on the west side of Jackson Street. Since the existing bridge has surpassed its design life (constructed in 1962) and is due for replacement in the near future, constructing a new pedestrian bridge adjacent to the existing bridge is not practical.

Given the expense of the new bridge, the costs for replacing the existing bridge and all associated roadwork have been provided separately. The bridge replacement cost estimate includes the most costly bridge type to allow the flexibility for determining the preferred alternative at the design stage.

The following improvements are recommended within study corridor:

- Replace the existing bridge with a box culvert structure.
- Reconstruct the existing intersection of Jackson Street and Canal View Boulevard and a portion of Jackson Street to accommodate the new bridge.
- Construct a 5-foot-wide sidewalk along the west side of Jackson Street with a crossing at Sweetgum Lane, near station 133+35 to the east side of the road.
- Reconstruct a portion of the existing southbound travel lane to provide 0.3% longitudinal gutter slope for the installation of curb and gutter with adjacent sidewalk from station 112+80 to station 115+60.
- Reconstruct side streets for the removal of existing side drains and construction of new drainage features and ADA compliant crosswalks.
- Construct new concrete driveways for the removal of existing side drains and construction of new drainage features and ADA compliant crosswalks.
- Construct swales to maintain existing drainage patterns in areas where there is adequate room between the proposed sidewalk and existing edge of pavement.
- Modify existing drainage collection system components along the study corridor to allow for construction of the sidewalk.
- Acquire all necessary rights-of-way, temporary construction easements, or right of entry agreements to construct swales, tie-in grading and other harmonizing improvements.
- Coordinate with the power company to provide pedestrian crosswalk lighting at Sweetgum Lane and Madeline Avenue.

- The engineering and construction costs associated with the sidewalk improvements are estimated at approximately \$1,631,260.26 in 2022.
- The engineering and construction costs associated with the bridge replacement improvements are estimated at approximately \$1,158,563.95 in 2022.
- The engineering and construction costs associated with both the sidewalk and the bridge replacement improvements are estimated at approximately \$2,789,824.21 in 2022.

Based on analysis of the data, graphics, concept plans, and cost estimate provided within this report, it is concluded that this project is feasible.

It should also be noted that in **Appendix J** are responses to various agency comments during the preparation of the study. These comments and the associated responses may help the reader better understand the evolution of the recommendation and key points relative to project implementation.

APPENDIX A

**2022 APPLICATION
FOR PROJECT PRIORITIZATION**



2022 Application for Project Prioritization – **FEASIBILITY STUDY**

Bicycle/Pedestrian Projects

All applications must be uploaded to the TPO file transfer site by 2:00 p.m. (EST) on February 25, 2022
<https://www3.mydocsonline.com/customerupload/b4bbf6f197bbf605f029f13c7936>

Project Title: Sidewalk and Pedestrian Improvements on Jackson Street from Canal View Boulevard to Madeline Avenue

Applying Agencies (project sponsor): City of Port Orange **Date:** 3/4/2022

Contact Person: Tim Burman **Job Title:** Community Devpmt Director

Address: 1000 City Center Circle, Port Orange, FL 32129

Phone: (386) 506-5675 **FAX:** (386) 506-5699

E-mail: tburman@port-orange.org

Does the Applying Agency expect to be certified by FDOT to perform work under the Local Agency Program (LAP) process? ☒ YES ☐ NO

If not, what local government agency will perform the work on behalf of the Applying Agency? N/A
[Attach a letter of intent from the agency that will perform the work.]

Governmental entity with maintenance responsibility for roadway facility on which proposed project is located: City of Port Orange

[If not the same as Applying Agency, attach letter of support for the proposed project from the responsible entity. This letter of support must include a statement describing the responsible entity's expectations for maintenance of the proposed improvements, i.e., what the applying agency's responsibility will be.]

Priority of this proposed project relative to other applications submitted by the Applying Agency: #1 (Bike/Ped)

Project Description: Construction of a minimum 5' wide sidewalk and drainage improvements along Jackson Street from Canal View Boulevard to Madeline Avenue, preferably on the west side, including sidewalk gap along Herbert Street to connect to existing sidewalk network. Re-alignment of Jackson Street, reconfiguration of stormwater drainage systems, lighting and signalization improvements at intersections along Jackson Street, tree removal, and/or additional right-of-way may be required to achieve these objectives.

Project Location (include project length and termini, if appropriate, and attach location map): From Canal View Boulevard north to Madeline Avenue for a total distance of approximately 0.64 miles and approximately 150 feet of sidewalk along Herbert Street. (Exhibit 1)

Project Eligibility for Federal Funds (check the appropriate box):

- ☐ the proposed improvement is located on the Federal-aid system. (Reference the Federal Aid Road Report at <http://www.fdot.gov/statistics/fedaid/>);
- ☒ the proposed improvement is **not** located on the Federal-aid system, but qualifies as a type of improvement identified in 23 U.S.C. §133 that is not restricted to the Federal-aid system.

Project Purpose and Need Statement:

In the space provided below, describe the purpose and need for this proposed project. It is very important that the Purpose and Need Statement is clear and complete. It will be the principal consideration in ranking the project application for a feasibility study. It must convince the public and decision-makers that the expenditure of funds is necessary and worthwhile and that the priority the project is being given relative to other needed transportation projects is warranted. The Purpose and Need Statement will also help to define the scope for the feasibility study, the consideration of alternatives (if appropriate), and project design.

The purpose is analogous to the problem. It should focus on particular issues regarding the transportation system (e.g., mobility and/or safety). Other important issues to be addressed by the project should be identified as ancillary benefits. The purpose should be stated in one or two sentences as the positive outcome that is expected for each criterion. For example, "The purpose is to provide a connection between a park and a school." It should avoid stating a solution as a purpose, such as: "The purpose of the project is to add a sidewalk." It should be stated broadly enough so that no valid solutions will be dismissed prematurely.

The need should establish the evidence that the problem exists, or will exist if anticipated conditions are realized. It should support the assertion made in the Purpose Statement. For example, if the Purpose Statement is based on safety improvements, the Need Statement should support the assertion that there is or will be a safety problem to be corrected. The need should be described for each criterion. When applying for a feasibility study, you should support your Need Statement with the best available evidence. However, you will not be expected to undertake new studies.

Purpose and Need Statements are required for all of the following Priority Criteria:

- 1. Proximity to Community Assets:** this measure will estimate the potential demand of bicyclists and pedestrians based on the number of productions or attractions the facility may serve within a one (1) mile radius for Shared Use Paths or a one-half (½) mile radius for Sidewalks. A maximum of 20 points will be awarded.
Purpose and Need (required): *The purpose of this project is to improve the safety of all pedestrians along this segment of Jackson Street and complete gaps in the sidewalk network. This project will complete the pedestrian network by providing a safer route and enhanced connectivity for the residents on the east and west side of Jackson Street to access nearby destinations including other residential areas, commercial, schools, Votran (Herbert and Nova stops), and the City Center complex. In 2022 – 2023, the City of Port Orange has a drainage improvement project along Jackson Street from Canal View Boulevard to Oak Street, and as part of the project, will be installing a sidewalk on the west side of this Jackson Street segment. Therefore, the Jackson Street sidewalk segment in this feasibility study request would connect to create a complete sidewalk network along Jackson Street from Madeline Avenue to Dunlawton Avenue and provide greater enhanced connectivity for the residents on the east and west side of Jackson Street. (Exhibit 2)*
- 2. Connectivity and Accessibility:** this measure considers the gaps that exist in the current network of bike lanes, bike paths and sidewalks. The measurement will assess points based on the ability of the proposed project to join disconnected networks or complete fragmented facilities. A maximum of 20 points will be awarded.
Purpose and Need (required): *This project will connect the residential areas along Jackson Street from Canal View Boulevard to Madeline Avenue with other existing sidewalks to provide a more complete pedestrian network. Completion of the sidewalk gap at the corner of Herbert Street and Jackson Street will provide connectivity to Nova Road for access to commercial businesses, schools, school bus stops, medical offices, restaurants, and Votran bus stops.*

3. **Safety/Security:** this measure provides additional weight to applications that have included safety as a component of the overall project and includes school locations identified as hazardous walking/biking zones and areas with significant numbers of safety concerns. A maximum of 25 points will be awarded.

Purpose and Need (required): *School children currently stand either in the paved roadway of Jackson Street or on a sloped drainage area while waiting for school bus pick-up or walking to school (Silver Sands Middle School). These children have been observed walking in the street in the afternoon after being dropped off. Construction of a sidewalk will provide a safer environment for these children and other pedestrians. (Exhibit 1)*

4. **Contribution to “Livability” and Sustainability in the Community:** this measure considers factors that have an impact on “livability” and sustainability in the community. A maximum of 10 points will be awarded.

Purpose and Need (required): *This project will enhance the sidewalk network for residents and school children. The feasibility study should provide options to increase connectivity for students waiting for school buses in the event a full sidewalk connection cannot be implemented. In addition to completing sidewalk gaps, the project includes providing fully compliant ADA crosswalks and curb ramps at all intersections within the project limits.*

This project will complete the existing gap on Jackson Street between Canal View Boulevard to Madeline Avenue and provide a safer route and enhanced connectivity for the residents on the east and west sides of Jackson Street to access nearby destinations including other residential areas, commercial, schools, Votran (Herbert and Nova stops), and the City Center complex. In addition, with the completion of the City's drainage project on Jackson Street between Canal View Boulevard and Oak Street, these 2 projects will provide further accessibility to 2 City parks, commercial businesses, medical offices, schools and a post office for a significant number of homes located on the east and west sides of Jackson Street.

5. **Enhancements to the Transportation System:** this measure considers the demonstrated and defensible relationship to surface transportation. A maximum of 10 points will be awarded.

Purpose and Need (required): *This project will enhance the sidewalk network for residents on the east and west sides of Jackson Street to access Votran bus stops on Nova Road (Route #7) or Herbert Street (Route #17B) and school children to access bus stops along Jackson Street. (Exhibit 3)*

6. **Public Support/Special Considerations:** describe whether the proposed facility has public support and provide documentation (e.g., letters of support/signed petitions/public comments from community groups, public meeting minutes, homeowners associations, school administrators). Describe any special issues or concerns that are not being addressed by the other criteria. A maximum of 5 points will be awarded.

Purpose and Need (required): *The City has received several comments from nearby residents regarding the children waiting in the road or in drainage areas for school buses and school children walking in the street after being dropped off by school buses. Construction of sidewalks or other options will help to provide a safer environment for both school children and pedestrian travel to nearby businesses and the Votran bus stops on Nova Road (Route #7) or Herbert Street (Route #17B).*

7. **Local Matching Funds > 10%:** if local matching funds greater than 10% of the estimated project cost are available, describe the local matching fund package in detail. A maximum of 20 points will be awarded.

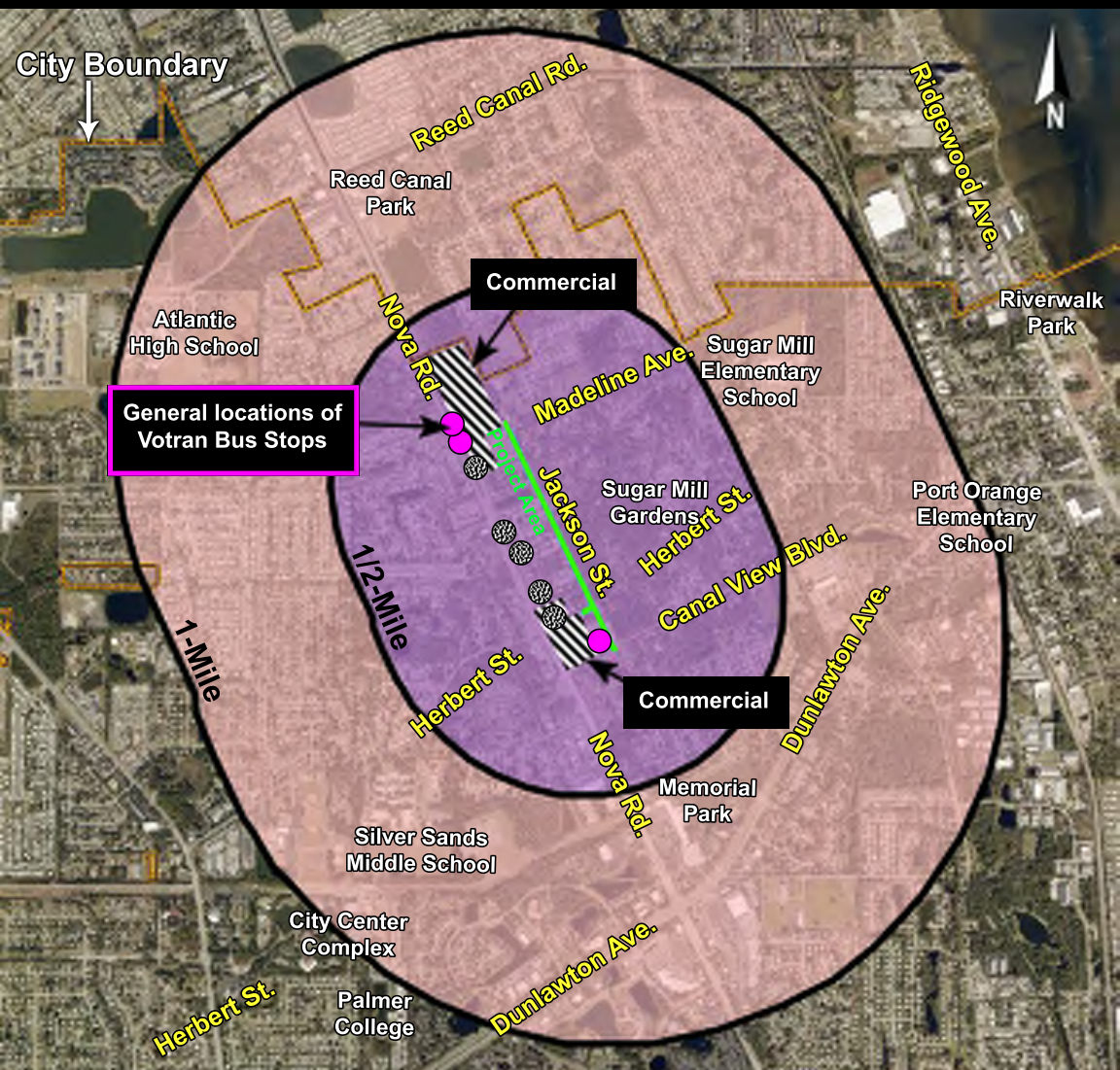
Purpose and Need (required): *In February of 2022, the Port Orange City Council approved the submittal of this application requesting to provide a local match of 10% of the project design, construction, and CEI costs.*

Exhibit 1 - Location Map (Sidewalk and Pedestrian Improvements on Jackson Street from Canal View Boulevard to Madeline Avenue)



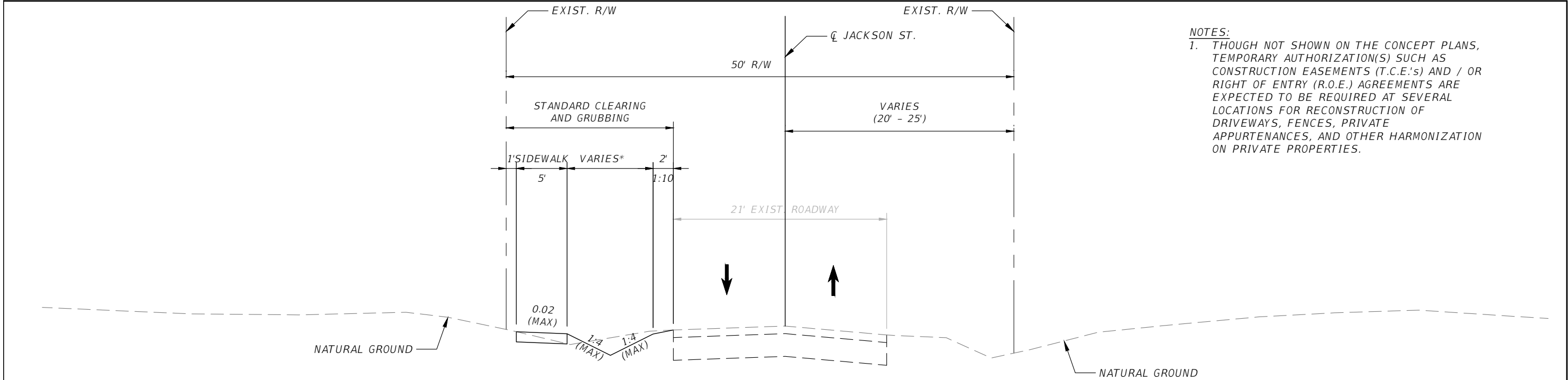
School-age children waiting for school bus in the morning.

Exhibit 2 - Location Map (Sidewalk and Pedestrian Improvements on Jackson Street from Canal View Boulevard to Madeline Avenue)



APPENDIX B

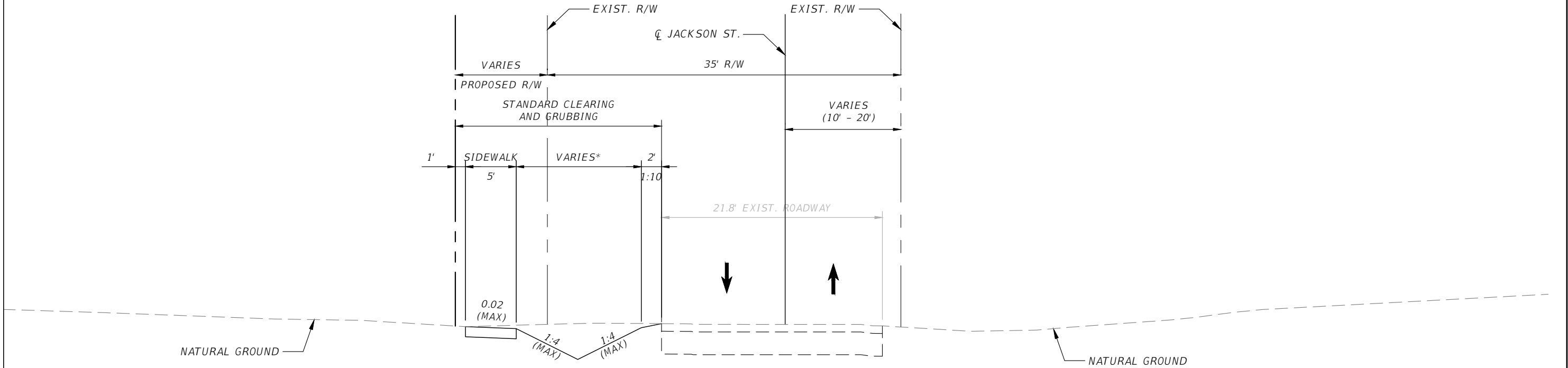
TYPICAL SECTIONS
&
CONCEPT PLANS



NOTES:
1. THOUGH NOT SHOWN ON THE CONCEPT PLANS, TEMPORARY AUTHORIZATION(S) SUCH AS CONSTRUCTION EASEMENTS (T.C.E.'s) AND / OR RIGHT OF ENTRY (R.O.E.) AGREEMENTS ARE EXPECTED TO BE REQUIRED AT SEVERAL LOCATIONS FOR RECONSTRUCTION OF DRIVEWAYS, FENCES, PRIVATE APPURTENANCES, AND OTHER HARMONIZATION ON PRIVATE PROPERTIES.

* DESIGN VARIATION REQUIRED TO MEET MINIMUM 1-FOOT GRADED AREA 1:6 MAX ADJACENT TO SIDEWALK (FLORIDA GREENBOOK CHAPTER 8 B.1)

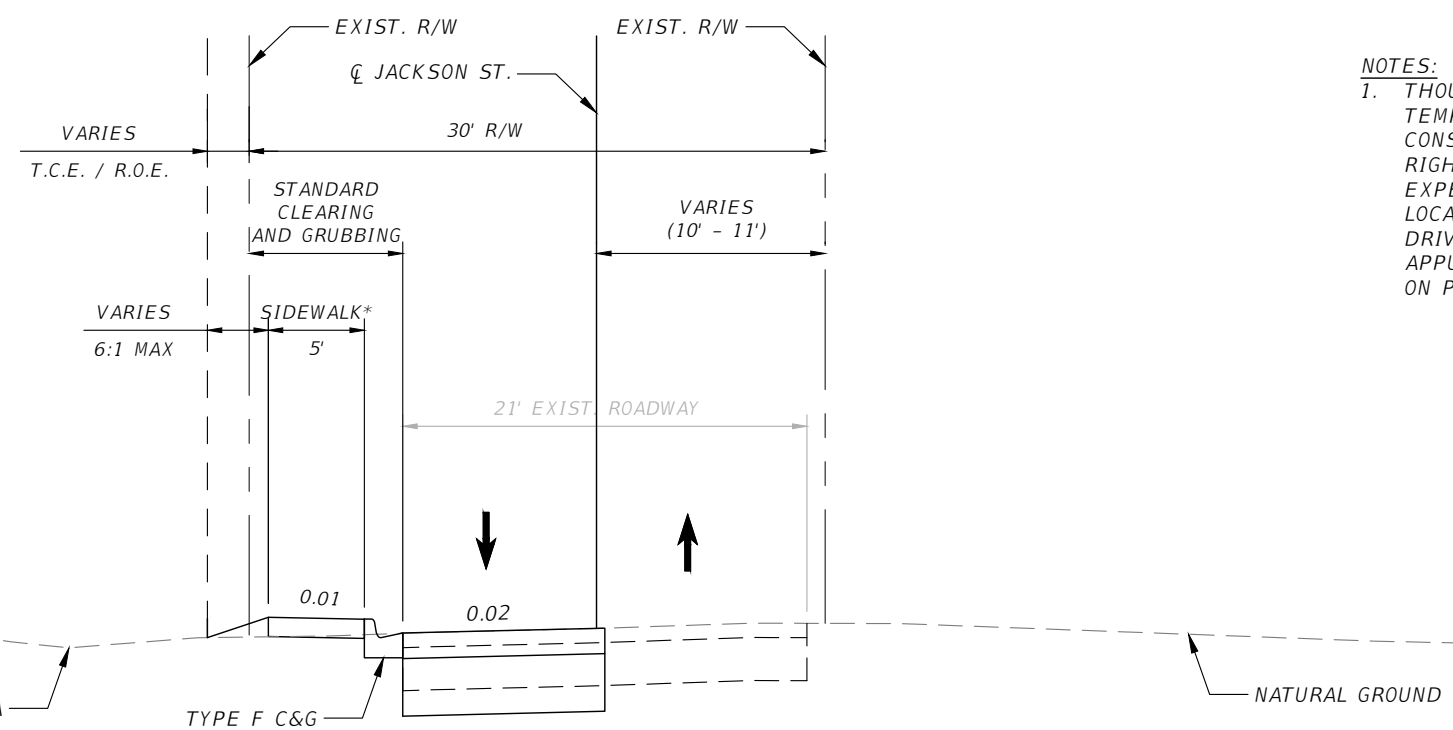
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STA. 106+80.00 TO STA. 109+80.00



* DESIGN VARIATION REQUIRED TO MEET MINIMUM 1-FOOT GRADED AREA 1:6 MAX ADJACENT TO SIDEWALK (FLORIDA GREENBOOK CHAPTER 8 B.1)

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STA. 109+80.00 TO STA. 112+80.00

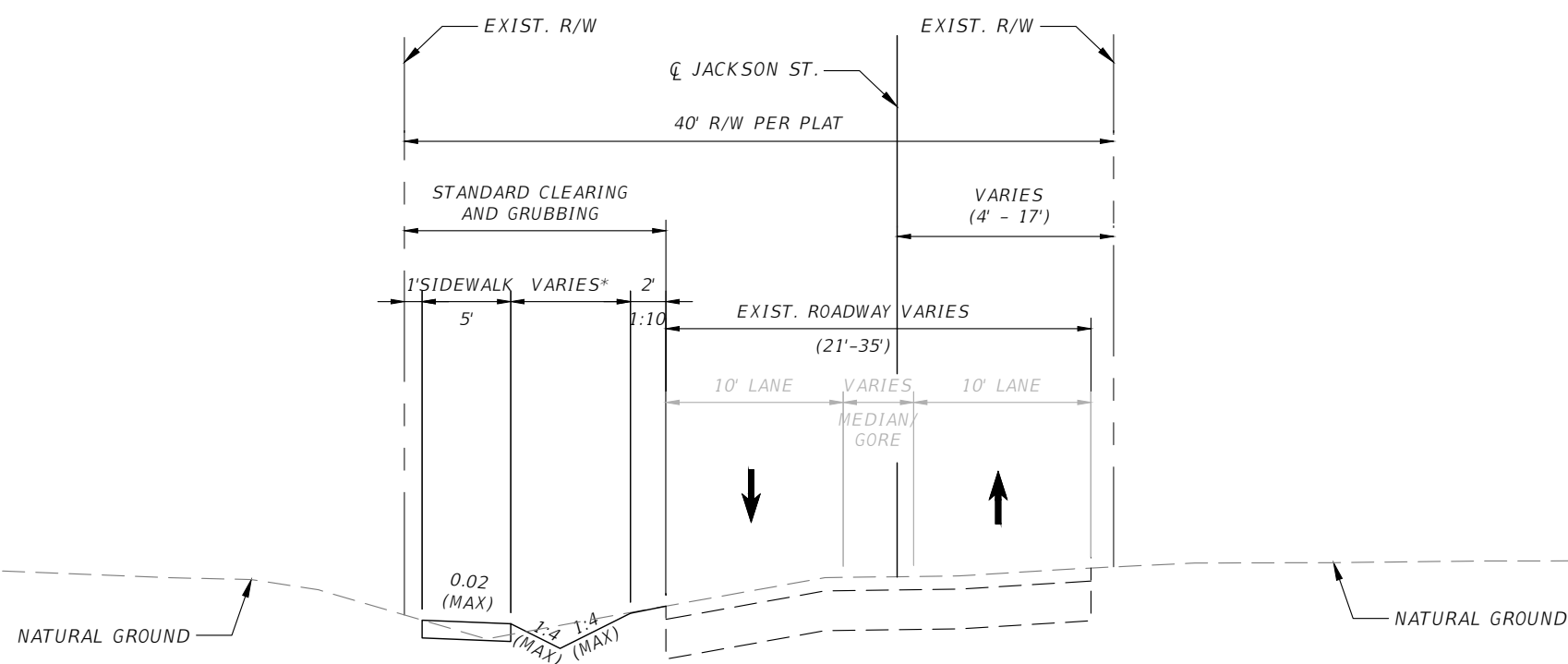
REVISIONS			 TRAFFIC ENGINEERING DATA SOLUTIONS, INC. Phone 386.753.0558 80 Spring Vista Drive Fax 386.753.0778 DeBary, FL 32713	JACKSON STREET SIDEWALK FEASIBILITY STUDY			TYPICAL SECTIONS	SHEET NO.
DATE	DESCRIPTION			ROAD	COUNTY	FINACIAL PROJECT ID		
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NOTES:
 1. THOUGH NOT SHOWN ON THE CONCEPT PLANS, TEMPORARY AUTHORIZATION(S) SUCH AS CONSTRUCTION EASEMENTS (T.C.E.'s) AND / OR RIGHT OF ENTRY (R.O.E.) AGREEMENTS ARE EXPECTED TO BE REQUIRED AT SEVERAL LOCATIONS FOR RECONSTRUCTION OF DRIVEWAYS, FENCES, PRIVATE APPURTENANCES, AND OTHER HARMONIZATION ON PRIVATE PROPERTIES.

* DESIGN VARIATION REQUIRED TO MEET MINIMUM SIDEWALK WIDTH (FLORIDA GREENBOOK CHAPTER 8 B.1)

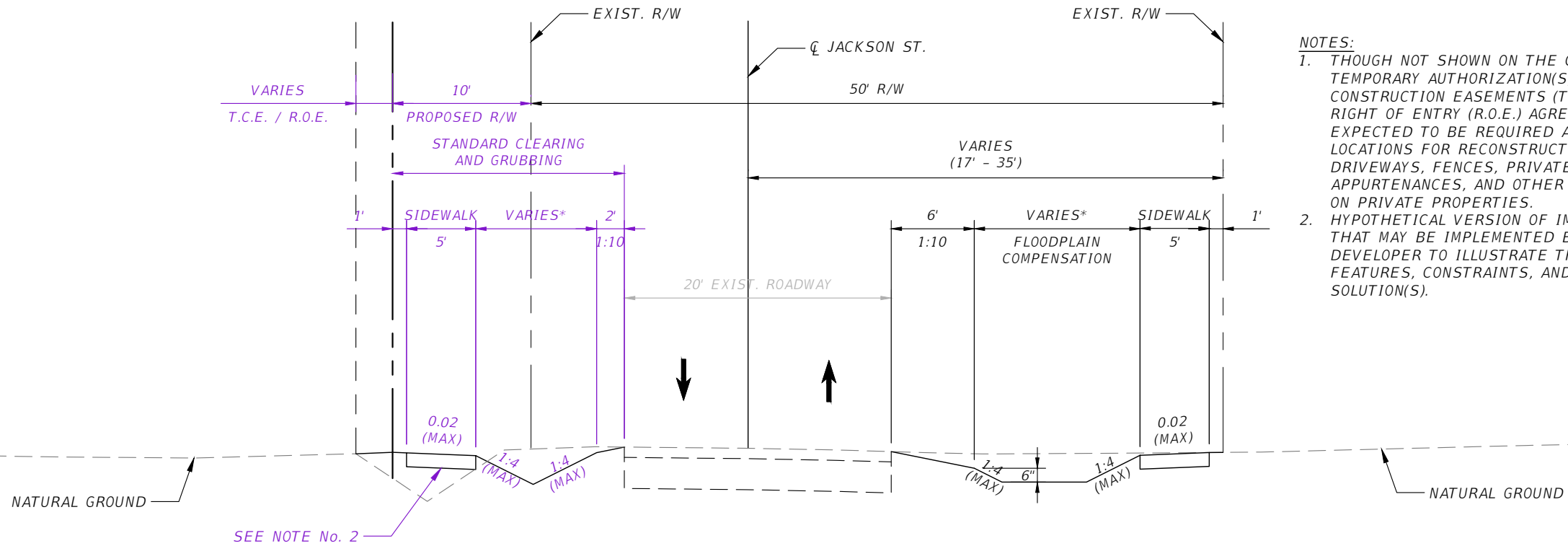
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 STA. 112+80.00 TO STA. 115+50.00



* DESIGN VARIATION REQUIRED TO MEET MINIMUM 1-FOOT GRADED AREA 1:6 MAX ADJACENT TO SIDEWALK (FLORIDA GREENBOOK CHAPTER 8 B.1)

TYPICAL SECTION NO. 4
 JACKSON ST.
 STA. 115+50.00 TO STA. 133+00.00

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DATE	DESCRIPTION			ROAD	COUNTY	FINACIAL PROJECT ID		02
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- NOTES:
1. THOUGH NOT SHOWN ON THE CONCEPT PLANS, TEMPORARY AUTHORIZATION(S) SUCH AS CONSTRUCTION EASEMENTS (T.C.E.'s) AND / OR RIGHT OF ENTRY (R.O.E.) AGREEMENTS ARE EXPECTED TO BE REQUIRED AT SEVERAL LOCATIONS FOR RECONSTRUCTION OF DRIVEWAYS, FENCES, PRIVATE APPURTENANCES, AND OTHER HARMONIZATION ON PRIVATE PROPERTIES.
 2. HYPOTHETICAL VERSION OF IMPROVEMENTS THAT MAY BE IMPLEMENTED BY THE DEVELOPER TO ILLUSTRATE THE EXISTING FEATURES, CONSTRAINTS, AND POTENTIAL SOLUTION(S).

* DESIGN VARIATION REQUIRED TO MEET MINIMUM 1-FOOT GRADED AREA 1:6 MAX ADJACENT TO SIDEWALK (FLORIDA GREENBOOK CHAPTER 8 B.1)

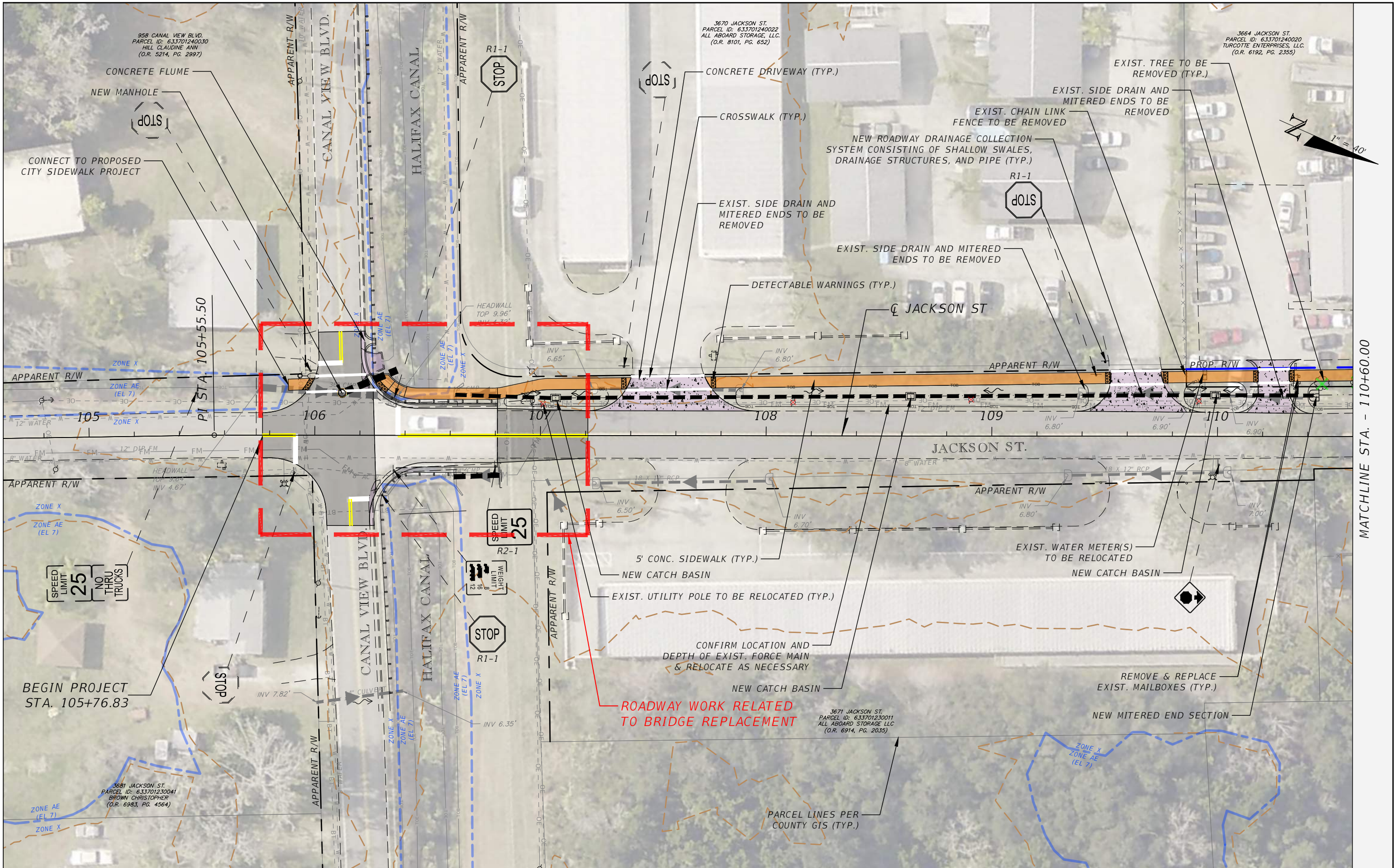
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STA. 133+00.00 TO STA. 139+60

LEGEND

CONCEPT PLAN SYMBOLS

- CONCRETE SIDEWALK
- CONCRETE DRIVEWAY
- ASPHALT PAVEMENT
- CONCRETE REMOVAL
- DETECTABLE WARNING SURFACE
- UTILITY POLE TO BE RELOCATED (BY OTHERS)
- TREE REMOVAL
- PROPOSED STREET LIGHT

