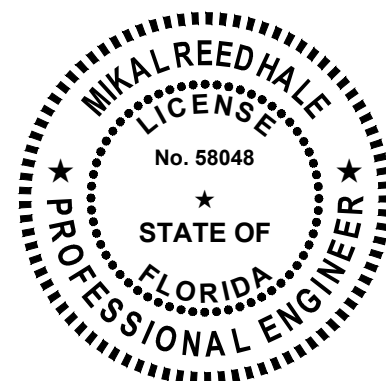


# ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY

Dunlawton Avenue & Nova Road Corridors  
FM 448907-1

City of Port Orange

FINAL Report, February 2021



This item has been digitally signed and sealed by Mikal R. Hale, PE, on the date adjacent to the seal.

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Prepared For:  
River to Sea TPO



Prepared By:  
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*Traffic Engineering Data Solutions, Inc.*

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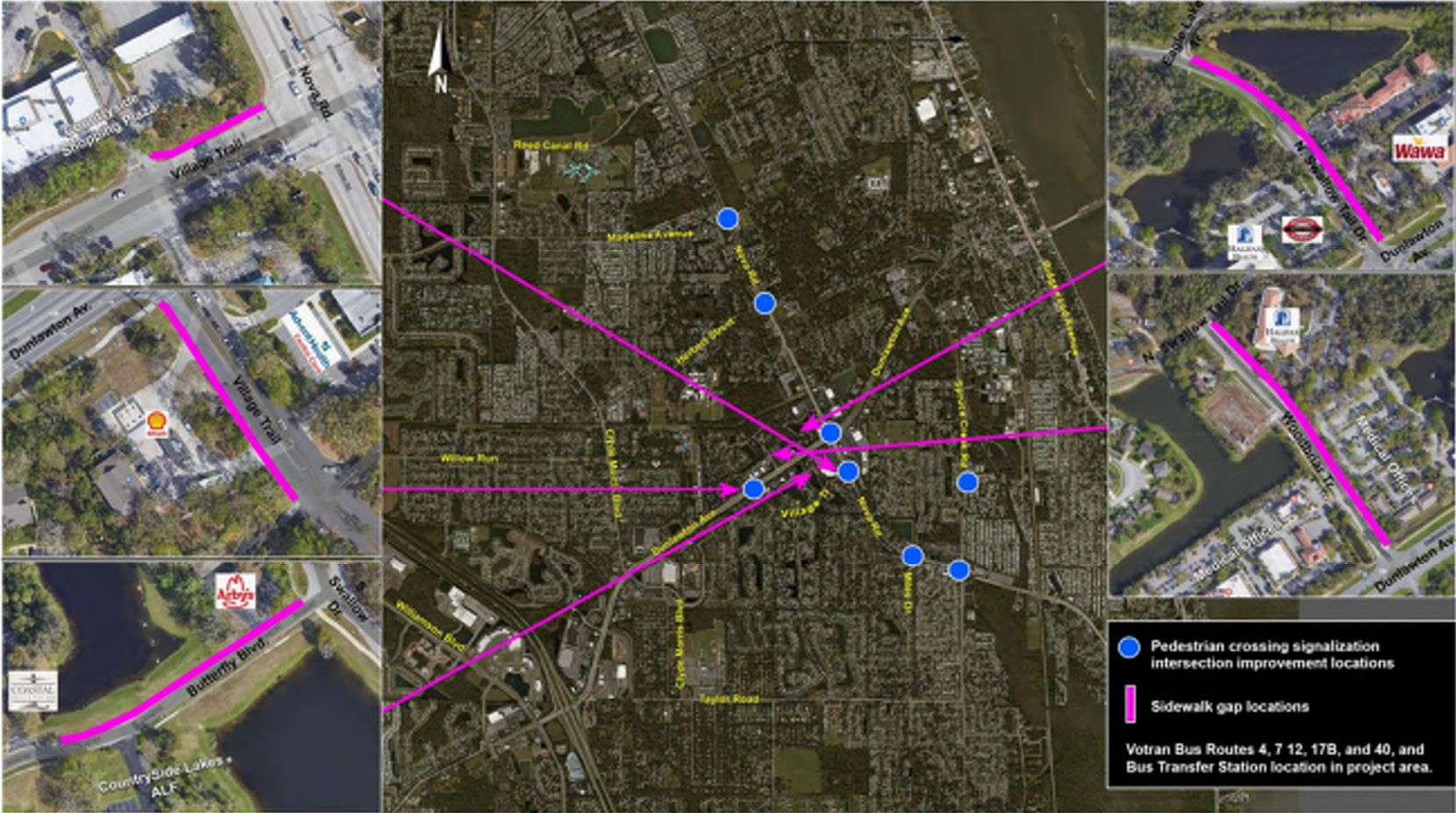
# 1

## INTRODUCTION

As of March 30, 2020, the City of Port Orange (the City) filed a 2020 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 providing Accessible Pedestrian Signals (APS) at eight (8) different intersections and constructing sidewalk facilities to fill in existing gaps at five (5) locations, which are generally shown in **Figure 1**. Improvements requested in the City's application include the installation of APS systems and the construction a new concrete sidewalk where there are existing gaps in the sidewalk facilities. The project purpose and scope for this study are further explained in Section 2.



**Figure 1**  
**Project Location Map**



# 2

## PROJECT PURPOSE AND SCOPE

An initial scoping meeting for this project was held on July 13, 2020 with members of the City, the Florida Department of Transportation (FDOT), and R2CTPO in attendance. As the maintenance authority for Spruce Creek Road right of way, Volusia County (the County) did not attend the meeting.

As noted in the City's application, the purpose of the City's request is to improve the safety for all pedestrians at select intersections along the Dunlawton Avenue (SR 421) and Nova Road (SR 5A) corridors and to promote connectivity of the existing sidewalk network within a few existing gaps, in order to improve pedestrian access to commercial, office, & medical uses within the surrounding areas, as well as VOTRAN bus stops. This project was initiated as a result of the January 2017 Accessible Pedestrian Signal (APS) Action Plan that was prepared by the R2CTPO, but building upon additional input from residents that regularly use pedestrian facilities within the vicinity, the City expanded the project area to include the following thirteen components.

### Existing Signalized Intersections to Receive APS Facilities

- Component #1 (Intersection Improvements) - Nova Road & Village Trail
- Component #2 (Intersection Improvements) - Village Trail & Dunlawton Avenue
- Component #3 (Intersection Improvements) - Nova Road & Dunlawton Avenue
- Component #4 (Intersection Improvements) - Nova Road & Herbert Street
- Component #5 (Intersection Improvements) - Nova Road & Madeline Avenue
- Component #6 (Intersection Improvements) - Nova Road & Spruce Creek Road
- Component #8 (Intersection Improvements) - Commonwealth Boulevard & Spruce Creek Road

### Existing Unsignalized Intersection to Receive Pedestrian Facility Upgrades

- Component #7 (Intersection Improvements) - Nova Road & Miles Drive

### Existing Sidewalk Gaps

- Component #9 (Sidewalk Gap) - West Side of Village Trail, South of Dunlawton Avenue
- Component #10 (Sidewalk Gap) - North Side of Butterfly Boulevard, West of S. Swallow Tail Drive
- Component #11 (Sidewalk Gap) - East Side of N. Swallow Tail Drive, North of Dunlawton Avenue
- Component #12 (Sidewalk Gap) - East Side of Woodbriar Trail, North of Dunlawton Avenue
- Component #13 (Sidewalk Gap) - North Side of Village Trail, West of Nova Road

A base map was assembled with current aerial photography and GIS data available from the County, including 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 and record utility plans provided by the City, FDOT R/W maps, record documents from the St. Johns River Water Management District (SRWMD) for roadway, site plan, & subdivision projects, etc. These items were traced for incorporation of existing elements into the base map, including right of way, buildings, roadways, sidewalks, driveways, curbing, drainage facilities, signs, pavement markings, 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 and APS improvements for development of concept plans and a cost estimate. These include right of way constraints, unusual geometrics, visual obstructions, signing and pavement marking deficiencies, 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, the County, 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 distinct location of each component, since at this time, it is not certain if all components will be included in one (1) single construction project. Component #'s 1 through 7 are located on the State Highway System (SHS), and design should maintain strict adherence to the FDOT Design Manual (FDM) and FDOT Standard Plans, in accordance with Chapter 19 of the Local Agency Program (LAP) Manual. Component #'s 8 through 13 are considered “off-system” projects, located entirely within rights of way maintained by the City and/or County. Within these areas, the conceptual improvements have presently been developed to achieve criteria set forth within the 2018 Manual of Uniform Minimum Standards for Design, Construction and Maintenance (Florida Greenbook), as well as criteria of the local agencies (City & County) and other various publications when not otherwise governed by the Florida Greenbook. If these components are to be constructed within the same bundle projects, they will likely need to be designed in accordance with “on-system” criteria. Considerations were made for replacement of existing curb ramps and/or detectable warnings based on the current requirements of the Americans with Disabilities Act (ADA) to eliminate the associated liabilities from the corridor, especially within Component #'s 1 through 8, where signalized intersections are to be upgraded with APS facilities.

During the initial scoping meeting, the City reported that there are no active Capital Improvement Projects (CIP's) or other development permit projects that would have impact on the proposed improvements. The FDOT does have an on-going lighting retrofit project (FPID 442428-1) which needs to be considered for some of the project component areas, as discussed in further detail in Section 4 below.

Based on all of the research completed and discussions that took place at project coordination meetings, Concept Plans were prepared showing all existing elements and the recommended improvements along with Typical Sections (where applicable), both of which are included in **Appendix B**. Additionally, a cost estimate was prepared for the project, as discussed in Section 5 below and included in **Appendix B**.



# 3

## PROJECT COMPONENTS

This section provides a general description of the characteristics observed within the existing right of way for each project component, in regards to physical conditions, drainage, utilities, etc., as well as a summary of the proposed APS and sidewalk improvements with supporting drainage and utilities adjustments, as depicted in the Concept Plans included in **Appendix B**.

Existing right of way derived from best available sources is denoted “Apparent R/W” within the Concept Plans, which should be confirmed with actual survey in the design phase of these project(s). Below is a summary of the agencies that presently own and maintain the various rights of way within each project component.

### FDOT

- Component #1 (Intersection Improvements) - Nova Road & Village Trail
- Component #2 (Intersection Improvements) - Village Trail & Dunlawton Avenue
- Component #3 (Intersection Improvements) - Nova Road & Dunlawton Avenue
- Component #4 (Intersection Improvements) - Nova Road & Herbert Street
- Component #5 (Intersection Improvements) - Nova Road & Madeline Avenue
- Component #6 (Intersection Improvements) - Nova Road & Spruce Creek Road
- Component #7 (Intersection Improvements) - Nova Road & Miles Drive

### Volusia County \*

- Component #8 (Intersection Improvements) - Commonwealth Boulevard & Spruce Creek Road

*\* Exception - The City of Port Orange is maintenance authority for north leg of Spruce Creek Road.*

### City of Port Orange

- Component #9 (Sidewalk Gap) - West Side of Village Trail, South of Dunlawton Avenue
- Component #10 (Sidewalk Gap) - North Side of Butterfly Boulevard, West of S. Swallow Tail Drive
- Component #11 (Sidewalk Gap) - East Side of N. Swallow Tail Drive, North of Dunlawton Avenue
- Component #12 (Sidewalk Gap) - East Side of Woodbriar Trail, North of Dunlawton Avenue
- Component #13 (Sidewalk Gap) - North Side of Village Trail, West of Nova Road

## Component #1 (Intersection Improvements) - Nova Road & Village Trail

Refer to **Concept Plans - Sheet 11 in Appendix B** for a depiction of existing and proposed improvements, as summarized below.

### General Description

Component #1 of the study entails adding APS facilities to the intersection of Nova Road (SR 5A) and Village Trail. Within this segment, Nova Road (SR 5A) is a four-lane, divided roadway maintained by FDOT, with a 45 mph posted speed and an urban typical section (raised concrete median with curb and gutter on the outside of the roadway). The context classification for Nova Road (SR 5A) is C3C – Suburban Commercial.

Village Trail is a two-lane, undivided roadway maintained by the City with a 30 mph posted speed. At the intersection, Village Trail has a short section of raised median on the west side of Nova Road (SR 5A).

### Pedestrian Signalization, Ramps and Lighting

In existing conditions, there are crosswalks provided at all four (4) legs of the intersection. All crosswalk striping is noted to be standard (not special emphasis). All ramps to the crosswalks are directional in nature (thus, combined ramps are not currently provided on any quadrant of the intersection). Signalized pedestrian features consist of individual pedestrian signal poles with detectors on each ramp and there are no Accessible Pedestrian Signals. Lastly, lighting at the intersection is minimal as lighting is only provided along the east side of Nova Road.

Pedestrian detectors on traffic signal mast arm in the southwest quadrant.



Pedestrian ramps and crosswalks from the southwest quadrant, looking east.



Looking north from the west leg crosswalk.

The location was reviewed for upgrades to the existing pedestrian features to bring them to current ADA standards, to provide APS features. Additionally, existing crosswalk markings were evaluated for upgrades (convert to special emphasis). Lastly, the review looked into providing adequate lighting in accordance with Section 231.2.1 of the FDM. However, lighting at this intersection will be improved in accordance with FDOT's FDM signalized intersection lighting criteria as part of a separate FDOT lighting retrofit project FPID 442428-1 (thus, additional lighting improvements are not anticipated).

The following pedestrian signalization, ramps and lighting improvements are recommended at City Component #1:

- Remove all eight (8) existing pedestrian signals and detectors.
- Provide APS improvements for all eight (8) pedestrian ramps.
- Remove all existing ramps in all four (4) quadrants.
- Construct eight (8) new ADA compliant pedestrian ramps with detectable warning surfaces at all quadrants at the intersection.
- Remove and replace crosswalk markings at all four legs with Special Emphasis crosswalk markings (adjust stop lines as necessary to be a minimum of 4 feet from crosswalks).
- Replace six (6) vehicular detection loops impacted by the crosswalk adjustments.

### Soils

A soils map was prepared through the Web Soil Survey operated by United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS). Refer to the Soils Map for Component #1 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0507J, as last revised September 29, 2017, no portions of Component #1 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Nova Road (SR 5A) is a crowned roadway, with runoff directed towards the outside edges of pavement, but Village Trail is located at a high point in the Nova Road (SR 5A) profile so there are no drainage structures in the vicinity of this intersection. Given that only curb ramp reconstruction is proposed, no drainage improvements are anticipated to be required.

### Utilities

There are overhead electric utilities along the west side of Nova Road (SR 5A). Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains a 6" reclaimed water main along the west side of Nova Road (SR 5A), as well as a 18" potable water main and 6" force main along the east side. Additionally, there is a 6" gas main along the east side. Based on the rather shallow depths of excavation required to construct curb ramps, no major utility adjustments are expected to be required.

## Component #2 (Intersection Improvements) - Village Trail & Dunlawton Avenue

Refer to **Concept Plans - Sheet 1 in Appendix B** for a depiction of existing and proposed improvements, as summarized below.

### General Description

Component #2 of the study entails adding APS facilities to the intersection of Dunlawton Avenue (SR 421) and Village Trail within the City of Port Orange. Dunlawton Avenue (SR 421) is a six-lane, divided roadway maintained by FDOT, with a 50 mph posted speed and a suburban typical section (curbed median and swales on the outside of the roadway). The context classification for Dunlawton Avenue (SR 421) is C3C – Suburban Commercial.