REVISIONS			 <div><div>RIVER TO SEA</div><div>Transportation Planning Organization</div><div>VISION • PLAN • IMPLEMENT</div></div> <div><div>TRAFFIC ENGINEERING DATA SOLUTIONS, INC.</div><div>Phone 386.753.0558 80 Spring Vista Drive Fax 386.753.0778 DeBary, FL 32713</div></div>	JACKSON STREET SIDEWALK FEASIBILITY STUDY			TYPICAL SECTION & LEGEND	SHEET NO.
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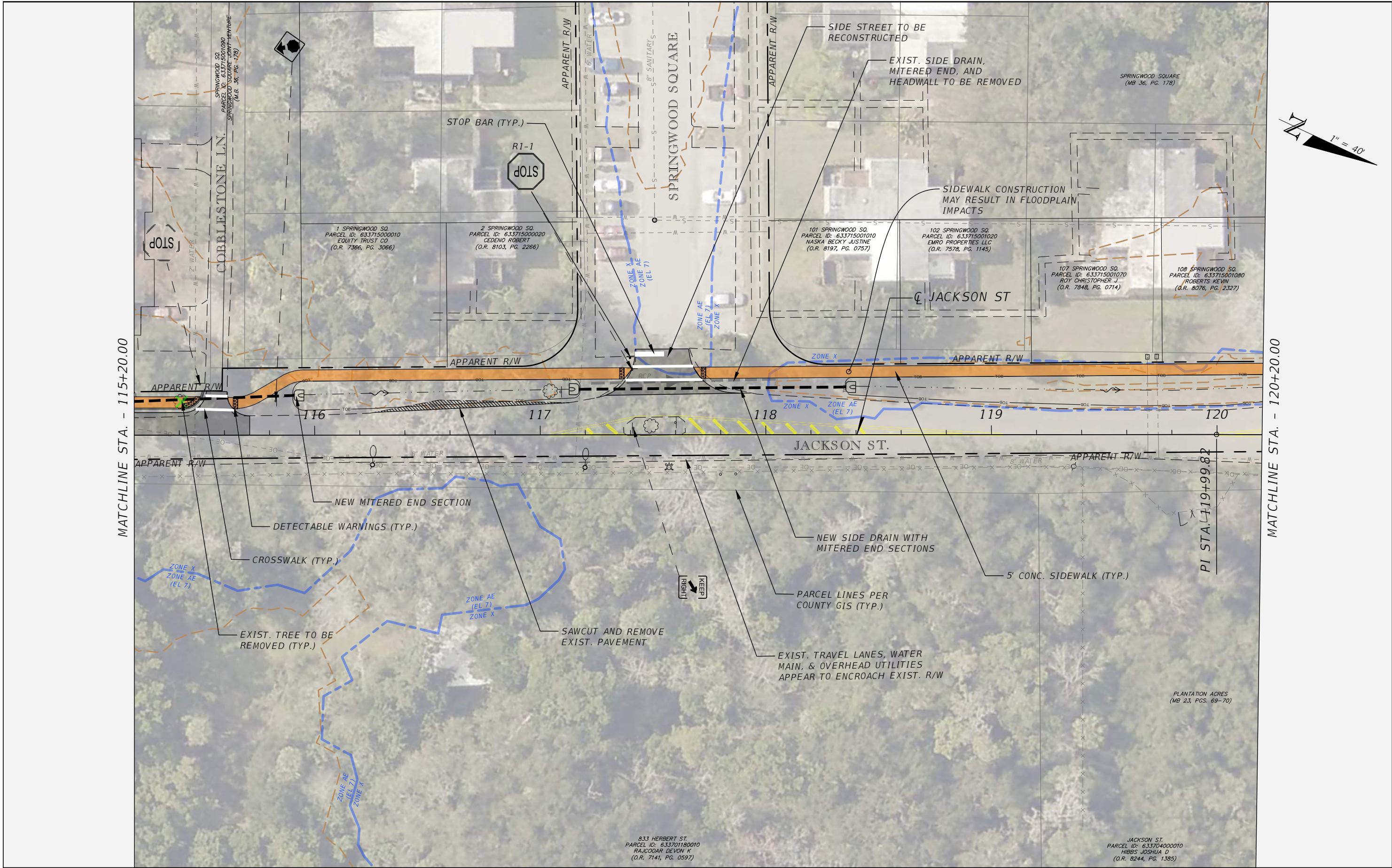
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CONCEPT PLAN (1)	

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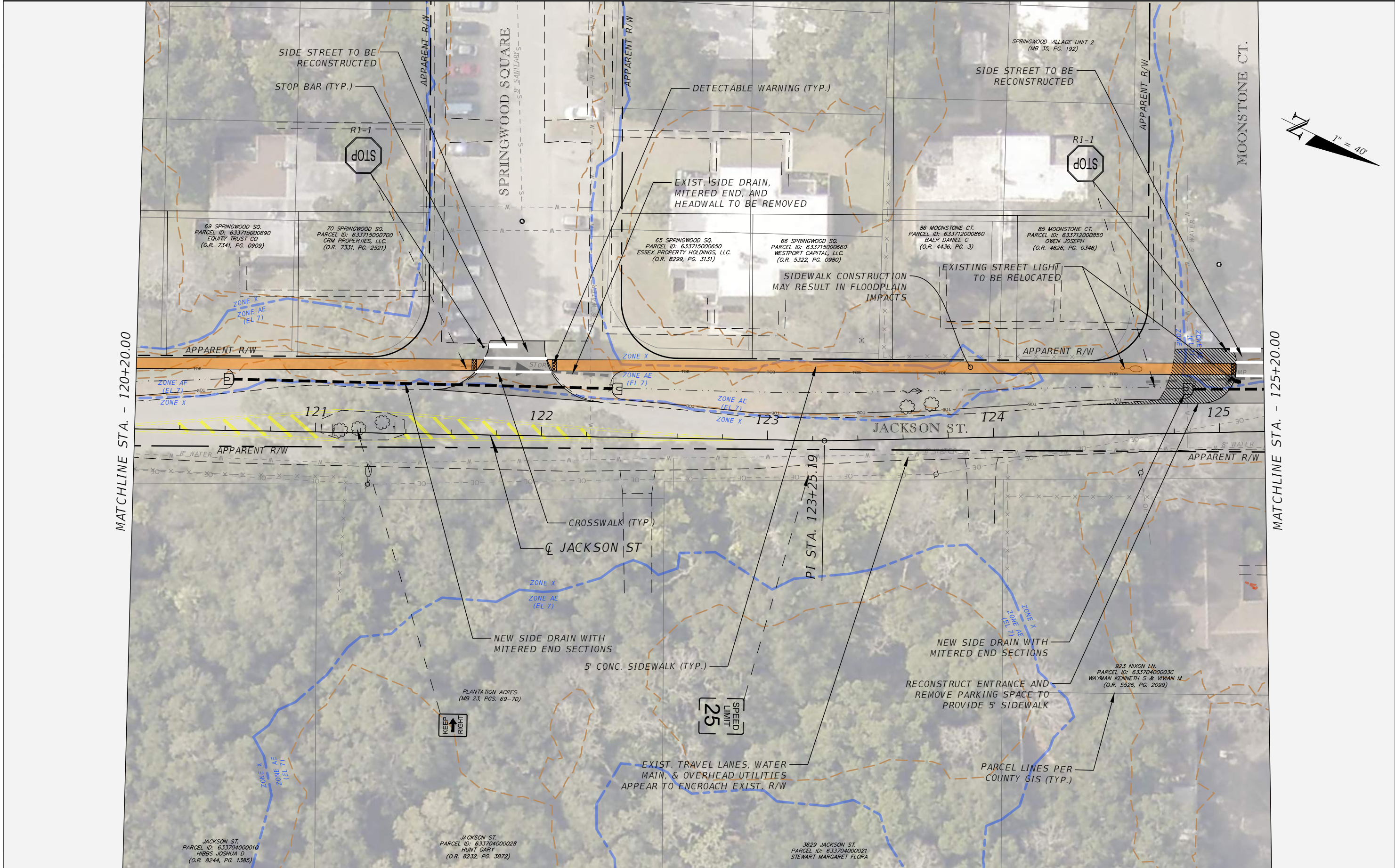


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Fax 386.753.0778 DeBary, FL 32713

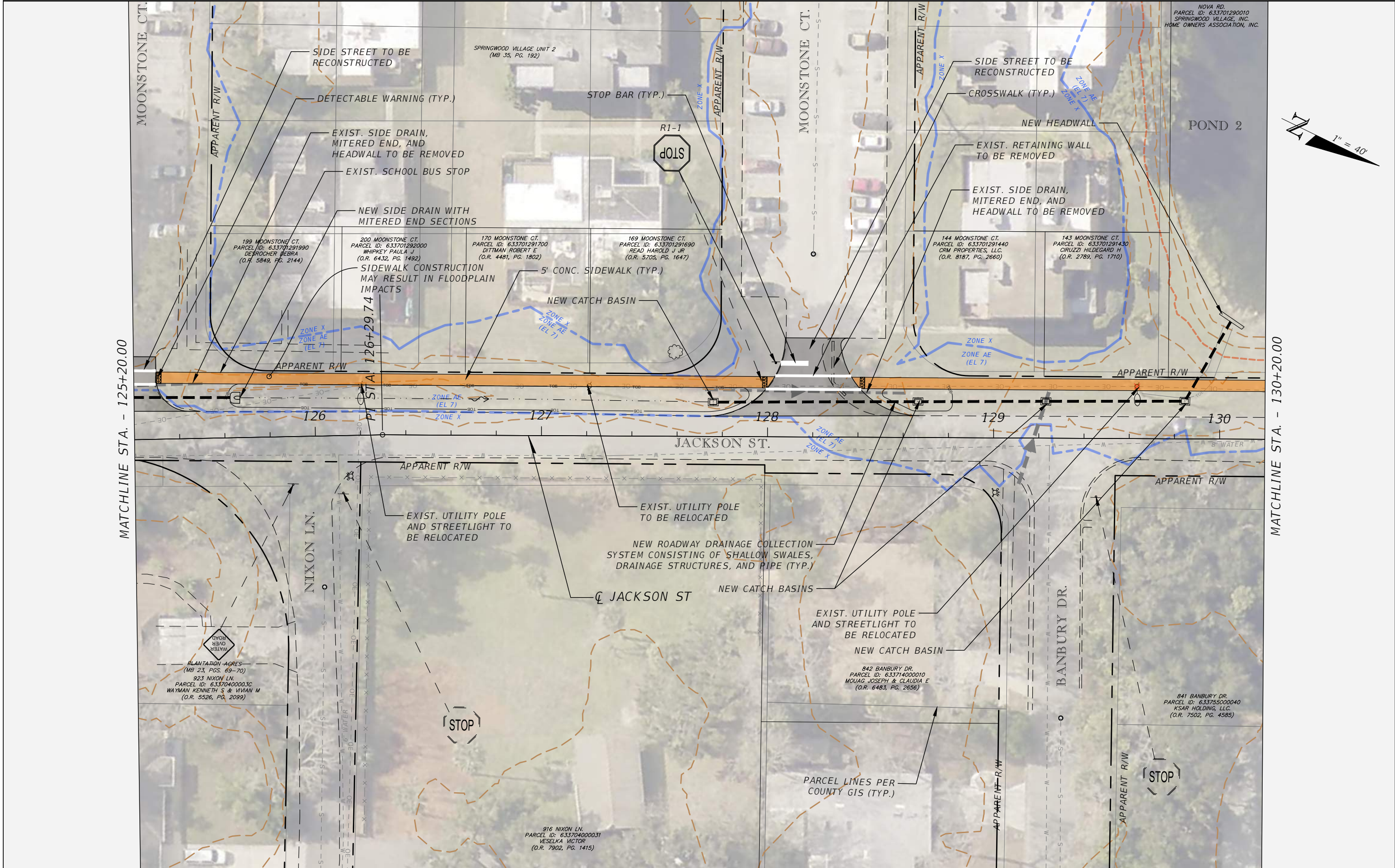
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CONCEPT PLAN (3)	

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06



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DATE	DESCRIPTION			ROAD	COUNTY	FINACIAL PROJECT ID	
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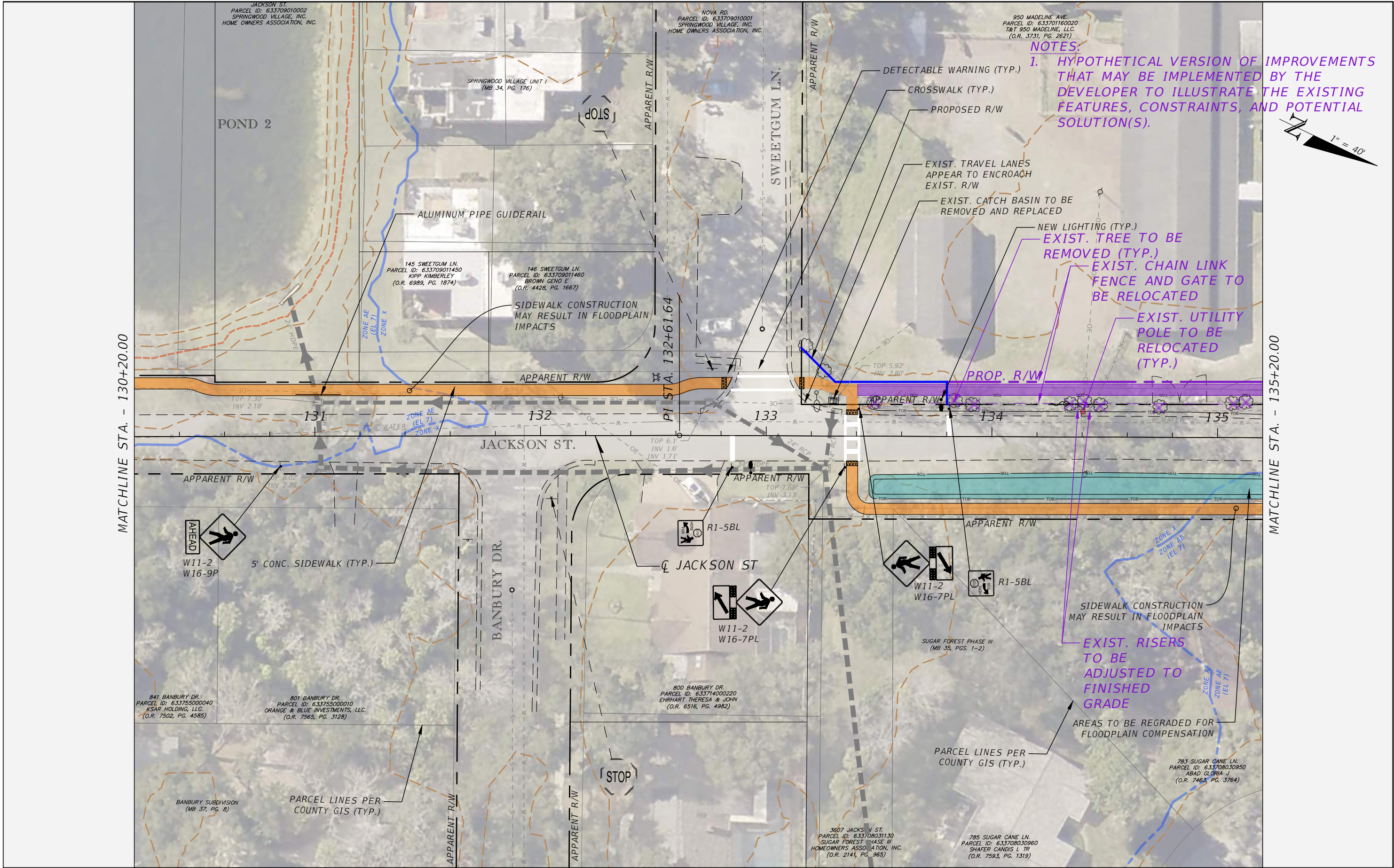


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Fax 386.753.0778 DelBury, FL 32713

JACKSON STREET SIDEWALK FEASIBILITY STUDY		
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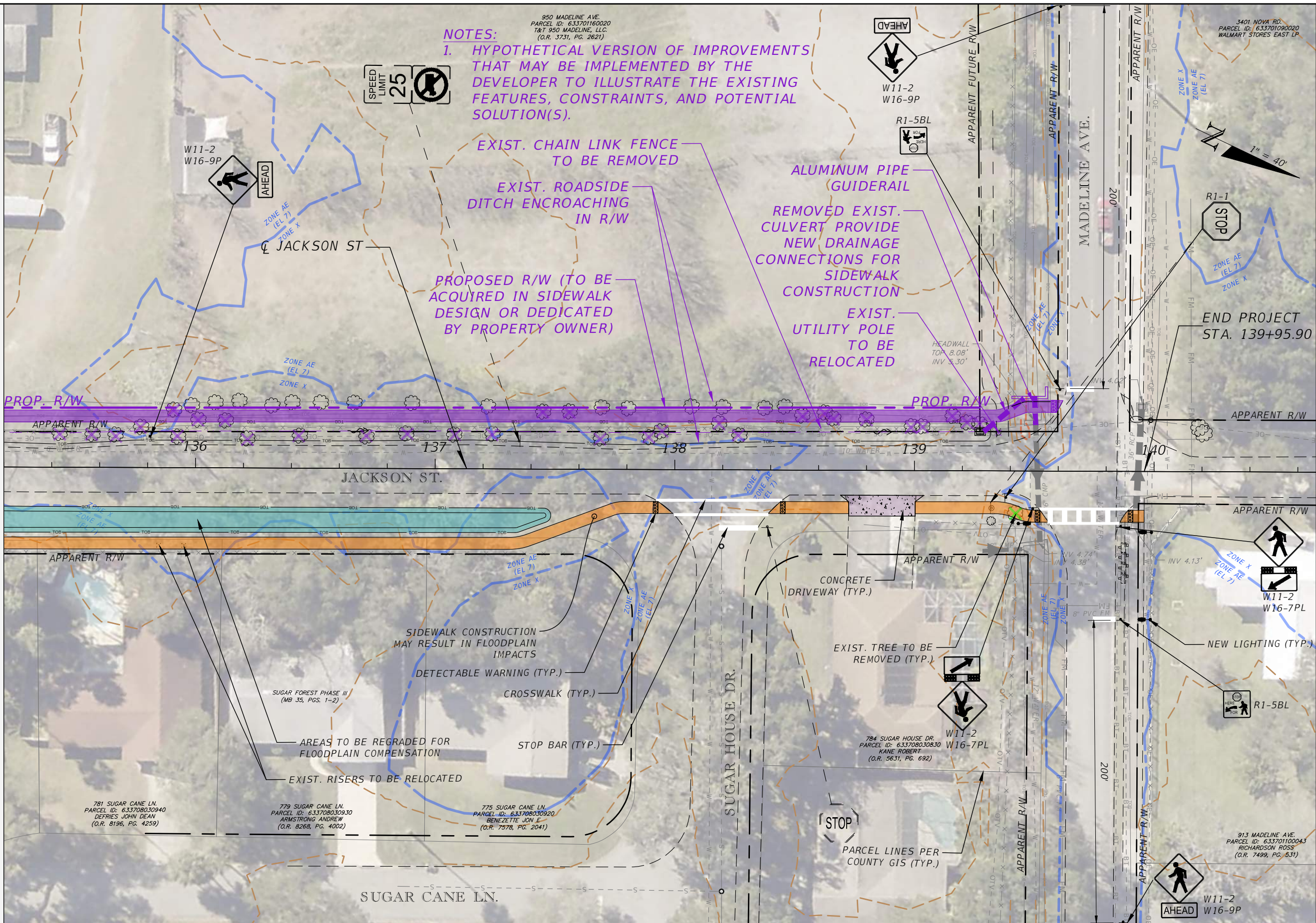
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MATCHLINE STA. - 135+20.00



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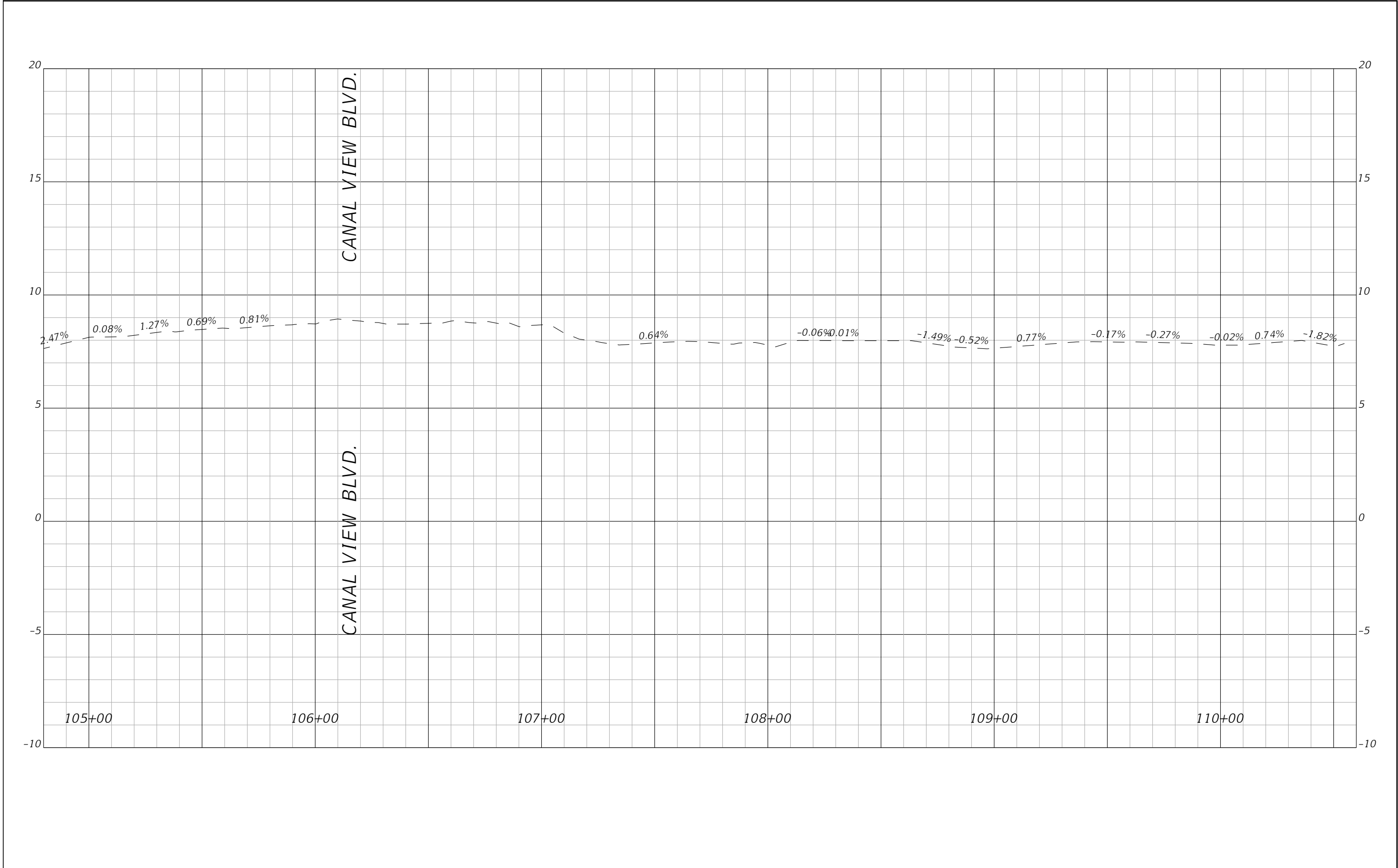
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CONCEPT PLAN (7)	

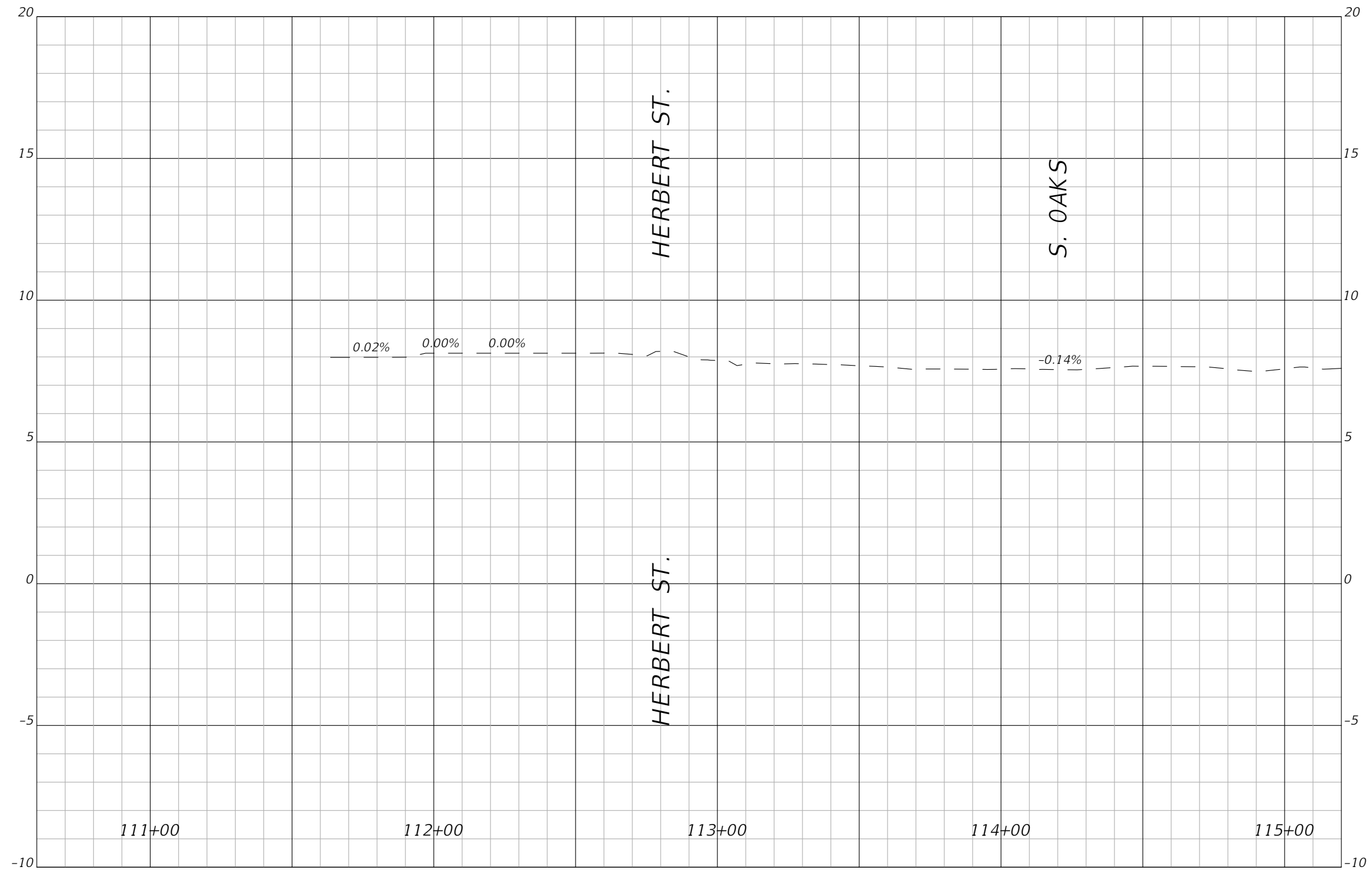
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APPENDIX C

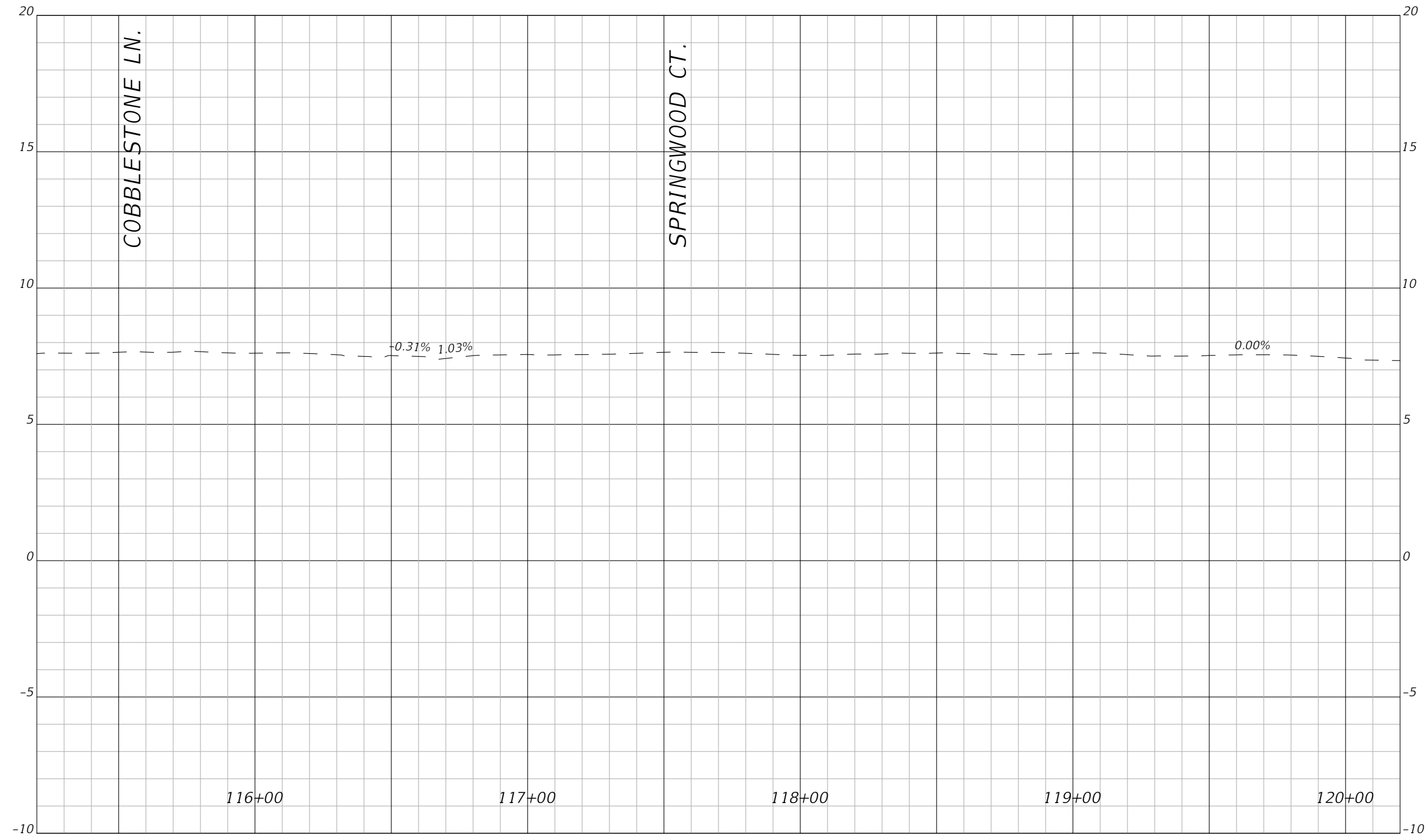
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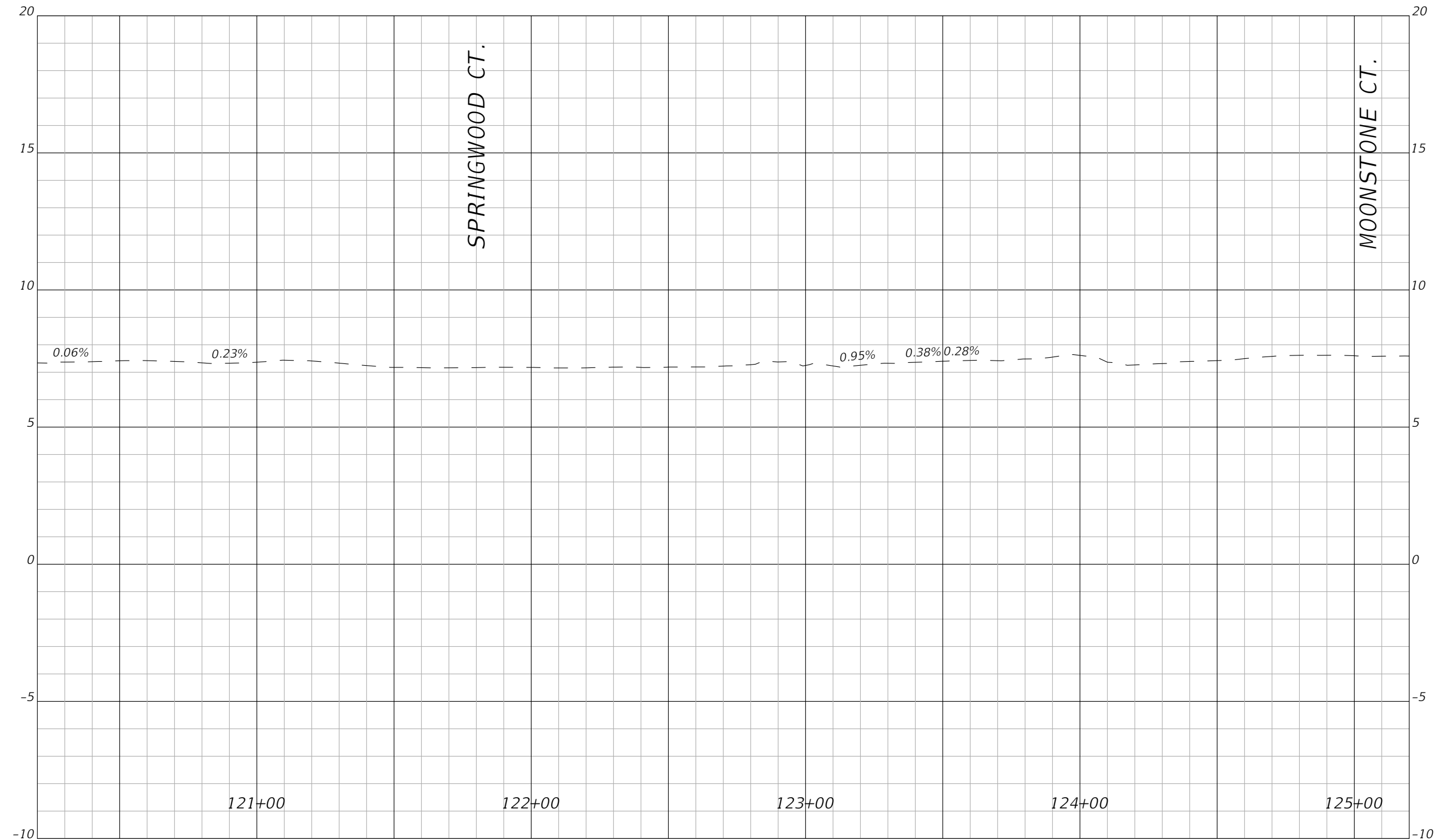
R E V I S I O N S			 TRAFFIC ENGINEERING DATA SOLUTIONS, INC. Phone 386.753.0558 80 Spring Vista Drive Fax 386.753.0778 DeBary, FL 32713	JACKSON STREET SIDEWALK FEASIBILITY STUDY			CONCEPT PROFILE	SHEET NO.
DATE	DESCRIPTION			ROAD	COUNTY	FINACIAL PROJECT ID		01
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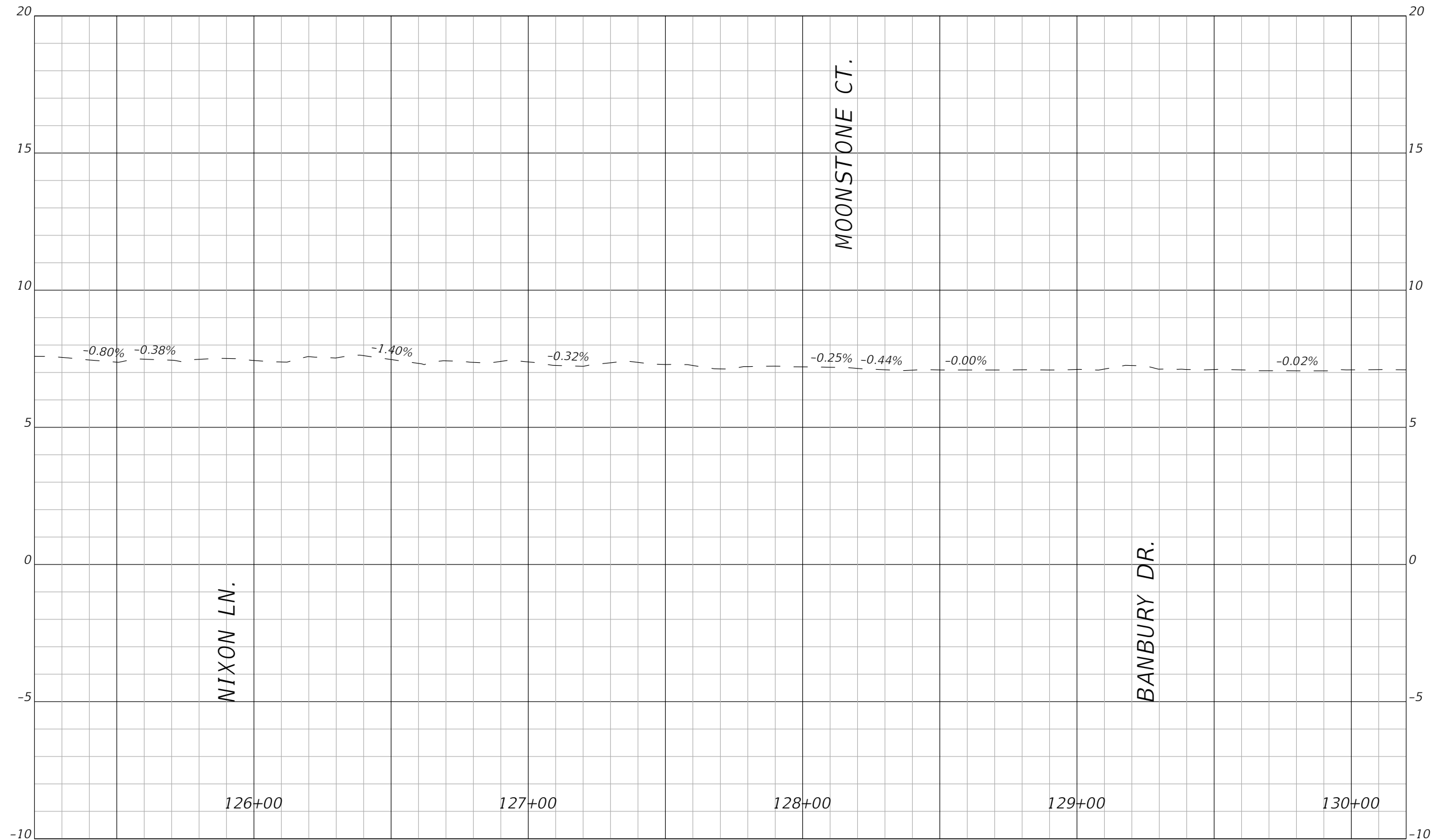
R E V I S I O N S		 TRANSPORTATION PLANNING ORGANIZATION VISION • PLAN • IMPLEMENT	 TRAFFIC ENGINEERING DATA SOLUTIONS, INC. Phone 386.753.0558 80 Spring Vista Drive Fax 386.753.0778 DeBary, FL 32713	JACKSON STREET SIDEWALK FEASIBILITY STUDY			CONCEPT PROFILE	SHEET NO.
DATE	DESCRIPTION			ROAD	COUNTY	FINACIAL PROJECT ID		02
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REVISIONS		 RIVER TO SEA Transportation Planning Organization VISION • PLAN • IMPLEMENT	 TRAFFIC ENGINEERING DATA SOLUTIONS, INC. Phone 386.753.0558 80 Spring Vista Drive Fax 386.753.0778 DeBary, FL 32713	JACKSON STREET SIDEWALK FEASIBILITY STUDY			CONCEPT PROFILE	SHEET NO.
DATE	DESCRIPTION			ROAD	COUNTY	FINACIAL PROJECT ID		03
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R E V I S I O N S		 TRANSPORTATION PLANNING ORGANIZATION VISION • PLAN • IMPLEMENT	 TRAFFIC ENGINEERING DATA SOLUTIONS, INC. Phone 386.753.0558 80 Spring Vista Drive Fax 386.753.0778 DeBary, FL 32713	JACKSON STREET SIDEWALK FEASIBILITY STUDY			CONCEPT PROFILE	SHEET NO.
DATE	DESCRIPTION			ROAD	COUNTY	FINACIAL PROJECT ID		04
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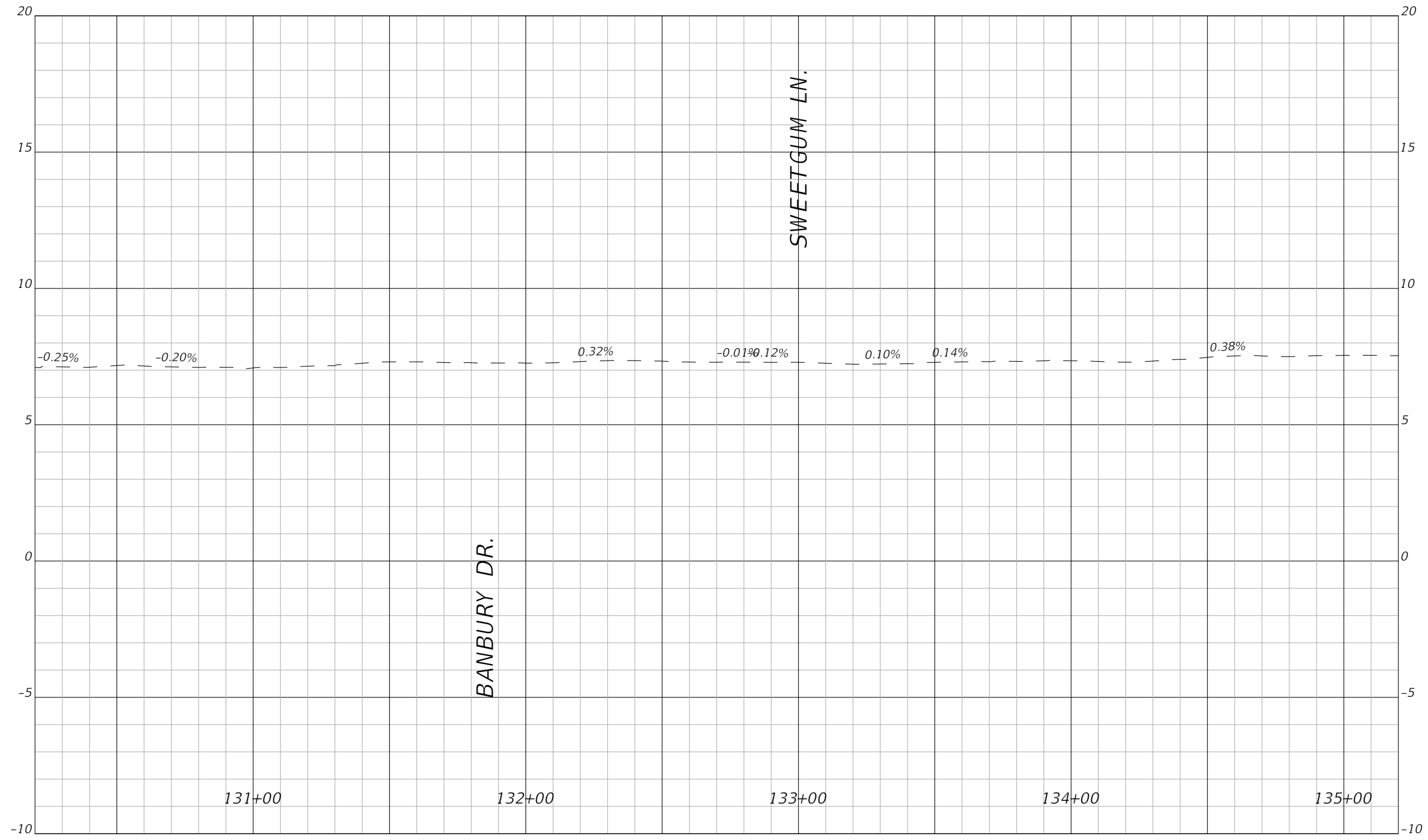


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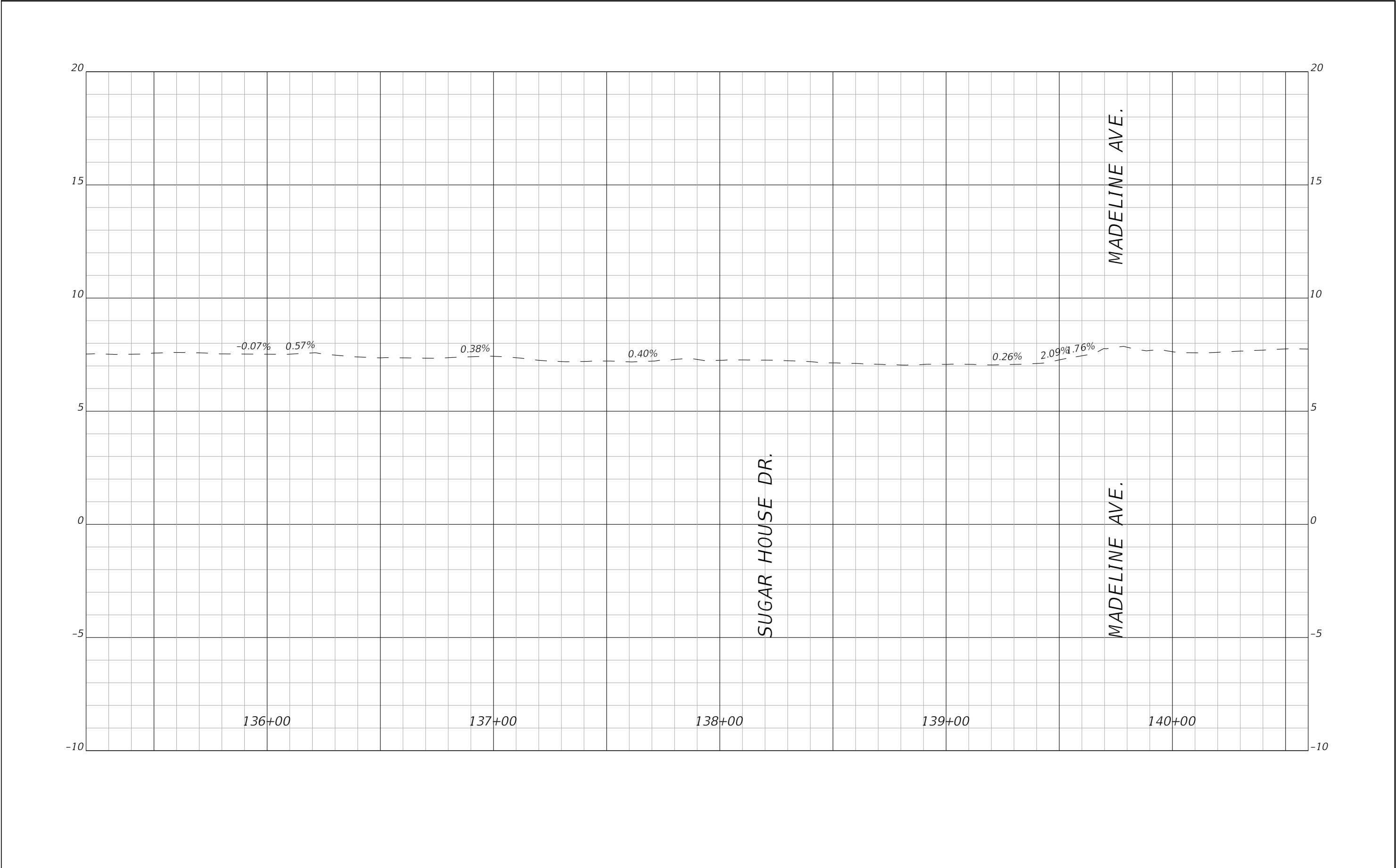


JACKSON STREET SIDEWALK FEASIBILITY STUDY		
ROAD	COUNTY	FINACIAL PROJECT ID
	VOLUSIA	----- - -

CONCEPT PROFILE	SHEET NO.
	05



REVISIONS		 RIVER TO SEA Transportation Planning Organization VISION • PLAN • IMPLEMENT	 TRAFFIC ENGINEERING DATA SOLUTIONS, INC. Phone 386.753.0558 80 Spring Vista Drive Fax 386.753.0778 DeBary, FL 32713	JACKSON STREET SIDEWALK FEASIBILITY STUDY			CONCEPT PROFILE	SHEET NO.
DATE	DESCRIPTION			ROAD	COUNTY	FINACIAL PROJECT ID		06
					VOLUSIA	----- - -		

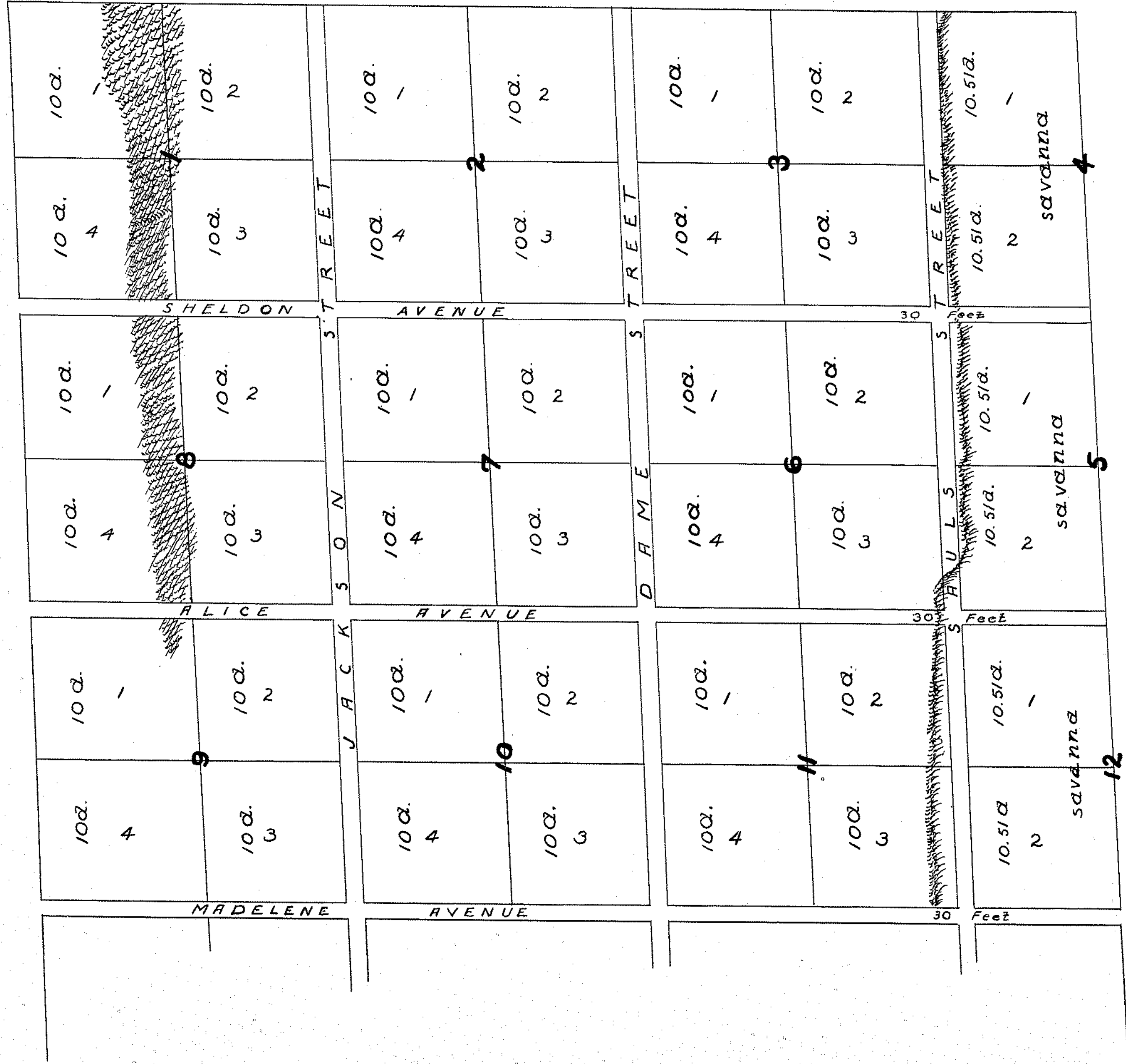


REVISIONS		 TRANSPORTATION PLANNING ORGANIZATION VISION • PLAN • IMPLEMENT	 TRAFFIC ENGINEERING DATA SOLUTIONS, INC. Phone 386.753.0558 80 Spring Vista Drive Fax 386.753.0778 DeBary, FL 32713	JACKSON STREET SIDEWALK FEASIBILITY STUDY			CONCEPT PROFILE	SHEET NO.
DATE	DESCRIPTION			ROAD	COUNTY	FINACIAL PROJECT ID		
					VOLUSIA	----- - -		07

APPENDIX D

RECORD PLATS

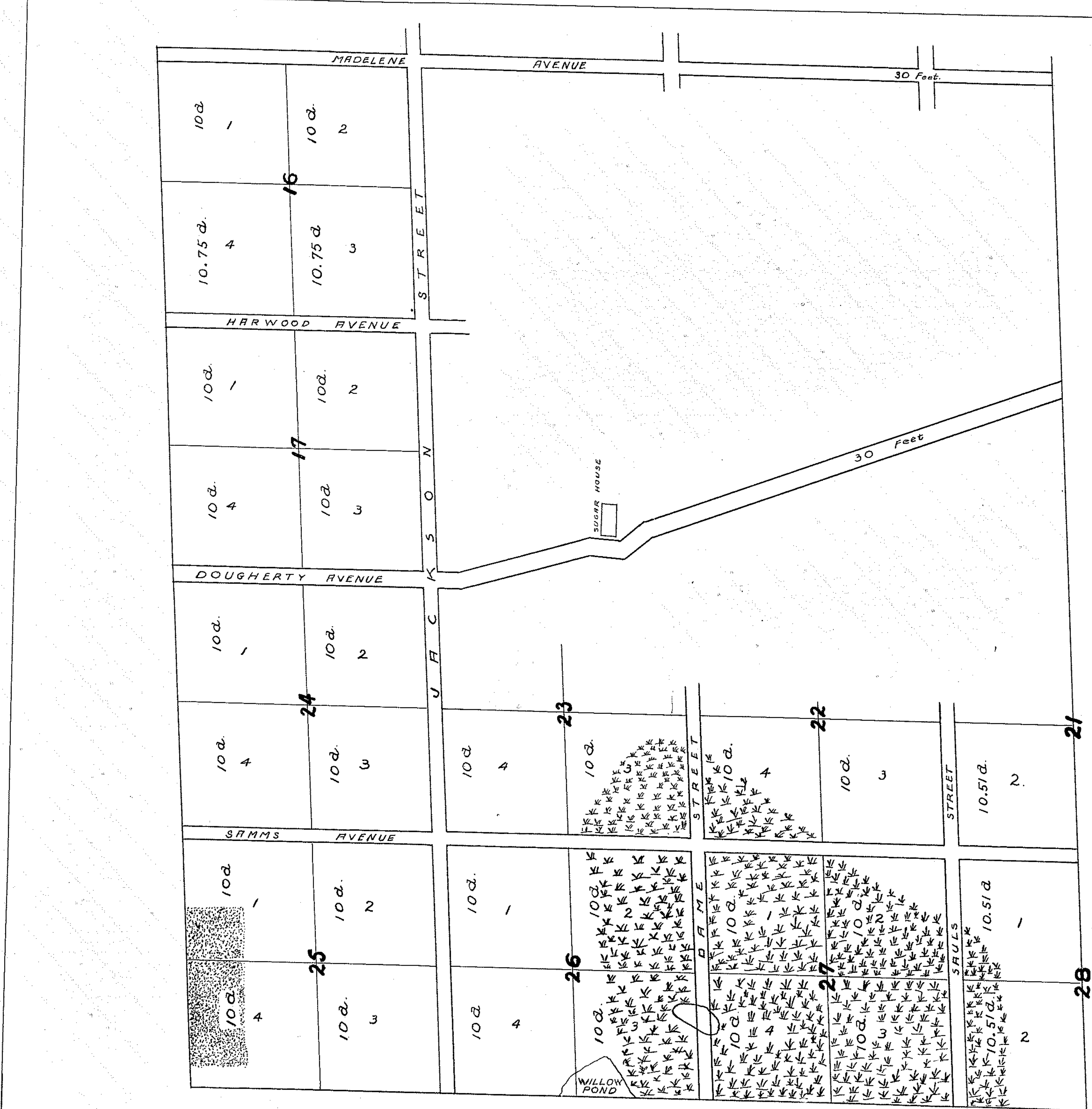
A TRUE COPY
OF MAP IN
MAP BOOK M
PAGE 187
I. WALTER HAWKINS,
CLERK CIRCUIT COURT.
By *David W. Harrison*
DEPUTY.



Sheet Two
of Two Sheets.

Sec. 177.141 F.S.
For corrective information
pertaining to this plat see:
AFFIDAVIT
Filed: 3/18/98 and
recorded in Official Record
Book 4086 Page 4789

DIANE M. MATOUSEK
Clerk of Circuit Court
Sharon Barrie D.C.



MAP OF DUN=LAWTON

TOWNSHIPS 15²/₁₆ 16 SECTIONS 43 & 37 SOUTH, RANGE 33E.

CHA^S DOUGHERTY

Surveyed Jan'y 1882.

Scale - Five Chains to the Inch.

14-83

Sec. 177, 141 F.S.
For corrective information
relating to this plat see:
H.S. 3/8/93 and
H.S. 4/23/93 Page 4722

DIANE M. MATOUSEK
Clerk of Circuit Court

Sharon Boone, D.C.

A TRUE COPY
OF MAP IN
MAP BOOKM
PAGE 187
I. WALTER HAWKINS.
CLERK CIRCUIT COURT.
By *Reed W. Swanton* DEPUTY.

Sheet One
of Two Sheets.

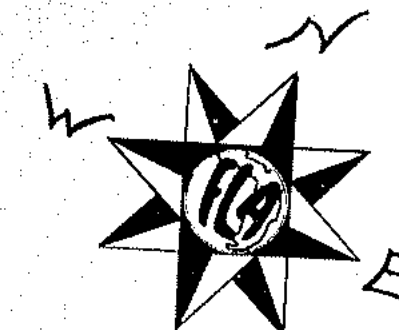
State of Florida } Be it known that on this the
County of Volusia } third day of April A.D. 1883
personally came before me, a notary public for the
said county and state, Charles Dougherty personally
known to me and acknowledged that he had sub-
divided and platted a certain portion of the
Patrick Dean Grant in Townships 15 and 16
Sections 43 and 37 South, Range 33 East, belonging
to him, and acknowledged the within to be a
correct map or plat of such subdivision which he
prays may be filed for record in the County
Clerk's office of Volusia County.



Notary Public.

Filed for record April 5, 1883 and recorded
on page 187 Book M.

Jno. W. Dickins.
Clerk.

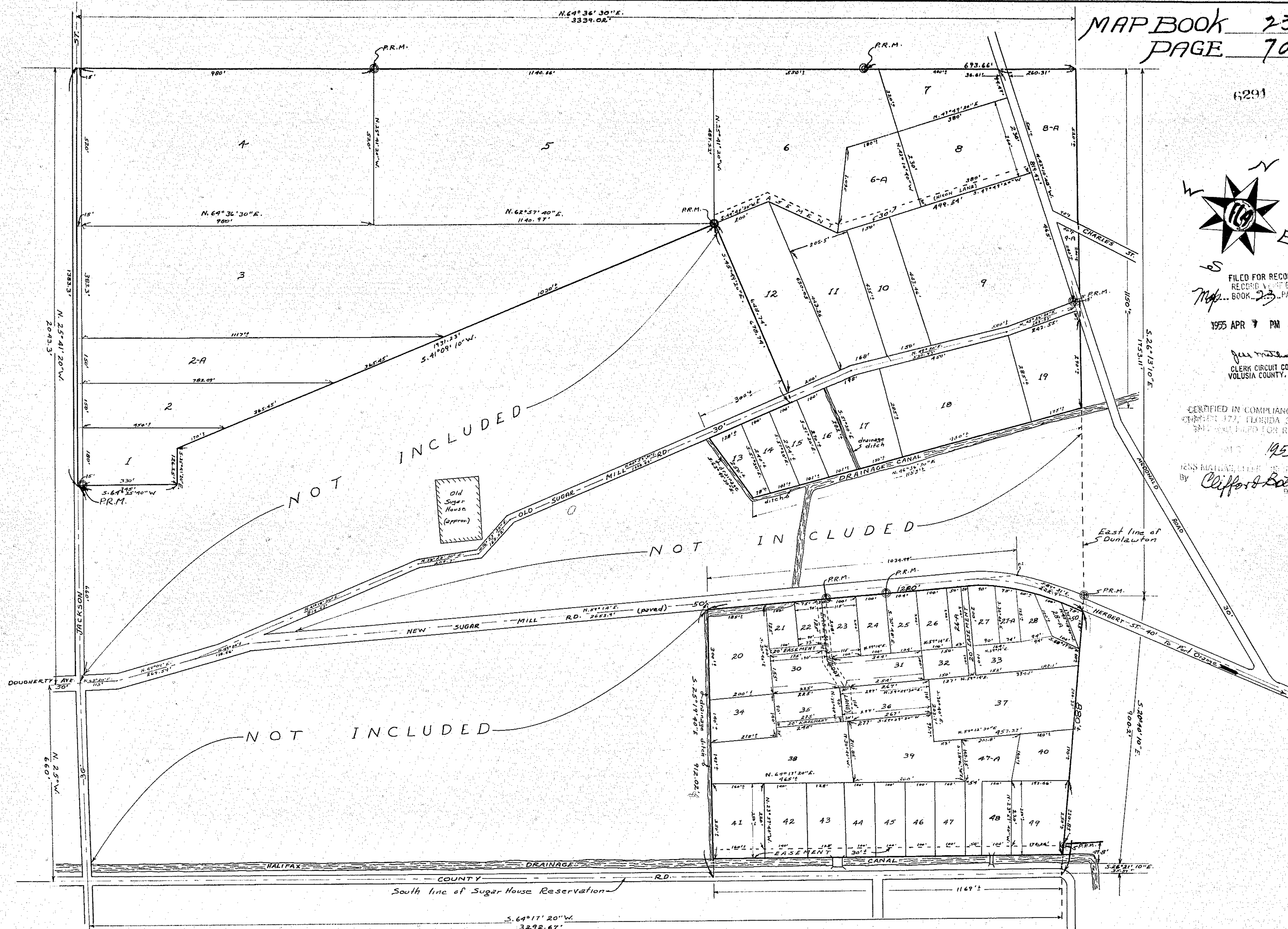


FILED FOR RECORD
RECORDED
Map BOOK 23, PAGE 70
1955 APR 7 PM 2 32

Jas. M. Bates
CLERK CIRCUIT COURT
VOLUSIA COUNTY, FLA.

CERTIFIED IN COMPLIANCE WITH
CHAPTER 177, FLORIDA STATUTES
AND AMENDED FOR RECORD

1955
JESS M. BATES, CLERK
By *Clifford & Bates*
Surveyors



PLAT OF
PLANTATION ACRES
PART OF SUGAR HOUSE RESERVATION,
SEC. 37, T. 16 S., R. 33 E.,
VOLUSIA COUNTY, FLORIDA.

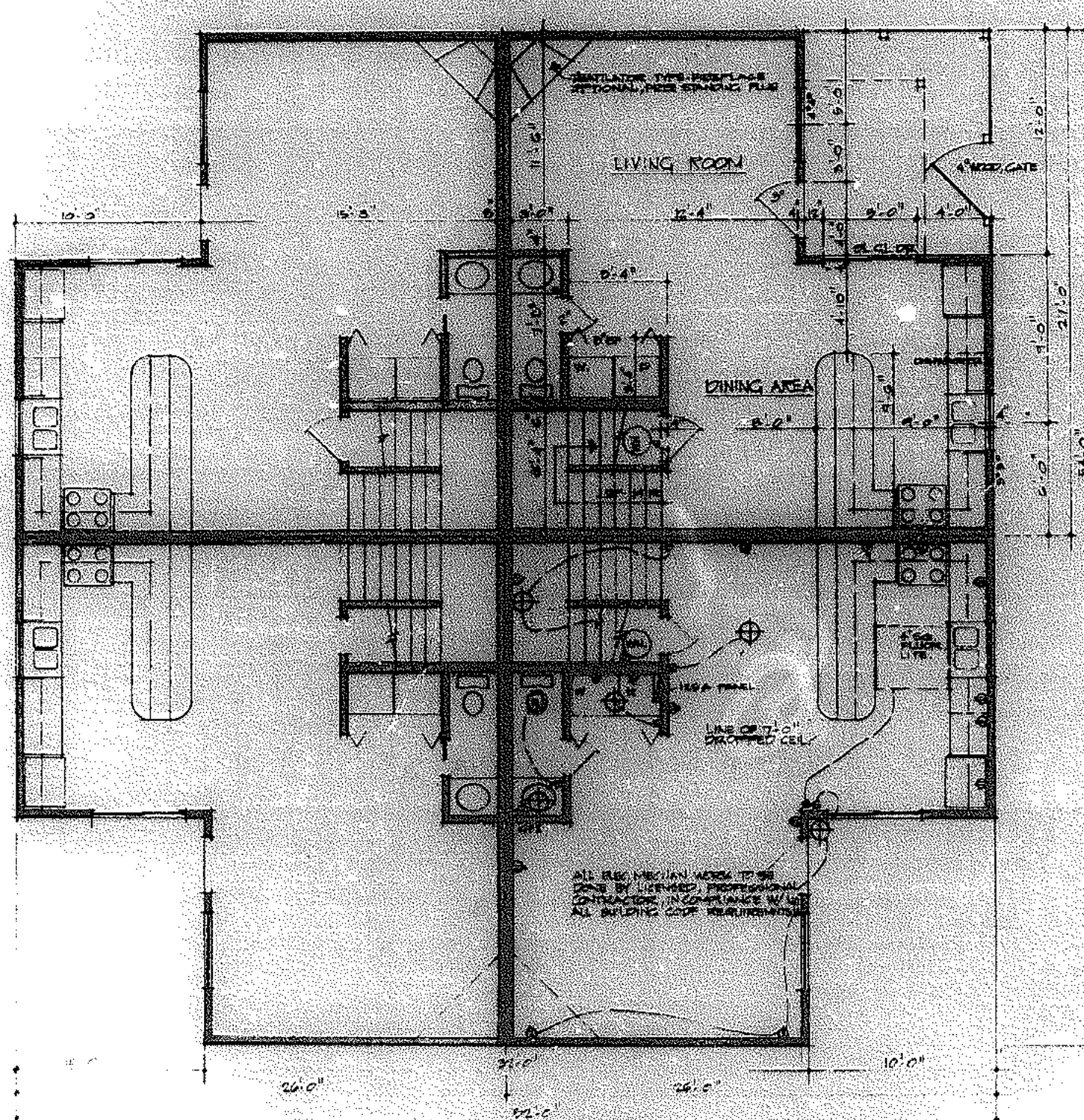
STEPP INC.,
Registered Engineers & Surveyors,
Daytona Beach, Florida.

Scale: 1"=200'

4 February, 1955

SURVEYOR'S CERTIFICATE:
I hereby certify that the foregoing plat is a correct representation
of the land surveyed, and that permanent reference monuments have been
placed as required by the Survey Laws of the State of Florida.
J. H. Stepp
Registered Surveyor #669

SOUTH OAK TOWNHOUSES



FIRST FLOOR PLAN - 1/4"

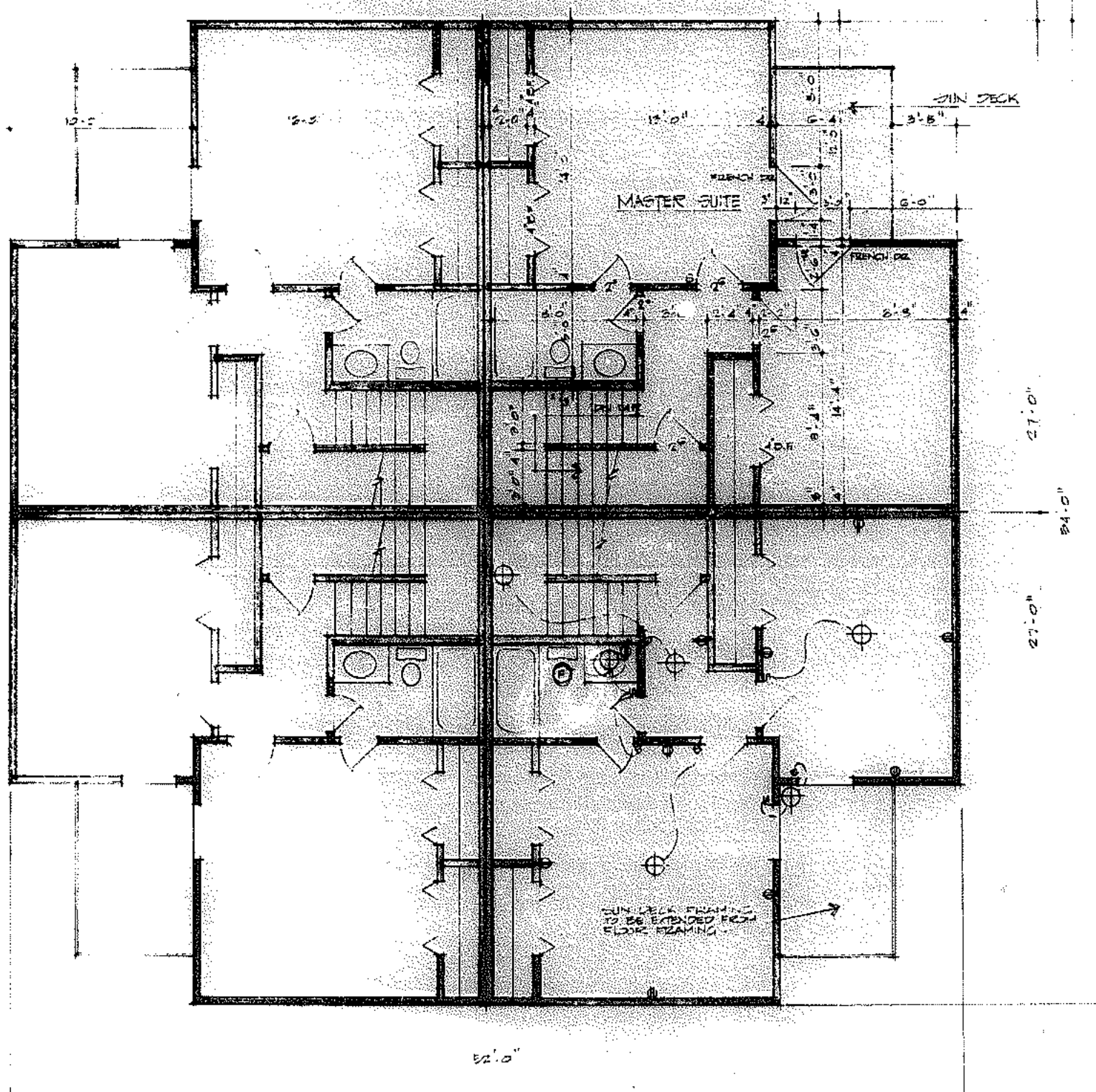
NOTE: USE DIMENSIONS ONLY
DO NOT SCALE DRAWINGS.
NOTE: ALL UNITS ARE TYPICAL

FLOOR PLAN BY LARRY ROBINSON, ARCHITECT

SOUTH OAK TOWNHOUSES

A CONDOMINIUM

PLAT BOOK 38
PAGE 197



SECRET FLOOR PLAN

DO NOT SCALE DRAWINGS.
NOTE: ALL DIMS ARE IN FEET

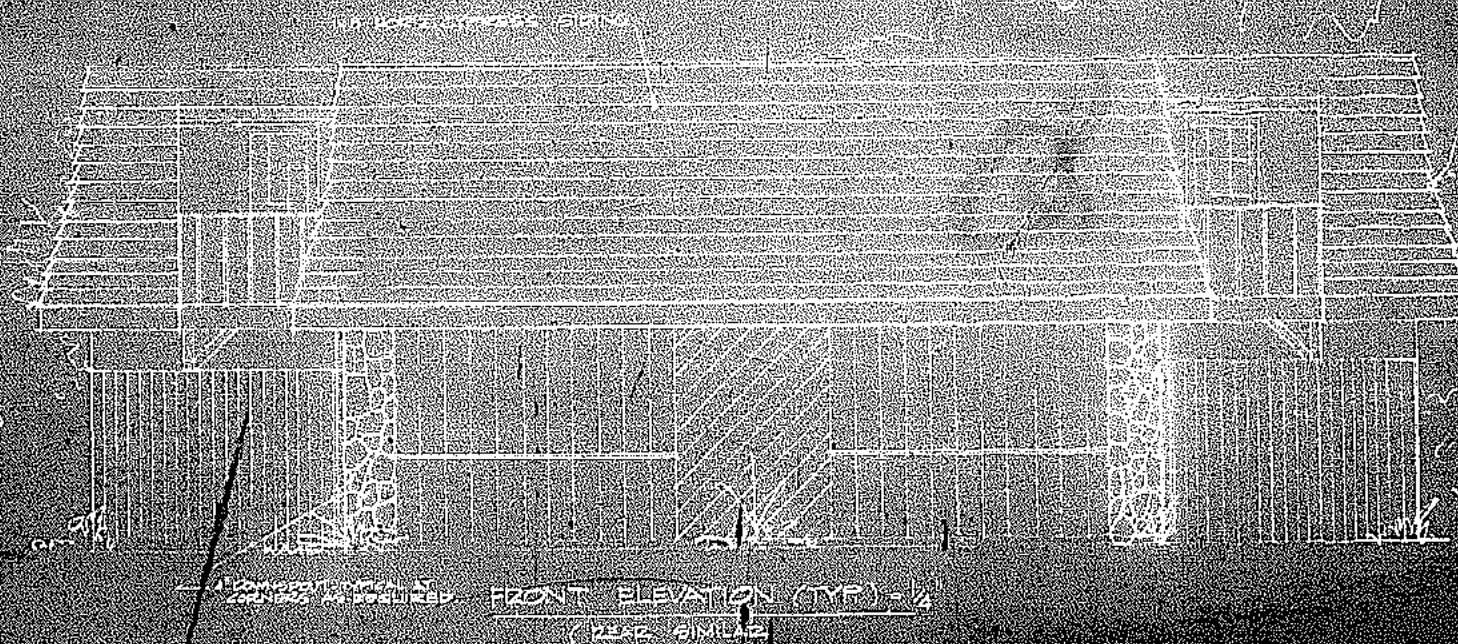
FLOOR PLAN BY LARRY ROBINSON, ARCHITECT

SOUTH OAK TOWNHOUSES

A CONDOMINIUM



NOTE: 1/2 HORIZONTAL CYPRESS SIDING
1/2 VERTICAL WOOD SIDING
1/2 HORIZONTAL CYPRESS SIDING
1/2 VERTICAL WOOD SIDING

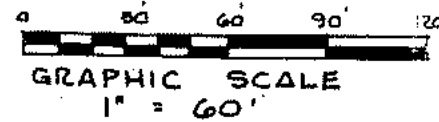


ELEVATIONS BY LARRY ROBINSON, ARCHITECT

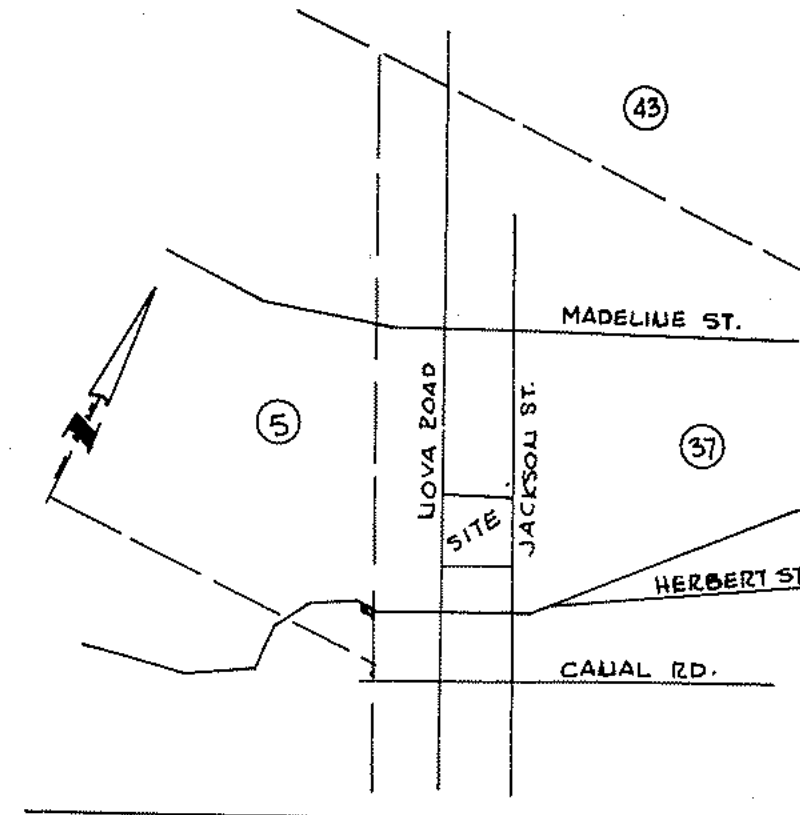
SPRINGWOOD SQUARE PORT ORANGE, VOLUSIA COUNTY, FLORIDA

BEING A PART OF LOTS 2 AND 3, BLOCK 17, DUNLAWTON SUBDIVISION, AS SHOWN ON MAP IN DEED BOOK M, PAGE 187, OF THE PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, LYING IN SECTION 37, TOWNSHIP 16 SOUTH, RANGE 33 EAST, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHEAST CORNER OF LOT 3, BLOCK 16, DUNLAWTON SUBDIVISION AS PREVIOUSLY DESCRIBED, SAID POINT ALSO BEING THE NORTHEAST CORNER OF SPRINGWOOD VILLAGE, UNIT 1, AS SHOWN ON MAP IN MAP BOOK 34, PAGE 167, OF THE PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, SAID POINT BEING ON THE WESTERLY RIGHT OF WAY OF JACKSON STREET, A 30 FT. RIGHT OF WAY AS SHOWN ON THE PLAT OF DUNLAWTON, THENCE S 25° 46' 37" E ALONG SAID WESTERLY RIGHT OF WAY OF JACKSON STREET A DISTANCE OF 961.50 FT. TO THE POINT OF BEGINNING, THENCE CONTINUE ALONG SAID WESTERLY RIGHT OF WAY OF JACKSON STREET S 25° 46' 37" E A DISTANCE OF 414.50 FT. TO THE SOUTHEAST CORNER OF LOT 2, BLOCK 17, PREVIOUSLY DESCRIBED; THENCE CONTINUE ALONG SAID WESTERLY LINE OF JACKSON STREET S 25° 44' 22" E A DISTANCE OF 373.32 FT.; THENCE S 25° 46' 37" E A DISTANCE OF 645.00 FT. TO A POINT IN THE WEST LINE OF LOTS 2 AND 3, BLOCK 17, PREVIOUSLY DESCRIBED; THENCE ALONG SAID WEST LINE N 25° 41' 39" W A DISTANCE OF 779.61 FT. TO THE SOUTHWEST CORNER OF SPRINGWOOD VILLAGE, UNIT 1; THENCE N 64° 13' 23" E A DISTANCE OF 644.03 FT. TO THE POINT OF BEGINNING, EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PARCEL; THE WESTERLY 60' OF THE SOUTHERLY 40' AT THE NORTHERLY 373.32' OF SAID BLOCK 17, DUNLAWTON SUBDIVISION, CONTAINING 11.6 ACRES MORE OR LESS.