Village Trail is a two-lane, undivided roadway maintained by the City, with a 30 mph posted speed south of Dunlawton Avenue (SR 421) and 25 mph posted speed north of Dunlawton Avenue (SR 421). At the intersection, Village Trail has a short section of raised median on both sides of Dunlawton Avenue.

### Pedestrian Signalization, Ramps and Lighting

There are currently three (3) crosswalks provided at this location across the east, south and north legs. All crosswalk striping is noted to be standard (not special emphasis). All ramps to the crosswalks are directional in nature (thus, combined ramps are not currently provided on any quadrant of the intersection). Signalized pedestrian features consist of individual pedestrian signal poles with detectors on each ramp and there are no Accessible Pedestrian Signals. Lastly, lighting at the intersection is minimal as there is one (1) luminaire on a power pole in the southeast quadrant.







Pedestrian signal pole with detector in the southeast quadrant looking west at the south leg crosswalk.



Pedestrian signal pole with detector in the southwest quadrant.

The location was reviewed for upgrades to the existing pedestrian features to bring them to current ADA standards, to provide APS features. Additionally, existing crosswalk markings were evaluated for upgrades (convert to special emphasis). Lastly, the review looked into providing adequate lighting in accordance with Section 231.2.1 of the FDM.

The following pedestrian signalization, ramps and lighting improvements are recommended at City Component #2:

- Remove all six (6) existing pedestrian signals and detectors.
- Provide APS improvements for all eight (8) pedestrian ramps.
- Remove existing ramps in the northwest, southwest, and southeast quadrants.
- Construct eight (8) new ADA compliant pedestrian ramps with detectable warning surfaces on all quadrants.
- Remove crosswalk markings on the south, north and east legs.
- Install special emphasis crosswalk markings on all four intersection legs (adjust stop lines as necessary to be a minimum 4 feet from the crosswalks).
- Replace six (6) vehicular detection loops impacted by the crosswalk adjustments.
- Provide adequate lighting in accordance with the signalized intersection lighting levels (retrofit) per section 231 of the FDM. This typically requires two (2) luminaires per traffic flow direction; one (1) in front of each crosswalk, and one (1) immediately after each crosswalk. Coordination with the power company will be needed to determine if the lighting will be installed by the power company.

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #2 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0507J, as last revised September 29, 2017, no portions of Component #2 lie within Special Flood Hazard Areas (SFHAs). Some portions of the planning area are located within Zone X (*Other Areas of Flood Hazard with 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth of less than one foot or with drainage areas of less than one square mile*), but proposed work is not expected to result in floodplain impacts requiring compensating storage. Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Dunlawton Avenue (SR 421) is a crowned roadway which directs runoff to existing roadside ditches. Given that only reconstruction of existing sidewalk and landings is proposed, no drainage improvements are anticipated to be required.

### Utilities

There are overhead electric utilities along the south side of Dunlawton Avenue (SR 421). Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains 30" DIP gravity sewer main, a 12" DIP potable water main, and a 6" reclaimed water main along the south side of Dunlawton Avenue (SR 421) at this intersection. The potable water utility contains a 10" PVC branch across the west leg of the intersection, and the reclaimed water utility contains an 18" DIP branch across the east leg of the intersection. Based on the rather shallow depths of excavation required to construct curb ramps, no major utility adjustments are expected to be required.

### Component #3 (Intersection Improvements) - Nova Road & Dunlawton Avenue

Refer to **Concept Plans - Sheet 2 in Appendix B** for a depiction of existing and proposed improvements, as summarized below.

#### General Description

Component #3 of the study entails adding APS facilities to the intersection of Nova Road (SR 5A) and Dunlawton Avenue (SR 421), both of which are maintained by FDOT. Dunlawton Avenue (SR 321) is a six-lane, divided roadway with a suburban typical section (curbed median and swales on the outside of the roadway) west of Nova Road (SR 5A), and a four-lane, divided roadway with a rural typical section (no curbed median and swales on the outside of the roadway) east of Nova Road (SR 5A). Dunlawton Avenue (SR 421) has a 45 mph posted speed, and the context classification is C3C – Suburban Commercial.

Nova Road (SR 5A) is a four-lane, divided roadway with a 45 mph posted speed south of Dunlawton Avenue (SR 421) and a five-lane (inclusive of a center two-way left-turn lane), undivided roadway north of Dunlawton Avenue (SR 421). At the intersection, Nova Road (SR 5A) has a short section of raised median north of Dunlawton Avenue. The context classification for Nova Road is C3C – Suburban Commercial.

#### Pedestrian Signalization, Ramps and Lighting

In existing conditions, there are crosswalks provided at all four (4) legs of the intersection. All crosswalk striping is noted to be standard (not special emphasis) with the exception of the small section of crosswalk across the channelized eastbound right-turn lane on Dunlawton Avenue (SR 421). All ramps to the crosswalks are directional in nature (thus, combined ramps are not currently provided on any quadrant of the intersection). Signalized pedestrian features consist of individual pedestrian signal poles with detectors on each ramp and there are no Accessible Pedestrian Signals. Lastly, lighting at the intersection is minimal as there is one luminaire mounted onto each of the mast arms in the northwest and southeast quadrant and there are continuous light poles provided along the east side of Nova Road, and along the south side of Dunlawton Avenue west of Nova Road and along the north side of Dunlawton Avenue east of Nova Road.



Pedestrian signal pole with detector in the southeast quadrant looking east.



Pedestrian ramps and signal poles with detectors in the northeast quadrant looking east from the north leg crosswalk.



Pedestrian refuge Island with ramps and signal pole with detector in the southwest quadrant looking south.

The location was reviewed for upgrades to the existing pedestrian features to bring them to current ADA standards, to provide Accessible Pedestrian Signal (APS) features. Additionally, existing crosswalk markings were evaluated for upgrades (convert to special emphasis). Lastly, the review looked into providing adequate lighting in accordance with Section 231.2.1 of the FDM. However, lighting at this intersection will be improved in accordance with FDOT's FDM signalized intersection lighting criteria as part of a separate FDOT lighting retrofit project FPID 442428-1 (thus, additional lighting improvements are not anticipated).

The following pedestrian signalization, ramps and lighting improvements are recommended at City Component #3:

- Remove all eight (8) existing pedestrian signals and detectors.
- Provide APS improvements for all eight (8) pedestrian ramps.
- Remove all existing ramps, including the channelizing island in the southwest quadrant of the intersection (the ramp in the southeast quadrant for crossing Dunlawton Avenue

is to remain)

- Construct ADA compliant pedestrian ramps with detectable warning surfaces at all removed ramp locations.
- Remove and replace crosswalk markings at all four (4) legs with Special Emphasis crosswalk markings (adjust stop lines as necessary to be a minimum of 4 feet from crosswalks).
- Replace 10 vehicular detection loops impacted by the crosswalk adjustments.

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #3 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0369J, as last revised September 29, 2017, no portions of Component #3 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Nova Road (SR 5A) and Dunlawton Avenue (SR 421) are crowned roadways. Within the area of proposed improvements, runoff is conveyed to the outside edges of pavement where curb & gutter directs it northerly and southerly to the existing collection systems. Given that only curb ramp reconstruction is proposed, no drainage improvements are anticipated to be required.

### Utilities

There are overhead electric utilities along the south side of Dunlawton Avenue (SR 421) and the west side of Nova Road (SR 5A). Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains a 24" reclaimed water main (in 42" steel casing) across the north leg of the intersection, a 30" DIP gravity sewer main (in 42" steel casing) across the south leg of the intersection, and there is a 6" force main that was previously abandoned in place across the east leg of the intersection. Gas mains and fiber optic lines also run through the intersection near the areas of proposed work. Based on the rather shallow depths of excavation required to construct curb ramps, no major utility adjustments are expected to be required.



#### Component #4 (Intersection Improvements) - Nova Road & Herbert Street

Refer to the **Concept Plans - Sheet 12 in Appendix B** for a depiction of existing and proposed improvements, as summarized below.

##### General Description

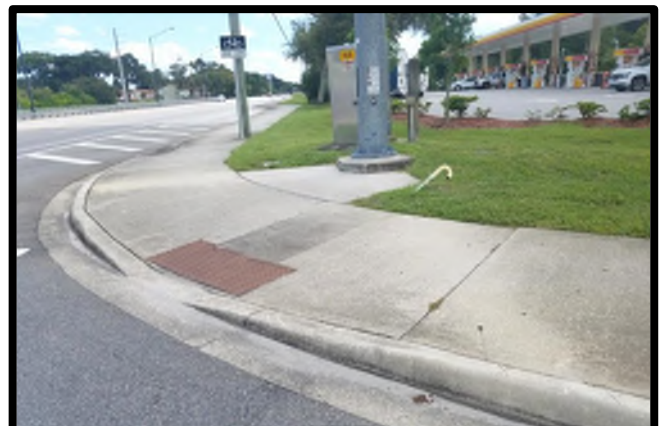
Component #4 of the study entails adding APS facilities to the intersection of Nova Road (SR 5A) and Herbert Street, which are maintained by FDOT and the City, respectively. Nova Road (SR 5A) is a five-lane (inclusive of a center two-way left-turn lane), undivided roadway south of Herbert Street and a seven-lane (inclusive of a center two-way left-turn lane), undivided roadway north of Herbert Street. Nova Road contains an urban typical section (curb and gutter) with a 45 mph posted speed. The context classification for Nova Road (SR 5A) is C3C – Suburban Commercial. Herbert Street is a two-lane, undivided roadway maintained by the City, with a 30 mph posted speed.

##### Pedestrian Signalization, Ramps and Lighting

In existing conditions, there are crosswalks provided at all four (4) legs of the intersection. All crosswalk striping is noted to be special emphasis. All ramps to the crosswalks are directional in nature (thus, combined ramps are not currently provided on any quadrant of the intersection). Signalized pedestrian features consist of individual pedestrian signal poles with detectors on each ramp and there are no Accessible Pedestrian Signals. Lastly, lighting at the intersection is minimal as there is one luminaire on a power pole in the southeast quadrant and there is lighting along the east side of Nova Road south of Herbert Street.



Looking south at the pedestrian ramp, west leg crosswalk, signal heads and detectors in the northwest quadrant.



Pedestrian ramp in the southwest quadrant.



The location was reviewed for upgrades to the existing pedestrian features to bring them to current ADA standards, to provide APS features. Additionally, existing crosswalk markings were evaluated for upgrades (convert to special emphasis). Lastly, the review looked into providing adequate lighting in accordance with Section 231.2.1 of the FDM. However, lighting at this intersection will be improved in accordance with FDOT's FDM signalized intersection lighting criteria as part of a separate FDOT lighting retrofit project FPID 442428-1 (thus, additional lighting improvements are not anticipated).

The following pedestrian signalization, ramps and lighting improvements are recommended at City Component #4:

- Remove all eight (8) existing pedestrian signals and detectors.
- Provide APS improvements for all eight (8) pedestrian ramps.
- Remove all existing ramps in all four (4) quadrants.
- Construct eight (8) new ADA compliant pedestrian ramps with detectable warning surfaces at all quadrants at the intersection.
- Remove and replace crosswalk markings at all four legs with Special Emphasis crosswalk markings (adjust stop lines as necessary to be a minimum of 4 feet from crosswalks).

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #4 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0369J, as last revised September 29, 2017, no portions of Component #4 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Nova Road (SR 5A) and Herbert Street are crowned roadways and runoff is conveyed to the outside edges of pavement for each, where existing curb inlets convey it to the canal in the center of Nova Road (SR 5A). Given that only curb ramp reconstruction is proposed, no drainage improvements are anticipated to be required.

### Utilities

There are overhead electric utilities along the west side of Nova Road (SR 5A) and the south side of Herbert Street. Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains a 12" DIP potable water main on the west side of Nova Road (SR 5A) which runs north south through the intersection, and branches easterly with 12" DIP and westerly with 18" DIP. There are additional existing utilities on the far east side of the Nova Road (SR 421) right of way beyond the ditch, which are not in close proximity to the areas of proposed work. Based on the rather shallow depths of excavation required to construct curb ramps, no major utility adjustments are expected to be required.



## Component #5 (Intersection Improvements) - Nova Road & Madeline Avenue

Refer to **Concept Plans - Sheet 13 in Appendix B** for a depiction of existing and proposed improvements, as summarized below.

### General Description

Component #5 of the study entails adding APS facilities to the intersection of Nova Road (SR 5A) and Madeline Avenue. Nova Road (SR 5A) is a six-lane, divided roadway south of Madeline Avenue, and a five-lane, divided roadway north of Madeline Avenue. Nova Road (SR 5A) contains an urban typical section (curb and gutter) with a 50 mph posted speed. Madeline Avenue is a two-lane, undivided roadway with a 25 mph posted speed west of Nova Road (SR 5A), and a 35 mph posted speed east of Nova Road (SR 5A). The context classification for Nova Road (SR 5A) is C3C – Suburban Commercial.

### Pedestrian Signalization, Ramps and Lighting

In existing conditions, there are crosswalks provided at all four (4) legs of the intersection. All crosswalk striping is noted to be special emphasis. All ramps to the crosswalks are directional in nature (thus, combined ramps are not currently provided on any quadrant of the intersection). Signalized pedestrian features consist of individual pedestrian signal poles with detectors on each ramp and there are no Accessible Pedestrian Signals. Lastly, lighting at the intersection is minimal as there is one luminaire on a power pole in the northwest quadrant.



Looking east at the pedestrian ramp in the median for the north leg crosswalk.



Pedestrian detector in the northeast quadrant.



Looking east at the signal and detectors in the median for the south leg crosswalk.



Looking west at the pedestrian detectors in the southwest quadrant.

The location was reviewed for upgrades to the existing pedestrian features to bring them to current ADA standards, to provide Accessible Pedestrian Signal (APS) features. Additionally, existing crosswalk markings were evaluated for upgrades (convert to special emphasis). Lastly, the review looked into providing adequate lighting in accordance with Section 231.2.1 of the FDM. However, lighting at this intersection will be improved in accordance with FDOT's FDM signalized intersection lighting criteria as part of a separate FDOT lighting retrofit project FPID 442428-1 (thus, additional lighting improvements are not anticipated).

The following pedestrian signalization, ramps and lighting improvements are recommended at City Component #5:

- Remove all 12 existing pedestrian signals and detectors.
- Provide APS improvements for all 12 pedestrian ramps.
- Remove all 12 existing ramps
- Construct ADA compliant pedestrian ramps with detectable warning surfaces at all removed ramp locations.
- Remove and replace crosswalk markings at all four legs with Special Emphasis crosswalk markings (adjust stop lines as necessary to be a minimum of 4 feet from crosswalks).

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #5 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0369J, as last revised September 29, 2017, no portions of Component #5 lie within Special Flood Hazard Areas (SFHAs). Some portions of the planning area are located within Zone X (*Other Areas of Flood Hazard with 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth of less than one foot or with drainage areas of less than one square mile*), but proposed work is not expected to result in floodplain impacts requiring compensating storage. Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Nova Road (SR 5A) and Madeline Avenue are crowned roadways and runoff is conveyed to the outside edges of pavement for each, where existing curb inlets convey it to the canal in the center of Nova Road (SR 5A). Given that only curb ramp reconstruction is proposed, no drainage improvements are anticipated to be required.

### Utilities

There are overhead electric utilities along the west side of Nova Road (SR 5A) and the north side of Madeline Avenue. Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains a 12" VCP gravity sewer within Madeline Avenue that extends into a manhole within the intersection. It appears a 4" force main and 6" force main discharge into this manhole, which is directed southerly along Nova Road (SR 5A) within a 15" gravity main. There is also a 12" DIP potable water main along the west side of Nova Road (SR 5A) that branches westerly along Madeline Avenue. In addition, record plans suggest buried telephone lines run through the intersection in several locations. Based on the rather shallow depths of excavation required to construct curb ramps, no major utility adjustments are expected to be required.

## Component #6 (Intersection Improvements) - Nova Road & Spruce Creek Road

Refer to **Concept Plans - Sheet 9 in Appendix B** for a depiction of existing and proposed improvements, as summarized below.

### General Description

Component #6 of the study entails adding APS facilities to the intersection of Nova Road (SR 5A) and Spruce Creek Road. Nova Road (SR 5A) is a four-lane, divided roadway maintained by FDOT, with an urban typical section (curb and gutter). Nova Road (SR 5A) has a 45 mph posted speed.

Spruce Creek Road is a five-lane (inclusive of a center two-way left-turn lane), undivided roadway maintained by the County, with an urban typical section (curb and gutter) and 45 mph posted speed south of Nova Road (SR 5A), and a two-lane, undivided roadway with a rural typical section (no curb and gutter) and 30 mph posted speed north of Nova Road (SR 5A).

### Pedestrian Signalization, Ramps and Lighting

In existing conditions, there are crosswalks provided at all four (4) legs of the intersection. All crosswalk striping is noted to be standard (not special emphasis) with the exception of the crosswalk striping on the north leg. All ramps to the crosswalks are directional in nature (thus, combined ramps are not currently provided on any quadrant of the intersection). Signalized pedestrian features consist of individual pedestrian signal poles with detectors on each ramp and there are no Accessible Pedestrian Signals. Lastly, lighting at the intersection is minimal as there is lighting along the north side of Nova road and one light pole in the southwest and southeast quadrants.



Looking east from the south leg crosswalk at the detectors and ramps in the southeast quadrant.



Pedestrian signals and detectors in the southwest quadrant.

The location was reviewed for upgrades to the existing pedestrian features to bring them to current ADA standards, to provide APS features. Additionally, existing crosswalk markings were evaluated for upgrades (convert to special emphasis). Lastly, the review looked into providing adequate lighting in accordance with Section 231.2.1 of the FDM. However, lighting at this intersection will be improved in accordance with FDOT's FDM signalized intersection lighting criteria as part of a separate FDOT lighting retrofit project FPID 442428-1 (thus, additional lighting improvements are not anticipated).

The following pedestrian signalization, ramps and lighting improvements are recommended at City Component #6:

- Remove the four (4) existing pedestrian signals and detectors in the southwest and southeast quadrants.
- Provide APS improvements in the southwest and southeast quadrants.
- Remove four (4) existing ramps in the southwest and southeast quadrants
- Construct ADA compliant pedestrian ramps with detectable warning surfaces at all removed ramp locations.
- Remove and replace crosswalk markings on the south, west, and east legs with Special Emphasis crosswalk markings (adjust stop lines as necessary to be a minimum of 4' from crosswalks).

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #6 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0526J, as last revised September 29, 2017, no portions of Component #6 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Nova Road (SR 5A) is a crowned roadway, with runoff directed towards the outside edges of pavement, but Spruce Creek Road is located at a high point in the Nova Road (SR 5A) profile so there are no drainage structures in the vicinity of this intersection. Given that only curb ramp reconstruction and striping is proposed, no drainage improvements are anticipated to be required.

### Utilities

There are overhead electric utilities along the south side of Nova Road (SR 5A) and the east side of Spruce Creek Road. Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains an 18" force main along the west side of Spruce Creek Road, a reclaimed water main down the middle of Nova Road (SR 5A), and a 18" potable water main along the south side of Nova Road (SR 5A) within the eastbound lanes, all of which run through the intersection. There are also miscellaneous fiber optic and underground electric utilities that run through the intersection. Based on the rather shallow depths of excavation required to construct curb ramps, no major utility adjustments are expected to be required.



## Component #7 (Intersection Improvements) - Nova Road & Miles Drive

Refer to **Concept Plans - Sheet 10 in Appendix B** for a depiction of existing and proposed improvements, as summarized below.

### General Description

Component #7 of the study entails adding crosswalks to the intersection of Nova Road (SR 5A) and Miles Drive. Nova Road (SR 5A) is a four-lane, divided roadway maintained by FDOT, with an urban typical section (curb and gutter) and a 45 mph posted speed. The context classification for Nova Road (SR 5A) is C3C – Suburban Commercial.

Miles Drive is a two-lane, undivided roadway maintained by the City, with a 25 mph posted speed.

### Pedestrian Signalization, Ramps and Lighting

There are presently no crosswalks provided at the intersection. Lighting at the intersection is minimal as lighting is currently only provided along the north side of Nova Road.

The location was reviewed for upgrades to the existing pedestrian features to bring them to current ADA standards. The review looked into providing adequate lighting in accordance with Section 231.2.1 of the FDM. However, lighting at this intersection will be improved in accordance with FDOT's FDM signalized intersection lighting criteria as part of a separate FDOT lighting retrofit project FPID 442428-1 (thus, additional lighting improvements are not anticipated).

The following pedestrian ramps and lighting improvements are recommended at City Component #7:

- Construct ADA compliant pedestrian ramps with detectable warnings at existing sidestreet crossings
- Provide new crosswalks across the south and north legs of the intersection

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #7 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0526J, as last revised September 29, 2017, no portions of Component #7 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Nova Road (SR 5A) is a crowned roadway, with runoff directed towards the outside edges of pavement, but Miles Drive is located at a high point in the Nova Road (SR 5A) profile so there are no drainage structures in the vicinity of this intersection. Given that only curb ramp reconstruction and striping is proposed, no drainage improvements are anticipated to be required.

### Utilities

There are overhead electric utilities along the south side of Nova Road (SR 5A), and on the north leg of the intersection, there is an overhead communication utility that runs along the west side of Miles Drive, which contains an existing guy wire within the back of sidewalk. Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains an 18" potable water main that runs along the east side of Nova Road (SR 5A) within the paved shoulder, a reclaimed water main down the middle of Nova Road (SR 5A), and a 6" force main along the south side of Nova Road (SR 5A) which enters the intersection from the east, and then is directed southerly along Miles Drive. There are also miscellaneous gas mains that run through the intersection. Based on the rather shallow depths of excavation required to construct curb ramps, no major utility adjustments are expected to be required.

## Component #8 (Intersection Improvements) - Commonwealth Boulevard & Spruce Creek Road

Refer to **Concept Plans - Sheet 14 in Appendix B** for a depiction of existing and proposed improvements, as summarized below.

### General Description

Component #8 of the study corridor entails adding APS facilities to the intersection of Commonwealth Boulevard and Spruce Creek Road. Commonwealth Boulevard is a two-lane, undivided roadway maintained by the County, with a rural typical section (no curb and gutter) and a 30 mph posted speed.

Spruce Creek Road contains a rural typical section (no curb and gutter) south of Commonwealth Boulevard, and curb and gutter only on the east side north of Commonwealth Boulevard. South of Commonwealth Boulevard, Spruce Creek Road has a 30 mph posted speed and it is maintained by the County. North of Commonwealth Boulevard, Spruce Creek Road has a 35 mph posted speed and it is maintained by the City.

### Pedestrian Signalization, Ramps and Lighting

In existing conditions, there are standard (not special emphasis) crosswalks provided at the north and east legs of the intersection. There are combined ramps currently provided on the northeast quadrant of the intersection. Signalized pedestrian features consist of individual pedestrian signal poles with detectors on each ramp and there are no Accessible Pedestrian Signals. Lastly, lighting at the intersection is minimal as there is one luminaire on a power pole in the northeast quadrant.







The location was reviewed for upgrades to the existing pedestrian features to bring them to current ADA standards, to provide Accessible Pedestrian Signal (APS) features. Additionally, existing crosswalk markings were evaluated for upgrades (convert to special emphasis). Lastly, the review looked into providing adequate lighting in accordance with Section 231.2.1 of the FDM.

The following pedestrian signalization, ramps and lighting improvements are recommended at City Component #8:

- Remove four (4) existing pedestrian signals and detectors.
- Provide APS improvements for all four (4) pedestrian ramps in the southeast, northwest, and northeast quadrants.
- Remove two (2) existing ramps in the northwest and northeast quadrants.
- Construct ADA compliant pedestrian ramps with detectable warning surfaces at all removed ramp locations.
- Remove and replace crosswalk markings on the north and east legs with Special Emphasis crosswalk markings (adjust stop lines as necessary to be a minimum of 4 feet from crosswalks).
- Replace two (2) vehicular detection loops impacted by the crosswalk adjustments.
- Provide adequate lighting in accordance with the signalized intersection lighting levels (retrofit) per section 231 of the FDM. This typically requires two (2) luminaires per traffic flow direction; one (1) in front of each crosswalk, and one (1) immediately after each crosswalk. Coordination with the power company will be needed to determine if the lighting will be installed by the power company.

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #8 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0526J, as last revised September 29, 2017, no portions of Component #8 lie within Special Flood Hazard Areas (SFHAs). The planning area is located entirely within Zone X (*Other Areas of Flood Hazard with 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth of less than one foot or with drainage areas of less than one square mile*), but proposed work is not expected to result in floodplain impacts requiring compensating storage. Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Spruce Creek Road and Commonwealth Boulevard are crowned roadways, and runoff is conveyed to the outside edges of pavement for each. Very shallow swales are present in most areas, though on the north leg of the intersection, existing curb & gutter located on the east side of the roadway directs runoff to an existing curb inlet located approximately 160-feet north of the intersection, which then conveys it northerly. Other than minor profile adjustment for the existing curb return that may be necessary improve drainage, no drainage improvements are anticipated to be required.

### Utilities

There are overhead electric utilities along the west side of Spruce Creek Road and north side of Commonwealth Boulevard. Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains a 18" PVC force main along the west side of Spruce Creek Road, and a water main along the east side, which branches easterly along Commonwealth Boulevard. There are underground gas mains, fiber optic lines, and communication lines that run through the areas of proposed work. There is an existing potable water valve located within the sidewalk on the northeast corner of the intersection. Based on the rather shallow depths of excavation required to construct curb ramps, no major utility adjustments are expected to be required.

## Component #9 (Sidewalk Gap) - West Side of Village Trail, South of Dunlawton Avenue

Refer to **Concept Plans - Sheet 3** and **Typical Section - Sheet 1** in **Appendix B** for a depiction of existing and proposed improvements, as summarized below.

### General Description

Component #9 of the study entails constructing  $\pm 290$  feet of sidewalk where it does not presently exist along the west side of Village Trail, just south of Dunlawton Avenue (SR 421). Within the study area, Village Trail is a four-lane, divided local road maintained by the City, with a posted speed limit of 30 mph. The existing right of way is 100 feet wide. Within this segment, there is Type D curb around the landscaped median, Drop Curb on the east side, and no curbing on the west side.

### Sidewalks, Signing & Pavement Marking

With exception of the gap being addressed in Component #9, Village Trail presently contains 5-foot sidewalks on both sides of the road, however, with existing sidewalk on the west side of the road terminating near station 26+60. The existing Circle K gas station and convenience store is served via a full access driveway near Station 27+00, with no stop bar or stop sign present, as well as an existing right-in driveway near station 28+70.

Below is a summary of the improvements recommended for this location:

- Remove existing concrete sidewalk from station 26+40 (LT) to station 26+80 (LT)
- Construct new Type "F" curb & gutter with adjacent 6-foot sidewalk from station 26+40 (LT) to station 29+20 (LT) (During design, the existing grades along the edge of pavement need to be evaluated to ensure that the construction of curb & gutter will meet the minimum slope requirements of the Florida Green Book.)
- Obtain Right of Entry agreement to reconnect private sidewalk near station 26+60 (LT)
- Provide new crosswalks across both existing driveways
- Relocation existing bus stop signage near station 27+40 (LT)

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #9 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0507J, as last revised September 29, 2017, no portions of Component #9 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Village Trail is a crowned roadway. Existing catch basins on the west side of the road near station 26+50 and station 27+80 collect runoff from the roadway and direct it northerly to the existing ditch on the south side of Dunlawton Avenue (SR 421) through a series of shallow pipes. The existing catch basin near station 27+80 receives discharge from the drainage control structure within the previously permitted dry retention stormwater management facility for Circle K. The City's Stormwater Drainage Supervisor indicates that this portion of Village

Trail floods during heavy rainfall events which spread well into the southbound lane. There is evidence of debris accumulating in the northern driveway, preventing it from entering the stormwater inlets. The addition of curb and gutter may improve this condition and based on the shallow depths of the system, an additional Type 9 inlet has been included in the study to help alleviate some of this issue. However, there may be other factors contributing to the flooding, and therefore, the City requests that the design scope of services provide for the Engineer to further investigate the cause of flooding and provide long term solutions.



Looking south at the existing catch basin  
near station 26+60 (LT)



Looking southwest at the existing catch basin  
near station 27+80 (LT)

Below is a summary of the drainage improvements recommended for this location:

- Construct new Type “F” curb & gutter from station 26+40 (LT) to station 29+20 (LT)
- Remove existing catch basins near station 26+50 (LT) and station 27+80 (LT) and construct new Type 9 curb inlets with J bottoms to receive the existing pipes, such that existing drainage patterns are maintained
- Construct an additional Type 9 curb inlet with J bottom near station 28+40 (LT) to improve intake of runoff from the roadway

### Utilities

Based on field reviews, available utility atlases, as-built surveys, and record plans, there appears to be an underground electric utility along Village Trail near the areas of proposed work, and the City owns and maintains an 8” PVC water main in the same vicinity. Near station 26+50, installation of the proposed storm structure may require minor relocation of the water main and/or adjustment of a nearby existing hydrant valve to finished grade. However, based on the rather shallow depths of excavation required to construct sidewalk, no major utility adjustments are expected to be required.

## Component #10 (Sidewalk Gap) - North Side of Butterfly Boulevard, West of S. Swallow Tail Drive

Refer to **Concept Plans - Sheet 6** and **Typical Section - Sheet 1** in **Appendix B** for a depiction of existing and proposed improvements, as summarized below.

### General Description

Component #10 of the study entails constructing  $\pm 400$  feet of sidewalk where it does not presently exist along the north side of Butterfly Boulevard just west of S. Swallow Tail Drive. Within this segment, Butterfly Boulevard is a two-lane, undivided local road maintained by the City, with a posted speed limit of 30 mph. The existing right of way is 50 feet wide, and there is drop curb present on both sides of the roadway.

### Sidewalks, Signing & Pavement Marking

In existing conditions, Butterfly Boulevard contains 4-foot sidewalks on both sides of the roadway, which return to the roadway at an existing midblock crossing near station 12+75 which contains no crosswalk striping. East of the driveway serving the Country Side Lakes Assisted Living Facility, 5-foot sidewalk has been constructed along the south side of Butterfly Boulevard from station 14+00 to station 17+30 where it connects to the existing 8-foot sidewalk along the west side of S. Swallow Tail Drive. Arby's Fast Food has recently constructed a new 5' sidewalk from the western limits of their lot to the 8-foot sidewalk along S. Swallow Tail Drive within a 12-foot Sidewalk / Public Pedestrian, Drainage & Utility Easement.