P.O.B. N.E. CORNER
SPRINGWOOD VILLAGE
UNIT 1, M.B. 34, PG. 167



VICINITY MAP
SCALE: 1" = 2000'

DEDICATION GENERAL PARTNERSHIP

KNOW ALL MEN BY THESE PRESENTS, THAT SPRINGWOOD SQUARE, INC. VOLUNTARILY PARTNERSHIP UNDER THE LAWS OF THE STATE OF FLORIDA, BEING THE OWNER IN FEE SIMPLE OF THE LANDS DESCRIBED IN THE ATTACHED PLAT, ENTITLED SPRINGWOOD SQUARE, LOCATED IN VOLUSIA COUNTY, FLORIDA, HEREBY DEDICATES SAID LANDS AND PLAT FOR THE USES AND PURPOSES THEREIN EXPRESSED, AND DEDICATES ALL STREETS, AVENUES, ROADS, ALLEYS, THOROUGHFARES, PARKS, CANALS, UTILITY EASEMENTS, UTILITY RIGHTS OF WAYS, AND DRAINAGE EASEMENTS SHOWN OR DESCRIBED THEREON, TO THE PERPETUAL USE OF THE PUBLIC FOR PROPER PURPOSES, AND, IN WITNESS WHEREOF, HAS CAUSED THESE PRESENTS TO BE SIGNED AND ATTESTED TO BY THE PARTNERS NAMED BELOW.

[Signatures of Partners]

STATE OF FLORIDA, COUNTY OF VOLUSIA:
I HEREBY CERTIFY THAT ON THIS DAY BEFORE ME, AN OFFICER DULY AUTHORIZED IN THE STATE AND COUNTY AFORESAID, TO TAKE ACKNOWLEDGEMENTS, PERSONALLY APPEARED VESTA G. BISHOP, ROBERT E. BISHOP, LESTER K. BISHOP, WILLIAM L. BROCKFIELD JR., DAVID A. HARRIS, ROBERT E. BISHOP, AND WILLIAM E. BISHOP, TO ME KNOWN TO BE THE INDIVIDUALS DESCRIBED ABOVE AS GENERAL PARTNERS, AND EXECUTED THE FOREGOING.

WITNESS MY HAND AND OFFICIAL SEAL IN THE STATE AND COUNTY LAST AFORESAID, THIS 4th DAY OF April, 1980.

MY COMMISSION EXPIRES April 8, 1983

[Signature]
NOTARY PUBLIC, STATE OF FLORIDA

JOINDER AND CONSENT TO DEDICATION

INCORPORATED UNDER THE LAWS OF THE UNITED STATES OF AMERICA, I HEREBY CERTIFY THAT IT IS THE HOLDER OF A MORTGAGE, LIEN, OR OTHER ENCUMBRANCE ON THE PROPERTY SHOWN AND DESCRIBED IN THE ATTACHED PLAT, ENTITLED SPRINGWOOD SQUARE, LOCATED IN VOLUSIA COUNTY, FLORIDA, AND DOES HEREBY JOIN IN AND CONSENT TO THE DEDICATION, SHOWN ON THAT PLAT, OF THE LANDS THEREIN AND DESCRIBED BY THE OWNER THEREOF, AND AGREES THAT ITS MORTGAGE, LIEN, OR OTHER ENCUMBRANCE, WHICH IS RECORDED IN OFFICIAL RECORDS BOOK 2148, PAGE 0213 OF THE PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, SHALL BE SUBORDINATED TO THE SAID DEDICATION. IN WITNESS WHEREOF, Florida Federal S & L Assoc. HAS CAUSED THESE PRESENTS TO BE SIGNED IN ITS CORPORATE NAME BY Vesta G. Bishop, A.V. President, ITS CORPORATE SEAL TO BE HEREUNTO AFFIXED AND ATTESTED BY ITS ASST. SECRETARY. THIS 8th DAY OF April, A.D. 1980.

BY: *[Signature]* ATTEST: *[Signature]*

STATE OF FLORIDA, COUNTY OF PINELLAS
I HEREBY CERTIFY THAT ON THIS DAY BEFORE ME, AN OFFICER DULY AUTHORIZED IN THE STATE AND COUNTY AFORESAID, TO TAKE ACKNOWLEDGEMENTS, PERSONALLY APPEARED VESTA G. BISHOP TO ME KNOWN TO BE THE PERSON DESCRIBED IN AND WHO EXECUTED THE FOREGOING JOINDER AND CONSENT TO DEDICATION AND SEVERALLY ACKNOWLEDGED THE EXECUTION THEREOF TO BE HIS FREE ACT AND DEED FOR THE USES AND PURPOSES THEREIN EXPRESSED.

WITNESS MY HAND AND OFFICIAL SEAL IN THE STATE AND COUNTY LAST AFORESAID, THIS 8th DAY OF April, 1980.

MY COMMISSION EXPIRES March 16, 1981

[Signature]
NOTARY PUBLIC, STATE OF FLA.

CERTIFICATE OF SURVEYOR

KNOW ALL MEN BY THESE PRESENTS, THAT THE UNDERSIGNED, BEING A LICENSED AND REGISTERED SURVEYOR, DOES HEREBY CERTIFY THAT ON 3-19-79 HE COMPLETED THE SURVEY OF THE LANDS SHOWN IN THE FOREGOING PLAT, THAT SAID PLAT IS A CORRECT REPRESENTATION OF THE LANDS THEREIN DESCRIBED AND PLATTED; THAT PERMANENT REFERENCE MONUMENTS HAVE BEEN PLACED AS SHOWN THEREON, AS REQUIRED BY CHAPTER 177, FLORIDA STATUTES, AND THAT SAID LAND IS LOCATED IN VOLUSIA COUNTY, FLORIDA.

DATED 3-19-79
[Signature]
CLYDE H. RODGERS
REGISTRATION NO. 8290

CERTIFICATE OF APPROVAL

THIS IS TO CERTIFY THAT ON 14 APRIL 1980 THIS PLAT WAS APPROVED BY *[Signature]* CITY ENGINEER. THIS IS TO CERTIFY THAT ON *[Signature]* THIS PLAT WAS APPROVED BY

CERTIFICATE OF APPROVAL BY PLANNING BOARD

THIS IS TO CERTIFY THAT ON 26 APRIL 1979 THE PLANNING BOARD OF THE CITY OF PORT ORANGE, FLORIDA, APPROVED THE FOREGOING PLAT.

[Signature] PLANNING BOARD CHAIRMAN

CERTIFICATE OF APPROVAL BY THE CITY COUNCIL OF THE CITY OF PORT ORANGE, FLORIDA

THIS IS TO CERTIFY THAT ON 8 MAY 1979 THE FOREGOING PLAT WAS APPROVED BY THE COUNCIL OF THE CITY OF PORT ORANGE, FLORIDA.

[Signature]
MAYOR OF THE CITY OF PORT ORANGE
ATTEST: *[Signature]*
CITY CLERK

CURVE	RADIUS	DELTA	LENGTH	TANGENT	CHORD
1	110.00'	90° 00' 00"	172.79'	110.00'	155.56'
2	67.50'	90° 00' 00"	106.03'	67.50'	95.46'
3	25.00'	90° 00' 00"	39.27'	25.00'	35.36'
4	25.00'	89° 57' 45"	39.25'	24.98'	35.34'
5	25.00'	90° 02' 15"	39.29'	25.02'	35.37'
6	110.00'	3° 54' 34"	7.51'	3.75'	7.50'
7	110.00'	25° 29' 27"	48.94'	24.88'	48.54'
8	110.00'	6° 22' 21"	12.23'	6.12'	12.23'
9	110.00'	3° 41' 28"	7.09'	3.54'	7.09'
10	110.00'	9° 40' 30"	18.57'	9.31'	18.55'
11	110.00'	13° 35' 38"	26.10'	13.11'	26.04'
12	110.00'	15° 42' 13"	30.15'	15.17'	30.05'
13	110.00'	11° 33' 49"	22.20'	11.14'	22.10'
14	110.00'	2° 36' 19"	5.00'	2.50'	5.00'
15	110.00'	25° 18' 40"	48.59'	24.70'	48.20'
16	110.00'	8° 27' 58"	16.25'	8.14'	16.24'
17	110.00'	17° 50' 51"	34.26'	17.27'	34.13'
18	110.00'	6° 22' 11"	12.23'	6.12'	12.22'
19	110.00'	25° 29' 27"	48.94'	24.88'	48.54'
20	110.00'	3° 54' 34"	7.51'	3.75'	7.50'

- DENOTES EXISTING P.R.M.
- DENOTES SET P.R.M.
- DENOTES SET P.C.P.

BEARING REFERENCE BASED ON SPRINGWOOD II RECORD PLAT.

031445

APR 17 10 14 AM '80

PREPARED FOR:
FLORIDA FEDERAL SAVINGS & LOAN ASSOCIATION

CERTIFICATE OF CLERK

I HEREBY CERTIFY THAT I HAVE EXAMINED THE FOREGOING PLAT AND FIND THAT IT COMPLIES IN FORM WITH ALL THE REQUIREMENTS OF CHAPTER 177, FLORIDA STATUTES, AND WAS FILED FOR RECORD ON 4-17-80 AT

CLERK OF THE CIRCUIT COURT
IN AND FOR VOLUSIA COUNTY, FLORIDA

[Signature]

052372

MAP BOOK 37 PAGE 8

BEARING REFERENCE:
PLANTATION ACRES,
M.B. 23, PGS. 69 & 70

JUL 1 4 03 PM '80

BANBURY SUBDIVISION

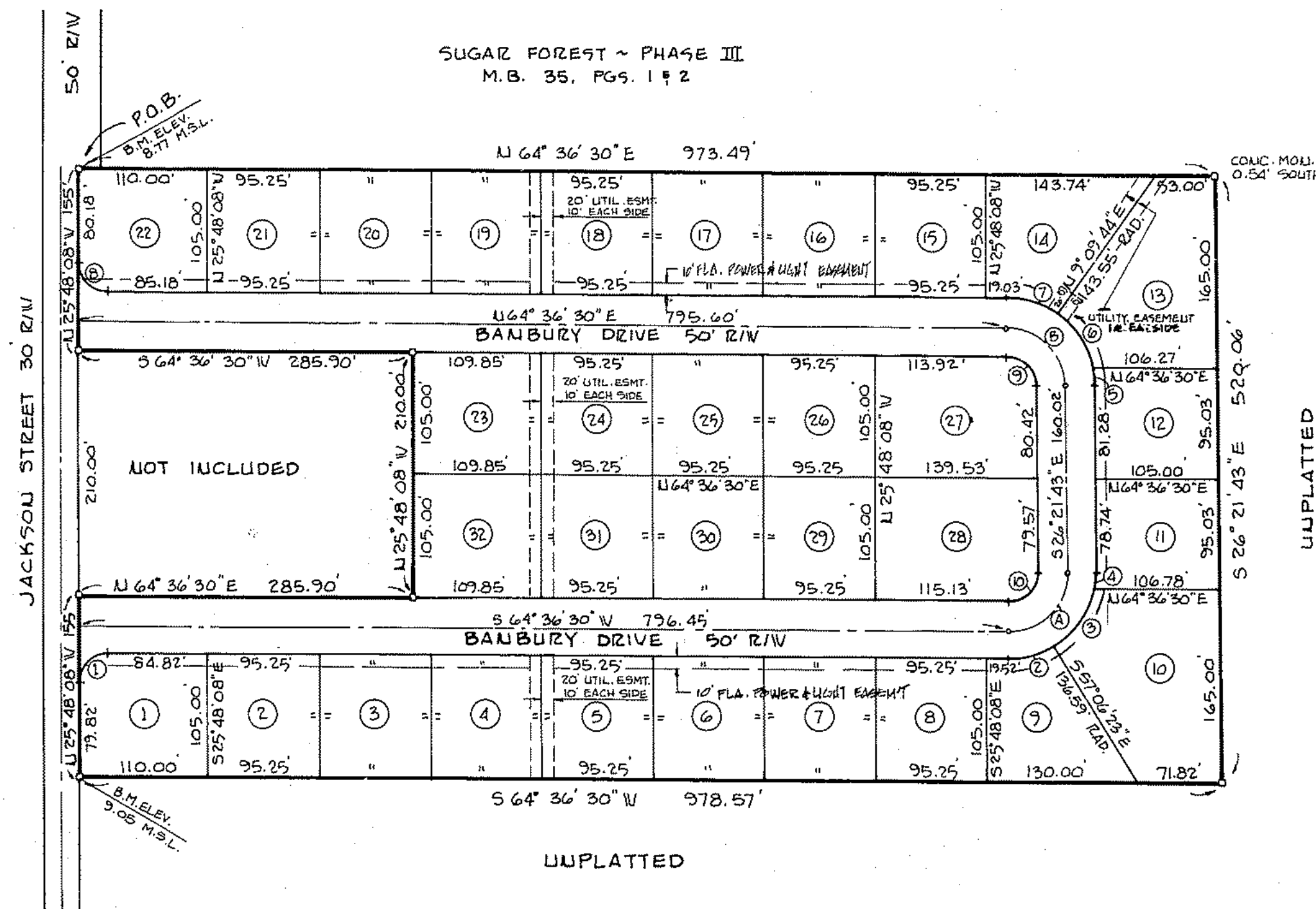
PORT ORANGE, VOLUSIA COUNTY, FLORIDA

A RESUBDIVISION OF PART OF LOT 4, PLANTATION ACRES SUBDIVISION

GRAPHIC SCALE: 1" = 100'

D DENOTES PERMANENT REFERENCE MONUMENTS

UNLESS OTHERWISE NOTED, THE FOLLOWING EASEMENTS
ARE HEREBY PROVIDED:
7.5' UTILITY EASEMENT ALONG ALL SIDE LOT LINES
10' UTILITY EASEMENT ALONG ALL REAR LOT LINES
10' UTILITY EASEMENT ALONG ALL FRONT LOT LINES



STATE OF FLORIDA COUNTY OF VOLUSIA S.S.

I, CHARLES WILLIAMS, JR., DO HEREBY CERTIFY THAT I AM THE OWNER OF PART OF LOT 4, PLANTATION ACRES SUBDIVISION, AS RECORDED IN MAP BOOK 23, PAGES 69 AND 70, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, EXCEPTING THEREFROM THE NORTHERLY 210 FT. OF THE SOUTHERLY 365 FT. OF THE WESTERLY 285.9 FT. THEREOF, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF LOT 4, RUN THENCE N 64° 36' 30" E ALONG THE NORTHERLY LINE THEREOF A DISTANCE OF 973.49 FT. TO THE NORTHEAST CORNER OF LOT 4; THENCE S 26° 21' 43" E ALONG THE EASTERLY LINE THEREOF A DISTANCE OF 520.06 FT. TO THE SOUTHEAST CORNER OF LOT 4; THENCE S 64° 36' 30" W ALONG THE SOUTHERLY LINE OF LOT 4 A DISTANCE OF 978.57 FT. TO THE SOUTHWEST CORNER THEREOF AND THE EASTERLY LINE OF JACKSON STREET A 30 FT. STREET PER SAID PLAT OF PLANTATION ACRES; THENCE N 25° 48' 08" W ALONG SAID EASTERLY LINE A DISTANCE OF 155 FT. TO A POINT; THENCE N 64° 36' 30" E AND PARALLEL TO THE SOUTH LINE OF LOT 4 A DISTANCE OF 285.90 FT. TO A POINT; THENCE N 25° 48' 08" W AND PARALLEL TO JACKSON STREET A DISTANCE OF 210 FT. TO A POINT; THENCE S 64° 36' 30" W AND PARALLEL TO THE SOUTH LINE OF LOT 4 A DISTANCE OF 285.90 FT. TO THE EASTERLY LINE OF JACKSON STREET AFORESAID; THENCE N 25° 48' 08" W ALONG SAID EASTERLY LINE OF JACKSON STREET A DISTANCE OF 155 FT. TO THE POINT OF BEGINNING, CONTAINING 10.27 ACRES MORE OR LESS.

IT IS FURTHER CERTIFIED THAT CHARLES WILLIAMS, JR., AS OWNER AND DEVELOPER, HAS CAUSED THE ABOVE DESCRIBED PROPERTY TO BE PLATTED AS BANBURY SUBDIVISION AND IT DOES HEREBY DEDICATE THE STREETS SHOWN ON THE ACCOMPANYING PLAT FOR USE AS STREETS BY THE GENERAL PUBLIC.

SIGNED, SEALED, AND DELIVERED
IN THE PRESENCE OF:

WITNESS

BY: Charles Williams, Jr.
CHARLES WILLIAMS, JR. OWNER

STATE OF FLORIDA COUNTY OF VOLUSIA S.S.

I HEREBY CERTIFY THAT ON THIS DAY BEFORE ME, AN OFFICER DULY AUTHORIZED IN THE STATE AND COUNTY AFORESAID TO TAKE ACKNOWLEDGEMENTS, PERSONALLY APPEARED CHARLES WILLIAMS, JR., TO ME KNOWN TO BE THE INDIVIDUAL DESCRIBED ABOVE, AND EXECUTED THE FOREGOING. WITNESS MY HAND AND OFFICIAL SEAL IN THE STATE AND COUNTY LAST AFORESAID, THIS

MY COMMISSION EXPIRES: 9-13-81

NOTARY PUBLIC, STATE OF FLORIDA

PROPERTY LINE CURVE DATA					
CURVE	RADIUS	DELTA	CHORD	TANGENT	LENGTH
1	25.00'	90° 24' 38"	35.48'	25.18'	39.45'
2	75.00'	31° 42' 53"	40.99'	21.30'	41.51'
3	75.00'	46° 44' 00"	59.49'	32.40'	61.17'
4	75.00'	12° 31' 20"	16.36'	8.23'	16.39'
5	75.00'	10° 34' 57"	13.83'	6.95'	13.85'
6	75.00'	43° 53' 36"	56.06'	30.22'	57.46'
7	75.00'	34° 33' 14"	44.55'	23.33'	45.23'
8	25.00'	87° 35' 22"	35.23'	24.82'	39.09'
9	25.00'	87° 01' 47"	35.05'	24.58'	38.85'
10	25.00'	90° 58' 13"	35.65'	25.43'	39.69'

CENTER LINE CURVE DATA					
CURVE	RADIUS	DELTA	CHORD	TANGENT	LENGTH
A	50.00'	90° 58' 13"	71.31'	50.85'	77.39'
B	50.00'	87° 01' 47"	70.11'	49.16'	77.69'

JOINDER AND CONSENT TO PLATTING OF SUB. FOR RECORD:

THE UNDERSIGNED HEREBY CERTIFIES THAT HE IS THE HOLDER OF A MORTGAGE, LIEN, OR OTHER ENCUMBRANCE UPON THE ABOVE DESCRIBED PROPERTY, AND THE UNDERSIGNED HEREBY JOINS IN AND CONSENTS TO THE RECORD PLAT OF THE LANDS DESCRIBED ABOVE BY THE OWNER THEREOF AND AGREES THAT ITS MORTGAGE, LIEN OR OTHER ENCUMBRANCE WHICH IS RECORDED IN OFFICIAL RECORDS BOOK _____ PAGE(S) _____ OF THE PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, SHALL BE SUBORDINATED TO THE ABOVE MENTIONED RECORDING.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF:

WITNESS

Flora B. Schwartzbach
MORTGAGE HOLDER

STATE OF FLORIDA COUNTY OF VOLUSIA S.S.

I HEREBY CERTIFY THAT ON THIS DAY BEFORE ME, AN OFFICER DULY AUTHORIZED IN THE STATE AND COUNTY AFORESAID TO TAKE ACKNOWLEDGEMENTS, PERSONALLY APPEARED Flora B. Schwartzbach TO ME KNOWN TO BE THE INDIVIDUAL DESCRIBED ABOVE, IN AND WHO EXECUTED THE FOREGOING JOINDER AND CONSENT TO THE RECORD PLAT AND SEVERALLY ACKNOWLEDGED THE EXECUTION THEREOF TO BE HIS FREE ACT AND DEED.

WITNESS MY HAND AND OFFICIAL SEAL IN THE STATE AND COUNTY LAST AFORESAID, THIS 13th DAY OF May, 1980

MY COMMISSION EXPIRES 8-9-80

NOTARY PUBLIC - STATE OF FLA.

SURVEYOR'S CERTIFICATE:

I HEREBY CERTIFY THAT THE FOREGOING PLAT IS A TRUE AND CORRECT REPRESENTATION OF THE LAND SURVEYED, AND THAT THIS SURVEY WAS PREPARED UNDER MY RESPONSIBLE SUPERVISION AND DIRECTION, AND THAT THE SURVEY DATA COMPLIES WITH ALL REQUIREMENTS OF CHAPTER 171, FLORIDA STATUTES, AND THAT PERMANENT REFERENCE MONUMENTS HAVE BEEN PLACED AS REQUIRED BY THE SURVEY LAWS OF THE STATE OF FLORIDA.

1 Dec 1978
DATE OF SURVEY

Ma. A. D. D.
REGISTERED LAND SURVEYOR NO. 2296

APPROVED AND ACCEPTED: BY THE CITY OF PORT ORANGE, FLORIDA. 7-10-79

Marion J. Zeller
CITY CLERK

James H. Lida
MAYOR

Jerry R. Pinsky 6/30/80
CITY ENGINEER

George T. Pinsky 6-30-80
CHAIRMAN OF THE PLANNING COMM.

FILED FOR RECORD BY THE OFFICE OF THE CLERK OF THE CIRCUIT COURT OF VOLUSIA COUNTY, FLORIDA.

7-1-80
DATE

A. A. Hays
AUTHORIZED REPRESENTATIVE

PREPARED BY:
STAPP & UPHAM, INC.
ENGINEERS AND SURVEYORS
ORMOND BEACH, FLORIDA

SHEET ONE OF ONE
R.P. NO. 300

060249

SPRINGWOOD VILLAGE

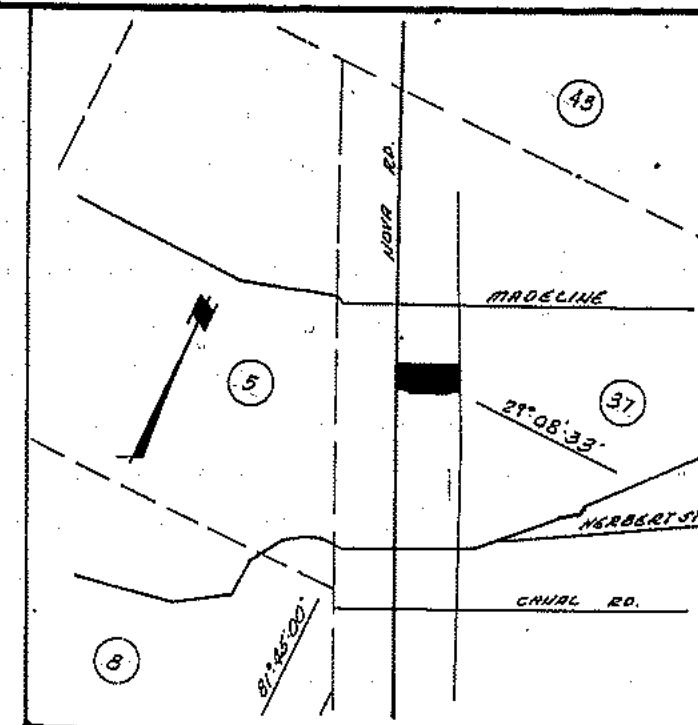
UNIT 1
SECTION 37, TOWNSHIP 16 SOUTH, RANGE 33 EAST
PORT ORANGE, VOLUSIA COUNTY, FLORIDA

SEP 25 3 23 PM '77

FILED FOR RECORDS
RECORDED
U.S. DEPT. OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VOLUSIA COUNTY, FLA.

Being The North 260 Feet Of Lot 3, Block 16 "Dunlawton"
Subdivision As Shown On Map In Deed Book "M", Page 187 Of The
Public Records Of Volusia County, Florida Being More Particularly
Described As Follows: BEGIN AT THE NORTHEAST CORNER OF LOT 3 BLOCK
16 PREVIOUSLY DESCRIBED, THENCE S 25° 16' 37" E ALONG THE EAST LINE OF
LOT 3 (ALSO BEING THE WESTERLY RIGHT-OF-WAY OF JACKSON ST. A 50 FOOT
R/W AS SHOWN ON PART OF "DUNLAWTON") A DISTANCE OF 260.00 FEET, THENCE
S 64° 25' 21" W AND PARALLEL TO THE NORTH LINE OF LOT 3 A DISTANCE OF
643.02 FEET TO THE WEST LINE OF SAID LOT 3, BLOCK 16 PREVIOUSLY DESCRIBED,
THENCE ALONG SAID WEST LINE N 25° 41' 39" W A DISTANCE OF 260.00 FEET
TO THE NORTHWEST CORNER OF LOT 3, BLOCK 16, THENCE N 64° 25' 21" E
ALONG THE SAID LAST DESCRIBED LINE A DISTANCE OF 642.64 FEET
TO THE POINT OF BEGINNING

Containing: 3.84 Acres More Or Less



Vicinity Map
Scale 1" = 200'

PLAT BOOK 34 60249
AND PAGE 167 60249

DEDICATION

KNOW ALL MEN BY THESE PRESENTS, That the undersigned, being
the owner(s) in fee simple of the lands described in the foregoing
caption to this plat, do hereby dedicate said lands and plat for
the uses and purposes therein expressed and dedicate the Streets,
alleys, thoroughfares, parks, canals, utility easements, utility right-
of-way, and drainage easements, furthermore, I dedicate a public
sewer and water systems shown hereon to the perpetual use of the
public. IN WITNESS WHEREOF, The undersigned have
hereunto set their hands and seals on AUGUST 19, 1977.

SPRINGWOOD VILLAGE, INC.

PRESIDENT: HUMAN DEANFAAN

SECRETARY: Oscar Dobrow

CORPORATE
SEAL

Signed and sealed in the presence of:

Dianna M. Connell

John Hill

STATE OF FLORIDA COUNTY OF VOLUSIA
THIS IS TO CERTIFY, That on AUGUST 19, 1977, before me,
an officer duly authorized to take acknowledgements in the State
and County aforesaid, personally appeared HUMAN DEANFAAN
AS PRESIDENT and Oscar Dobrow, AS SECRETARY

to me known to be the person(s) described in and who executed the
foregoing dedication and severally acknowledged the execution thereof
to be a free act and deed for the uses and purposes
therein expressed.

IN WITNESS WHEREOF, I have hereto
set my hand and seal on the above date.

Kathleen M. West

NOTARY PUBLIC

My Commission Expires 11/08/80

JOINDER AND CONSENT TO DEDICATION (CORPORATION)

The undersigned hereby certifies that it is the holder of a mortgage,
lien, or other encumbrance upon the above described property and
that the undersigned hereby joins in and consents to the dedication
of the lands described above by the owner thereof, and agrees that
its mortgage, lien, or other encumbrance, which is recorded in
Official Record Book _____, Page _____, of the Public Records of
Volusia County, Florida, shall be subordinated to the above
dedication.

Signed, sealed and delivered in the presence of:

President

Attest:

STATE OF _____ COUNTY OF _____

THIS IS TO CERTIFY, That on _____, before me,
an officer duly authorized to take acknowledgements in the State
and County aforesaid, personally appeared _____
and _____ respectively
President and _____ of the above named corporation
incorporated under the laws of the State of _____
to me known to be the individuals and officers described in and who
executed the foregoing Joinder and Consent to Dedication and
severally acknowledged the execution thereof to be their free act and
deed as such officers thereunto duly authorized; that the official
seal of said corporation is duly affixed thereto; and that the said
Joinder and Consent to Dedication is the act and deed of said
corporation.

IN WITNESS WHEREOF, I have hereto
set my hand and seal on the above date.

SEAL

NOTARY PUBLIC

My Commission Expires _____

CERTIFICATE OF SURVEYOR

KNOW ALL MEN BY THESE PRESENTS, That the undersigned,
being a licensed and registered land surveyor, does hereby certify
that on JULY 23, 1977, he completed the
survey of the lands as shown in the foregoing plat, that said plat is
a correct representation of the lands therein described and plotted;
that permanent reference monuments have been placed as shown
thereon as required by Chapter 177, Florida Statutes; and that
said land is located in Volusia County, Florida. Dated JULY 23, 1977.

Harold W. Connell

Registration No. 2027

CERTIFICATION OF APPROVAL OF WATER SUPPLY AND SEWAGE DISPOSAL SYSTEMS

I HEREBY CERTIFY, That the water supply and sewage disposal
systems installed or proposed for installation in _____
subdivision fully meet public health
requirements, and are hereby approved as shown.

DATE _____ COUNTY HEALTH OFFICER OR HIS
AUTHORIZED REPRESENTATIVE

CERTIFICATE OF APPROVAL

THIS IS TO CERTIFY, That on _____
this plat was approved. By _____

THIS IS TO CERTIFY, That on 25 August 1977
this plat was approved. By S. D. Connell, Jr.
Public Works Director

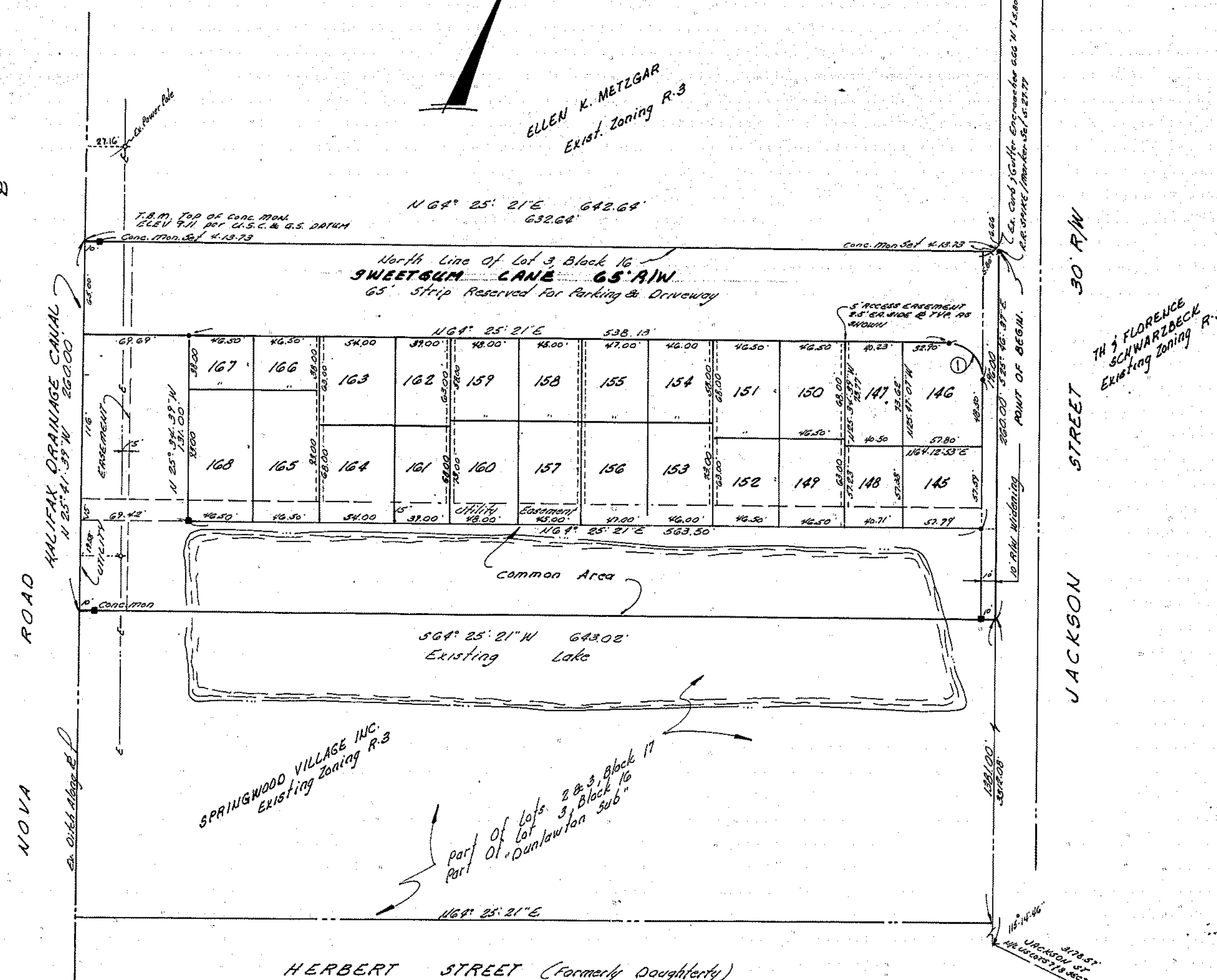
FORM 2

NOTES
ZONING - R-3
TOTAL RESERVE 3.84 AC
PRIVATE RD / PARKING 0.76 AC
PRIVATE CRD USE 1.15 AC
TOTAL NO. LOTS 24
DEBILITY 6.2 LOTS/AC.
E.C. 110,000

DEVOTES R.R.M. SET

DEVOTES R.C.R. SET

① Property Line Curve Data
R = 25.00'
Δ = 39° 48' 02"
L = 37.13'
T = 24.71'
Chd. N 70° 40' 38" W 35.29'



Note: Bearings For Angular And Description
Persons Only
*Ac. R. Shown Thus

Scale 1" = 60'

CERTIFICATE OF APPROVAL BY ZONING COMMISSION

THIS IS TO CERTIFY, That on _____
the Zoning Commission of the _____ District approved
the foregoing plat.

Zoning Chairman

CERTIFICATE OF CLERK

I HEREBY CERTIFY, That I have examined the foregoing
plat and find that it complies in form with all the
requirements of Chapter 177, Florida Statutes, and was
filed for record on _____ at _____ File No. _____

Clerk of the Circuit Court
in and for Volusia County, Florida

CERTIFICATE OF APPROVAL BY

THIS IS TO CERTIFY, That on 25 August, 1977, the
foregoing plat was approved by the
CITY COUNCIL OF THE CITY OF PORT ORANGE,
FLORIDA.