Below is a summary of the improvements recommended for this location:

- Remove existing concrete sidewalk from station 15+80 (LT) to station 16+05 (LT)
- Construct a 6-foot wide sidewalk along Butterfly Boulevard from station 12+75 (LT) to station 16+05 (LT) adjacent to the existing right of way
- Add detectable warnings to the existing sidewalk landings at the midblock crosswalk near station 12+75

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #10 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0507J, as last revised September 29, 2017, no portions of Component #10 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Butterfly Boulevard is a crowned roadway with catch basins at a low point near Station 14+45. All runoff from the proposed improvements will be conveyed to previously permitted interconnected wet detention facilities, including Lake No. 6 to the north and Lake No. 8 to the south. No drainage improvements are anticipated to be required.





Looking northwest at the existing catch basin with concrete apron near station 14+40 (LT)



Looking east at the existing midblock crosswalk near station 12+80

### Utilities

There are no overhead electric utilities present along Butterfly Boulevard. Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains a gravity sewer in the middle of the roadway, as well as a potable water main on the south side of the roadway. There is an underground gas main in the areas of proposed work, but based on the rather shallow depths of excavation required to construct sidewalk, no major utility adjustments are expected to be required.

### **Component #11 (Sidewalk Gap) - East Side of N. Swallow Tail Drive, North of Dunlawton Avenue**

Refer to **Concept Plans - Sheets 7 & 8** and **Typical Section - Sheet 2** in **Appendix B** for a depiction of existing and proposed improvements, as summarized below.

#### General Description

Component #11 of the study entails constructing  $\pm 850$  feet of sidewalk where it does not presently exist along the east side of N. Swallow Tail Drive just north of Dunlawton Avenue (SR 421). Within the study area, N. Swallow Tail Drive is local road maintained by the City with a posted speed limit of 25 mph, which transitions from a two-lane, undivided rural section with Environmental Curb on both sides to a four-lane, divided section with Type D curb around the landscaped median and no curbing on the outsides. Within this segment, the existing right of way is 100 feet wide.

#### Sidewalks, Signing & Pavement Marking

In exiting conditions, N. Swallow Tail Drive contains an 8-foot sidewalk on the west side of the road, but no sidewalks are present on the east side. There are two (2) full-access driveways serving commercial properties along the east side of the road. The driveway near station 117+30 contains a stop bar, but no stop sign. The driveway near station 119+20 contains a stop sign, but no stop bar.

Below is a summary of the improvements recommended for this location:

- Construct a 5-foot sidewalk along the east side of N. Swallow Tail Drive from station 113+00 (LT) to station 121+40 (LT) adjacent to the existing right of way where possible and meandering around trees as necessary
- Provide new pedestrian crossing signage at the existing crosswalk near station 113+20
- Obtain Right of Entry agreements to replace stop bar near station 117+30 (LT), and add a stop bar near station 119+20 (LT)
- Provide new crosswalks at both existing driveways
- Provide detectable warnings at commercial driveways, in accordance with FDM 222.3 which requires them at commercial driveways with a stop sign, yield sign, or traffic signal

Looking northwest at the existing roadside swale  
near station 117+40 (LT)



### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #11 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0369J, as last revised September 29, 2017, no portions of Component #11 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

N. Swallow Tail Drive is a crowned roadway with roadside ditches that convey runoff to catch basins located near station 118+00 at a low point in the roadway, which direct it northeasterly towards previously permitted wet detention stormwater facility (Lake 10). Other than minor regrading of the existing roadside ditches to accommodate the proposed sidewalk, no drainage improvements are anticipated to be required.

### Utilities

There are no overhead electric utilities present along N. Swallow Tail Drive. Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains a 10" potable water main that runs along the east side of N. Swallow Tail Drive near the areas of proposed work, along with reclaimed mains and an 8" PVC gravity sewer that cross the roadway in single locations. Based on the rather shallow depths of excavation required to construct sidewalk, no major utility adjustments are expected to be required.



## Component #12 (Sidewalk Gap) - East Side of Woodbriar Trail, North of Dunlawton Avenue

Refer to **Concept Plans - Sheets 4 & 5** and **Typical Section - Sheet 1** in **Appendix B** for a depiction of existing and proposed improvements, as summarized below.

### General Description

Component #12 of the study entails constructing  $\pm 1,100$  feet of sidewalk where it does not presently exist along the east side of N. Woodbriar Trail just north of Dunlawton Avenue (SR 421). Woodbriar Trail is a four-lane, divided local road maintained by the City, with Type D curb around the landscaped medians and no curbing on the outsides. Speed limits are not posted for this roadway. Within this segment, the existing right of way is 100 feet wide.

### Sidewalks, Signing & Pavement Marking

In existing conditions, Woodbriar Trail contains sidewalk on the west side of the road, which is 6-foot in width from station 7+70 (LT) to station 10+20 (LT), and 8-foot in width from station 10+60 (LT) to station 18+60 (LT). No sidewalks are present on the east side of the roadway. There are three (3) commercial driveways on the east side of the roadway near station 10+30 (RT), station 11+40 (RT), and station 14+50 (RT), all of which contain stop bars and stop signs.

Below is a summary of the improvements recommended for this location:

- Construct a 6-foot sidewalk along the east side of Woodbriar Trail from station 7+70 (RT) to station 10+00 (RT) meandering around existing trees and existing drainage structures as necessary to maintain drainage patterns
- Construct a 6-foot sidewalk along the east side of Woodbriar Trail from station 10+40 (RT) to station 11+30 (RT) within the existing right of way
- Remove the existing environmental curb from station 11+60 (RT) to station 18+60 (RT) and construct new Type F curb & gutter at the existing edge of pavement with adjacent 6-foot concrete sidewalk
- Remove and replace existing stop bars and stop signs at all three (3) existing driveways
- Remove and replace existing crosswalk striping near station 14+80 and provide new pedestrian crossing signage
- Obtain Right of Entry agreement to reconstruct existing curb ramp on private property near station 14+80 (RT)

### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #12 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0369J, as last revised September 29, 2017, no portions of Component #12 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

### Drainage

Woodbriar Trail is a crowned roadway with roadside ditches. A series of existing side drains and catch basins on the east side of the road collect runoff from the roadway and direct it southerly to the existing wet detention facility (Lake 82) on the northeast corner of the Dunlawton Avenue (SR 421) intersection.

Below is a summary of the improvements recommended for this location:

- Remove existing MES and concrete flume near station 10+60 (RT) and construct two (2) new manholes with 18" pipe as necessary to fill in existing ditch
- Construct new Type F curb & gutter at the existing edge of pavement from station 11+60 (RT) to station 18+60 (RT)
- Remove existing MES near station 11+75 (RT) and construct new Type 4 curb inlet to receive runoff from existing roadway / proposed curb
- Remove existing catch basin near station 17+80 (RT) and construct new Type 4 curb inlet to receive runoff from existing roadway / proposed curb



Looking north at the existing roadside swale near station 8+40 (RT)



Looking north at the existing roadside swale to be filled in and piped near station 10+40 (RT)

### Utilities

There are no overhead electric utilities present along Woodbriar Trail. Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains an 8" PVC gravity sewer that runs down the middle of Woodbriar Trail, as well as a 10" potable water main that runs along the east side of Woodbriar Trail near the areas of proposed work, both of which cross the roadway in select locations. Based on the rather shallow depths of excavation required to construct sidewalk, no major utility adjustments are expected to be required.

### Component #13 (Sidewalk Gap) - North Side of Village Trail, West of Nova Road

Refer to **Concept Plans - Sheet 11** and **Typical Section - Sheet 3** in **Appendix B** for a depiction of existing and proposed improvements, as summarized below.

#### General Description

Component #13 of the study entails constructing  $\pm 150$  feet of sidewalk where it does not presently exist along the north side of Village Trail just west of Nova Road (SR 5A). Within the study area, Village Trail is a four-lane (inclusive of a left turn lane), divided local road maintained by the City with a posted speed limit of 30 mph. Within this segment, the existing right of way is 100 feet wide. There is Type A curb around the landscaped medians and no curbing on the outsides.

#### Sidewalks, Signing & Pavement Marking

In existing conditions, Village Trail contains existing 6-foot sidewalk on the south side of the road, but no sidewalks are present on the north side of the roadway. There is a commercial driveway on the north side which contains a stop bar and stop sign.

Below is a summary of the improvements recommended for this location:

- Remove approximately 20-feet of existing concrete sidewalk within the Village Trail right of way
- Construct approximately 150 feet of 6-foot sidewalk on the north side within the existing right of way as necessary to maintain existing drainage patterns
- Obtain Right of Entry agreement to remove and replace stop bar and stop sign on private property at existing commercial driveway

#### Soils

A soils map was prepared through the Web Soil Survey operated by USDA NRCS. Refer to the Soils Map for Component #13 included in **Appendix D** for a map of the soil types and hydrological soils groups within the planning area.

#### Floodway / Floodplain

According to FEMA FIRM Panel 12127C0507J, as last revised September 29, 2017, no portions of Component #13 lie within Special Flood Hazard Areas (SFHAs). Refer to the FEMA Map Overlay provided in **Appendix C**.

#### Drainage

Village Trail is a crowned roadway. Presently, runoff from the north side of the road is directed off right of way to dry retention facilities hosted on the adjacent private property. Given the rather short length of the improvement being considered in this project, it is recommended the proposed sidewalk be sloped away from the roadway to maintain existing drainage patterns. No drainage improvements are anticipated to be required.

Looking northeast at the existing roadside retention pond  
Located on private property



### Utilities

There are no overhead electric utilities present along Woodbriar Trail. Based on field reviews and available utility atlases, as-built surveys, and record plans, the City owns and maintains an 8" PVC gravity sewer that runs down the middle of Woodbriar Trail, as well as a 10" potable water main that runs along the east side of Woodbriar Trail near the areas of proposed work, both of which cross the roadway in select locations. Near station 11+20 and station 11+70, the existing water main may need to be relocated behind the allow for installation of proposed storm structures, but based on the rather shallow depths of excavation required to construct sidewalk, no major utility adjustments are expected to be required.



# 4

## ENVIRONMENTAL RESOURCE PERMITTING

Though all of the proposed improvements are located within previously developed areas that were subjected to prior disturbance, an ecological due diligence was performed by Terracon Consultants, Inc. (fka Environmental Services, Inc.) to identify potential impacts to wetlands and threatened and endangered species which would result from the proposed sidewalk improvements included in this study. A copy of their report has been included as **Appendix E**. Additionally, they also conducted a desktop level review to complete Cultural Resources Assessment Survey (CRAS) Determination, with copy of this report included as **Appendix F**. In general, no significant wetland, species, or cultural resource issues are anticipated.

Under provision in FAC 62-330.051, minor roadway safety projects, including reconstruction of curb ramps and sidewalks less than 6' in width, typically qualify for exemption from Environmental Resource Permit (ERP). The caveat is that when proposed improvements occur within previously permitted areas, like they are in the case of the components addressed within this study, the SJRWMD sometimes requires modifications to be completed, which are considered either minor or major pursuant to the thresholds within the ERP Applicant's Handbook Vol. I §6.2.1, and which adds significant complexity to the design process. At this time, it is not certain if all components will be included in one (1) single construction project, or if they will instead be split into multiple projects. Nonetheless, as a first priority, it is recommended an Application for Verification of Exemption be submitted to SJRWMD during the design phase for each bundle(s) of projects that will be included in each intended construction project, as it would significantly streamline the permitting process if SJRWMD were to provide acknowledgement of exemption.

It is noted that in review of SJRWMD files, there are an abundance of existing ERP's which encompass the areas of proposed improvements within their previously permit areas, which is logical and expected given that the improvements proposed in the study area occur at numerous locations that are over 2.0 miles apart. Complicating the issue is that many of the permits of record are very old, and the record documents within are very convoluted. More importantly, in many cases these permit files are lacking copies of the previously approved construction plans and/or drainage calculations.

Below is a brief summary of the primary ERP series underlying the areas of proposed improvements included in this study, and a few points to be considered in the design process.

### Component #'s 1, 3, 4, 5, 6, 7, & 13

ERP Series No. 22818 – Nova Road Improvements – The original permit in this series (22818-1) was issued to FDOT on December 22, 1988 for the surface water management system to serve portions of the six-lane urban roadway (Nova Road) located in Daytona Beach, though ERP 22818-2 was subsequently issued for the portions located from US 1 to Herbert Street. In total, there have been twelve modifications issued subsequent to the original permit. None of the improvements proposed within this study will result in additional impervious area, so if an exemption is not granted, and a permit modification is required, it is anticipated the work will qualify for a minor modification.



**Component #'s 2 & 3**

ERP Series No. 23032 – Nova Road Improvements – The original permit in this series (23032-1) was issued to FDOT on December 8, 1992 for the surface water management system consisting of roadside retention ponds and wet detention ponds to serve widening of Dunlawton Avenue (SR 421). In total, there have been four (4) modifications issued subsequent to the original permit, some of which were processed with the City and County serving as applicant. None of the improvements proposed within this study will result in additional impervious area, so if an exemption is not granted and a permit modification is required, it is anticipated the work will qualify for a minor modification.

**Component #'s 9, 10, 11, 12, & 13**

ERP Series No. 22614 – Countryside PUD - This original permit (22614-1) was issued to Coastline Enterprises, Inc. on July 7, 1985 for the construction of a 192.9 acre combination development single-family, multi-family, commercial, and professional development, including Countryside Units IIIA, IIIB, IIIC, & IIID, Howell Place, the Village Marketplace, the recreation area, and the stormwater management system consisting of swales, culverts, roads, parking lots, storm sewers, 12 wet detention lakes, and their accompanying control structures. There have been thirteen subsequent modifications to this permit series, but it appears the stormwater management facilities are still owned and maintained by the property owner's association established for the Countryside PUD. In the event that modification(s) of this permit series are required, it is noted that the Technical Staff Report (TSR) for the original permit documented maximum impervious percentages for each unit originally included within the master planned Countryside PUD. In addition, a few of the subsequent permit modifications documented proposed impervious areas which did not consume the maximum allowable amounts, which may offset the minor additional impervious areas associated with the proposed sidewalks, such that a minor modification could be obtained, in lieu of a major modification requiring demonstration of discharge rates and peak stages being maintained.

Under all of the circumstances noted above, it is recommended that the design scope of services allow for ample efforts required to comprehensively review the permit history, as necessary to apply for exemption and/or permit modifications.

# 5

## FINANCIAL FEASIBILITY

This section summarizes the preliminary cost estimates prepared for the design and construction of the proposed APS and sidewalk improvements at each of the component locations. As completed in the feasibility study, this estimate is intended to facilitate the R2CTPO and the City of Port Orange with prioritizing the proposed improvements. As such, cost estimates have been completed for each individual component, along with a sum total including all thirteen components, copies of which are provided in **Appendix G**. Adjustment of soft costs and/or unit pay items may be in order if it is later determined which projects will be included in the same construction project(s). It is noted that costs estimated for right of way include services related to coordinating right of entry from adjacent private properties.

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 2039 is also provided within **Appendix G**.

As shown in the summary below, the total cost of the improvements, including engineering and CEI, is estimated at approximately \$2,460,869. Using FDOT inflation factors, the three-year breakdown for cost estimates is provided below:

- Year 1 (2022) cost estimate adjusted for inflation – \$2,805,390
- Year 2 (2023) cost estimate adjusted for inflation – \$2,884,138
- Year 3 (2024) cost estimate adjusted for inflation – \$2,967,807

SUMMARY OF COMPONENT COSTS WITH INFLATION				
COMPONENT	CURRENT YEAR TOTAL PROJECT COSTS	2022 ESTIMATED PROJECT COST	2022 ESTIMATED PROJECT COST	2022 ESTIMATED PROJECT COST
COMPONENT #1	\$ 219,067	\$ 249,736	\$ 256,747	\$ 264,195
COMPONENT #2	\$ 338,452	\$ 385,836	\$ 396,666	\$ 408,174
COMPONENT #3	\$ 256,678	\$ 292,613	\$ 300,826	\$ 309,553
COMPONENT #4	\$ 226,655	\$ 258,387	\$ 265,639	\$ 273,346
COMPONENT #5	\$ 289,760	\$ 330,326	\$ 339,599	\$ 349,451
COMPONENT #6	\$ 180,426	\$ 205,686	\$ 211,459	\$ 217,594
COMPONENT #7	\$ 96,343	\$ 109,832	\$ 112,915	\$ 116,190
COMPONENT #8	\$ 195,271	\$ 222,609	\$ 228,858	\$ 235,497
COMPONENT #9	\$ 126,507	\$ 144,218	\$ 148,266	\$ 152,567
COMPONENT #10	\$ 90,505	\$ 103,176	\$ 106,072	\$ 109,149
COMPONENT #11	\$ 139,880	\$ 159,463	\$ 163,939	\$ 168,695
COMPONENT #12	\$ 223,667	\$ 254,981	\$ 262,138	\$ 269,743
COMPONENT #13	\$ 77,656	\$ 88,528	\$ 91,013	\$ 93,654
<b>TOTAL</b>	<b>\$ 2,460,869</b>	<b>\$ 2,805,390</b>	<b>\$ 2,884,138</b>	<b>\$ 2,967,807</b>

# 6

## CONCLUSION

The purpose of this study was to evaluate the feasibility of retrofitting 7 (7) existing signalized intersections with Accessible Pedestrian Signals, upgrading pedestrian facilities at one (1) unsignalized intersection, and filling in sidewalk gaps at five (5) other locations within the City in order to improve pedestrian safety and access to commercial, office, & medical uses within the surrounding areas, as well as VOTRAN bus stops. With exception of a few areas where Right of Entry agreements are recommended to harmonize existing stop control features and tie-in existing pedestrian features, all proposed improvements can be constructed within the existing rights of way. It is noted that while they recommended, the aforementioned Right of Entry agreements are not critical or absolutely necessary.

The engineering and construction costs associated with these improvements are estimated at approximately \$2,460,869 in 2020. Based on analysis of the data, graphics, concept plans, and cost estimate provided within this report, it is concluded that this project is feasible.

## **APPENDIX A**

# **2020 APPLICATION FOR PROJECT PRIORITIZATIN**



## 2020 Application for Project Prioritization – FEASIBILITY STUDY

# Bicycle/Pedestrian and B/P Local Initiatives Projects

**Project Title:** Accessible Pedestrian Signals and Sidewalk Gaps- Dunlawton and Nova Corridor

**Applying Agency (project sponsor):** City of Port Orange **Date:** 3/30/2020

**Contact Person:** Tim Burman **Job Title:** Director of Community Dev

**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?** \_\_\_\_\_  
[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:**  
Volusia County: Signals; City of Port Orange: Sidewalks

[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

**Project Description:** The project consists of updating intersections along the Dunlawton Avenue and Nova Road corridors to include accessible pedestrian signals and detectors and ADA compliant sidewalks and crosswalk approaches.

**Project Location** (include project length and termini, if appropriate, and attach location map): See Exhibit A -Map for Locations

**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/planning/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 principle 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 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. 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.

The Purpose and Need Statement must address 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 assessed.
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 assessed.
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 assessed.
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 assessed.
5. **Enhancements to the Transportation System:** this measure considers the demonstrated and defensible relationship to surface transportation. A maximum of 10 points will be assessed.
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, 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 assessed.
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.

**Commentary (required):** *The purpose of the City's request is to improve the safety for all pedestrians at intersections along the Nova Road corridor, Nova Road/Dunlawton Avenue intersection node, and the Village Trail/Dunlawton*

Avenue intersection node to provide safe routes and intersection crossings for pedestrians to access commercial, office, medical uses, VOTRAN, and promote connectivity of existing sidewalk network. In 2017, the River to Sea TPO Accessible Pedestrian Signal (APS) Action Plan identified 3 intersections in Port Orange that warrant accessible types of pedestrian signals and detectors (Exhibit B). With input from residents that use the Nova Road corridor, staff has identified additional intersections and sidewalk gaps within the medical use node on Dunlawton Avenue where pedestrian improvements are needed to improve the safety at existing intersection crossings and complete the sidewalk network.

The intersections and sidewalk gaps included in this request include the following intersections (See Exhibit A):

1. Nova Road and Village Trail
2. Village Trail and Dunlawton Avenue
3. Nova Road and Dunlawton Avenue
4. Nova Road and Herbert Street
5. Nova Road and Madeline Avenue
6. Nova Road and Spruce Creek Road
7. Nova Road and Miles Drive
8. Commonwealth Avenue and Spruce Creek Road
9. 275' sidewalk gap segment on the west side of Village Trail, south of Dunlawton Avenue.
10. 400' sidewalk gap segment on the north side of Butterfly Boulevard, west of N. Swallow Trail
11. 850' sidewalk gap segment on the east side of N. Swallow Trail, north of Dunlawton Avenue
12. 1,100 sidewalk gap segment on the east side of Woodbriar Trail, north of Dunlawton Avenue
13. 115' sidewalk gap segment on the north side of Village Trail, west of Nova Road

The intersections and sidewalk gaps included in this request serve two of the City's main roadway corridors that include commercial, office, medical uses, and VOTRAN stops. Improving these intersections and completing sidewalk gaps will make these areas accessible for all pedestrians and will increase the use and safety of the existing sidewalk network. As shown on the map, there are a significant number of residential areas, commercial uses, and VOTRAN stops located within the 1-mile radius of these intersections and gaps. In addition to intersection improvements for pedestrians and sidewalk gaps, the City request the VOTRAN bus benches in proximity to the sidewalk gaps and intersection list above be evaluate to determine what is required to bring the stops into compliance with ADA.

There is an existing sidewalk network in place along Nova Road and the intersection of Dunlawton Avenue and Nova Road and Dunlawton Avenue and Village Trail. This project is to improve the sidewalk network as it relates to connectivity and improve the safety at the intersections listed above to allow all pedestrians, including the visually and hearing impaired and disabled, safe use of the sidewalk network in the project area.

The 2017 Accessible Pedestrian Signal Study by the TPO (Exhibit B) the current pedestrian signals at the intersections at Nova Road and Village Trail, Village Trail and Dunlawton Avenue, and Nova Road and Dunlawton Avenue are not sufficient to serve sight-impaired citizens warrant accessible types of pedestrian signals and detectors. The primary technique that pedestrians who have visual disabilities use to cross these streets at signalized locations is to initiate their crossing when they hear the traffic in front of them stop and the traffic alongside them begin to move, which often corresponds to the onset of the "green" interval. Accessible pedestrian signals and detectors which provide information

in non-visual formats – such as audible tones, speech messages, and/or vibratory surfaces – provide a safer environment for all pedestrians.

City staff also spoke to Matt Roberts, a visually-impaired citizen, who has previously provided input at City Council meetings on this subject. Mr. Roberts indicated a need to upgrade the crossings at the intersections of Nova Road at Herbert Street, Madeline Avenue, Spruce Creek Road, and Miles Drive and Commonwealth Avenue and Spruce Creek Road as these intersections serve the current VOTRAN bus routes (Routes 12, 7, 4, 40, and Transfer Station) and the improvement of safer crosswalks would be extremely beneficial to all citizens, specifically the ADA community. City staff agrees with the findings in the 2017 report and input from residents that improving the safety of these crosswalks would benefit all citizens.

The specific sidewalk segments have been selected by City staff as high-priority due to their location near medical uses, existing pedestrian patterns, enhancement of safety, and to ultimately address the existing sidewalk gap issue within the existing pedestrian network. It is anticipated that sidewalk approaches at these intersections may need to be modified to accommodate improvements.

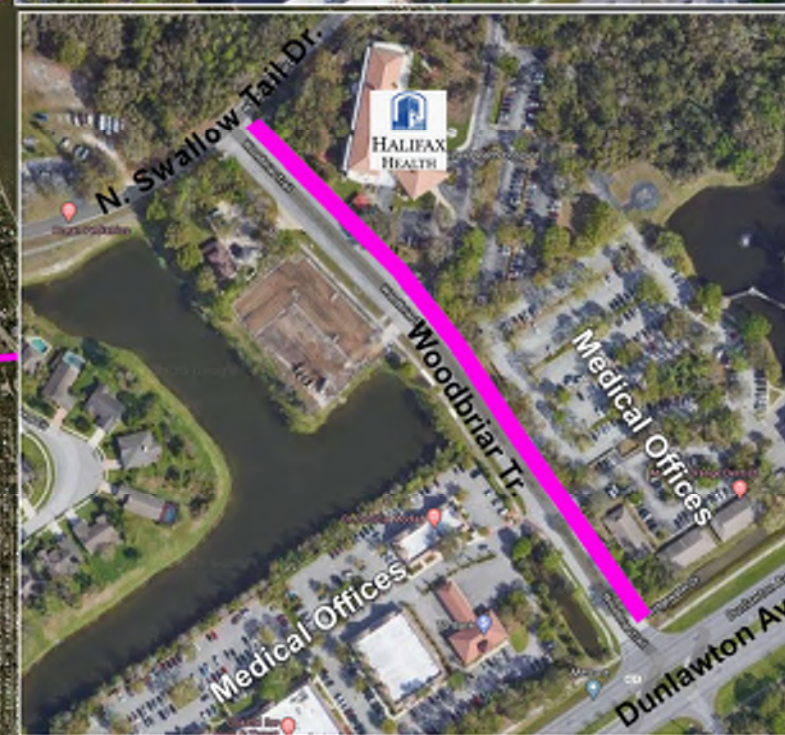
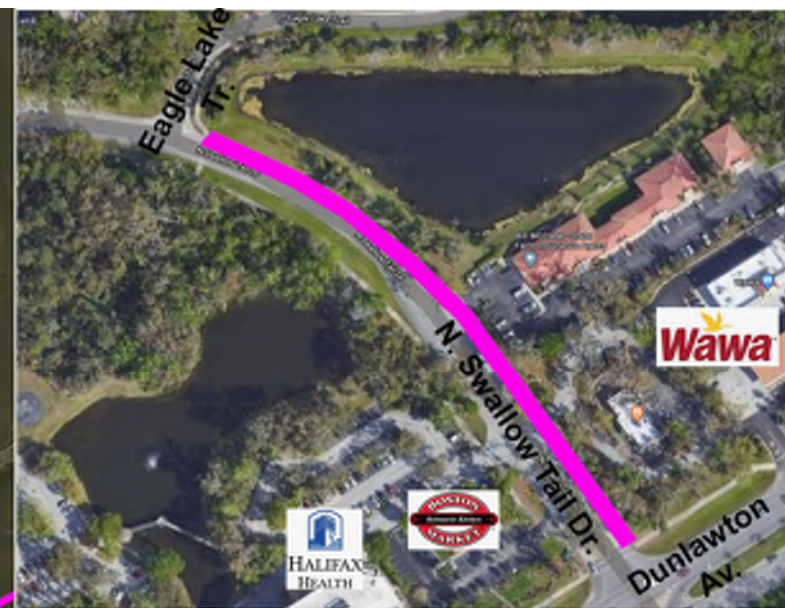
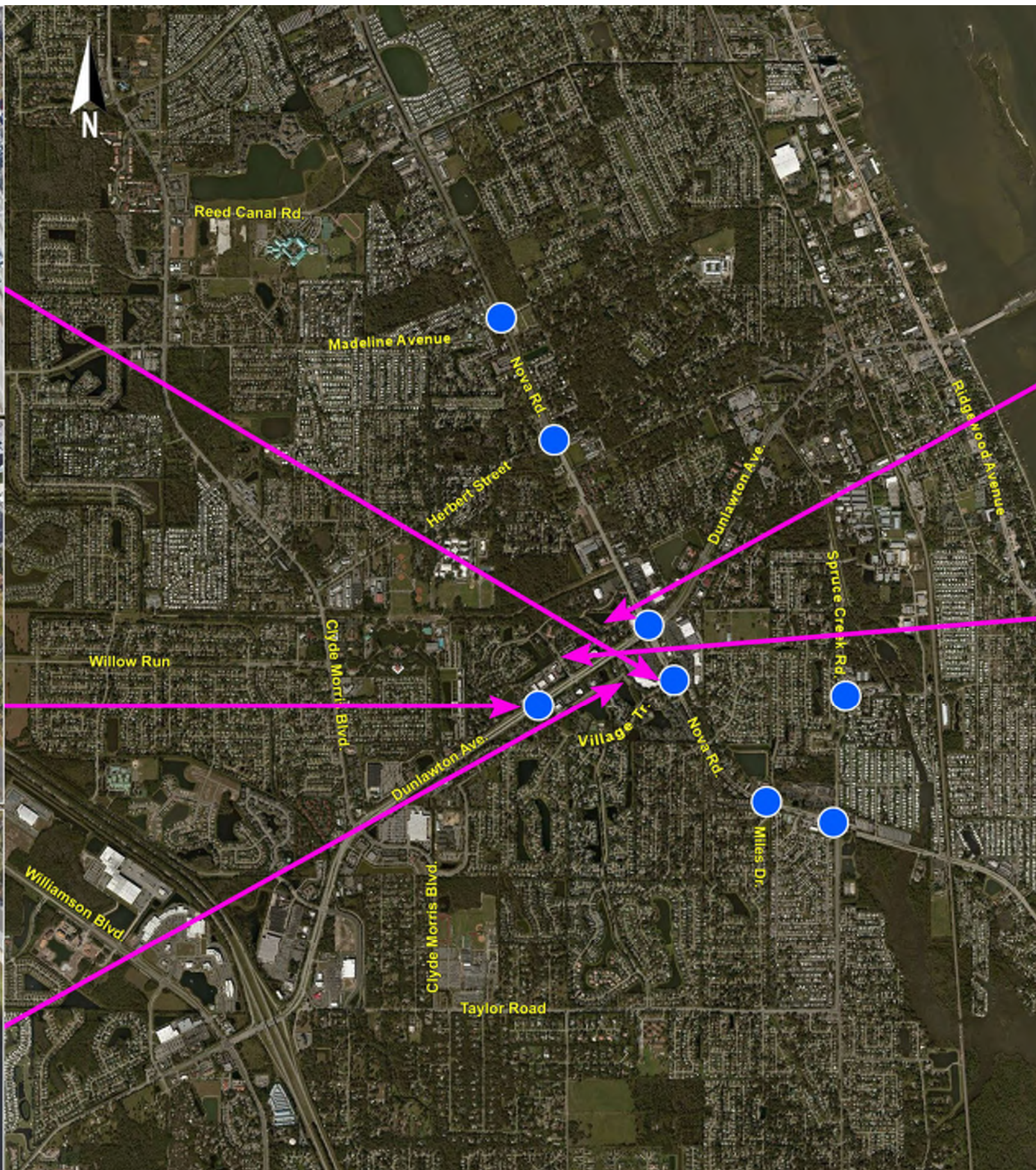
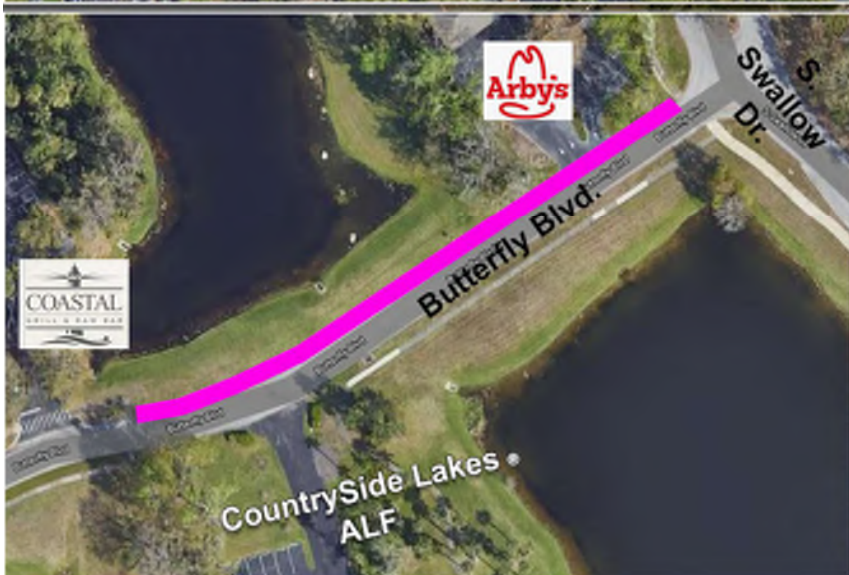
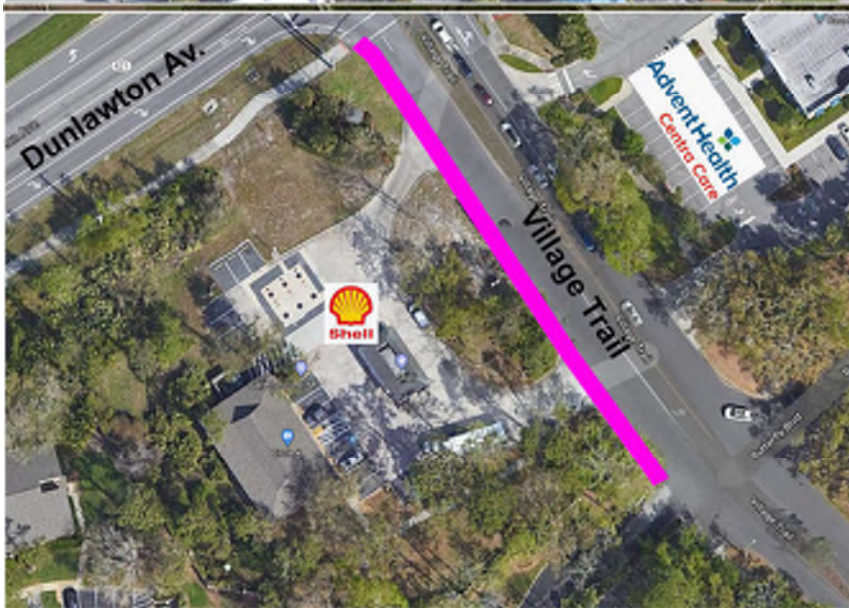
The improvements (ADA, approach, lighting, and audible) to the existing pedestrian crosswalks at the intersections identified along with the sidewalk gaps will facilitate greater mobility to medical, commercial (grocery, pharmacy, and food), residential uses and VOTRAN within this portion of the City and improve pedestrian safety for all the crosswalks at key intersection.