Attest: _____
Mayor of the City of Port Orange

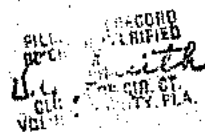
City Manager of the City of Port Orange

CERTIFICATE OF APPROVAL BY THE PLANNING BOARD

THE PORT ORANGE PLANNING BOARD hereby
approves the final plat for the
SPRINGWOOD VILLAGE UNIT 1 Subdivision.
Dated 25 August, 1977.
Chairman _____

029952

APR 19 12 03 PM '78



SUGAR FOREST - PHASE III

PORT ORANGE, VOLUSIA COUNTY, FLORIDA

A RESUBDIVISION OF PART OF THE DUNLAWTON SUBDIVISION AS RECORDED IN DEED BOOK "M", PAGE 187, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, AND BEING ALSO A PART OF THE BUNCH GRANT, SECTION 37, TOWNSHIP 16 SOUTH, RANGE 33 EAST.

STATE OF FLORIDA
COUNTY OF VOLUSIA S.S.

WE, JOHN COLLINS AND EDWARD CLARK, AS VICE PRESIDENT AND ASSISTANT SECRETARY RESPECTIVELY, DO HEREBY CERTIFY THAT SUGAR FOREST, INC., A FLORIDA CORPORATION, IS THE OWNER OF THAT PART OF DUNLAWTON SUBDIVISION AS RECORDED IN DEED BOOK "M", PAGE 187, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE EASTERLY LINE OF JACKSON STREET, A 30 FT. STREET AS PRESENTLY OCCUPIED AND ESTABLISHED, AND THE NORTHERLY LINE OF PLANTATION ACRES SUBDIVISION, AS RECORDED IN MAP BOOK 23, PAGES 69 AND 70, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, RUN THENCE N25° 46' 37" W ALONG THE EASTERLY LINE OF JACKSON STREET A DISTANCE OF 625 FT. TO THE SOUTHERLY LINE OF MADELINE AVENUE, A 50 FT. STREET AS ESTABLISHED; THENCE N64° 36' 30" E ALONG SAID SOUTHERLY LINE A DISTANCE OF 1135 FT. TO A POINT; THENCE S25° 23' 30" E A DISTANCE OF 129.50 FT. TO A POINT; THENCE N64° 36' 30" E AND PARALLEL TO MADELINE AVENUE A DISTANCE OF 110 FT. TO THE WESTERLY LINE OF SUGAR HOUSE BOULEVARD AS SHOWN ON THE PLAT OF SUGAR FOREST, PHASE I SUBDIVISION, AS RECORDED IN MAP BOOK 34, PAGE 123; THENCE S25° 23' 30" E ALONG SAID WESTERLY LINE A DISTANCE OF 298.50 FT. TO THE POINT OF CURVATURE OF A CURVE CONCAVE WESTERLY, THENCE ALONG SAID CURVE TO THE RIGHT HAVING A RADIUS OF 25 FT. AND A CENTRAL ANGLE OF 90°, AN ARC DISTANCE OF 39.27 FT. TO A POINT; THENCE S25° 23' 30" E A DISTANCE OF 50 FT. TO A POINT; THENCE N64° 36' 30" E A DISTANCE OF 95 FT. TO A POINT; THENCE S25° 23' 30" E A DISTANCE OF 131.93 FT. TO A POINT IN THE NORTH LINE OF PLANTATION ACRES AFORESAID; THENCE S64° 36' 30" W ALONG SAID NORTHERLY LINE A DISTANCE OF 1310.80 FT. TO THE POINT OF BEGINNING, CONTAINING 17.69 ACRES MORE OR LESS.

IT IS FURTHER CERTIFIED THAT SUGAR FOREST, INC., AS OWNER AND DEVELOPER, HAS CAUSED THE ABOVE DESCRIBED PROPERTY TO BE PLATTED AS SUGAR FOREST - PHASE III, AND IT DOES HEREBY DEDICATE THE STREETS SHOWN ON THE ACCOMPANYING PLAT FOR THE USE AS STREETS BY THE GENERAL PUBLIC.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF:

SUGAR FOREST, INC.

Wieland W. Shuman
WITNESS
Lawrence D. Sherer, Jr.
WITNESS

BY: John Collins
JOHN COLLINS, VICE PRESIDENT
ATTEST: Edward Clark
EDWARD CLARK, ASSIST. SECRETARY

STATE OF FLORIDA
COUNTY OF VOLUSIA S.S.

I HEREBY CERTIFY THAT ON THIS DAY BEFORE ME, AN OFFICER DULY AUTHORIZED IN THE STATE AND COUNTY AFORESAID TO TAKE ACKNOWLEDGEMENTS, PERSONALLY APPEARED JOHN COLLINS AND EDWARD CLARK, AS VICE PRESIDENT AND ASSISTANT SECRETARY RESPECTIVELY, OF SUGAR FOREST, INC., A FLORIDA CORPORATION TO ME KNOWN TO BE THE INDIVIDUALS AND OFFICERS OF SAID CORPORATION DESCRIBED ABOVE, AND EXECUTED THE FOREGOING, AND EACH DULY ACKNOWLEDGED BEFORE ME THAT SAID CORPORATION EXECUTED THE SAME FOR THE PURPOSES EXPRESSED AS THE ACT AND DEED OF EACH OF SAID CORPORATION.

WITNESS MY HAND AND SEAL IN THE STATE AND COUNTY LAST AFORESAID THIS 30th DAY OF December, 1977.

MY COMMISSION EXPIRES: March 24, 1981

Louise Ann Doffer
NOTARY PUBLIC, STATE OF FLORIDA

SURVEYOR'S CERTIFICATE:

I HEREBY CERTIFY THAT THE FOREGOING IS A TRUE AND CORRECT REPRESENTATION OF THE LAND SURVEYED AND THAT THIS SURVEY WAS PREPARED UNDER MY RESPONSIBLE SUPERVISION AND DIRECTION AND THAT THE SURVEY DATA COMPLIES WITH ALL REQUIREMENTS OF CHAPTER 177, FLORIDA STATUTES, AND THAT PERMANENT REFERENCE MONUMENTS HAVE BEEN PLACED AS REQUIRED BY THE SURVEY LAWS OF THE STATE OF FLORIDA.

DATE: 15 October 1977

W. A. Dumban
REGISTERED SURVEYOR NO. 2296

APPROVED AND ACCEPTED BY THE CITY OF PORT ORANGE, FLORIDA.
DATE: Dec. 30, 1977

H. G. Francis
CITY MANAGER

Franklin Zepeda
MAYOR

Lawrence D. Sherer, Jr.
DIRECTOR OF PUBLIC WORKS

Steven C. Johnston
CHAIRMAN PLANNING COMMITTEE

FILED FOR RECORD BY THE OFFICE OF THE CLERK OF THE CIRCUIT COURT OF VOLUSIA COUNTY, FLORIDA.

DATE: 4-19-78

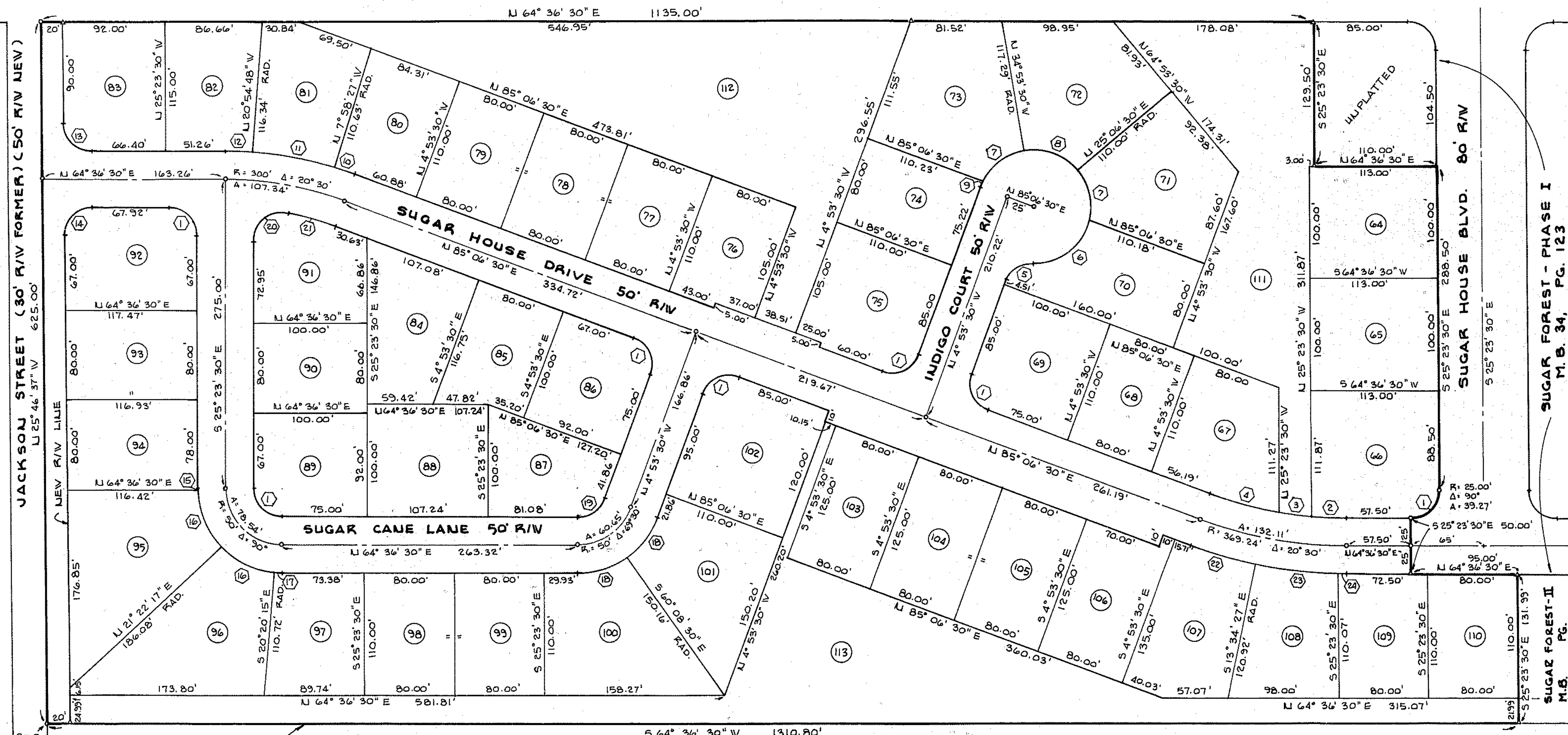
T. A. Hays D.C.
AUTHORIZED REPRESENTATIVE

SUGAR FOREST - PHASE III PORT ORANGE, VOLUSIA COUNTY, FLA.

BEARING BASE:
SUGAR FOREST, PHASE I

DAME ST.
30' R/W

MADELINE AVENUE 50' R/W



NORTH LINE OF PLANTATION
ACRES - M.B. 23, PGS. 69 & 70.

CURVE NO.	RADIUS	DELTA	ARC	CHORD	TANGENT
1	25.00'	30°00'00"	39.27'	35.36'	25.00'
2	344.24'	5°35'05"	33.55'	33.54'	16.79'
3	344.24'	4°24'28"	26.48'	26.48'	13.25'
4	344.24'	10°30'27"	63.13'	63.04'	31.65'
5	25.00'	70°31'44"	30.77'	28.87'	17.68'
6	50.00'	76°00'53"	66.34'	61.58'	39.07'
7	50.00'	54°30'50"	47.57'	45.80'	25.76'
8	50.00'	60°00'00"	52.36'	50.00'	28.87'
9	50.00'	5°29'11"	4.79'	4.79'	2.40'
10	325.00'	3°04'57"	17.48'	17.48'	8.74'
11	325.00'	12°56'21"	73.40'	73.24'	36.85'
12	325.00'	4°28'42"	25.40'	25.40'	12.71'



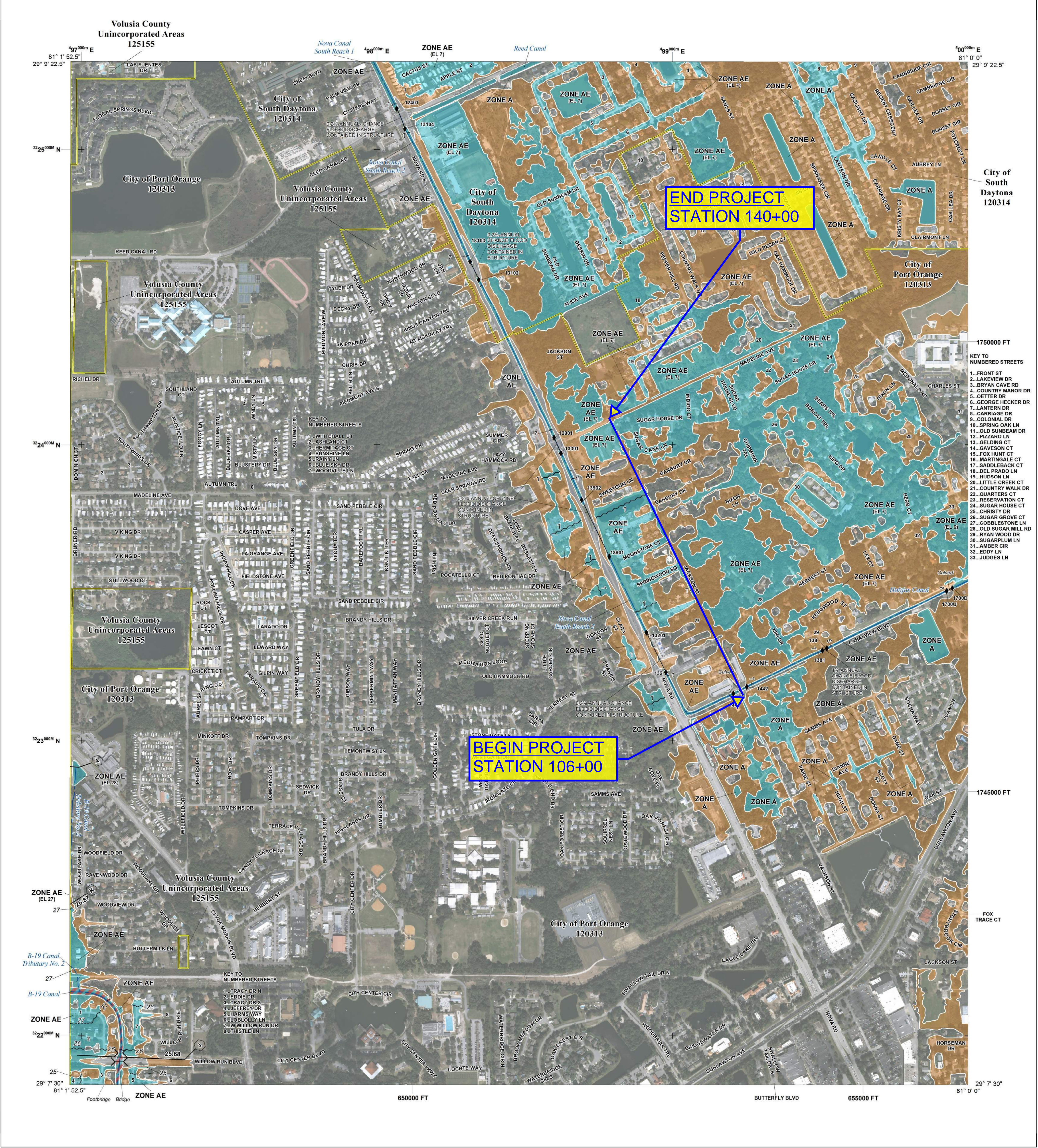
A DENOTES PERMANENT REFERENCE MONUMENT
7.5' UTILITY EASEMENT ON ALL SIDE LOT LINES;
15' WITH ADJACENT LOT.
15' REAR UTILITY EASEMENT ON LOTS 68, 69,
72, 73, AND 81-96.

STEPP & UPHAM, INC.
ENGINEERS AND SURVEYORS
ORMOND BEACH, FLA.

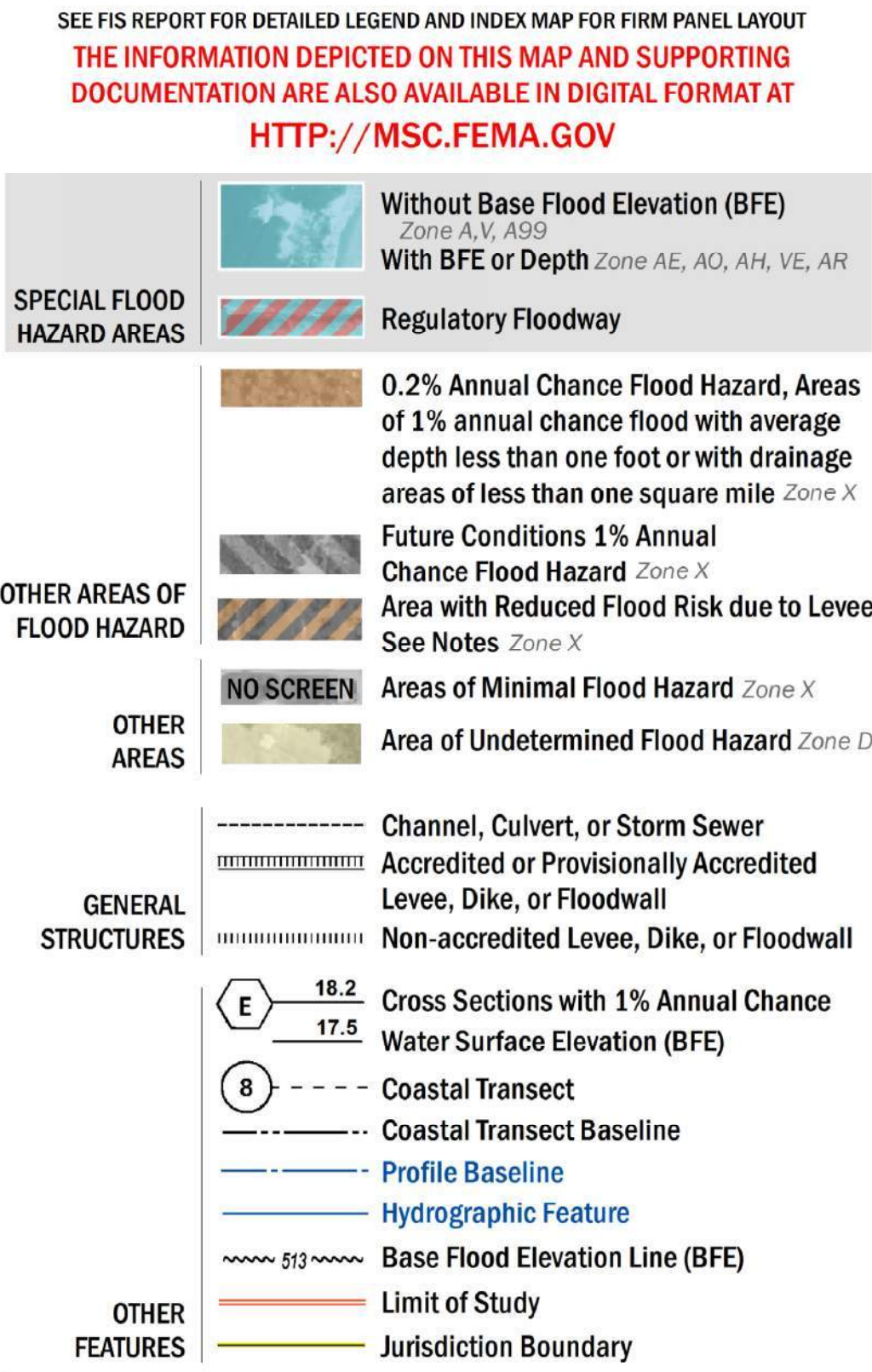
CURVE NO.	RADIUS	DELTA	ARC	CHORD	TANGENT
13	25.00'	89°36'53"	39.10'	35.24'	24.83'
14	25.00'	90°23'07"	39.44'	35.47'	25.17'
15	75.00'	1°31'41"	2.00'	2.00'	1.00'
16	75.00'	41°42'32"	54.60'	53.40'	28.57'
17	75.00'	5°03'15"	6.62'	6.61'	3.31'
18	75.00'	34°45'00"	45.49'	44.79'	23.47'
19	25.00'	69°30'00"	30.33'	28.50'	17.34'
20	25.00'	101°32'13"	44.30'	38.73'	30.62'
21	275.00'	8°57'47"	43.02'	42.98'	21.55'
22	394.24'	8°40'57"	59.74'	59.69'	29.93'
23	394.24'	10°43'39"	73.81'	73.71'	37.02'
24	394.24'	1°05'24"	7.50'	7.50'	3.75'

APPENDIX E

FEMA MAP



FLOOD HAZARD INFORMATION



NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

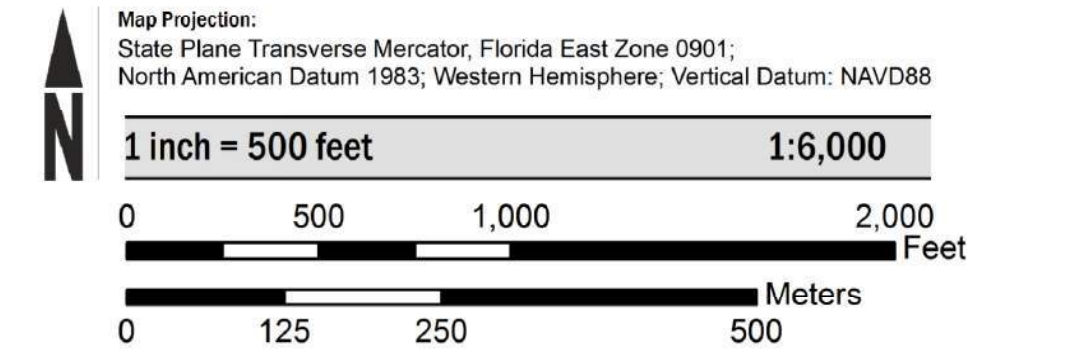
Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction. To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6820.

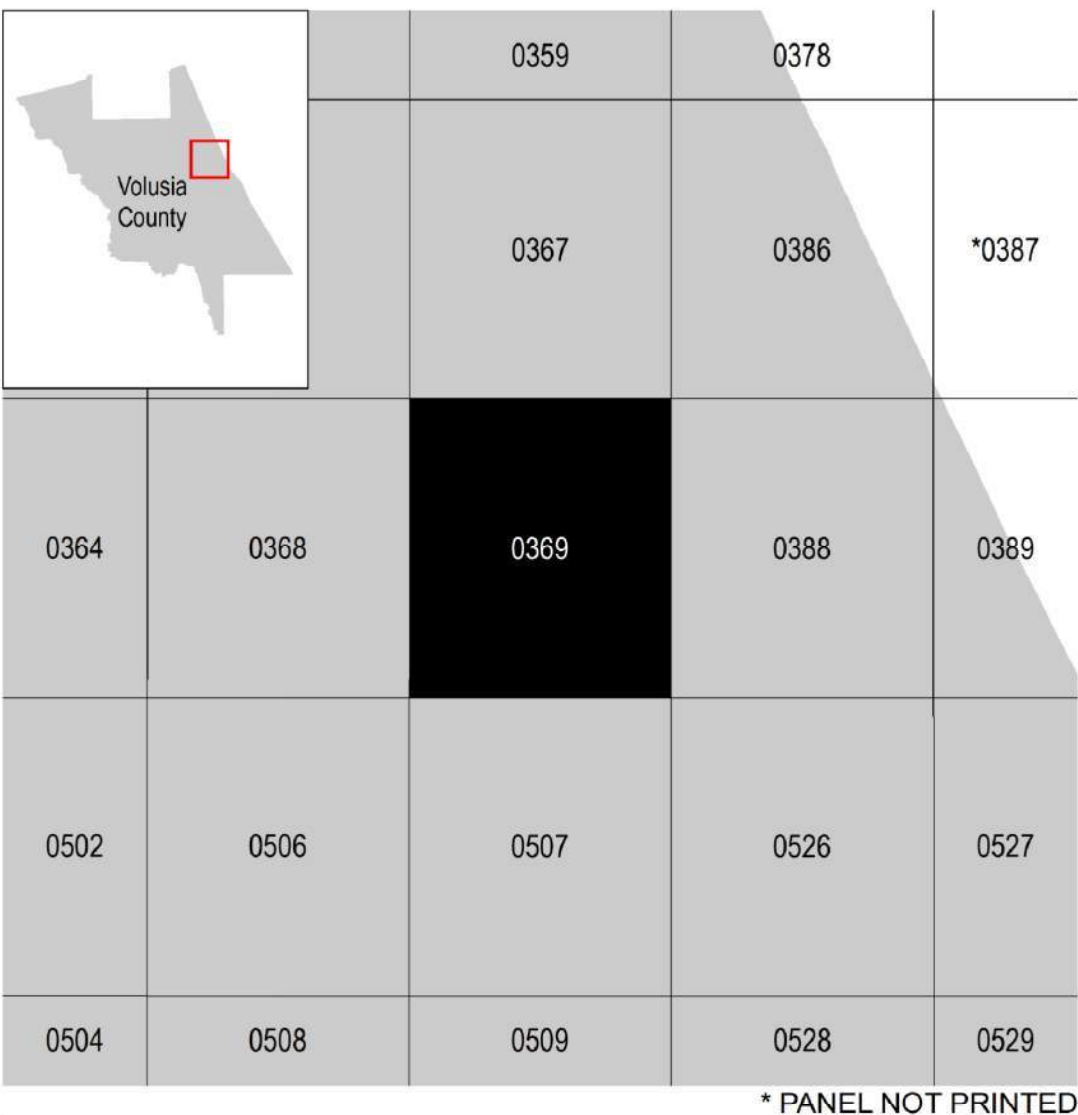
Base Map information shown on this FIRM was provided in digital format by Volusia County Growth and Resource Management, Volusia County GIS Department, Florida Department of Transportation, U.S. Fish and Wildlife Service, U.S. Geological Survey and FEMA.

1NE0100
Nodes - Points used to define the topology of the hydrologic network

SCALE



PANEL LOCATOR



National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

VOLUSIA COUNTY, FLORIDA
And Incorporated Areas

PANEL 369 of 930

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORT ORANGE, CITY OF	120313	0369	J
SOUTH DAYTONA, CITY OF	120314	0369	J
VOLUSIA COUNTY	125155	0369	J

VERSION NUMBER
2.3.3.2

MAP NUMBER
12127C0369J

MAP REVISED
September 29, 2017

APPENDIX F

USDA SOILS MAP

Custom Soil Resource Report

Map—Hydrologic Soil Group (JACKSON STREET SIDEWALKS)



Custom Soil Resource Report








MAP LEGEND

Area of Interest (AOI)









Area of Interest (AOI)

Soils

Soil Rating Polygons





	A
	A/D
	B
	B/D
	C
	C/D
	D
	Not rated or not available

Soil Rating Lines


	A
	A/D
	B
	B/D
	C
	C/D
	D
	Not rated or not available

Soil Rating Points






	A
	A/D
	B
	B/D

	C
	C/D
	D
	Not rated or not available

Water Features

 Streams and Canals

Transportation

	Rails
	Interstate Highways
	US Routes
	Major Roads
	Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Volusia County, Florida
Survey Area Data: Version 21, Sep 2, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 19, 2022—Mar 2, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group (JACKSON STREET SIDEWALKS)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
69	Tuscawilla fine sand, 0 to 2 percent slopes	B/D	13.6	81.3%
70	Tuscawilla-Urban land complex	B/D	3.1	18.7%
Totals for Area of Interest			16.8	100.0%

Rating Options—Hydrologic Soil Group (JACKSON STREET SIDEWALKS)*Aggregation Method: Dominant Condition**Component Percent Cutoff: None Specified**Tie-break Rule: Higher*

APPENDIX G

NATURAL RESOURCES REPRT

(by Terracon Consultants, Inc.)

Natural Resources Report

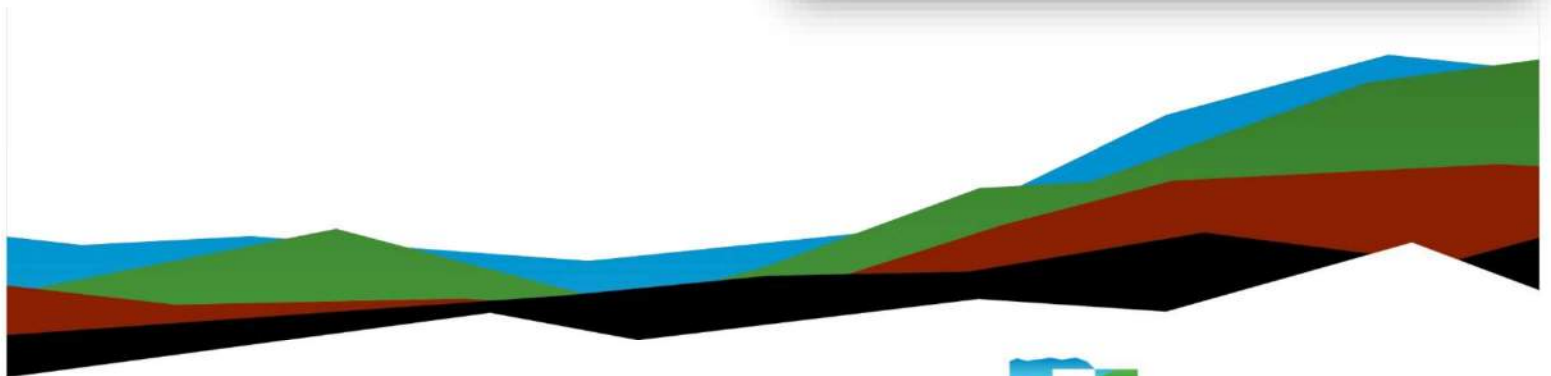
Jackson Street

Sidewalk and Pedestrian Improvements

October 10, 2022 | Project Number: H1227664

Prepared for:

Traffic Engineering Data Solutions, Inc
80 Spring Vista Drive
DeBary, Florida 32713



Nationwide
[Terracon.com](https://www.terracon.com)

- Facilities
- Environmental
- Geotechnical
- Materials



1675 Lee Road
Winter Park, Florida 32789
P (407) 740-6110
F (407) 740-6112
Terracon.com

October 10, 2022

Traffic Engineering Data Solutions, Inc.
80 Spring Vista Drive
DeBary, Florida 32713

Attn: Mr. Chris Walsh
P (386) 753-0558
E cwalsh@teds-fl.com

RE: Natural Resources Report
Jackson Street - Sidewalk and Pedestrian Improvements
Jackson Street from Canal View Boulevard to Madeline Avenue
Port Orange, Volusia County, Florida
Terracon Project No. H1227664
TEDS Project No. 11076-TWO#008

Dear Mr. Walsh:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Natural Resources Report for the above-referenced site. The scope of this assessment included a wetland assessment and listed species assessment.

This work was performed in general accordance with the scope of services outlined in the Agreement for Services July 19, 2022. This report was prepared for the exclusive reliance of Traffic Engineering Data Solutions, Inc ("client"). Use or reliance by any other party is prohibited without the written authorization of the client and Terracon.

We trust that this information will assist you in your evaluation of the site. If you have questions concerning this report, or if we can assist you in other matters, please contact us.

Sincerely,

Terracon

A handwritten signature in black ink, appearing to read 'Brennan Hagan', written over a light gray circular stamp.

Brennan Hagan, PWS
Senior Staff Scientist
(321) 203-7402
Brennan.hagan@terracon.com

A handwritten signature in black ink, appearing to read 'Brian P. Brandon', written over a light gray circular stamp.

Brian P. Brandon, PWS
Group Manager
(407) 740-6739
Brian.brandon@terracon.com

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Natural Resources Report

Jackson Street ■ Port Orange, Florida

October 10, 2022 ■ Terracon Project No. H1227664



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1.0 Introduction

The site consists of Jackson Street and associated rights-of-way (ROW) beginning at Madeline Avenue and terminating at Canal View Boulevard in Port Orange, Florida. The “study area” for this project includes ±7.76 acres of landscaped areas, ruderal areas, sidewalks, driveways, and other related roadway infrastructure. It is the understanding of Terracon that the study area is proposed for general improvements.

Any potential wetland areas on the site would likely fall under the jurisdiction of the St. Johns River Water Management District (SJRWMD) for the State, and potentially the Florida Department of Environmental Protection (FDEP) under the State 404 Program as “Assumed Waters”. Potential impacts to species which are listed as threatened or endangered would fall under the jurisdiction of the Florida Fish and Wildlife Conservation Commission (FWC) for state listed species, and the United States Fish and Wildlife Service (USFWS) for federally listed species. The following sections provide Terracon’s methodologies and findings to conduct a natural resources assessment of the site.

2.0 Methodology

2.1 Wetland Assessment

Terracon initially reviews readily available published resources to preliminarily identify features indicative of jurisdictional resources on the project site or in the immediate vicinity. The Natural Resource Conservation Service (NRCS) Soil Survey for Volusia County, the National Wetland Inventory (NWI), the Florida Department of Transportation (FDOT) Florida Land Use, Cover and Forms Classification System (FLUCFCS), and historical aerial imagery are also reviewed.

A site reconnaissance is then conducted on site utilizing the FDEP Wetlands Delineation Manual¹, Rule 62-340 Florida Administrative Code (FAC) and Rule 62-331 FAC, and guidance provided in the June 2020 Navigable Waters Protection Rule (NWPR) and pre-2015 definition of Waters of the United States (WOTUS); and assessed for the presence of wetlands and surface waters based on the three wetland parameters of hydrophytic vegetation, hydrology, and hydric soil indicators. The presence or absence of wetland indicators is documented and photographed on site.

2.2 Listed Species Assessment

The site is preliminarily investigated for the presence of state and federally protected animal and plant species and their habitat.² Literature and agency file searches are conducted to identify the potential occurrence of state and federally protected animal species on the site. A review of Geographical

¹Gilbert, K.M., J.D. Tobe, R.W. Cantrell, M.E. Sweely, and J.R. Cooper. 1995. The Florida Wetlands Delineation Manual. FDEP, Tallahassee, FL.

²Species-specific survey methods were not used as this is a preliminary site inspection.

Information System databases³ containing listed species observations and a map review is performed prior to the field assessment. The USFWS Information, Planning, and Conservation (IPAC) and Florida Natural Areas Inventory (FNAI) search engines are also utilized to determine potential occurrences.

USFWS-IPAC identifies potential occurrences and habitat for federally listed threatened and endangered species, proposed listed and candidate species, and designated critical habitat. The FNAI search engine identifies potential occurrences of both federally and state listed species. The results of the USFWS-IPAC and FNAI search results are then compiled to produce Table 1 in Appendix C of this report. The search results are supplemented by data from the FWC. Additional FWC databases researched for this assessment include Map Direct, wading bird colonies, the eagle nest locator, and GIS data layers of species occurrences. Database search results are included in Appendix C.

A general wildlife survey is then performed on site by conducting the following activities:

- Stationary monitoring stations are established to survey for migratory bird species utilizing the site and transects are walked to locate any migratory bird nests on the site.
- A reconnaissance-level listed flora and fauna survey is conducted for the project area.
- An assessment is conducted by a qualified biologist to identify the occurrence and relative abundance of species considered endangered, threatened, or listed as a species of special concern by the USFWS (50 CFR 11-12) or the FWC (Chapter 68A-27, FAC). All sightings, sign, call, tracks, scat, nests, cavities, burrow, and probable habitat of wildlife observed is documented.
- If encountered, observations of listed species are recorded, their locations marked utilizing a GPS with sub-meter accuracy, and the location is marked on an aerial photograph. A determination is made to determine what additional formal surveys may be required to address species occurrence on the site.

Table 1 in Appendix C provides a list of state and federally protected animal and plant species with the potential to occur within the vicinity of the site in Volusia County, Florida, and makes a recommendation as to whether further investigations are warranted.

2.3 Land Cover

To better categorize on-site habitats, on-site areas were demarcated and classified using FLUCFCS.⁴ Particular attention was allocated to undeveloped and natural areas. The current conditions are discussed in Section 4.0 of this report and reflected on Exhibit 5 (Appendix A).

³The data was obtained from the Florida Fish and Wildlife Conservation Commission and the Florida Natural Areas Inventory.

⁴Florida Department of Transportation, Survey and Mapping Office Geographic Mapping Section. January 1999, Third Ed. Florida Land Use, Cover and Forms Classification System. Tallahassee, FL.

3.0 Desktop Assessment

3.1 Topography and Hydrology

A review of the United States Geological Survey (USGS) topographical map for this parcel (Daytona Beach, FL Quadrangle, 1993), and elevation data from Google Earth indicate the parcel undulates between 10 and 15 feet above mean sea level (AMSL). Hydrology on-site appears to be associated with surrounding communities stormwater management systems. On-site hydrology will likely flow towards canal that is located towards the southern portion of the site.

3.2 Soil Survey

According to the Natural Resources Conservation Service (NRCS) Soil Survey for Volusia County, mapped soil units on the site include the following:

- **69 – Tuscawilla fine sand:** Poorly drained with average depth to water table between 0 and 12 inches below ground surface (bgs). This is the dominant soil type located on site.
- **70 – Tuscawilla – Urban Land complex:** Poorly drained with average depth to water table more than 80 inches This soil type is mapped along the southern portion of the site.

During the site reconnaissance, Terracon dug test pits to analyze subsurface soil conditions for hydric soil indicators. According to the *Hydric soils of Florida Handbook*, Tuscawilla fine sand (69) and Tuscawilla – Urban Land Complex (70) are categorized as hydric soils. However, based on field reconnaissance, both soil types located on site were observed to be generally inconsistent with the NRCS soil survey designation.

Additionally, Terracon reviewed the *Gopher Tortoise Burrowing Suitability* layer on the NRCS Web Soil Survey. According to this resource, Tuscawilla fine sand (69) and Tuscawilla – Urban Land Complex (70) are rated 'unsuited' and are therefore not conducive for burrowing fauna such as the gopher tortoise (*Gopherus polyphemus*) or the Florida Burrowing Owl (*Athene cunicularia*). The NRCS Soil Survey Map for the site is included as Exhibit 3.

3.3 National Wetlands Inventory

The NWI map of the site was reviewed to identify potential wetlands and surface waters. The map for the site was published by USFWS and depicts probable wetland areas and surface waters based on stereoscopic analysis of high-altitude aerial photographs, topographic maps, and soil survey information. The NWI map does not depict any wetlandson the site. However, the NWI does depict a surface water on the southern portion of the site. Based on the site reconnaissance, the NWI designaton is generally consistent with current onsite conditions. The NWI map for the site is included as Exhibit 4.

3.4 Flood Zones

Terracon reviewed the Federal Emergency Management Agency (FEMA) ArcGIS online open data portal to determine if the subject project area falls does fall within flood zone areas. Based on the data reviewed, portions of the site fall under '0.2% Annual Flood Chance Hazard Zone' (Zone X Shaded) and

Zone AE which are areas subject to the 0.2% annual chance flood hazard with base flood elevations (BFEs) are determined. The BFE for the study area was determined to be 7 feet AMSL. The FEMA 100-Year Flood Zone Map is included as part of Appendix A.

3.5 Previously Issued Wetland Permits

Terracon reviewed the following sources to determine if wetland or surface water permits had previously been issued for the site, or if the site is associated with a currently valid permit.

- **Environmental Resource Permit (ERP) Database:** The SJRWMD and FDEP ERP databases were reviewed to identify potential wetland areas and permits previously issued for the site. According to the records search, ERP No. 76110-1 was issued for a standard general on July 29, 1999, (expired July 29, 2004). This ERP authorized wetland impacts and the creation of a stormwater management system for the surrounding residential areas. According to the project drawings, this ERP was issued for an area located within the northern portion of the site between Sweetgum Lane to Cobblestone Lane. In addition, ERP No. 191160-1 is currently pending and partially located within the study area. The project area for ERP No. 191160-1 is located outside the northwest corner of the site near Madeline Avenue. Only Based on the information reviewed, surface waters are located within the southern area of the ERP but not associated with the current study area. Based on the information reviewed, wetlands and surface waters do not appear to be present within the area of study.
- **State 404 Program Permit Database:** The FDEP State 404 Program permit database was reviewed to identify potential wetland areas and permits previously issued for the site. According to the records search, there are no previously issued State 404 Program permits issued for the site.
- **USACE Permit Database:** The US Army Corps of Engineers (USACE) permit database was reviewed to identify potential wetland areas and permits issued for the site. According to the records search, there are no previously issued wetland permits associated with the site.

3.6 Recorded Conservation Easements

Terracon reviewed site information made available through the Volusia County Property Appraiser website, and available data layers made available through FDEP's Map Direct database to determine if the site was associated with recorded conservation easements. According to these resources, there are no conservation easements recorded for the site. However, Terracon recommends that title records for the site be researched prior to acquisition or development of the site.

4.0 Site Reconnaissance

The site was reviewed by Brennan Hagan, PWS on September 27, 2022. The site was investigated for the presence of wetlands and surface waters using the Routine On-site Determination Method described in the FDEP Wetland Delineation Manual. Additionally, the site was investigated to determine if habitat for listed threatened or endangered species was present based on FLUCFCS designation. The following section outlines Terracon's observations during the site reconnaissance.

4.1 Existing Site Conditions

Based on the site inspection and review of the above resources, the following land uses were observed on the site:

- **Residential, High Density** (Mapped FLUCFCS Code – 130) ±1.89 acres: A portion of the study area consists of single family residential buildings. Vegetation within these landscaped properties consist of live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), camphor tree (*Cinnamomum camphora*), red cedar (*Juniperus virginiana*), Bahia grass (*Paspalum notatum*), and common landscaped plants associated with single-family residences.
- **Multiple Dwelling Units, Low Rise** (Mapped FLUCFCS Code – 133) – ±1.32 acres: A Portion of the study area consists of two story apartments along the western side of Jackson Street. Vegetation within these landscaped areas consisted of live oak, laurel oak, cabbage palm, camphor tree, slash pine (*Pinus elliottii*), saw palmetto (*Serenoa repens*), and common landscaped plants.
- **Mixed Commerical and Services** (Mapped FLUCFCS Code – 147) – ±0.85 acres: The southern portion of the study area contained multiple commercial businesses with landscaped areas. Vegetation within these landscaped areas contained live oak, cabbage palm, and bahaia grass.
- **Upland Hardwood Forests** (Mapped FLUCFCS Code – 420) – ±1.29 acres: A portion of the study area contained undeveloped forested areas. Vegetation within these areas contained live oak, slash pine, laurel oak, sweet gum (*Liquidambar styraciflua*), red cedar, cabbage palm, Brazillian pepper (*Schinus terebinthifolia*), common persimmon (*Diospyros virginiana*), Australian pine (*Casuarina equisetifolia*), air potato (*Dioscorea bulbifera*), and cogon grass (*Imperata cylindrica*).
- **Brazilian Pepper** (Mapped FLUCFCS Code – 422) – ±0.49 acres: The northern portion of the study area contained an area that was dominated by Brazilian pepper. No other significant vegetation was present within this area.
- **Reservoirs** (Mapped FLUCFCS Code – 530) – ±0.05 acres: The southern portion of the study area contained a canal. The vegetation within and on the banks of the canal consisted of red cedar, Australian pine, Brazilian pepper, rag weed (*Ambrosia artemisiifolia*), dog fennel (*Eupatorium capillifolium*), penny wort (*Centella asiatica*), dollar weed (*Hydrocotyle* spp.), and duckweed (*Spirodela polyrhiza*).
- **Roads and Highways** (Mapped FLUCFCS Code – 814) – ±1.87 acres: The site contained a two laned street throughout the center of the study area. Jackson Street runs north to south from Madeline Avenue to Canal View Boulevard.

5.0 Wetland Jurisdiction and Permitting Needs

5.1 St. John's River Water Management District

The site is located within the jurisdictional boundary of SJRWMD. Terracon did not identify any wetlands onsite. However, surface waters were identified. Any impacts to the canal would require additional environmental considerations be included in the ERP application.

5.2 Florida Department of Environmental Protection

Currently wetlands and surface waters are assessed to determine if they would constitute WOTUS and be federally regulated by the FDEP under the Assumed Waters Rule that went into effect on December 22, 2020. Although the Navigable Waters Protection Rule (NWPR) was vacated in federal court on August 31, 2021, the FDEP is using the NWPR to make jurisdictional determinations for one calendar year from the date of vacatur. The surface water areas onsite (canal) should be considered (a)(2) *Tributaries* per 33 CFR § 328.3. Based on the current regulatory definitions, the wetlands and surface water areas located on site are anticipated to be jurisdictional to the State 404 Program. Therefore, a State 404 Program permit would be required from FDEP to address any proposed wetland/surface water impacts. Mitigation may also need to be provided to offset surface water impacts.

6.0 Listed Species Assessment

6.1 Listed Wildlife

During the site reconnaissance, Terracon surveyed along pedestrian transects through the site while utilizing the methodologies as outlined in Section 2.2 of this report. Based on our observations, potential habitat for the following fauna was identified on site:

Wood Stork (*Mycteria americana*)

This state/federally listed species typically nests in forested wetlands and forages in shallow ponds, ditches, and freshwater marshes. The site contains a portion of a canal on the southern portion of the site that could potentially support this species. Based on the online resources made available by the U.S. Fish and Wildlife Service, the project appears to be located within foraging habitat for the wood stork. Based on resources reviewed for the wood stork and based on the quality of the surface water located within the study area; the proposed development is not likely to adversely affect the wood stork. Due to this, additional coordination with USFWS should not be required.

6.2 Migratory Birds

6.2.1 Bald Eagles

Bald Eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). No bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*) individuals, nests, or eggs was noted on the site during the site reconnaissance. In addition, Terracon

accessed the bald eagle nest locator dataset provide through FDEP's Map Direct database, as well as the eagle nest location map made available through the National Audubon Society's Eagle Watch Program website. According to these sources, there are no documented bald eagle nests or eagle nest protection zones within one mile of the project site. No impacts to migratory birds are anticipated during site development.

6.2.2 Other Migratory Birds

No migratory birds, nests, or eggs protected under the MBTA was noted on the site during the site reconnaissance.

6.3 Listed Plant Species

No listed threatened or endangered plant species was identified on site during the site reconnaissance. It should be noted that the site reconnaissance may have been conducted outside of the survey season for certain species; however, there are currently no state or federal regulatory protections regarding the removal or destruction of listed plant species unless they are located on federal lands. As such, additional consultation with the agencies regarding listed plant species should not be required.

7.0 Conclusions and Recommendations

The site was investigated to identify the potential presence of wetlands, surface waters, and listed species on the site. Based on the results of our assessment, Terracon makes the following conclusions and recommendations:

- No wetlands were identified on the site however, surface waters were identified (canal) on the southern portion of the site. Any proposed impacts to the canal would require additional environmental considerations be included in the ERP application.
- The surface waters on the southern portion of the site (canal) are anticipated to be jurisdictional to the State 404 Program. If impacts are proposed to the surface waters onsite, an Individual 404 permit or verification of a General Permit (GP) will likely be required from FDEP. Otherwise, a State 404 Program permit should not be required.

8.0 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, express or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third-party resources supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed to by the client. Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is

Natural Resources Report

Jackson Street ■ Port Orange, Florida

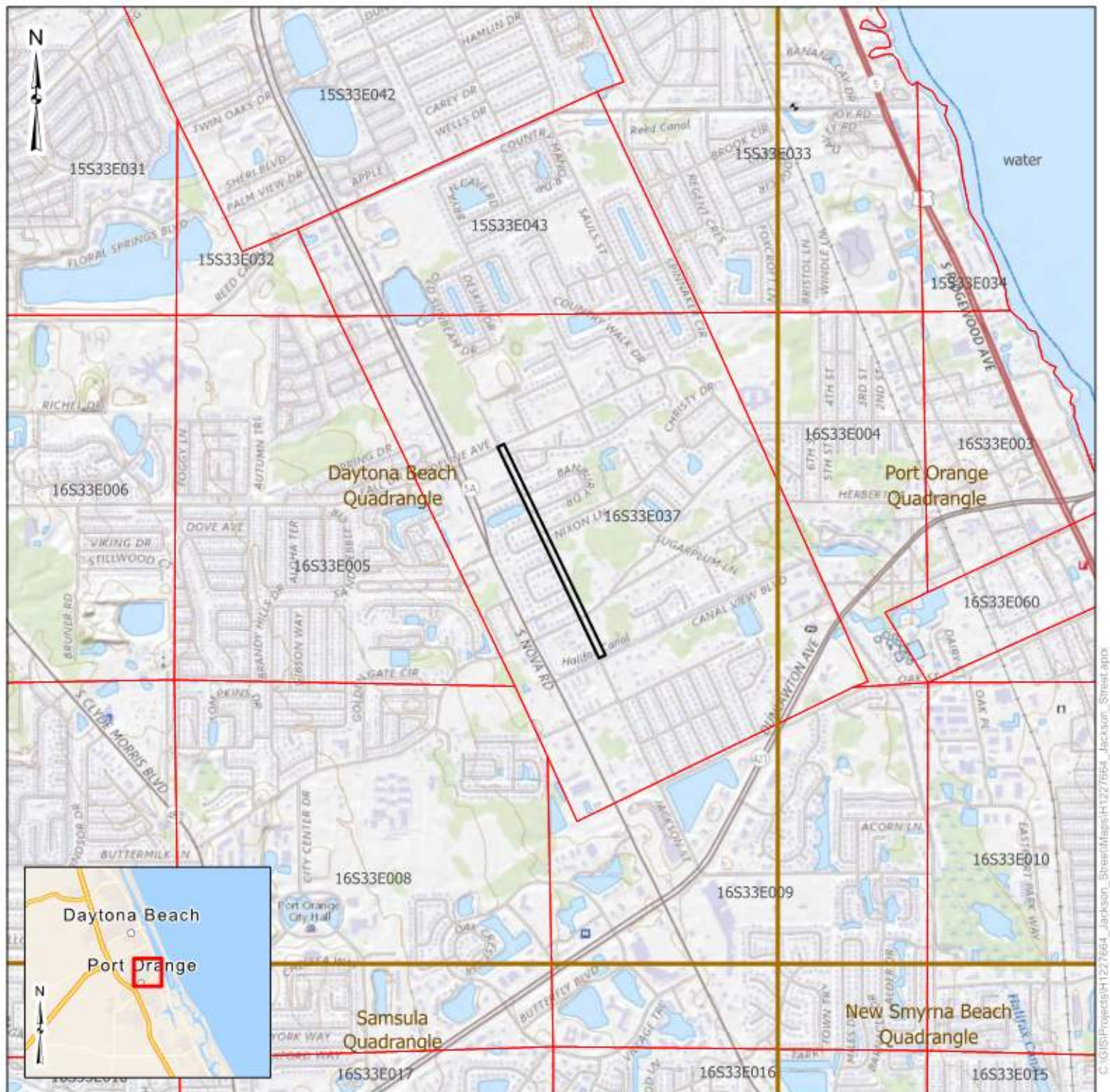
October 10, 2022 ■ Terracon Project No. H1227664



subject to change over time. Certain indicators of the presence of wetlands may have been latent, inaccessible, unobservable, or not present during our services.

Appendix A

Exhibits



- Project Boundary
- USGS 24K Grid Quadrangle
- Public Land Survey System (TRS)

Feet
0 1,000 2,000 4,000

DATA SOURCES:
Project Boundary provided by KMZ. USGS Topographic Survey; Daytona Beach Quadrangle; ESRI - USGS Topographic Basemap & World Navigation Map

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Reviewed By:	BH



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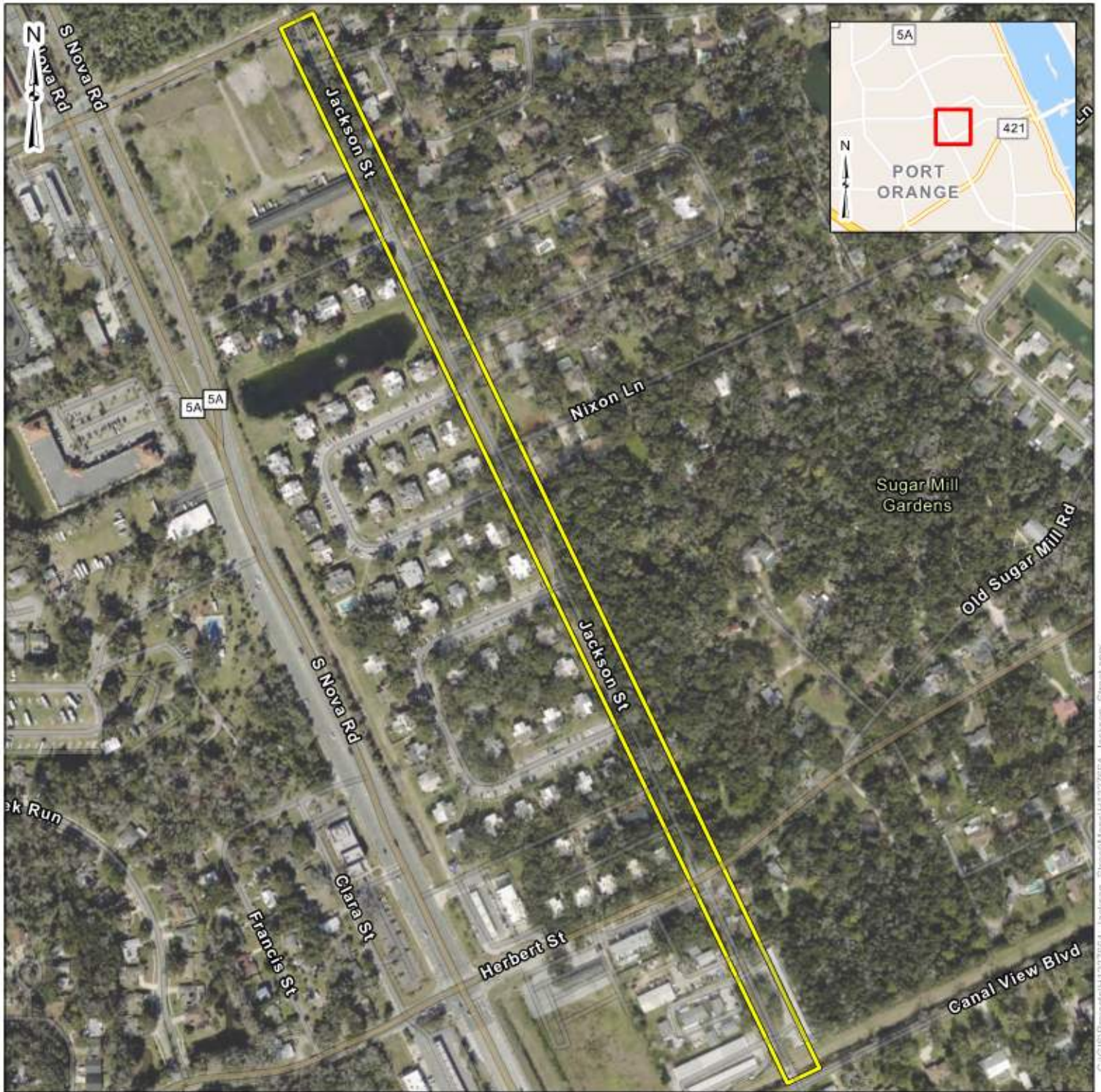
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Project Location

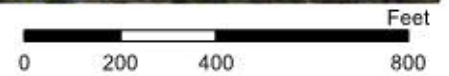
Jackson Street
Natural Resources Assessment
Volusia County, Florida

Exhibit

1



 Project Boundary



DATA SOURCES:
Project Boundary provided by KMZ; ESRI - World Imagery Hybrid Basemap & World Navigation Map

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Aerial Photograph

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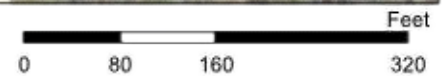
Exhibit

2

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Project Boundary
 Soils
 69, Tuscawilla Fine Sand



DATA SOURCES:
 USDA - NRCS Soils Survey of Volusia County, FL;
 ESRI - World Imagery Hybrid Basemap & World Navigation Map

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NRCS Soils

Jackson Street
 Natural Resources Assessment
 Volusia County, Florida

Exhibit

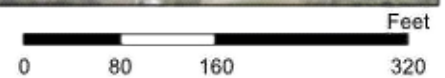
3-1



Project Boundary

Soils

69, Tusawilla Fine Sand



DATA SOURCES:
 USDA - NRCS Soils Survey of Volusia County, FL;
 ESRI - World Imagery Hybrid Basemap & World
 Navigation Map

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NRCS Soils

Jackson Street
 Natural Resources Assessment
 Volusia County, Florida

Exhibit

3-2

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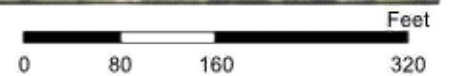


Project Boundary

Soils

69, Tusawilla Fine Sand

70, Tusawilla-Urban Land Complex



DATA SOURCES:
 USDA - NRCS Soils Survey of Volusia County, FL;
 ESRI - World Imagery Hybrid Basemap & World Navigation Map

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NRCS Soils

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Exhibit

3-3



- Project Boundary
- National Wetlands Inventory
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine



DATA SOURCES:
USFWS - National Wetlands Inventory (NWI); ESRI -
World Imagery Basemap & World Navigation Map

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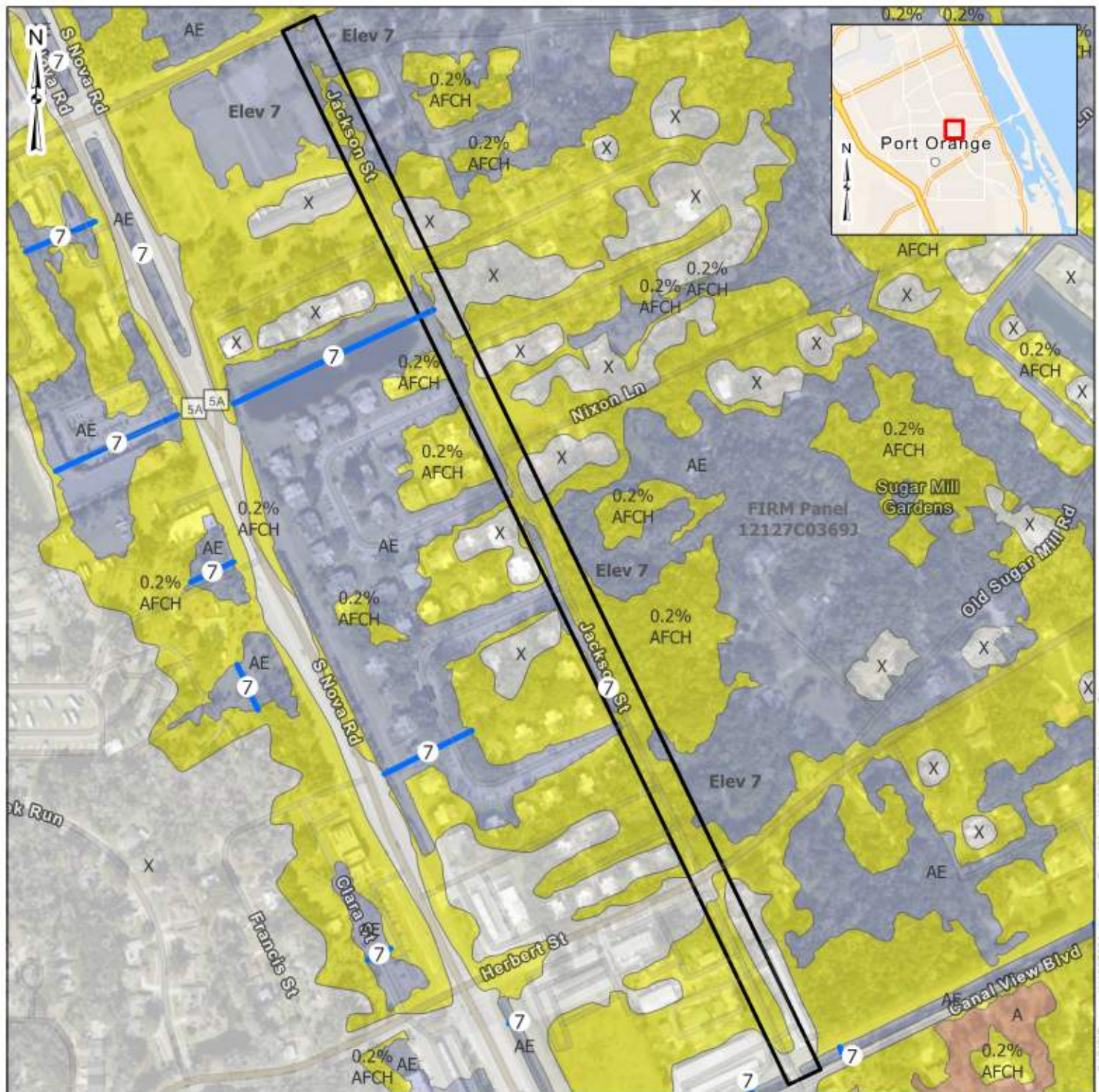
National Wetlands Inventory

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Volusia County, Florida

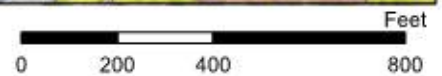
Exhibit

4

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- Project Boundary**
- Base Flood Elevation**
- FEMA Zones**
- Zone A - No Base Flood Elev. Determined
 - Zone AE - Base Flood Elev. Determined
 - Zone X - Outside 0.2% Annual Chance Floodplain
 - 0.2 Pct Annual Flood Chance Hazard



DATA SOURCES:
 FEMA - Flood Hazard Zones for Volusia County,
 FIRM Panel - 12127C0369J; ESRI - World Imagery
 Basemap & World Navigation Map

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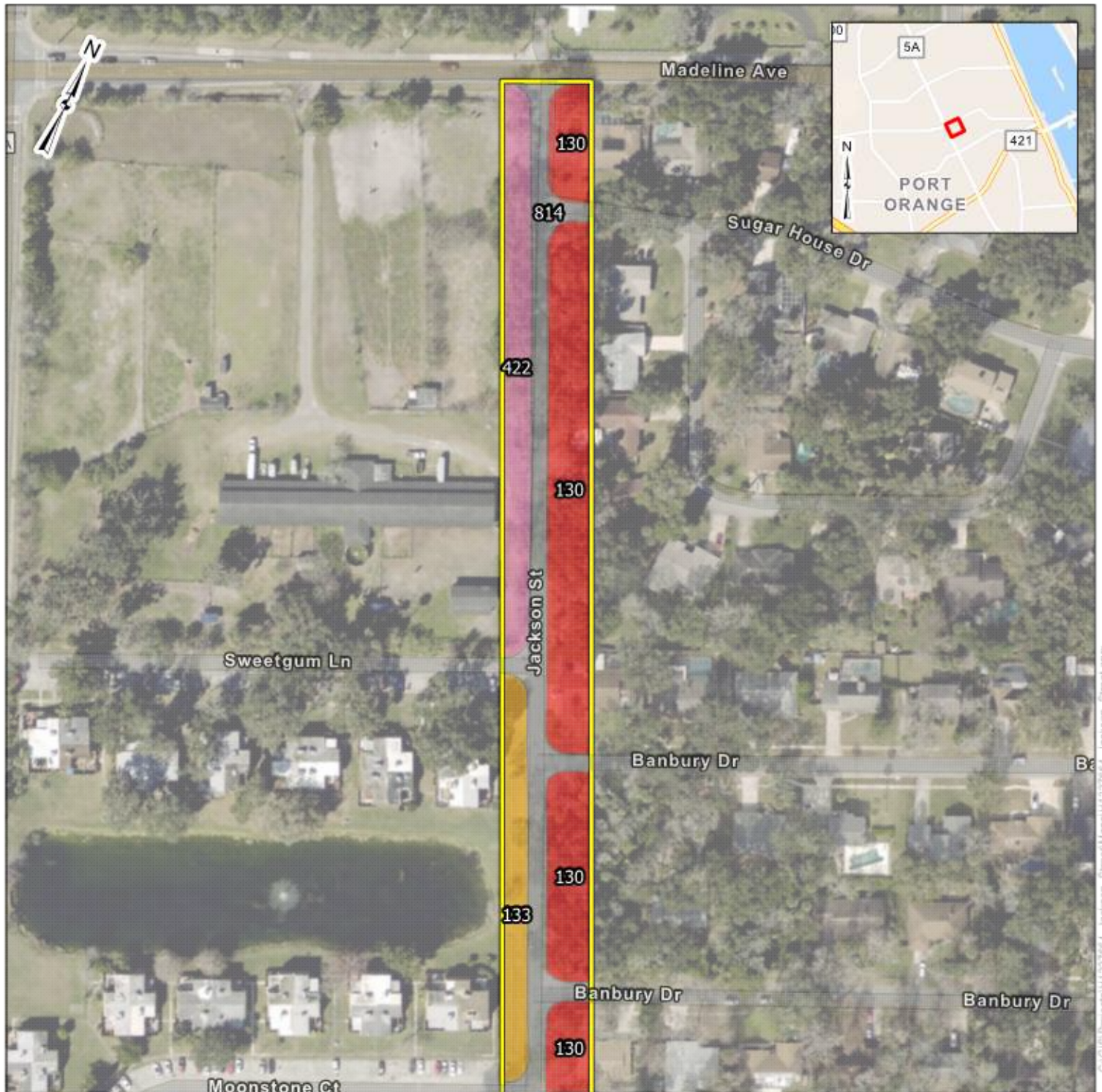
FEMA

Jackson Street
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Exhibit

5

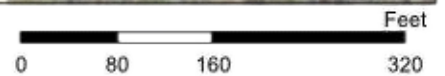
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Project Boundary (7.76 ac.±)

FLUCFCS

- 130, Residential, High Density (1.89 ac.±)
- 133, Multiple Dwelling Units, Low Rise <Two Stories or Less> (1.32 ac.±)
- 147, Mixed Commercial and Services (0.85 ac.±)
- 420, Upland Hardwood Forests (1.29 ac.±)
- 422, Brazilian Pepper (0.49 ac.±)
- 530, Reservoirs (0.05 ac.±)
- 814, Roads and Highways (1.87 ac.±)



DATA SOURCES:
Florida Land Use, Cover and Forms Classification System (FLUCFCS); ESRI - World Imagery Basemap & World Navigation Map

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Date:	Oct 2022
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Reviewed By:	CL



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Existing Site Conditions

Jackson Street
Natural Resources Assessment
Volusia County, Florida

Exhibit

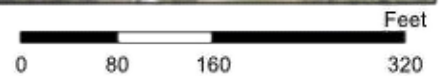
6-1



Project Boundary (7.76 ac.±)

FLUCFCS

- 130, Residential, High Density (1.89 ac.±)
- 133, Multiple Dwelling Units, Low Rise <Two Stories or Less> (1.32 ac.±)
- 147, Mixed Commercial and Services (0.85 ac.±)
- 420, Upland Hardwood Forests (1.29 ac.±)
- 422, Brazilian Pepper (0.49 ac.±)
- 530, Reservoirs (0.05 ac.±)
- 814, Roads and Highways (1.87 ac.±)



DATA SOURCES:
Florida Land Use, Cover and Forms Classification System (FLUCFCS); ESRI - World Imagery Basemap & World Navigation Map

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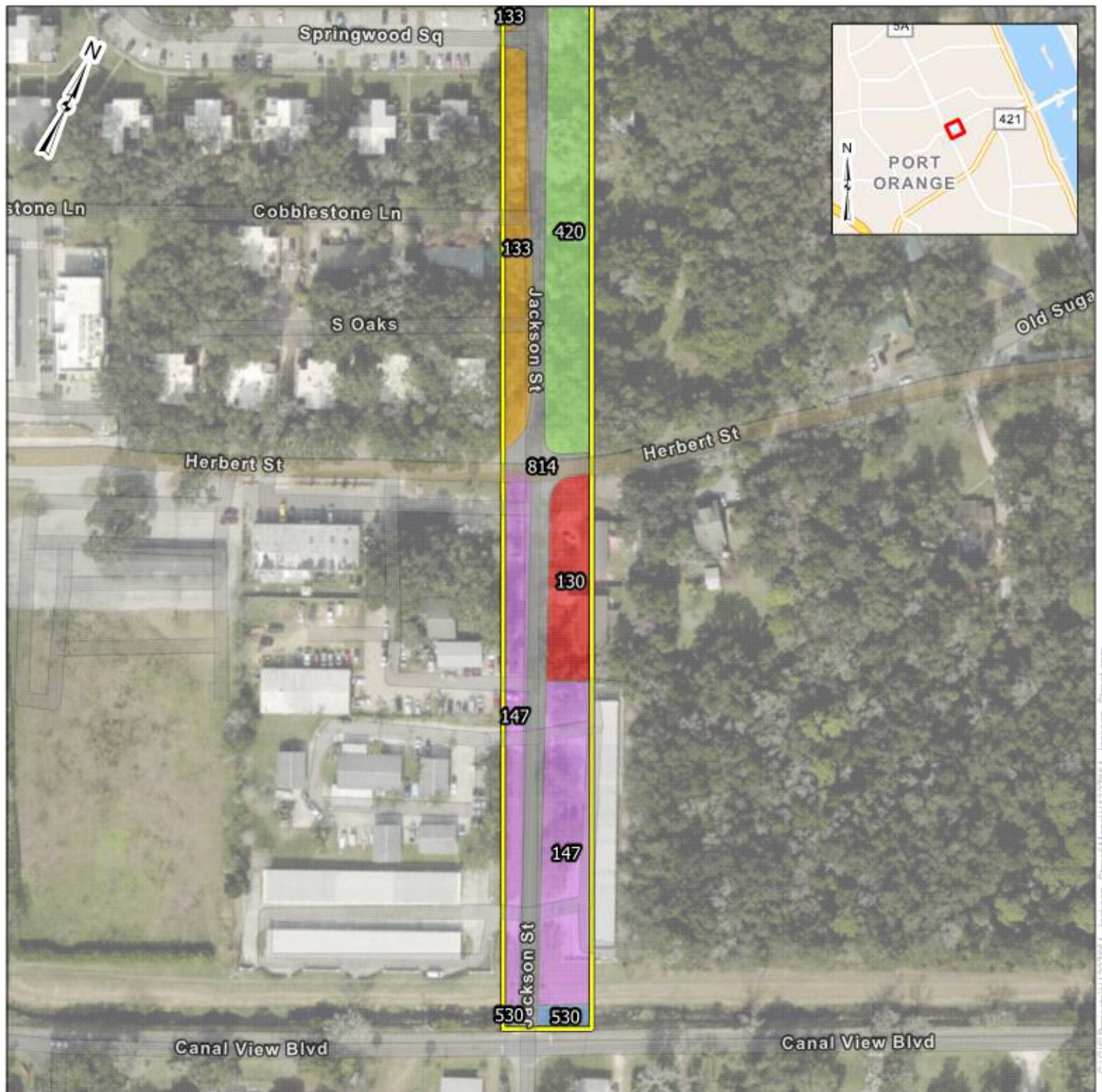
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Existing Site Conditions

Jackson Street
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Volusia County, Florida

Exhibit

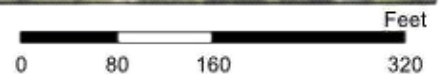
6-2



Project Boundary (7.76 ac.±)

FLUCFCS

- 130, Residential, High Density (1.89 ac.±)
- 133, Multiple Dwelling Units, Low Rise <Two Stories or Less> (1.32 ac.±)
- 147, Mixed Commercial and Services (0.85 ac.±)
- 420, Upland Hardwood Forests (1.29 ac.±)
- 422, Brazilian Pepper (0.49 ac.±)
- 530, Reservoirs (0.05 ac.±)
- 814, Roads and Highways (1.87 ac.±)



DATA SOURCES:
Florida Land Use, Cover and Forms Classification System (FLUCFCS); ESRI - World Imagery Basemap & World Navigation Map

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Existing Site Conditions

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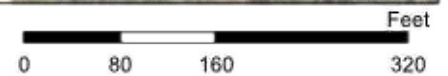
Exhibit

6-3

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- Project Boundary (7.76 ac.±)
- Upland (7.71 ac.±)
- Other Surface Water (0.05 ac.±)



DATA SOURCES:
ESRI - World Imagery Basemap & World Navigation Map

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Approximate Wetlands

Jackson Street
Natural Resources Assessment
Volusia County, Florida

Exhibit

7-1



- Project Boundary (7.76 ac.±)
- Upland (7.71 ac.±)
- Other Surface Water (0.05 ac.±)

Feet
0 80 160 320

DATA SOURCES:
ESRI - World Imagery Basemap & World Navigation Map

Project No.:	H1227664
Date:	Oct 2022
Drawn By:	GRS
Reviewed By:	BH



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Approximate Wetlands

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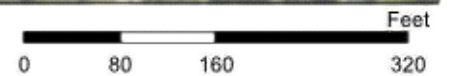
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- Project Boundary (7.76 ac.±)
- Upland (7.71 ac.±)
- Other Surface Water (0.05 ac.±)



DATA SOURCES:
ESRI - World Imagery Basemap & World Navigation Map

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Reviewed By:	BH



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Approximate Wetlands

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7-3

Appendix B

Photos

Natural Resources Report

Jackson Street ■ Port Orange, Florida

September 27, 2022 ■ Terracon Project No. H1227664



Photo #1 Site Overview (Facing South)



Photo #2 Site Overview (Facing North)



Photo #3 Upland Areas Along Jackson Street



Photo #4 Upland Areas Along Jackson Street



Photo #5 Canal on the Southern Portion of the Site



Photo #6 Canal on the Southern Portion of the Site

Appendix C

Species Lists

Table 1 Listed Threatened and Endangered Species				
Species	Federal Status	State Status	Habitat	Habitat Present
Amphibians				
Gopher Frog ¹ (<i>Lithobates capito</i>)		SSC	Longleaf pine, xeric oak, and sandhills mostly, but also occurs in upland pine forest, scrub, xeric hammock, mesic and scrubby flatwoods, dry prairie, mixed hardwood-pine communities, and a variety of disturbed habitats. This species inhabits gopher tortoise burrows.	No suitable habitat observed on site.
Reptiles				
Eastern Indigo Snake (<i>Drymarchon couperi</i>)	T	FT	Broad range of habitats, from scrub and sandhill to wet prairies and mangrove swamps. In northern part of range, often winters in gopher tortoise burrows in sandy uplands but forages in more hydric habitats. Requires very large tracts to survive.	No suitable habitat observed on site.
Gopher Tortoise (<i>Gopherus polyphemus</i>)	C	ST	Typically found in dry upland habitats, including sandhills, scrub, xeric oak hammock, and dry pine flatwoods; also commonly uses disturbed habitats such as pastures, old fields, and road shoulders.	No suitable habitat observed on site.
Birds				
Eastern Black Rail (<i>Laterallus jamaicensis</i>)	T		Tidally or non-tidally influenced, and range in salinity from salt to brackish to fresh. Can be found in higher elevation wetland zones with some shrubby vegetation. Impounded and unimpounded intermediate marshes	No suitable habitat observed on site
Everglade Snail Kite (<i>Rostrhamus sociabilis plumbeus</i>)	E	N	Snail Kite habitat consists of freshwater marshes and the shallow vegetated edges of natural and manmade lakes where apple snails can be found. Snail Kites require foraging areas that are relatively clear and open so that they can visually search for apple snails.	No suitable habitat observed on site.
Florida Burrowing Owl (<i>Athene cunicularia floridana</i>)		SSC	High, sparsely vegetated, sandy ground. Natural habitats include dry prairie and sandhill. Makes extensive use of ruderal areas such as pastures, airports, ball fields, parks, school grounds, university campuses, road right-of-ways, and vacant spaces in residential areas.	No suitable habitat observed on site.
Wood Stork (<i>Mycteria americana</i>)	T	T	Nests colonially in a variety of inundated forested wetlands, including cypress strands and domes, mixed hardwood swamps,	Suitable habitat observed on site for foraging

Table 1 Listed Threatened and Endangered Species				
Species	Federal Status	State Status	Habitat	Habitat Present
			sloughs, and mangroves. Forages mainly in shallow water in freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures and ditches, where they are attracted to falling water levels that concentrate food sources (mainly fish).	
Mammals				
Florida Mouse ² (<i>Podomys floridanus</i>)		SSC	Xeric Uplands (ecological communities with well drained sandy soils) such as sandhill and scrub	No suitable habitat observed on site.
Sherman's Fox Squirrel (<i>Sciurus niger shermani</i>)		SSC	Sandhills (high pine), pine flatwoods, and pastures and other open, ruderal habitats with scattered pines and oaks. Depends on a variety of oak trees for seasonal food and nest material. Longleaf pine cones and seeds are important foods.	This species was delisted
Plants				
Beach Jacquemontia (<i>Jacquemontia reclinata</i>)		T	Lee side of stable vegetated dunes and disturbed areas in maritime hammocks – endemic to southeast coast of Florida	No suitable habitat observed on site
Celestial Lily (<i>Nemastylis floridana</i>)		E	Wet flatwoods, prairies, marshes, cabbage palm hammocks edges.	No suitable habitat observed on site
Clamshell Orchid (<i>Encyclia cochleate</i>)		E	Trunks and branches of pond apple, cypress, live oak, and buttonwood trees in swamps and hammocks	No suitable habitat observed on site
Cutthroat Grass (<i>Panicum abscissum</i>)		E	Typically, found near ponds in Florida scrub, or scrubby habitat, and in marshy flatwoods; dependent on wildfire for natural maintenance	No suitable habitat observed on site
Florida Filmy Fern (<i>Trichomanes punctatum</i>)		E	Tree trunks in hammocks, edges of limesinks, and limestone boulders	No suitable habitat observed on site
Florida Prairie-Clover (<i>Dalea carthagenensis floridana</i>)	E		Miami-area pine rockland	No suitable habitat observed on site

Table 1 Listed Threatened and Endangered Species				
Species	Federal Status	State Status	Habitat	Habitat Present
Florida Royal Palm (<i>Roystonea elata</i>)		E	Tropical hammocks.	No suitable habitat observed on site
Four Petal Paw-Paw (<i>Asimina tetramera</i>)		E	Sand pine scrub habitat of coastal dune systems in Martin and Palm Beach county	No suitable habitat observed on site
Large-flowered rosemary (<i>Conradina grandiflora</i>)		T	Scrub, coastal strand. In disturbed areas	No suitable habitat observed on site
Nodding Pinweed (<i>Lechea cernua</i>)		T	Sand pine scrub	No suitable habitat observed on site
Rugel's Pawpaw (<i>Deeringothamnus rugelii</i>)	E	E	Open slash pine or longleaf pine flatwoods with wire grass and saw palmetto – endemic to Volusia County	No suitable habitat observed on site
Small's Flax (<i>Linum carteri</i>) Small		E	Pine rocklands, pine flatwoods, adjacent disturbed areas.	No suitable habitat observed on site
Tiny Polygala (<i>Polygala smallii</i>)	E	E	Pine rockland, scrub, sandhill, and open coastal spoil piles	No suitable habitat observed on site

TABLE 1 KEY

¹ No longer listed in Florida as of January 11,2017, but is part of the *Imperiled Species Management Plan*

² No longer listed in Florida as of January 11,2017. Commensal species with gopher tortoise.