In March of 2020, the City of Port Orange City Council approved the submittal of this application to request a Feasibility Study to improve the safety for all pedestrians at intersections listed in this request and complete as many of the sidewalk gaps in the Dunlawton Avenue/Nova Road and Dunlawton Avenue/Village Trail intersection nodes. As part of the 2019 proposed ½ cent sales tax public information meetings held by the City there were comments and discussions about the need for improvement to the sidewalk network, specially intersection crosswalks for the visual impaired and completion of sidewalk gaps in this general area to access medical uses, commercial centers, and Votran .

At this time, the City is requesting to provide a local match of 10% of the project design, construction, and CEI costs. It is anticipated that the updating of the intersections identified in the application will include audible pedestrian signals and detectors (audible tones, speech messages, and/or vibrating surfaces), ADA compliant sidewalks, crosswalk approaches, lighting and ADA sidewalk approaches to nearby bus stops. Completion of these improvements are to provide safer travel across intersections by all pedestrians, especially the sight-impaired in the area, who have voiced requests to the City for these improvements for some time.

The proposed improvements are anticipated to be constructed within existing right-of-way and additional right-of-way is not anticipated to be required for this project. Pedestrian improvements (ADA, approach, lighting, and audible) to the intersections along the Dunlawton Avenue and Nova Road corridor are also necessary as these roadways experience a significant amount of vehicular traffic traveling to/from single-family development, retail and medical businesses, employment centers, and schools. Completing the sidewalk gaps will further expand the roadway network to allow alternative travel paths and reduce crossing of local roads at unmarked intersections (Exhibit C).



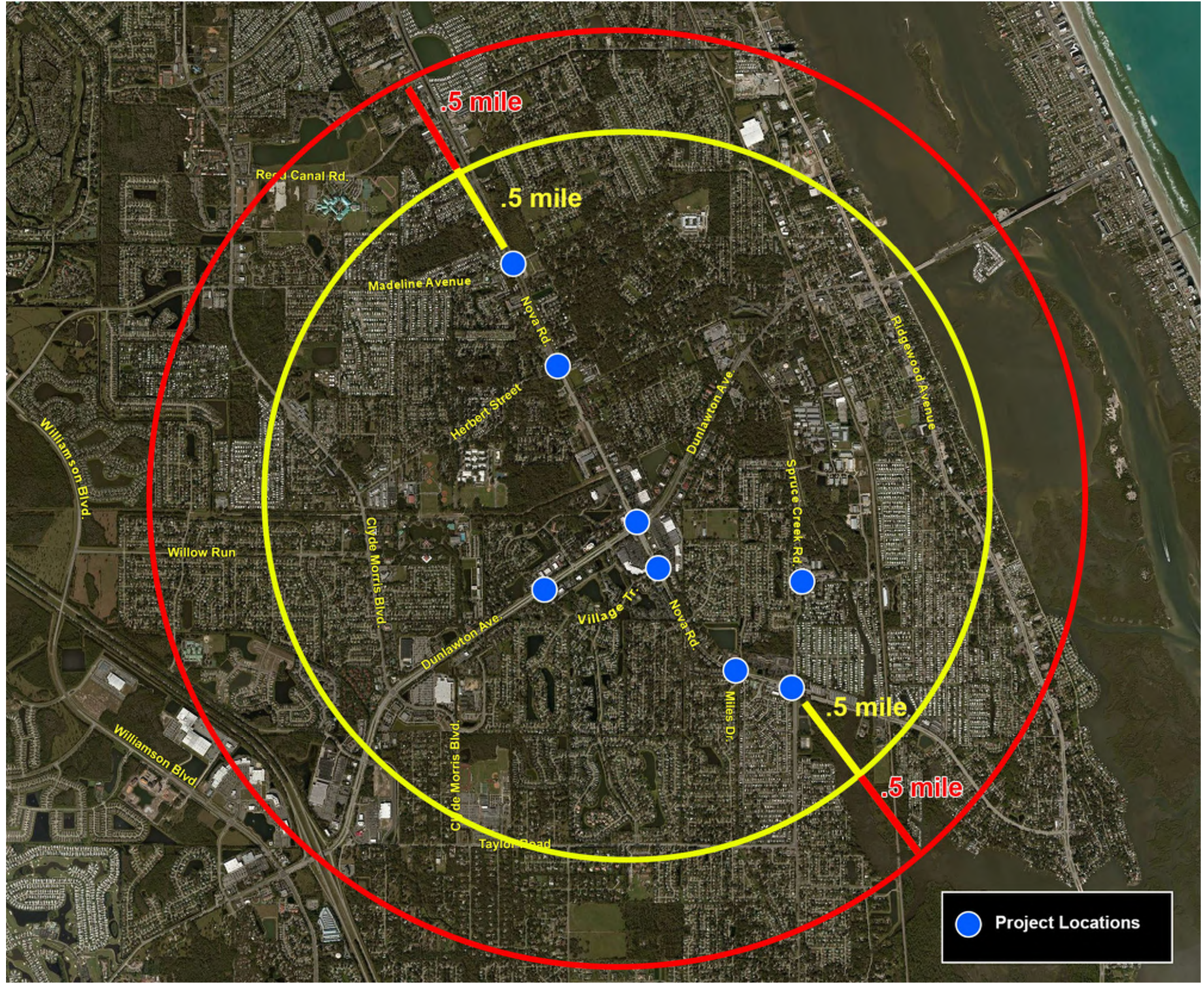


 Pedestrian crossing signalization intersection improvement locations

 Sidewalk gap locations

Votran Bus Routes 4, 7 12, 17B, and 40, and Bus Transfer Station location in project area.

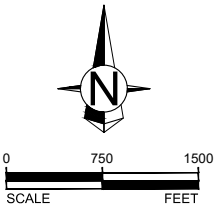
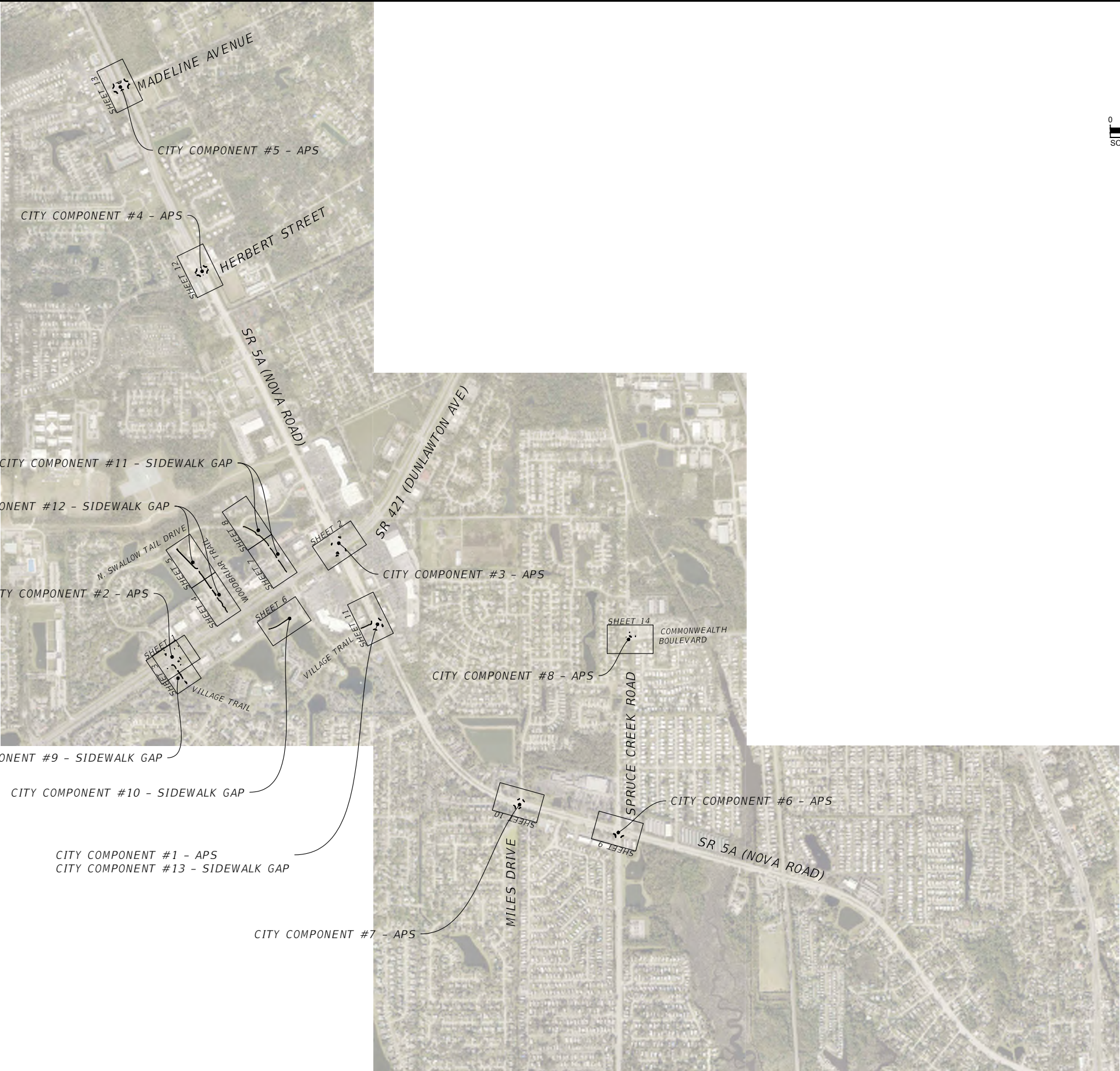






**APPENDIX B**

**PROJECT LAYOUT  
CONCEPT PLANS  
&  
TYPICAL SECTIONS**



REVISIONS	
DATE	DESCRIPTION



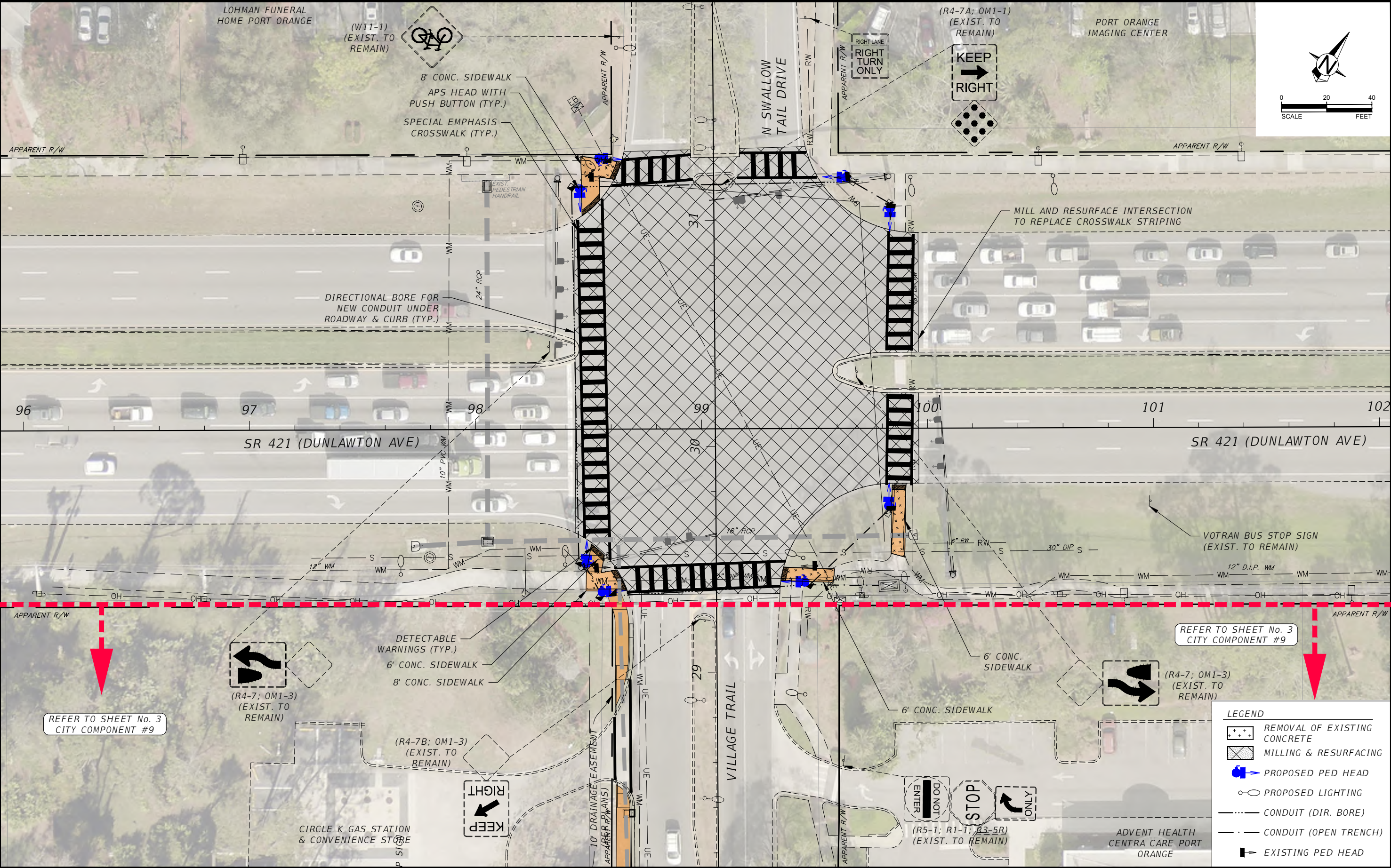
TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
Phone 386.753.0558 80 Spring Vista Drive  
Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

PROJECT LAYOUT	
A	

SHEET NO.
A



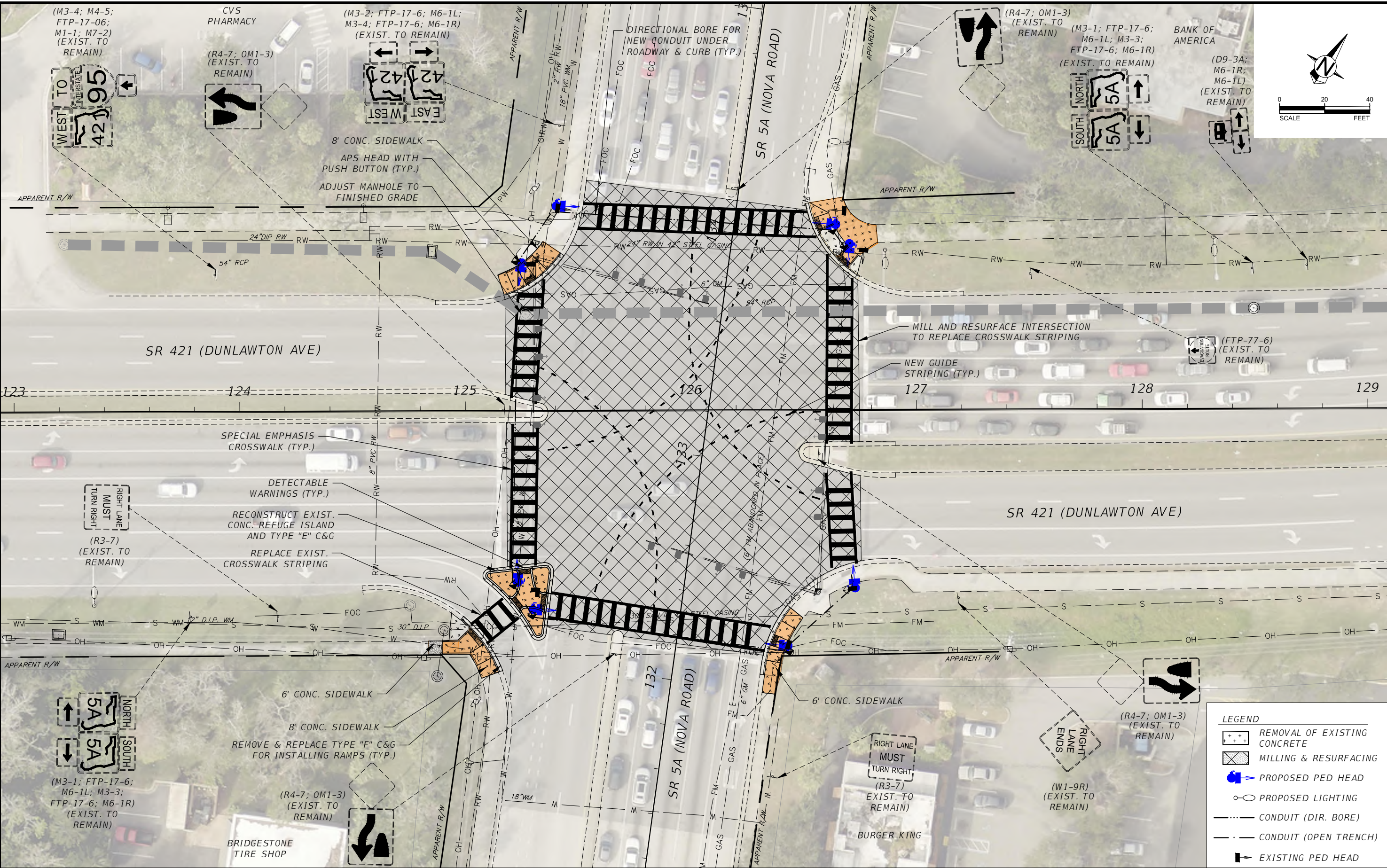


REVISIONS		ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY			CONCEPT PLAN INTERSECTION IMPROVEMENTS VILLAGE TRAIL & DUNLAWTON AVE CITY COMPONENT #2	SHEET NO.  1
DATE	DESCRIPTION					
		ROAD NO. COUNTY FINANCIAL PROJECT ID				
		.. VOLUSIA 448907-1				



**TEDS**  
TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
Phone 386.753.0558 80 Spring Vista Drive  
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CERTIFICATE OF AUTHORIZATION NO. 27392





REVISIONS	
DATE	DESCRIPTION



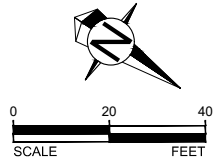
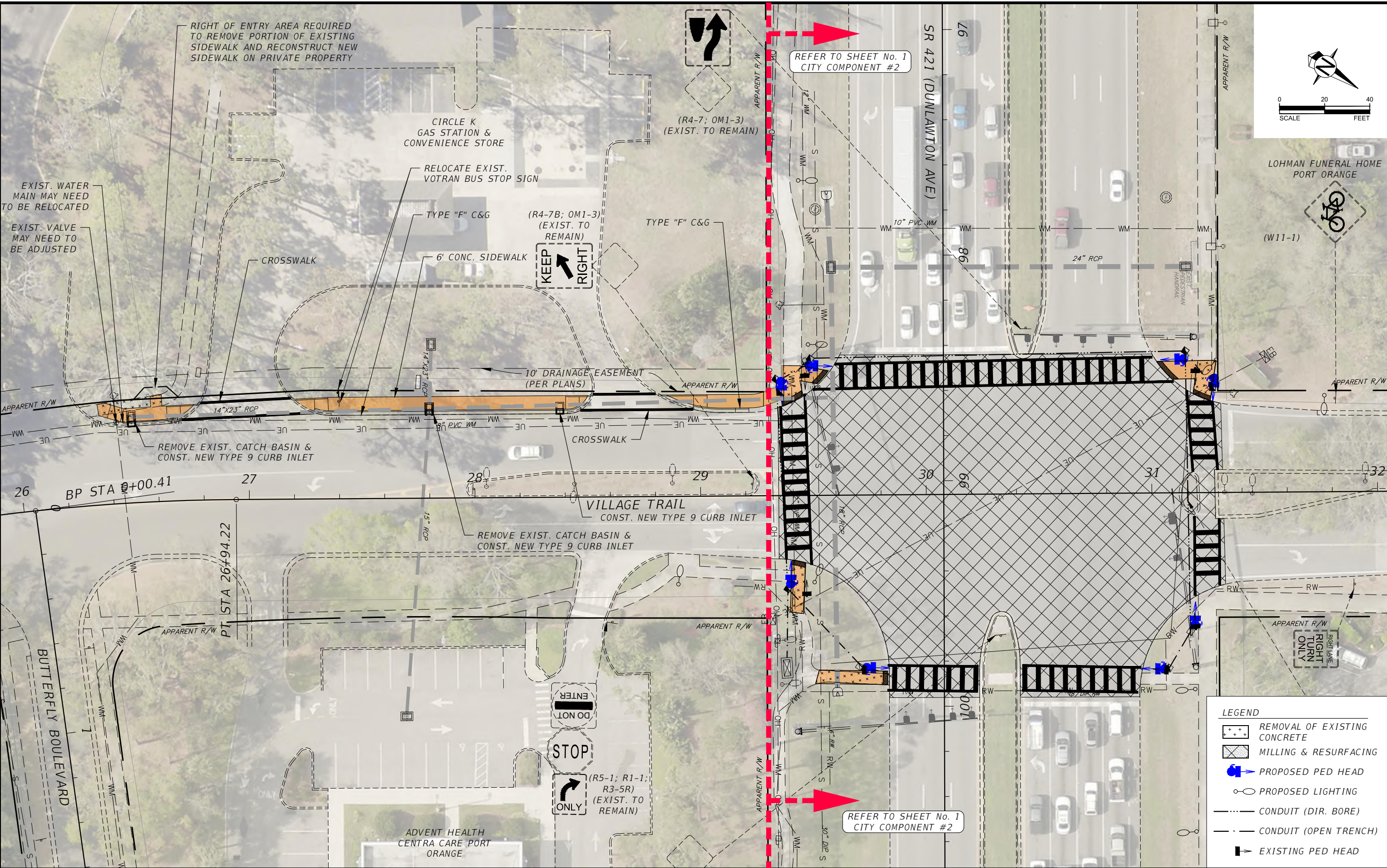
TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
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ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

CONCEPT PLAN  
INTERSECTION IMPROVEMENTS  
NOVA RD & DUNLAWTON AVE  
CITY COMPONENT #3

SHEET NO.
2





LEGEND	
	REMOVAL OF EXISTING CONCRETE
	MILLING & RESURFACING
	PROPOSED PED HEAD
	PROPOSED LIGHTING
	CONDUIT (DIR. BORE)
	CONDUIT (OPEN TRENCH)
	EXISTING PED HEAD

REVISIONS	
DATE	DESCRIPTION



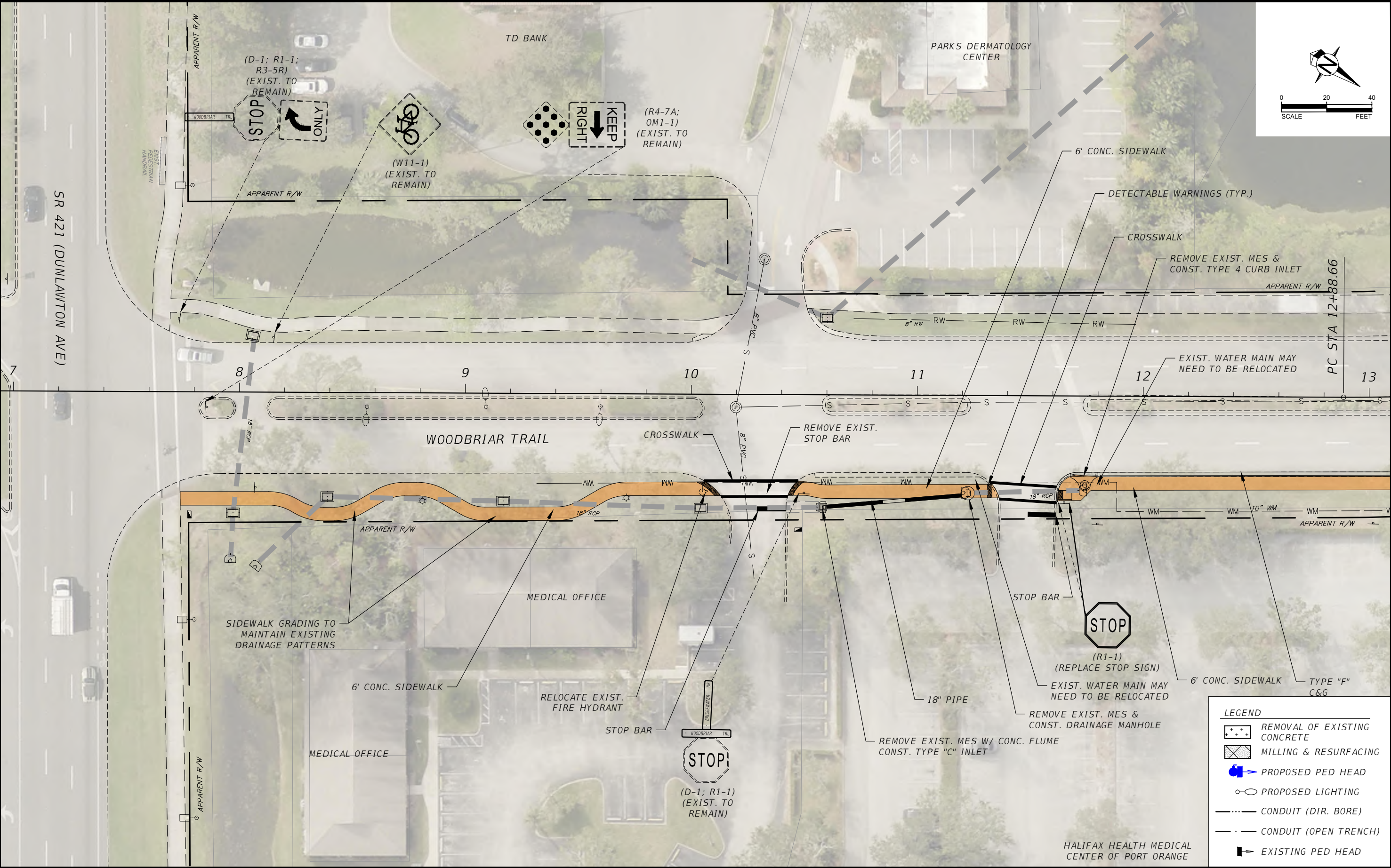
TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
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Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