FEDERAL LEGAL STATUS: Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.

E = Endangered: species in danger of extinction throughout all or a significant portion of its range.

T = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.

SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.

STATE LEGAL STATUS: Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency. Definitions derived from "Florida's Endangered Species and Species of

Special Concern, Official Lists” published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

C = Candidate for listing at the Federal level by the USFWS

FE = Listed as Endangered Species at the Federal level by the USFWS

FT = Listed as Threatened Species at the Federal level by the USFWS

FT(S/A) = Federal Threatened due to similarity of appearance

ST = State population listed as Threatened by the FWC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.

SSC = Listed as Species of Special Concern by the FWC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* for *Pandion haliaetus* (Osprey) indicates that this status applies in Monroe county only.)



Florida Natural Areas Inventory

Biodiversity Matrix Query Results

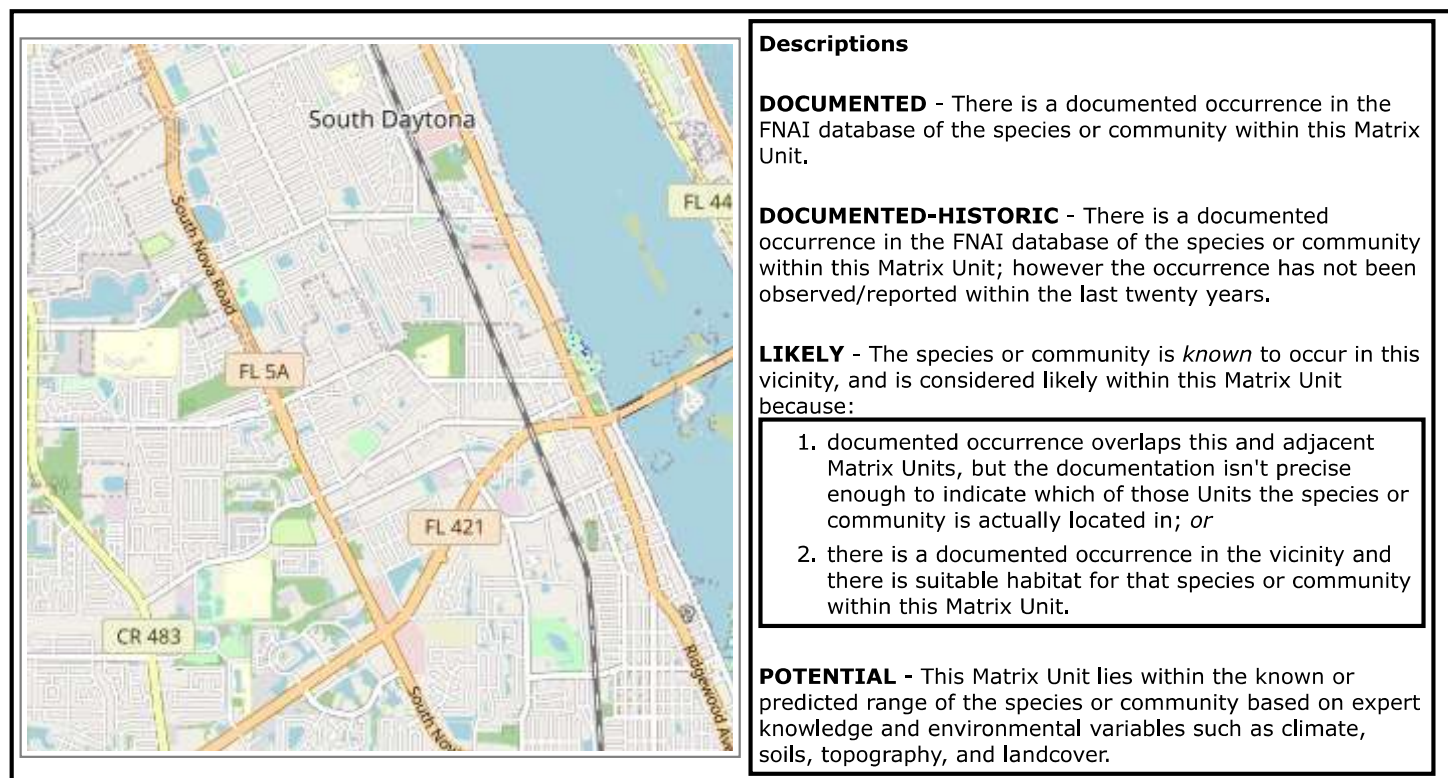
UNOFFICIAL REPORT

Created 9/28/2022

(Contact the FNAI Data Services Coordinator at 850.224.8207 or
kbrinegar@fnai.fsu.edu for information on an official Standard Data Report)

NOTE: The Biodiversity Matrix includes only rare species and natural communities tracked by FNAI.

Report for 2 Matrix Units: 54451 , 54452



Matrix Unit ID: 54451

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 **Likely** Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
Mycteria americana Wood Stork	G4	S2	T	FT

Matrix Unit ID: 54452

0 **Documented** Elements Found

0 **Documented-Historic** Elements Found

1 Likely Element Found

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
<i>Mesic flatwoods</i>	G4	S4	N	N

Matrix Unit IDs: 54451 , 54452**15 Potential** Elements Common to Any of the 2 Matrix Units

Scientific and Common Names	Global Rank	State Rank	Federal Status	State Listing
<i>Calopogon multiflorus</i> many-flowered grass-pink	G2G3	S2S3	N	T
<i>Centrosema arenicola</i> sand butterfly pea	G2Q	S2	N	E
<i>Conradina grandiflora</i> large-flowered rosemary	G3	S3	N	T
<i>Deeringothamnus rugelii</i> Rugel's pawpaw	G1	S1	E	E
<i>Drymarchon couperi</i> Eastern Indigo Snake	G3	S2?	T	FT
<i>Gopherus polyphemus</i> Gopher Tortoise	G3	S3	C	ST
<i>Heterodon simus</i> Southern Hognose Snake	G2	S2S3	N	N
<i>Lechea cernua</i> nodding pinweed	G3	S3	N	T
<i>Lupinus aridorum</i> scrub lupine	G3T1	S1	E	E
<i>Matelea floridana</i> Florida spiny-pod	G2	S2	N	E
<i>Nemastylis floridana</i> celestial lily	G2	S2	N	E
<i>Neofiber alleni</i> Round-tailed Muskrat	G2	S2	N	N
<i>Nolina atopocarpa</i> Florida beargrass	G3	S3	N	T
<i>Trichechus manatus latirostris</i> Florida Manatee	G2G3T2	S2S3	T	N
<i>Ursus americanus floridanus</i> Florida Black Bear	G5T4	S4	N	N

Disclaimer

The data maintained by the Florida Natural Areas Inventory represent the single most comprehensive source of information available on the locations of rare species and other significant ecological resources statewide. However, the data are not always based on comprehensive or site-specific field surveys. Therefore, this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. FNAI shall not be held liable for the accuracy and completeness of these data, or opinions or conclusions drawn from these data. FNAI is not inviting reliance on these data. Inventory data are designed for the purposes of conservation planning and scientific research and are not intended for use as the primary criteria for regulatory decisions.

Unofficial Report

These results are considered unofficial. FNAI offers a [Standard Data Request](#) option for those needing certifiable data.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Florida Ecological Services Field Office

FL

Email Address: fw4flesregs@fws.gov

<https://www.fws.gov/office/florida-ecological-services>



In Reply Refer To:

Project Code: 2022-0089840

Project Name: Jackson Street Improvements

September 28, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Please include your Project Code, listed at the top of this letter, in all subsequent correspondence regarding this project. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of

this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
 - USFWS National Wildlife Refuges and Fish Hatcheries
 - Migratory Birds
 - Wetlands
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Florida Ecological Services Field Office
, FL

Endangered Species Act Species

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Eastern Black Rail <i>Laterallus jamaicensis ssp. jamaicensis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10477	Threatened
Wood Stork <i>Mycteria americana</i> Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8477 General project design guidelines: https://ipac.ecosphere.fws.gov/project/PSWSFYWJHFCY7BVTNKID7QEHKA/documents/generated/6954.pdf	Threatened

Reptiles

NAME	STATUS
Atlantic Salt Marsh Snake <i>Nerodia clarkii taeniata</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7729	Threatened
Eastern Indigo Snake <i>Drymarchon couperi</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/646	Threatened
Gopher Tortoise <i>Gopherus polyphemus</i> Population: eastern No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6994	Candidate
Green Sea Turtle <i>Chelonia mydas</i> Population: North Atlantic DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6199	Threatened
Hawksbill Sea Turtle <i>Eretmochelys imbricata</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3656	Endangered
Leatherback Sea Turtle <i>Dermochelys coriacea</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1493	Endangered
Loggerhead Sea Turtle <i>Caretta caretta</i> Population: Northwest Atlantic Ocean DPS There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Rugel's Pawpaw <i>Deeringothamnus rugelii</i> Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5355	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel <i>Falco sparverius paulus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9587	Breeds Apr 1 to Aug 31
American Oystercatcher <i>Haematopus palliatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8935	Breeds Apr 15 to Aug 31

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Great Blue Heron <i>Ardea herodias occidentalis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Jan 1 to Dec 31
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Magnificent Frigatebird <i>Fregata magnificens</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Oct 1 to Apr 30
Painted Bunting <i>Passerina ciris</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 15
Prairie Warbler <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Reddish Egret <i>Egretta rufescens</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/7617	Breeds Mar 1 to Sep 15
Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Swallow-tailed Kite <i>Elanoides forficatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30
Willet <i>Tringa semipalmata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

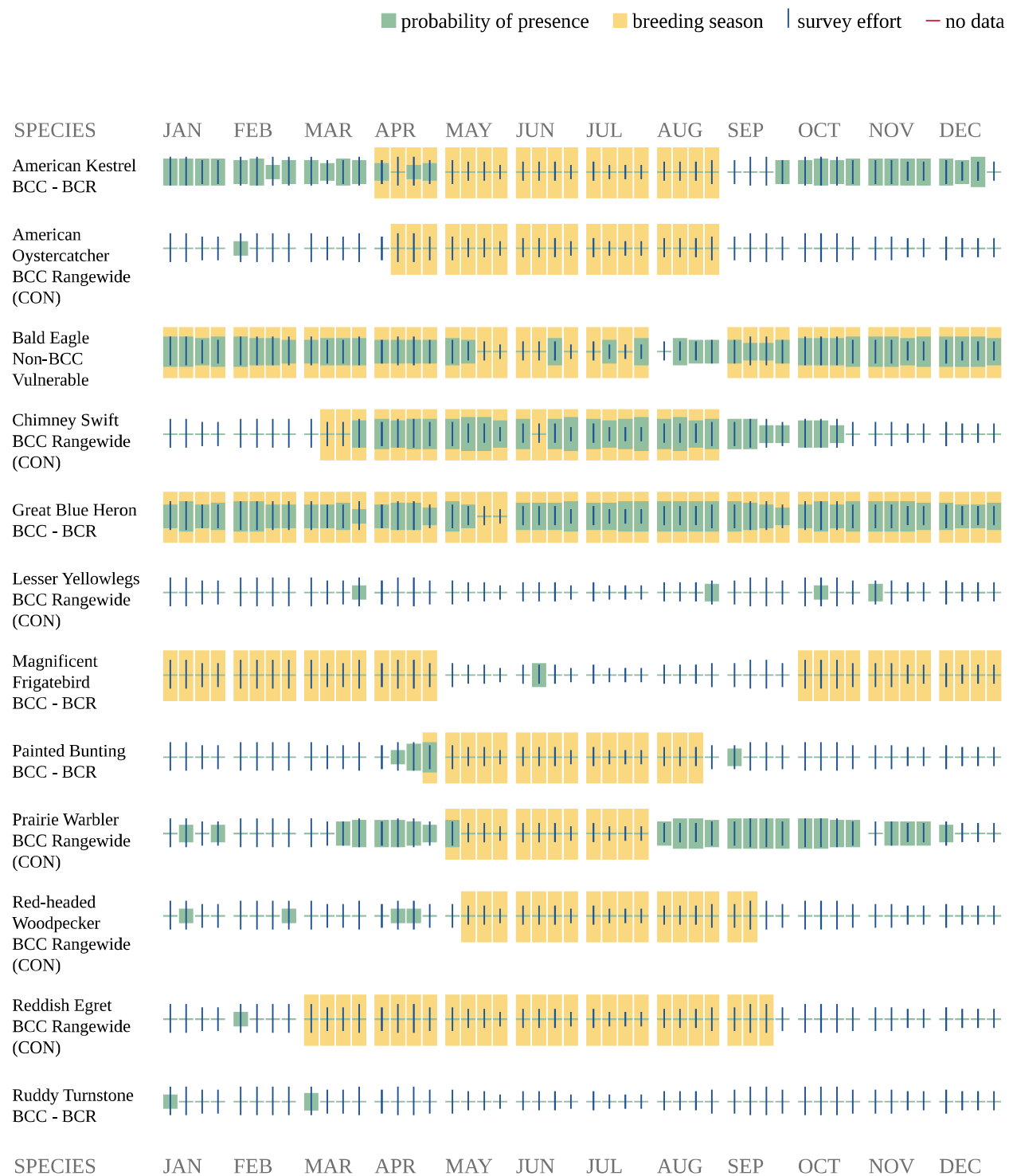
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

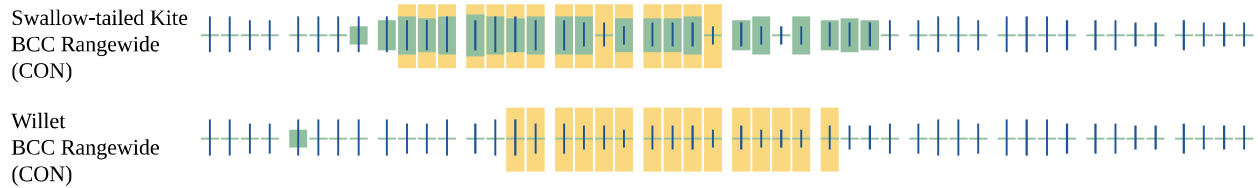
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.
PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

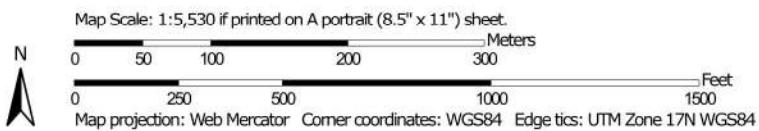
IPaC User Contact Information

Agency: Terracon
Name: Brennan Hagan
Address: 1675 Lee Rd
City: Winter Park
State: FL
Zip: 32789
Email: brennan.hagan@terracon.com
Phone: 8504454041

WLF - Gopher Tortoise Burrowing Suitability—Volusia County, Florida



Soil Map may not be valid at this scale.

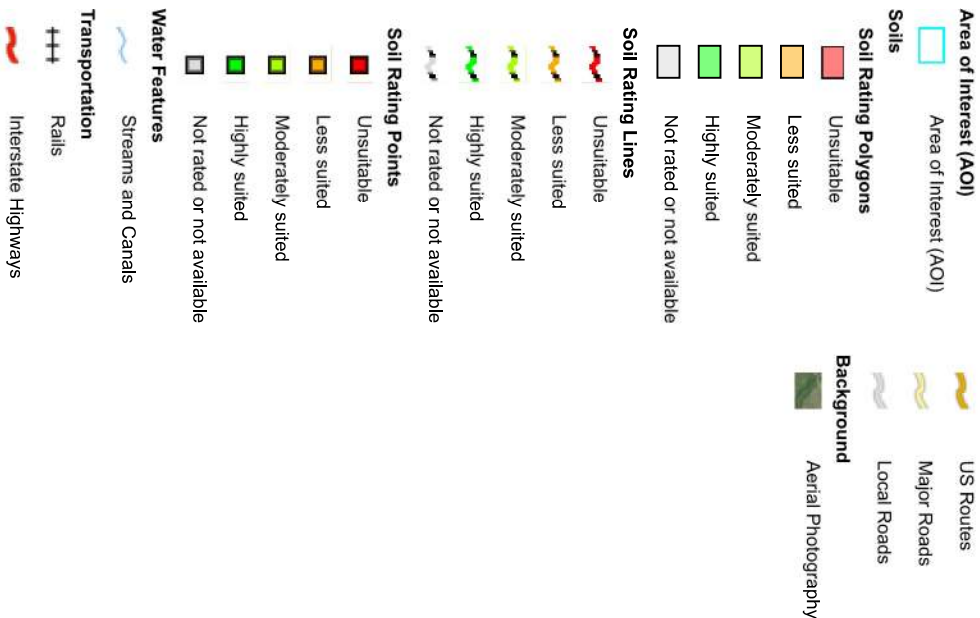


Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

9/28/2022
Page 1 of 5

MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Volusia County, Florida
Survey Area Data: Version 20, Aug 27, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 6, 2022—Feb 10, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

WLF - Gopher Tortoise Burrowing Suitability

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
69	Tuscawilla fine sand	Unsuitable	Tuscawilla (85%)	Water table (0.00)	6.6	82.3%
			Chobee, frequently flooded (8%)	Water table (0.00)		
				Flooding (0.00)		
				Texture (0.57)		
			Tequesta (7%)	Ponding (0.00)		
				Water table (0.00)		
				Texture (0.47)		
70	Tuscawilla-Urban land complex	Unsuitable	Tuscawilla (55%)	Water table (0.00)	1.4	17.7%
			Riviera, hydric (2%)	Water table (0.00)		
				Texture (0.82)		
			Chobee, frequently flooded (2%)	Water table (0.00)		
				Flooding (0.00)		
				Texture (0.57)		
			Winder (1%)	Water table (0.00)		
				Texture (0.65)		
Totals for Area of Interest					8.0	100.0%

Rating	Acres in AOI	Percent of AOI
Unsuitable	8.0	100.0%
Totals for Area of Interest	8.0	100.0%

Description

This soil interpretation is intended to provide ratings based on the dominant soil characteristics that influence the suitability of the soil for excavation, maintenance, and preservation of burrows by gopher tortoises (*Gopherus polyphemus*). The information allows the user to identify areas of potentially suitable habitat area prior to the application of conservation practices. The ratings are for the soils in their natural condition and do not consider present land use, existing vegetation, water sources, and the presence or absence of wildlife in the area. The presence or absence of a species is determined at the local level and by many factors including soil characteristics.

The gopher tortoise (*Gopherus polyphemus*) is a burrowing reptile that inhabits open pine forests throughout the southeastern United States. Historically, typical gopher tortoise habitat consisted of open, frequently burned longleaf pine or longleaf pine/scrub oak uplands and flatwoods on moderately well drained to xeric soils. The burrows of a gopher tortoise are the habitat and center of normal feeding, breeding, and sheltering activity. Gopher tortoises excavate and use more than one burrow for shelter beneath the ground surface. Burrows, which may extend for more than 30 feet, provide shelter from canid predators, winter cold and summer heat.

The soil criteria that are taken into account in this soil interpretation are those that have been determined to have the most effect on burrow excavation, maintenance, and preservation. These include the soil texture, percent coarse fragments, depth to a restrictive layer or layer with greater than or equal to 35% clay, ponding or flooding frequency, slope, and depth to seasonal high water table.

Each soil criteria is assigned a numerical rating between 0 and 1. In this rating, 1 represents more suitable soil characteristics, and 0 represents less suitable soil characteristics. Each criterion is calculated separately and the lowest rating is reported as the overall soil suitability rating, representing the most limiting factor in the soil's suitability for gopher tortoise burrows.

Rating classes have been defined as follows:

Highly suited (numerical rating 0.95-1): These soils have no restrictions for use and are favorable for burrowing by gopher tortoise. Colonization and population densities may be above average if other habitat factors are not limiting.

Moderately suited (numerical rating 0.5-0.95): These soils are suitable and somewhat favorable for burrowing by gopher tortoise. Some restrictive features may limit the use of the site to a minor extent. Colonization and population densities may be average to above for the area if the other habitat requirements are met.

Less suited (numerical rating 0.05-0.5): These soils have characteristics that may limit establishment, maintenance, or use of the site by gopher tortoise. Colonization and population densities may be below average or restricted in the area due to the limiting factors even though all of the other species habitat requirements are met.

Unsuitable (numerical rating 0-0.05): These soils have characteristics that may limit establishment, maintenance, or use of the site by gopher tortoise. Areas of

included soils with better drainage may provide suitable soil properties in some locations.

Not Rated: Miscellaneous areas are given a not rated status.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen, which is displayed on the report. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the Selected Soil Interpretations report with this interpretation included from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Citations:

U.S. Fish and Wildlife Service and Natural Resources Conservation Service. 2012. Gopher Tortoise (*Gopherus polyphemus*) Soil Classifications for the Federally Listed Range using the National Soil Information System Database, Version 1.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Printer Friendly View

Download as PDF

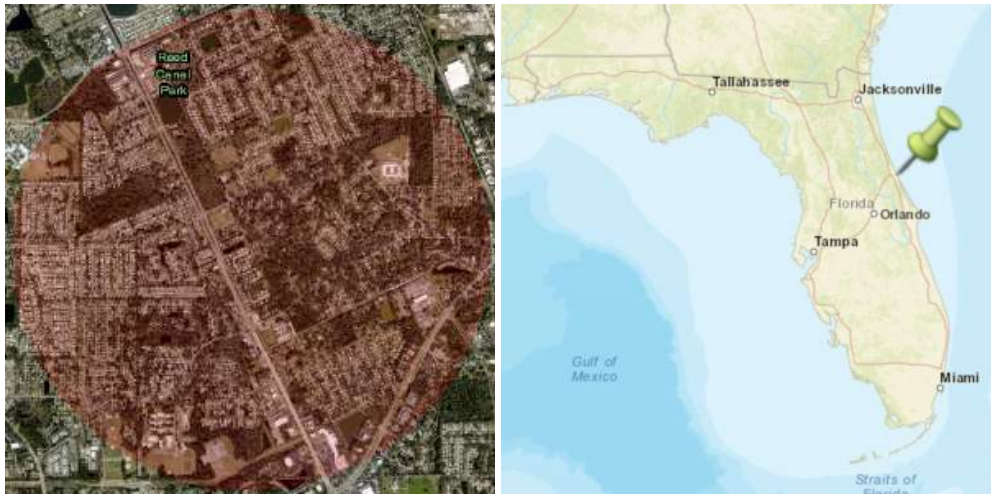


Florida Department
of Environmental Protection



Map Direct AIR (Area of Interest Report)
Standard Map

Point of Interest: 29°8'32.8857" x -81°0'39.1108" 29.14246825198267 x -81.01086410604465 Search Radius: 1 mile Report Created on Wed Oct 05 2022 at 10:06:03 Map Direct v7.221003	Township/Range/Section: 16S33E37 Port Orange, Volusia County 32129 FDEP Regulatory District: CENTRAL DISTRICT Water Management District: SJRWMD FL House District 25 :: FL Senate District 14 US Congressional District 6 HUC Basin Area: Daytona-St. Augustine Waterbody ID: 2670 State Land DM ID:
--	--



Search Result Summary

Features Found	Data Layer	Metadata	Spreadsheet
0	Wood Stork Active Nesting Colonies - 2500 Foot Buffer	Layer Information	--
0	Florida Wood Stork Foraging Areas	Layer Information	--
0	Fish and Wildlife Conservation Commission (FWC) Eagle Nests - 660 Foot Buffer	Layer Information	--
0	Wood Stork Active Nesting Colonies - 2500 Foot Buffer	Layer Information	--
0	Florida Woodstork Nesting Colonies	Layer Information	--
0	Florida Woodstork Nesting Colonies	Layer Information	--
0	Florida Wood Stork Foraging Areas	Layer Information	--

Search Result Details

No Results Found:
Fish and Wildlife Conservation Commission (FWC) Eagle Nests - 660 Foot Buffer
Florida Wood Stork Foraging Areas
Florida Wood Stork Foraging Areas
Florida Woodstork Nesting Colonies
Florida Woodstork Nesting Colonies
Wood Stork Active Nesting Colonies - 2500 Foot Buffer
Wood Stork Active Nesting Colonies - 2500 Foot Buffer

*** END OF REPORT ***

Appendix D

Resumes

Brennan Hagan

SENIOR STAFF SCIENTIST

PROFESSIONAL EXPERIENCE

Mr. Hagan has 6.5 years of experience as an environmental professional, specializing in environmental permitting, wetland delineation, environmental planning, arboricultural services, and listed species services in Florida. His expertise includes wetland delineation, wetland permitting and compliance, design, implementation, and design of wetland mitigation plans, sovereign submerged land authorizations, hydrologic surveys, sand skink surveys, tree inventories, tree health/risk assessments, reviewing/interpreting municipal code, and gopher tortoise surveys/relocations. In addition, Mr. Hagan has experience conducting Phase 1 site visits and writing Phase 1 reports per the ASTM standards. Experience also includes coordination with Florida Fish and Wildlife Conservation Commission (FWC), the Florida Department of Environmental Protection (FDEP), Orange County Environmental Protection Division (OCEPD), Hillsborough County Environmental Protection Commission (EPC) and all Water Management Districts (WMD) across the state.

PROJECT EXPERIENCE

South Fork High School – Natural Resources Assessment, Wetland Permitting & Conservation Easement Amendment

Project Manager for this multi-phase project in coordination with Martin County School Board. The first phase of this project included listed species assessment and wetland delineation. The second phase involved amending the existing conservation easement onsite. Efforts included initial wetland evaluation based on a UMAM analysis, creating a mitigation plan & monitoring plan, facilitate agency field visits, and prepare project documents for submittal to SFWMD.

Tampa VA Regional – Natural Resources Assessment & Wetland Permitting

Project Manager for this two-phase project located in Tampa, Florida. The first phase of the project included a listed species assessment and wetland delineation. The second phase of the project included permitting efforts with Hillsborough County EPC, SWFWMD, and FDEP. Efforts included pre-application meetings, application preparation, document submittals, and facilitating agency field visits.

Duke Energy – Hildreth Solar Gopher Tortoise Relocation

Authorized Gopher Tortoise Agent responsible for surveys, bucket trapping, and relocation activities. Lead agent onsite for multiple relocation efforts managing a team of eight people and three backhoe operators.

Advent Health – City of Orlando Environmental Assessment / Parcel Annex

Project Manager for this environmental assessment for a City of Orlando parcel annexation. The scope of services included wetland delineation, wetland functional assessment, Q-Wet Ranking score, and a listed species assessment. In addition, the project included the annexation requirements set forth within the City of Orlando Code of Ordinance.



EDUCATION

Bachelor of Science,
Interdisciplinary Studies –
Environmental Science
University of Central Florida, 2018

Masters of Science, Urban &
Regional Planning, University of
Central Florida, 2021

Graduate Certificate, Emergency
Management & Homeland
Security, University of Central
Florida, 2021

YEARS WITH TERRACON: 1.5
YEARS WITH REGULATORY
AGENCIES: 5

CERTIFICATIONS

Wildland Firefighter

Florida Stormwater, Erosion, and
Sediment Control Inspector, Tier II

Professional Wetland Scientist
(PWS)

Authorized Gopher Tortoise Agent

ADDITIONAL TRAINING

40 hours of Advanced Wetland
Delineation Training by FDEP
delineation team.

40-hour Hazardous Waste
Operations and Emergency
Response Certification

AFFILIATIONS

Society of Wetland Scientists

Urban Knights (UCF)

Central Florida Association of
Environmental Professionals

** Work performed prior to joining
Terracon.*

Brennan Hagan (continued)

Orange County Public Schools – Continuing Contract

Staff Scientist for this continuing environmental consulting services contract with Orange County Public Schools. The scope of services include sand skink surveys, burrowing owl surveys, consultation with USFWS, gopher tortoise burrow surveys and permitting, wetland delineations and permitting, and consultation with the Orange County Environmental Protection Division, FWC, and USFWS.

Lake Placid Solar – Listed Species Surveys

Staff Scientist on this solar farm project in Highlands County. Conducted American Kestral surveys along with multiple other different listed species including Scrub Jay, Gopher Tortoise, Sand Skinks, and Crested Caracara.

Palm City Elementary School – Wetland Permitting

Project manager for this wetland permitting contract. The scope of work includes a wetland delineation report and permitting, gopher tortoise burrow surveys. Additional efforts included pre-application meetings, application preparation, document submittals, and facilitating agency field visits with SFWMD.

Shingle Creek Regional Trail – Application Processor*

The lead environmental analyst at SFWMD on this multi-county regional recreation trail. This project consisted of multiple field reviews and planning around large wetland systems such as Shingle Creek and Lake Tohopekaliga. Worked in consultation with multiple consulting firms, Orange County, Osceola County, City of Kissimmee, and the City of Orlando.

Silverleaf Development West Orange County – Application Processor*

The lead environmental analyst at SFWMD for this 230 acre residential development in west Orange County. This project required multiple site visits to delineate wetlands and determine wetland function using UMAM. A mitigation proposal was also reviewed and processed to cover the 15 acres of wetland impacts on site.

ADDITIONAL EXPERIENCE

Land Management Reviews (LMRs)

Participated in land management reviews of Florida State Parks including Tiger Bay State Park, Blue Springs State Park, and Hontoon Island State Park. FDEP participated to review how the State Park was being ecologically managed and offered input on practices that we working or not.

Central Florida Water Initiative

Conducted vegetative and hydrologic surveys at various management areas around Central Florida. These surveys required coordination between SFWMD, SWFWMD, and SJRWMD.

Prescribed Fire

Participated in multiple controlled burns on SFWMD property.

Phase 1 Reports/Site Visits

Conducts Phase 1 site visits and prepares reports per the ASTM standards.

Tree Inventory and Health Assessments

Brian P. Brandon

SENIOR STAFF SCIENTIST

PROFESSIONAL EXPERIENCE

Mr. Brandon has more than 7 years of experience as an environmental professional, specializing in the investigation and management of environmental due diligence and natural resources projects in the southeastern United States. His expertise includes wetland delineation, wetland permitting and compliance, habitat assessments, floral/vegetation surveys, threatened and endangered species surveys, migratory bird evaluations, creation and maintenance of avian protection programs, and tribal and agency consultation pursuant to the National Environmental Policy Act (NEPA). Experience also includes coordination with the United States Fish and Wildlife Service, Florida Fish and Wildlife Conservation Commission, Federal Communications Commission (FCC), various state and tribal historic preservation offices (HPOs), the Florida Department of Environmental Protection (FDEP), United States Army Corps of Engineers (USACE), and all Florida Water Management Districts for various permitting projects.

PROJECT EXPERIENCE

Orange County Public Schools – Continuing Contract

Senior Staff Scientist for this continuing environmental consulting services contract with Orange County Public Schools. The scope of services include sand skink surveys, consultation with USFWS, gopher tortoise burrow surveys and permitting, wetland delineations and permitting, and consultation with the Orange County Environmental Protection Division, FWC, and USFWS.

Indrio Road Commercial Development – Ft. Pierce, FL

Senior Staff Scientist for a proposed commercial development. The scope of services includes a wetland assessment and delineation, listed species review, agency review of the wetland delineation, preparation of UMAM data sheets, cultural resources review, and environmental permitting.

Ft. Lauderdale Executive Airport – Ft. Lauderdale, FL

Senior Staff Scientist and Project Manager for commercial development on three non-contiguous lots. The scope of services included preliminary review of wetlands, threatened and endangered species, and cultural resources. The scope of services also included Florida Browning Owl surveys and permitting, creation of a burrowing owl mitigation plan, and consultation with the FWC.

Sadler's Landing – Woodbine Georgia

Senior Staff Scientist for proposed telecommunications tower development. The scope of services included utilizing an endoscope to inspect gopher tortoise burrows to analyze the potential presence of the federally listed eastern indigo snake. The scope of services included field verification with a USFWS eastern indigo snake biologist.



EDUCATION

Bachelor of Science, Biology
University of Central Florida, 2012

Graduate Certificate, Wetlands and
Water Resource Management,
University of Florida, 2020

YEARS WITH TERRACON: 1.5
YEARS WITH OTHER FIRMS: 6

CERTIFICATIONS

FWC Authorized Gopher Tortoise
Agent

Certified Florida Master Naturalist

PADI Certified Open Water Diver

CPR, AED, and Basic First Aid

ADDITIONAL TRAINING

38-Hour Army Corps of Engineers
Wetland Delineation Training
Program

40-hour Hazardous Waste
Operations and Emergency
Response Certification

AFFILIATIONS

Florida Native Plant Society –
Tarflower Chapter

National Association of
Environmental Professionals

Ecological Society of America

National Audubon Society

Florida Association of
Environmental Soil Scientists

FWC– Volunteer

Florida Forest Service - Volunteer

** Work performed prior to joining Terracon.*

Brian Brandon (continued)

Durando Yeehaw Ranch – Yeehaw Junction, Florida

Senior Staff Scientist and Project Manager for land analysis that includes demography of saw palmetto (*serenoa repens*) stands, agricultural soil analysis, and land use analysis to determine the correlation between palmetto densities and productivity and available soil nutrients on site. The 12,000-acre project site was proposed to be utilized for saw palmetto propagation and harvesting.

Grand Medina Resort - Kissimmee, FL

Senior Staff Scientist and Project Manager for a proposed 216-acre mixed use development. The scope of services includes a wetland permit review and file audit, wetland assessment and delineation, listed species review, agency review of the wetland delineation, preparation of UMAM data sheets, and environmental permitting.

Village of Royal Palm Beach Pathway – Royal Palm Beach, FL

Senior Staff Scientist and Project Manager for an ecological study on a 3.15 mile long transmission right-of-way and adjacent foot path. The scope of services included a burrowing owl survey and threatened and endangered species survey.

ADDITIONAL EXPERIENCE

NEPA Assessments – Alabama, Florida, Georgia, North Carolina, South Carolina, Tennessee*

Project Manager and Lead Biologist. Conducted regulatory compliance reviews for proposed telecommunications tower facilities. Reviews included consultation with the State Historic Preservation Offices, Native American Tribal Organizations, Certified Local Government officials, and the general public. Ordered and reviewed Cultural Resource Assessments prepared by Secretary of the Interior qualified archaeologists.

Biological Assessments - Alabama, Florida, Georgia, North Carolina, South Carolina

Project Manager and Lead Biologist. Analyzed habitat structure and performed surveys to determine anticipated impacts to threatened and endangered species and species of special concern pursuant to Section 7 of the Endangered Species Act. Species-specific surveys include Gopher Tortoise, migratory bird evaluations, bats, Red cockaded Woodpeckers, Florida Scrub-Jays, and various vegetation surveys. Consulted with lead agency for determinations of “no adverse effect” findings and coordinated permitting when necessary.

Wetland Delineations –Florida, Georgia, Maryland*

Project Manager and Lead Wetland Scientist. Determined the landward extent of wetlands and other surface waters in accordance with Florida Administrative Code 62-340 and the Army Corps of Engineers wetland delineation methodology. Delineated wetland boundaries and coordinated Environmental Resource Permits (ERP's), Nationwide Permits, and Individual Permits with the FDEP, USACE, and all Water Management Districts.

Migratory Bird Evaluations and Avian Protection Programs – Nationwide*

Director of Migratory Bird Services. Managed and directed a team of scientists to conduct evaluations of Osprey, Bald Eagle, Red-tailed Hawk, Great Horned Owl, Crested Caracara, Crows, Ravens, Eastern Kingbirds, and other migratory birds for compliance with the Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act, and Endangered Species Act. Determined nest status and facilitated permit actions. Created and maintained Avian Protection Programs for various national clientele.

APPENDIX H

CULTURAL RESOURCES DESKTOP ASSESSMENT

(by Terracon Consultants, Inc.)



1675 Lee Road
Winter Park, FL 32789
P (407) 740-6110
F (407) 740-6112
terracon.com

November 2, 2022

Traffic Engineering & Data Solutions, Inc.
80 Spring Vista Drive
Debary, Florida, 32713

Attn: Mr. Chris Walsh
Phone: (386) 753-0558
Email: cwash@teds-fl.com

Re: Cultural Resources Desktop Assessment of Jackson Street Between Madeline Avenue and Canal View Boulevard in Port Orange, Volusia County, Florida

Dear Mr. Lewis:

Terracon Consultants, Inc. (Terracon) conducted cultural resources desktop assessment of the right-of-way (ROW) of Jackson Street beginning at Madeline Avenue and terminating at Canal View Boulevard in Port Orange, Volusia County, Florida (**Figure 1**). A summary of Terracon's background research and the results are presented below.

The goals of this study were to assess the probability of encountering cultural resources within the proposed project corridor and to determine potential effects to cultural resources listed on or eligible for the National Register of Historic Places (NRHP). The project corridor comprises approximately eight acres of land, consisting of landscaped and ruderal areas, sidewalks, driveways, and additional related roadway infrastructure. The project area is currently proposed for improvements. Proposed improvements include sidewalk replacement and installation of utilities.

This study is being conducted for due diligence purposes and does not meet the requirements for a Phase I Cultural Resource Assessment Survey (CRAS). No field investigations were conducted as part of this study. Cultural resource desktop assessments provide developers, planners, and agency reviewers known information about a tract for proposed development, including previously conducted surveys, previously mapped cultural resources within and adjacent to the project area, and the probability of encountering cultural resources within the project area.

The term "cultural resources" as used herein is intended to refer to sites or objects that are archaeological, architectural and/or historical structures. Archaeological site location information is classified as sensitive, please limit the distribution of this information to project personnel. Soils throughout the project corridor primarily consist of very poorly drained soils, with poorly drained soils in the southern portion of the corridor.

The project area lies within the St. Augustine-Edgewater Ridge subdivision of the Central Atlantic Coastal Strip province of the Eastern Flatwoods District. The Eastern Flatwoods District originated as a sequence of barrier islands and lagoons during Plio-Pleistocene and Recent time. The Central Atlantic Coastal Strip consists of a coastal strip of land developed through shoreline processes during the Late Pleistocene (Brooks 1981).

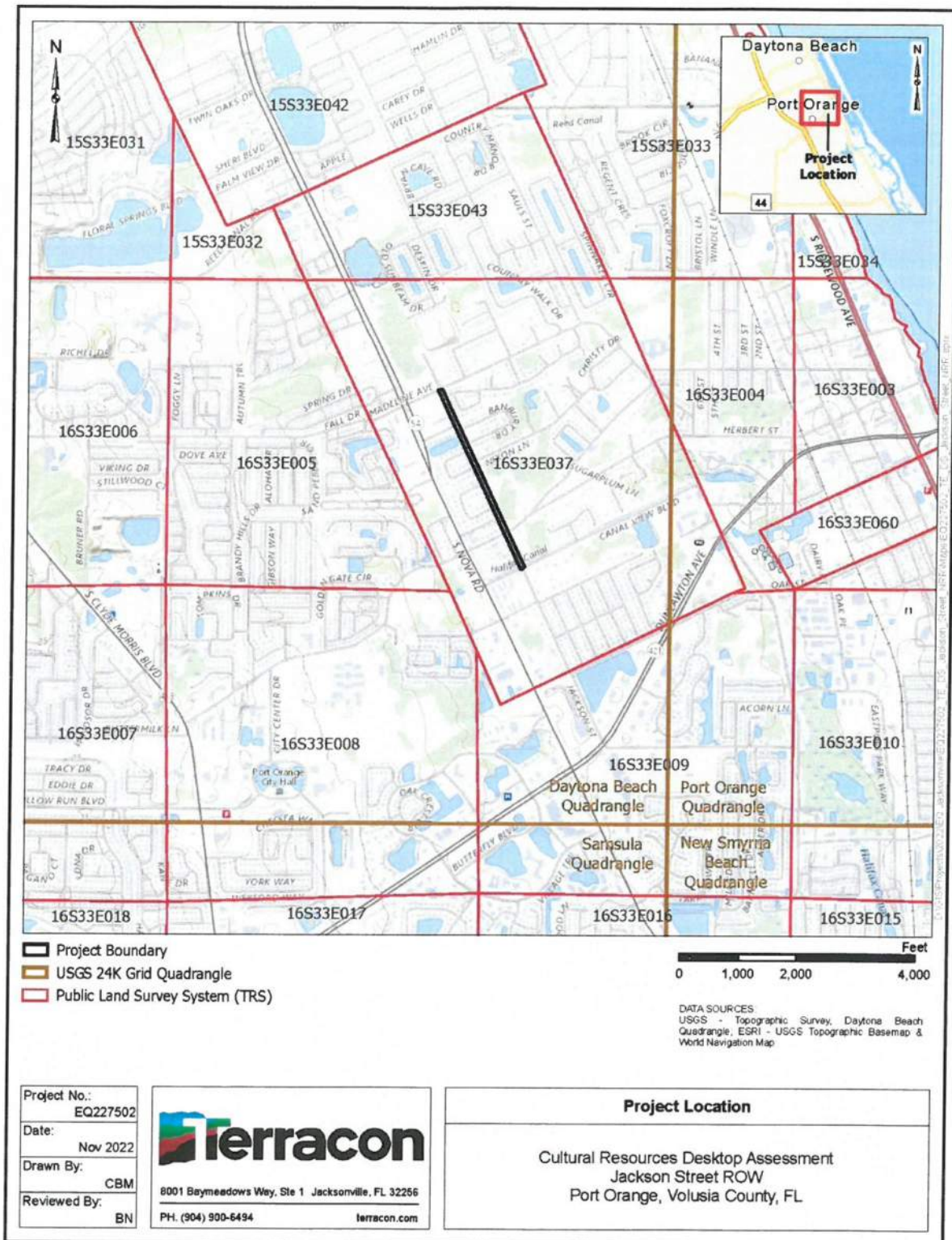


Figure 1. Project Corridor Location.

DESKTOP RESEARCH

Terracon conducted a search of the Florida Master Site File (FMSF) database to determine whether the project area has been previously subjected to cultural resource investigations or whether cultural resources have previously been recorded within the project area. FMSF data indicates that one previous historic properties survey (Survey No. 4449) has been conducted within the project boundary, and no archaeological sites or historic structures were previously documented (**Table 1**).

In 1996, a Historic Properties Survey (Survey No. 4449) was conducted by Historic Property Associates on behalf of the City of Port Orange, covering large sections of Port Orange. This survey covered the project area and consisted of a review of local property records, tax records, subdivision maps, and pedestrian survey. No archaeological investigation was conducted within the project corridor as a result of that survey; however, as a result, 65 new historic resources across Port Orange were recorded.

Expanding the search to include a one-mile radius surrounding the project area indicates seven additional cultural resource surveys (Survey Nos. 1324, 4449, 6038, 18963, 23824, 24003, 24134), 38 previously recorded historic structures, one archaeological site (VO00189), and four resource groups (VO07125, VO07655, VO08606, and VO0790) (**Tables 1, 2, and 3; Figure 2**).

Survey No. 4449 documented 38 historic structures, with two (VO06841, VO06842) located approximately 200 feet northeast of the project area, four located between 0.15 and 0.30 miles northeast of the project area (VO06850 VO06851, VO06837, VO06838), and one adjoining south of the project area (VO06843). None were determined to be eligible for listing in the NRHP.

Survey No. 6038, located approximately 600 feet northeast of the project area, covers the "Sugar Mill Botanical Gardens", a 12-acre park encompassing a portion of a former plantation and sugar mill recorded as the Dunlawton Planation Sugar Mill (VO00189). VO00189 was first identified in a 1966 archaeological survey and was listed in the NRHP in 1973. Survey No. 6038 included shovel testing throughout the park and a review of aboveground resources for the purpose of ongoing preservation.

Table 1. Previously Documented Surveys within a one mile Radius of the Project Corridor.

Survey No.	Report Name	Date	Reference
1324	Port Orange Historical, Architectural and Archaeological Survey	1986	Piatek, Bruce
4449	Historic Properties Survey of Port Orange, Florida: A Study of the Historic Architectural Resources of Port Orange and Recommendations for Their Preservation	1996	Historic Property Associates
6038	Sugar Mill Botanical Gardens Archaeological and Architectural Study Dunlawton Sugar Mill, 8Vo189, Volusia County, Florida	1991	Dickinson, Martin, Shepard Herschel, and Lucy Wayne
18963	Cultural Resource Assessment: State Project No. 79190-1503; The Addition of Two Lanes to S.R. 5A (Nova Road), Except Where It is Presently Six Laned, From U.S. 1 in Port Orange to U.S. 1 in Ormond Beach, Volusia County, Florida	1983	Browning, William

Cultural Resources Desktop

Jackson Street | Volusia County, Florida

November 3, 2022 | Project No. EQ227502



Survey No.	Report Name	Date	Reference
23824	Technical Memorandum Cultural Resource Reconnaissance Survey of the McDonald Road Sidewalk from Sauls Street to 6th Street, City of Port Orange, Volusia County	2017	Armstrong, Karen, Beth Chambliss, and Angela Matusik
24003	Technical Memorandum: Cultural Resource Assessment Survey of the State Road (SR) 421/Dunlawton Avenue Sidewalk Lighting Improvements, Volusia County, Florida	2017	Armstrong, Karen, Beth Chambliss, and Melissa Dye
24134	Phase I Archaeology Survey Letter for Trileaf Corporation Project #609714 (Powers and Dunlawton) Port Orange, Volusia County, Florida	2014	Geidel, Richard and Melissa Walsh

Table 2. Previously Recorded Archaeological Sites within a one mile Radius of the Project Area.

Site ID	Name	Description	Temporal Association	SHPO Eligibility
VO00189	Dunlawton Plantation-Sugar Mill Ruins	Historic Farmstead; Sugar Mill	American, 1900-present; American Acquisition/Territorial Development 1821-1845; British, 1763-1783	NRHP Listed (1973)

Table 3. Previously Recorded Resource Groups within a one mile Radius of the Project Area.

Site ID	Name	Description	Temporal Association	SHPO Eligibility
VO07125	Dunlawton Avenue Historic District	Historic District	Boom Times, 1921-1929; C1885-1941	Not Evaluated
VO07655	Lake Helen to Daytona Rd.	Linear Resource	Modern 1950-present; Nineteenth century American, 1821-1899	Ineligible for NRHP
VO08606	Florida East Coast Railroad	Linear Resource	Boom Times, 1921-1929; Nineteenth century American, 1821-1899	Eligible for NRHP
VO09790		Linear Resource	Boom Times, 1921-1929; Spanish American War, 1898-1916	Ineligible for NRHP

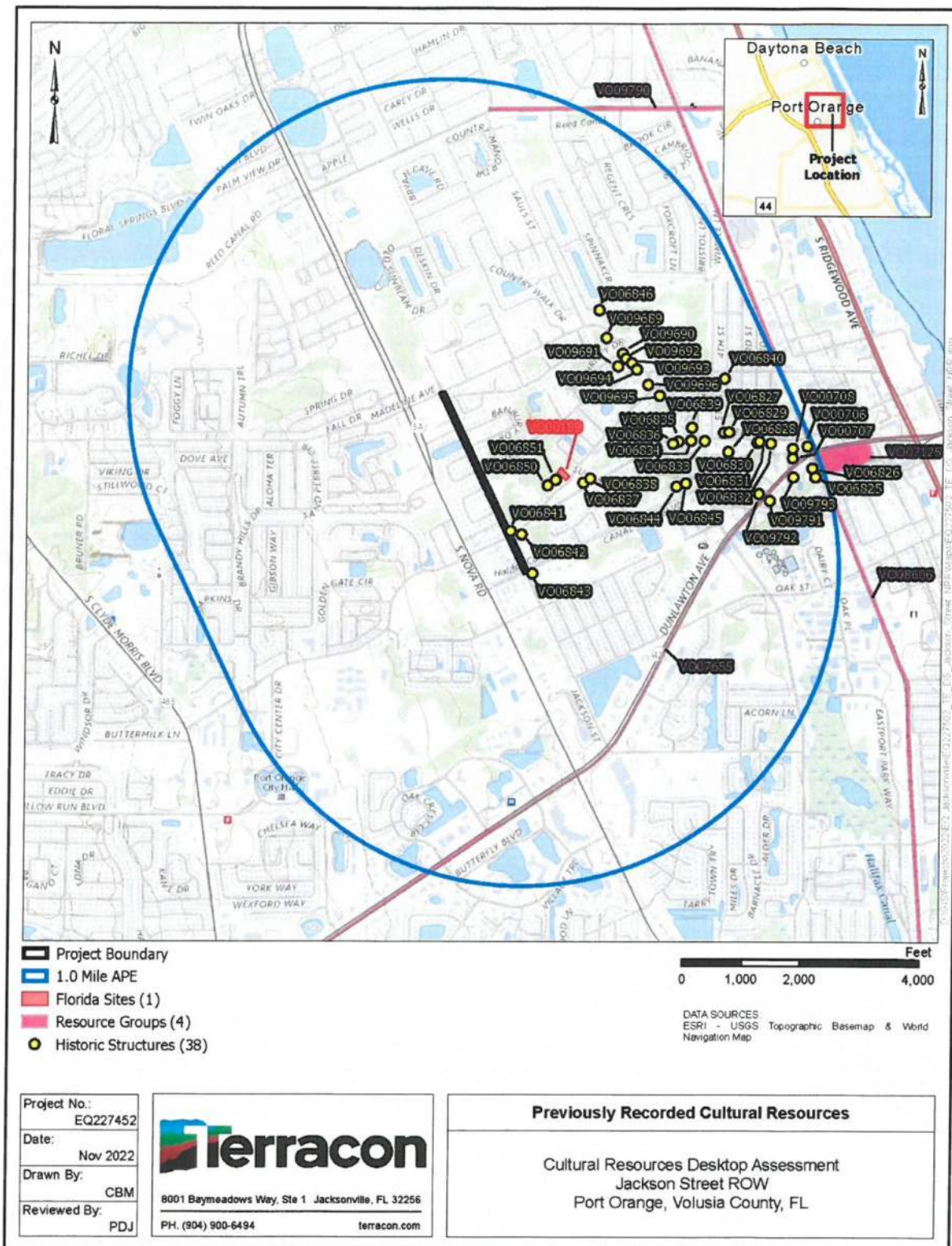


Figure 2. Previous Recorded Cultural Resources within a Mile of the Project Corridor.

Historic period maps and aerial photographs of the project area were examined to gain a better understanding of historical land use and development in the region and to assess the potential for historic period resources within the APE. Maps consulted during this analysis include the 1952 USGS topographic map of Daytona Beach, Florida, 1978 USGS topographical map of Daytona Beach, Florida, and 1952 and 1958 aerial photography of the area (**Figures 3, 4, 5**). The 1952 Daytona Beach (USGS) topographic map indicates there was no road or trail within the Jackson Street ROW, except for a small portion between Herbert Street and Canal View Boulevard. Additionally, it depicts Canal View Boulevard and Madeline Street, and it indicates that Herbert Street was a primary transportation avenue to the coast. Development in the area was sparse, focused primarily along Herbert Street. One structure is depicted within the project area, on the southwest corner of the intersection of Jackson Street at Herbert Street; and two more are depicted on the southwest and southeast corners of Jackson Street and Canal View Boulevard. The 1952 and 1958 aerial photographs (USDA) indicate little change between those years. These photographs indicate the corridor was heavily forested, sparsely populated, and may have had a dirt road or trail oriented along the Jackson Street corridor. The 1978 (USGS) topographic map of Daytona Beach does not depict structures and the image is too grainy to include as a figure; however, it depicts the addition of Jackson Street within the project area.

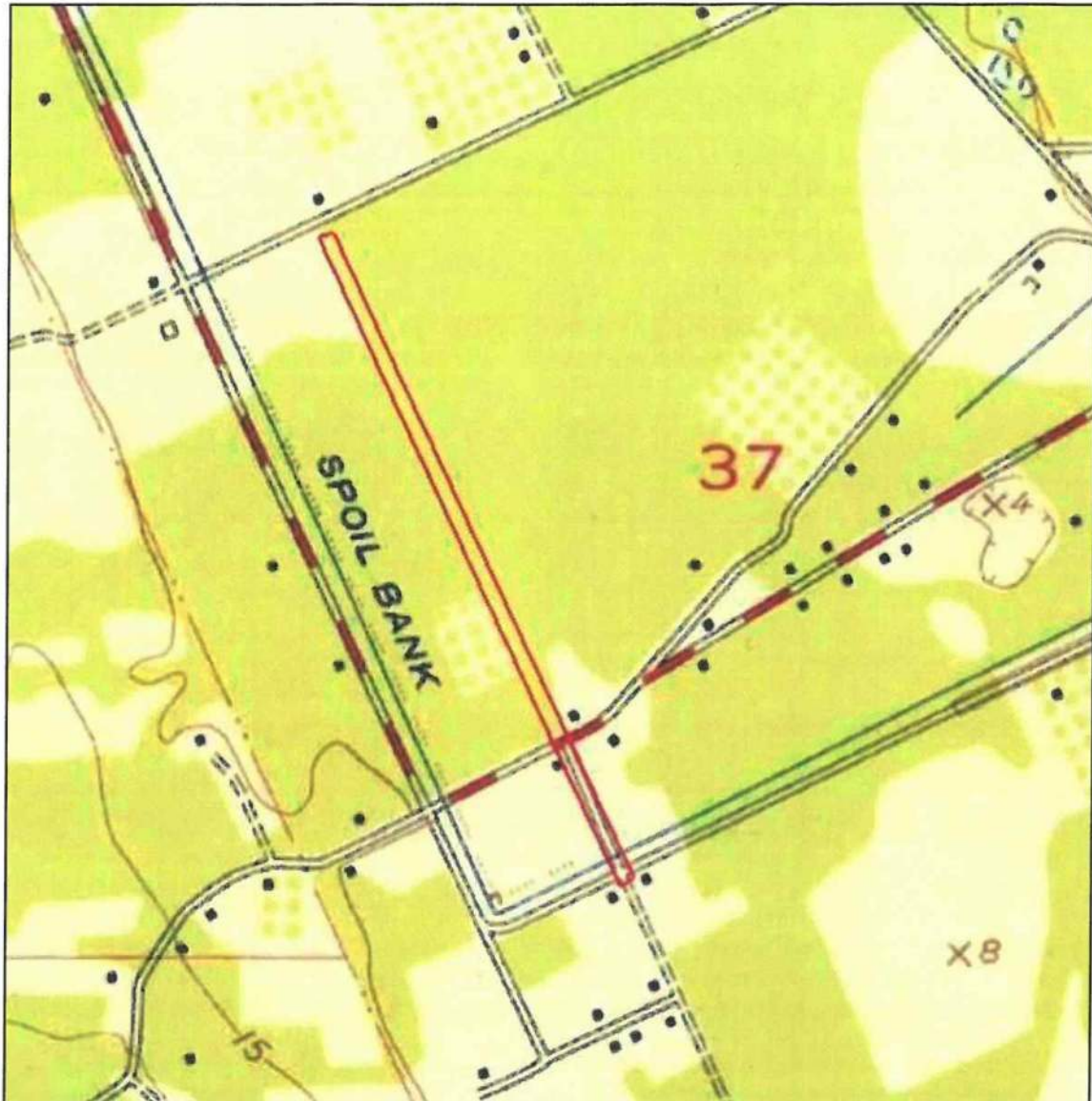


Figure 3. 1952 USGS Topographic Map of Daytona Beach, Florida. Project Corridor Highlighted in Red.



Figure 4. 1952 USDA Aerial Photograph of the Project Corridor, Florida. Yellow Dotted Line Represents the Project Corridor.



Figure 5. 1958 USGS Topographic Map of Daytona Beach, Florida. Yellow Dotted Line Represents the Project Corridor.

SUMMARY

In summary, the project corridor has not been previously subject to archaeological testing. In 1996, Survey No. 4449 identified seven historic structures within one mile of the project corridor, all of which were determined ineligible for the NRHP.

Seven previous cultural resource surveys have been conducted within one mile of the project area. In 1966, a historic archaeological site, the Dunlawton Plantation Sugar Mill, was identified approximately 320 meters northwest of the project area. The Dunlawton Plantation Sugar Mill was listed in the NRHP in 1973. Historic period maps and aerial photography depict the project corridor as partially developed, with Jackson Street paved by 1970. Based on the presence of roadways and modern ditches resulting in disturbed soils throughout the project area, as well as very poor to poor soil drainage within the project corridor, there is a low potential for encountering prehistoric cultural resources within the project corridor; however, due to the presence of historic aged structures within the project corridor, the probability for encountering historic resources is considered high. The FL SHPO is likely to require a Phase I cultural resource assessment survey as part of the permitting process through state and/or federal agencies. Terracon recommends that an Archaeological Reconnaissance Survey of the project corridor supplemented with a Historic Architecture Survey of the project corridor prior to submission of the ERP application.

We appreciate the opportunity to work with you on this project. If you should have any questions or comments or would like a proposal for a Phase I CRAS of the project area, please contact me at Blue.Nelson@Terracon.com or (904) 470-2233.

Sincerely,

Terracon Consultants, Inc.

Brian Brandon

Lukas M. Desjardins
Field Scientist

A handwritten signature in black ink, appearing to read 'B. Nelson', enclosed within a hand-drawn oval.

Blue Nelson, M.A, R.P.A
Archaeology Group Manager

References

Armstrong, Karen, Beth Chambless, and Angela Matusick

- 2017 Technical Memorandum Cultural Resource Reconnaissance Survey of the McDonald Road Sidewalk from Sauls Street to 6th Street, City of Port Orange, Volusia County. Ms. on File, Florida Master Site File, Tallahassee, Survey No. 243824.

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- 1981 *Physiographic Divisions: State of Florida*. Map and Text. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville.

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Historic Property Associates

- 1996 Historic Properties Survey of Port Orange, Florida: A Study of the Historic Architectural Resources of Port Orange and Recommendations for Their Preservation. Ms. on File, Florida Master Site File, Tallahassee, Survey No. 4449.

Piatek, Bruce

- 1986 Port Orange Historical, Architectural and Archaeological Survey. Ms. on File, Florida Master Site File, Tallahassee, Survey No. 1324.

United States Department of Agriculture (USDA)

- 1952 Aerial Photograph of the project area.
1958 Aerial Photograph of the project area.

United States Geological Survey

- 1952 Daytona Beach, FL. USGS Topographic Quadrangle Map.

Cultural Resources Desktop

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1978 Daytona Beach, FL. USGS Topographic Map.

APPENDIX I

FDOT APPROVED INFLATION FACTORS



Inflation Factors

This “*Transportation Costs*” report is issued by the Office of Policy Planning. It provides information on inflation factors and other indices that may be used to convert Present Day Costs (PDC) to future Year Of Expenditure costs (YOE) or vice versa. This report is updated regularly based on the FDOT Work Program Instructions.

Please note that the methodology for inflationary adjustments relating to specific transportation projects should be addressed with the district office where the project will be located. For general use or non-specific areas, the guidelines provided herein may be used for inflationary adjustments.

Construction Cost Inflation Factors

The table on the next page includes the inflation factors and Present Day Cost (PDC) multipliers that are applied to the Department’s Work Program for highway construction costs expressed in Fiscal Year 2022 dollars (FY 2022 runs from July 1, 2021 to June 30, 2022).

Other Transportation Cost Inflation Factors

Other indices may be used to adjust project costs for other transportation modes or non-construction components of costs. Examples are as follows:

The Consumer Price Index (CPI, also retail price index) is a weighted average of prices of a specified set of products and services purchased by wage earners in urban areas. As such, it provides one measure of inflation. The CPI is a fixed quantity price index and a reasonable cost-of-living index.

The Employment Cost Index (ECI) is based on the National Compensation Survey, administered by the Bureau of Labor Statistics (BLS). It measures quarterly changes in compensation costs, which include wages, salaries, and other employer costs for civilian workers (nonfarm private industry and state and local government).

The monthly series, Producer Price Index for Highway and Street Construction, is also available from BLS. It provides national-level estimates of past and recent highway construction inflation. The Producer Price Index (PPI) web site is <http://www.bls.gov/ppi/home.htm>.



FLORIDA DEPARTMENT OF TRANSPORTATION

TRANSPORTATION COSTS REPORTS

Work Program Highway Construction Cost Inflation Factors

Fiscal Year	Inflation Factor	PDC Multiplier
2022	Base	1.000
2023	2.7%	1.027
2024	2.8%	1.056
2025	2.9%	1.086
2026	3.0%	1.119
2027	3.1%	1.154
2028	3.2%	1.191
2029	3.3%	1.230
2030	3.3%	1.270
2031	3.3%	1.312
2032	3.3%	1.356
2033	3.3%	1.400
2034	3.3%	1.447
2035	3.3%	1.494
2036	3.3%	1.544
2037	3.3%	1.595
2038	3.3%	1.647
2039	3.3%	1.702
2040	3.3%	1.758
2041	3.3%	1.816
2042	3.3%	1.876
2043	3.3%	1.938
2044	3.3%	2.002
2045	3.3%	2.068
2046	3.3%	2.136
2047	3.3%	2.206
2048	3.3%	2.279
2049	3.3%	2.354
2050	3.3%	2.432
2051	3.3%	2.512
2052	3.3%	2.595
2053	3.3%	2.681
2054	3.3%	2.769
2055	3.3%	2.861
2056	3.3%	2.955
2057	3.3%	3.053
2058	3.3%	3.153
2059	3.3%	3.257

APPENDIX J

**RESPONSE TO COMMENTS
TECHNICAL MEMORANDUM**



Ref: 11076, TWO 8

TECHNICAL MEMORANDUM

To: Mr. Stephan Harris, Transportation Planner–Project Manager
From: Mr. Chris Walsh, P.E., Ms. Karen O'Neill
Subject: Jackson Street Sidewalk Feasibility Study - Response to Review Comments
Date: January 12, 2023

We have received comments on the Jackson Street Sidewalk Feasibility Study. Comments and their respective responses are provided below. Should you have any questions, please contact Chris Walsh at (386) 753-0558.

Comments from the City of Port Orange – Community Development Department:

(Tim Burman – tburman@port-orange.org / 386-506-5675)

1. Page 10 Right-of-Way: Write-up includes a recommendation for “sufficient title work and survey... completed to confirm the location of the existing R/W or easements on private property”; however, the Cost Estimate provided as Table 1 on Page 22 does not appear to include an estimate of expenditures for these services.
Response: Per discussions on the 12/21/2022 comment coordination meeting, the title work and survey needed to confirm the location of the existing R/W are included in the \$250,000.00 Right-of-way acquisition line item within the Cost estimate.
2. Page 13 Bridge: Preliminary costs for proposed new bridge types are provided; however, estimates are not provided for “other associated costs that would be expected to significantly increase the overall bridge replacement costs” such as roadway rework, MOT, removal of the existing bridge, embankment work, etc.
Response: Please see revised Page 14 where preliminary costs for the new bridge now include roadway work, temporary sheet pile wall, maintenance of traffic, removal of existing bridge, and embankment.
3. The report does not appear to detail recommendations for any “re-alignment” of Jackson Street or provide cost estimates for the removal of center island trees or any new roadwork.
Response: After extensive review of available record plats, it appears that the existing roadway is encroaching private rights-of-way in many areas, mainly on the eastern limits. The feasibility study evaluated leaving the eastern pavement edge as is, to simplify the right-of-way process and the need for additional maintenance mapping by the City. Ultimately, it was decided based on the comment resolution meeting (12/21/2022) to forego any realignment considerations.

Comments from R2CTPO - Transportation:

(Stephan C. Harris, Transportation Planner – Project Manager – sharris@r2ctpo.org / 386-226-0422)

1. General Description – Page 5 spelling correction requested.
Response: The spelling error has been corrected.
2. Bridge Discussion – Page 13 Include other associated costs in New Bridge Preliminary Cost Table.
Response: Please see response to City comment No. 2 above.
3. Floodplain Discussion – Page 19 revise language request.
Response: Floodplain language has been revised as requested.
4. Cost Estimate – The plan sheets depict 17 trees for removal, the cost estimate includes 25 trees for removal. Where are the additional trees from the cost estimate on page 22?
Response: Additional trees were added to the cost estimate to account for trees not depicted on the plans. Please note that this corridor has not yet been surveyed.

5. Plan Sheet 07 – Additional lighting is suggested at the Jackson Street / Moonstone Court Intersection (Sta. 124+60 Lt.).

Response: There is an existing streetlight that was previously labeled to be relocated near Sta. 120+60. We have included a depiction of this relocated utility pole and streetlight near Sta. 125+00 for the new crosswalk.

6. Plan Sheet 09 – Use bold text for hypothetical note in purple.

Response: The purple text has been set to bold and increased in size to bring greater attention to this item.

7. Plan Sheet 09 – All the hypothetical improvements (in purple) should be recommended to the developer to avoid the midblock crosswalk.

Response: Information Acknowledged. A statement was included in the study that the preferred alternative is to maintain the sidewalk on the western side of Jackson from Sweet Gum to Madeline but an alternative is shown on the eastern side in the event the City is unable to work with the development on the west.

8. Plan Sheet 10 – Use bold text for the hypothetical note in purple.

Response: The purple text has been set to bold and increased in size.

9. Plan Sheet 10 – Use bold text for proposed R/W note in purple.

Response: The purple text has been set to bold and increased in size.

10. Plan Sheet 10 – Additional lighting is suggested for the southeast corner of the Jackson Street / Madeline Avenue intersection.

Response: We have added a streetlight near Sta. 139+40 (RT).

Comments from FDOT:

(Sofie Liatsos – District 5 Local Program In-House Consultant Sofie.Liatsos@dot.state.fl.us / 386-943-5242)

1. PDF page 12, ROW Section – The study states “Based on the discussions above, existing ROW could be significantly different from that shown on the Concept Plans”. This poses a risk in the programming of the project phases without knowing our true ROW needs/requirements.

Response: Information acknowledged. As discussed at the comment resolution meeting (12/21/2022) the intent was to convey that while extensive efforts were made to determine the existing ROW, it was not formally surveyed/mapped.

2. PDF page 14 – decorative improvements to the bridge may not be eligible for federal reimbursement. This will be determined during the design phase.

Response: Information Acknowledged. While decorative items were not included in the study, the decorative aspect will be more formally addressed during the design stage.

3. PDF page 15 – Are there any environmental and/or permitting efforts with the bridge replacement?

Response: The bridge will need a permit from SJRWMD. The bridge reconstruction would not be exempt from SJRWMD due to its proposed size, furthermore, the reconstruction of the bridge will impact the surface waters identified by Terracon (the Halifax Canal).

4. PDF page 20 - Several utility pole conflicts are proposed. They are to be relocated to the ROW line however, is there adequate ROW?

Response: The utility poles will need to be relocated within the R/W by the UAOs. The sidewalk can meander around the relocated poles which should be located near the existing R/W.

5. PDF page 21 - Appears there will be flood plain impacts. Can this be confirmed or this another unknown moving into design phase? Can the consultant provide clear direction on what will be anticipated for the encroachment of the flood plain? Should the design phase anticipate flood plain impacts from the consultant's review?

Response: Yes, floodplain impacts are expected but the magnitude will need to be determined during design. As discussed on PDF page 24, there is an area along the east side of Jackson Street from Sta. 133+00 to 138+20 that can host the required compensating storage areas that may be needed.

6. PDF page 24 – Cost estimate includes a line item for “Light Pole By Power Company”. This item will have to be evaluated during the design phase to determine eligibility.

Response: Information Acknowledged.

7. PDF page 24 – The notes at the bottom of the page state “No costs have been included for the bridge replacement as it is recommended to be a separate future project”. On PDF page 25, it states “it is recommended to replace the existing bridge with one of the new bridge options discussed previously...”. Please confirm the intent.

Response: As discussed in the 12/21/2022 comment coordination meeting, the feasibility study has been revised to include the bridge replacement and all associated costs. Per the discussions, the bridge and all related costs are broken out separately within the study to provide the City the option to implement this project in two separate phases (one for the bridge and the other for the balance of sidewalk from just north of the bridge on up to Madeline Avenue).

8. PDF page 34 - 36 – Typical Sections do not include 1' flat areas adjacent to sidewalk. Will any design exceptions be required?

Response: The Florida Greenbook requires a minimum 1' flat area (1:6 max slope) adjacent to sidewalks (chapter 8 Section B.1). Due to the limited R/W, design variations will be needed for the proposed swale adjacent to the sidewalk. These design variations have been included in the Typical Sections.

9. PDF page 35 – Typical Section No. 3 shows a 5' sidewalk adjacent to the curb when greenbook criteria requires 6'. Are any design exceptions required for the proposed 5' sidewalk adjacent to the curb?

Response: A design variation may be needed in this area for the width of the proposed sidewalk. The adjacent landowner has a dry retention pond in very close proximity to the apparent R/W. The width of the proposed sidewalk will need to be determined during design once survey has been obtained. This design variation has been included in the Typical Sections.

10. PDF page 35 – Typical Section No. 3, appears drainage will go on private property. Please review.

Response: As discussed in the 12/21/2022 comment coordination meeting, the sidewalk drainage will be directed to the roadway. The sodded area adjacent to the sidewalk will be directed to the dry retention pond on the adjacent property to minimize the impacts to the existing pond. This will result in a smaller area draining to the existing pond than in existing conditions and no increase of impervious areas draining to the existing pond.

11. PDF page 35 – Typical Section No. 4 is called out to be 40' ROW. The existing roadway width is up to 35'. How does this work without ROW?

Response: As discussed in the 12/21/2022 comment coordination meeting, the existing roadway encroaches private property in this area.

12. PDF Page 38 – Will the drainage improvements proposed impact the roadway? Herbert Street is not on the federal aid system so any work on the roadway will not be eligible for federal reimbursement.

Response: No the drainage improvements will not impact the roadway. Any roadway work identified in the concept, including the bridge replacement, is necessary to accommodate the proposed sidewalk.

13. Pdf page 38 – Note states that the existing drainage system is to be cleared of debris. Just a FYI, this is a maintenance item and will not be reimbursable. I assume the clearing of the drainage system will be handled by the maintaining agency's maintenance crew.

Response: Information Acknowledged.

14. PDF page 38 – Note states “Driveway and private parking area to be reconstructed” at Sta 114+20. Why does the driveway need to be reconstructed? Since it is on public property (I believe to a condo complex), it will not be eligible for federal reimbursement.

Response: The curb and gutter will require a minimum grade of 0.30% and therefore the roadway will need to be reconstructed in this area. Additionally, the construction of the gutter inlet and pipe will require the driveway to be reconstructed. As discussed in the 12/21/2022 comment coordination meeting, the limits of the driveway

reconstruction have been reduced to only include what will be needed. Please note that the actual limits of the driveway reconstruction will need to be determined during design.

15. Pdf page 38 – Is the dark gray area along Jackson Street for milling and resurfacing? Reconstruction?
Milling is not listed in the cost estimate. In addition, Jackson Street is not on the federal aid list therefore, not eligible for federal reimbursement.

Response: As stated in the previous response, the roadway will be reconstructed to provide the necessary grades needed for the proposed curb and gutter to accommodate the proposed sidewalk. Please see the revised sheet 03 Typical Section & Legend, where a legend has been added to clarify the hatches and symbols in the Concept Plans.

16. Please note, Jackson Street and Herbert Street are not on the federal aid list. Pay items listed for roadway work will not be eligible for federal reimbursement unless roadways are added to federal aid list.

Response: Information Acknowledged. Any road work in the feasibility study is to accommodate the new sidewalk and/or the bridge replacement.

17. General Description – Page 5 spelling correction requested.

Response: The Spruce Creek High School spelling error has been corrected.