CONCEPT PLAN  
SIDEWALK GAP  
VILLAGE TRAIL  
CITY COMPONENT #9

SHEET NO.
3





REVISIONS	
DATE	DESCRIPTION

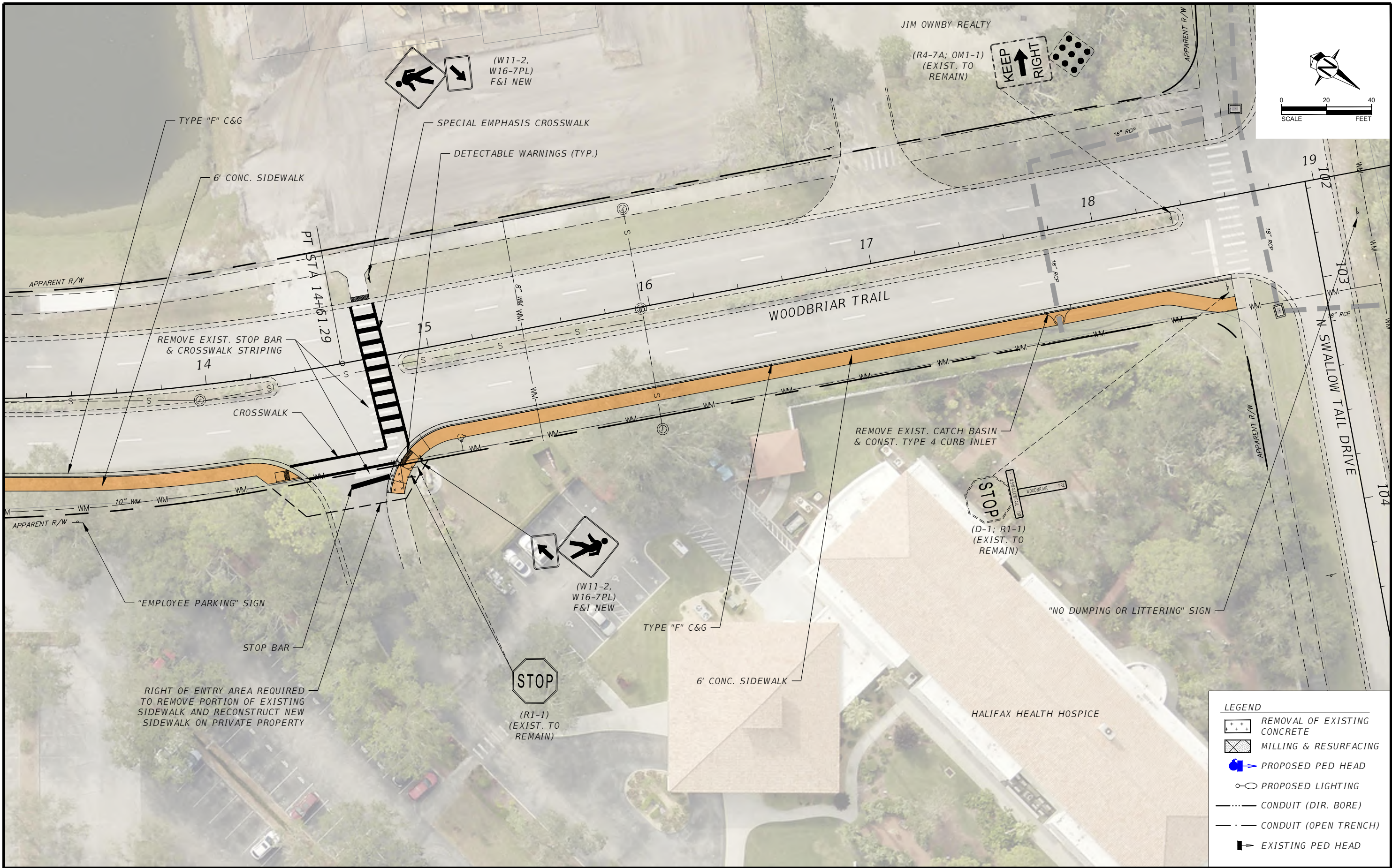


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CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

<b>CONCEPT PLAN SIDEWALK GAP WOODBRIAR TRAIL CITY COMPONENT #12</b>	
SHEET NO.	4





REVISIONS	
DATE	DESCRIPTION



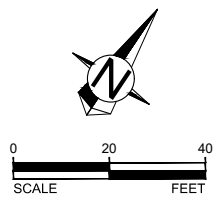
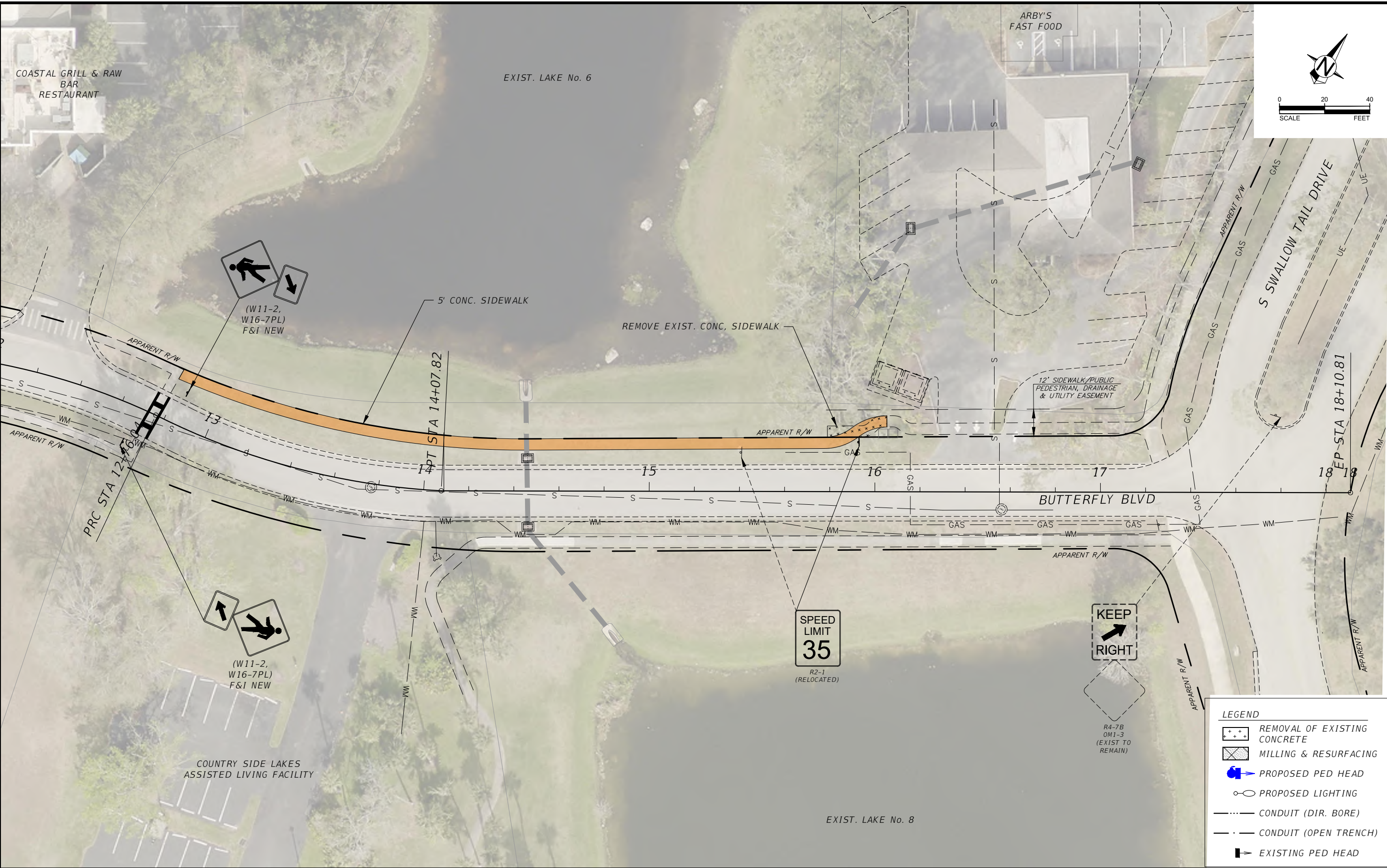
**TEDS**  
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Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

CONCEPT PLAN SIDEWALK GAP WOODBRIAR TRAIL CITY COMPONENT #12	

SHEET NO.
5





- LEGEND**
- REMOVAL OF EXISTING CONCRETE
  - MILLING & RESURFACING
  - PROPOSED PED HEAD
  - PROPOSED LIGHTING
  - CONDUIT (DIR. BORE)
  - CONDUIT (OPEN TRENCH)
  - EXISTING PED HEAD

REVISIONS	
DATE	DESCRIPTION

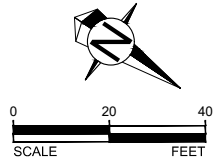
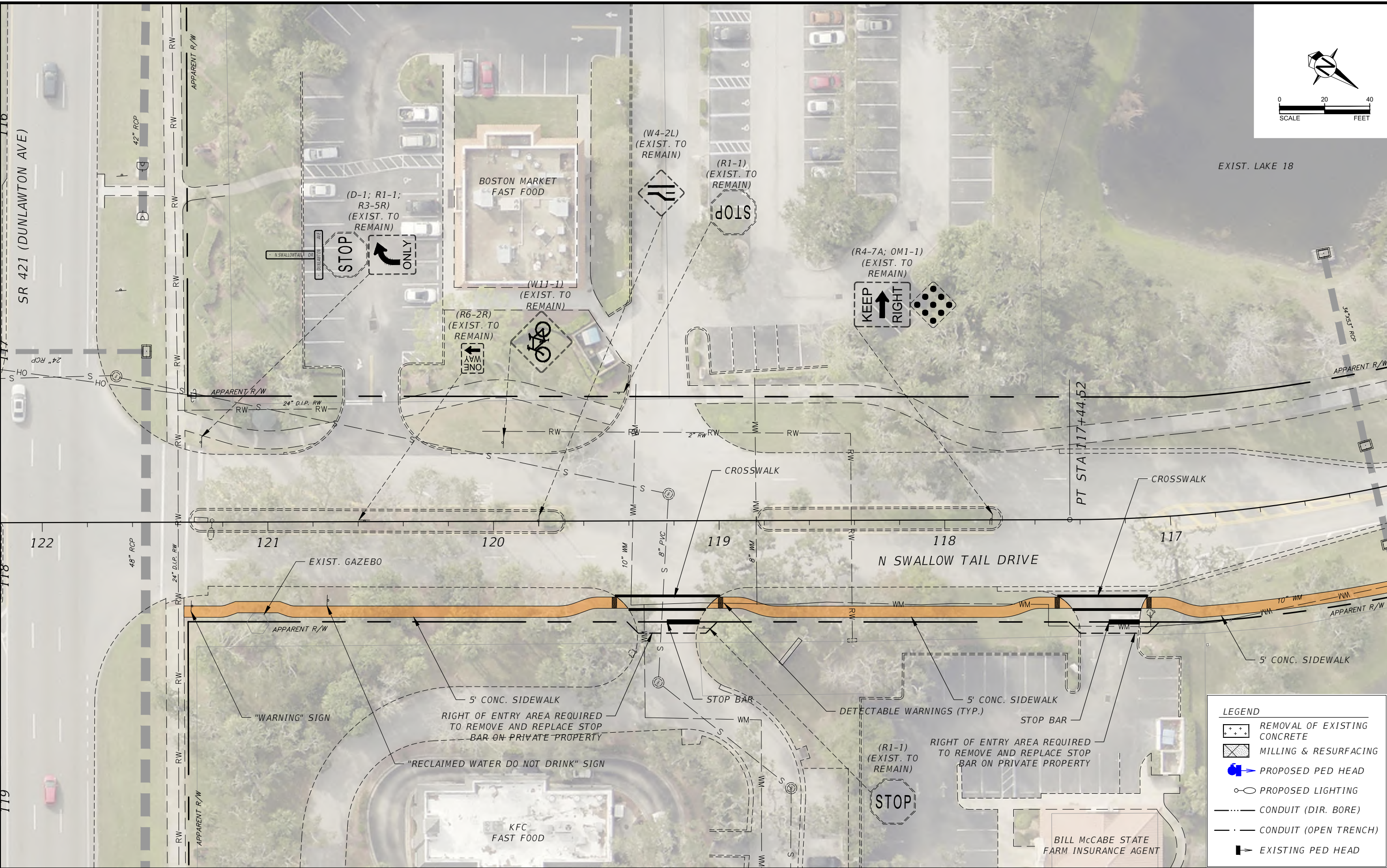


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CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

CONCEPT PLAN SIDEWALK GAP BUTTERFLY BLVD CITY COMPONENT #10	
SHEET NO.	6





LEGEND	
	REMOVAL OF EXISTING CONCRETE
	MILLING & RESURFACING
	PROPOSED PED HEAD
	PROPOSED LIGHTING
	CONDUIT (DIR. BORE)
	CONDUIT (OPEN TRENCH)
	EXISTING PED HEAD

REVISIONS	
DATE	DESCRIPTION



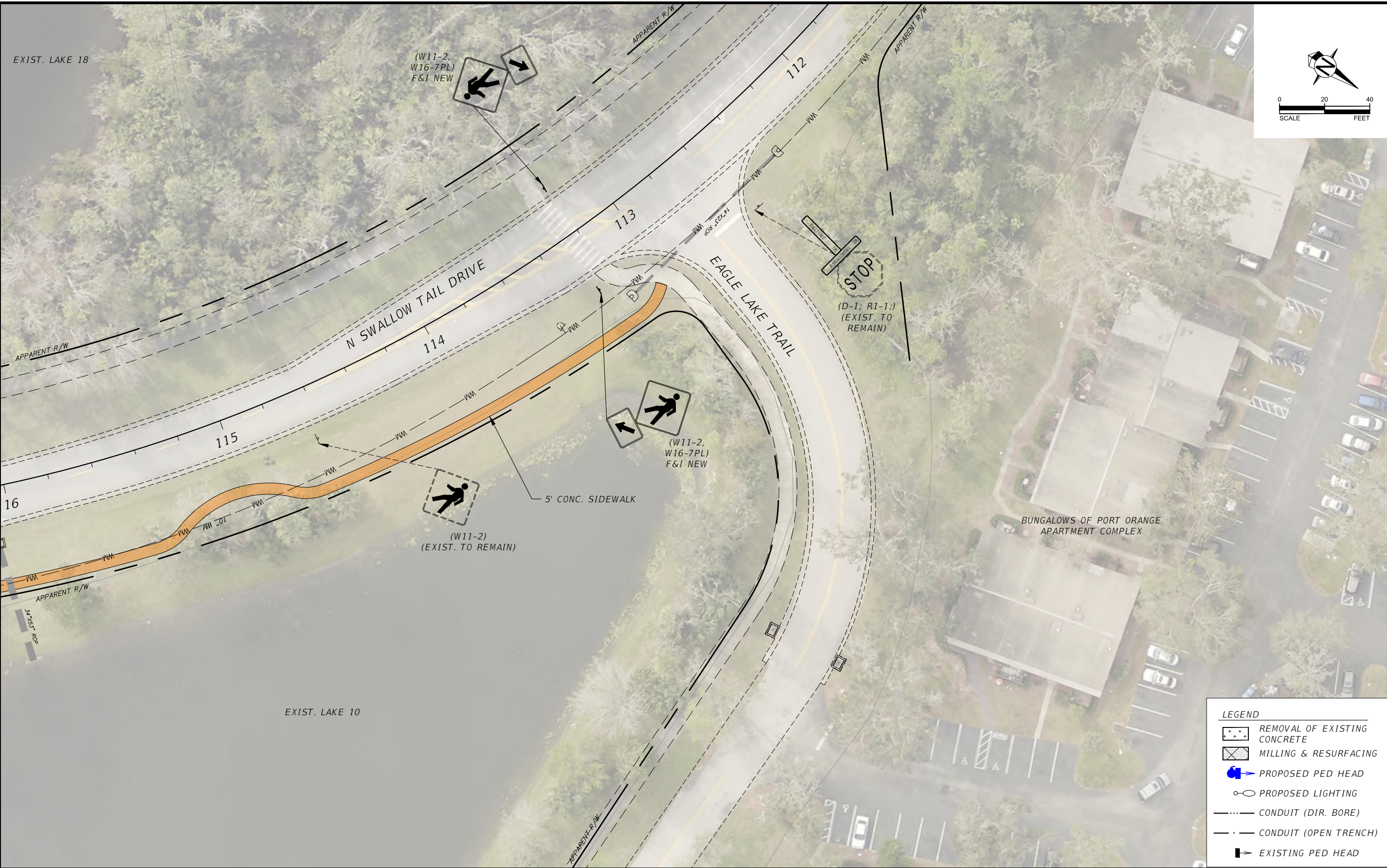


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Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

CONCEPT PLAN SIDEWALK GAP N SWALLOW TAIL DR CITY COMPONENT #11	
SHEET NO.	7





REVISIONS	
DATE	DESCRIPTION



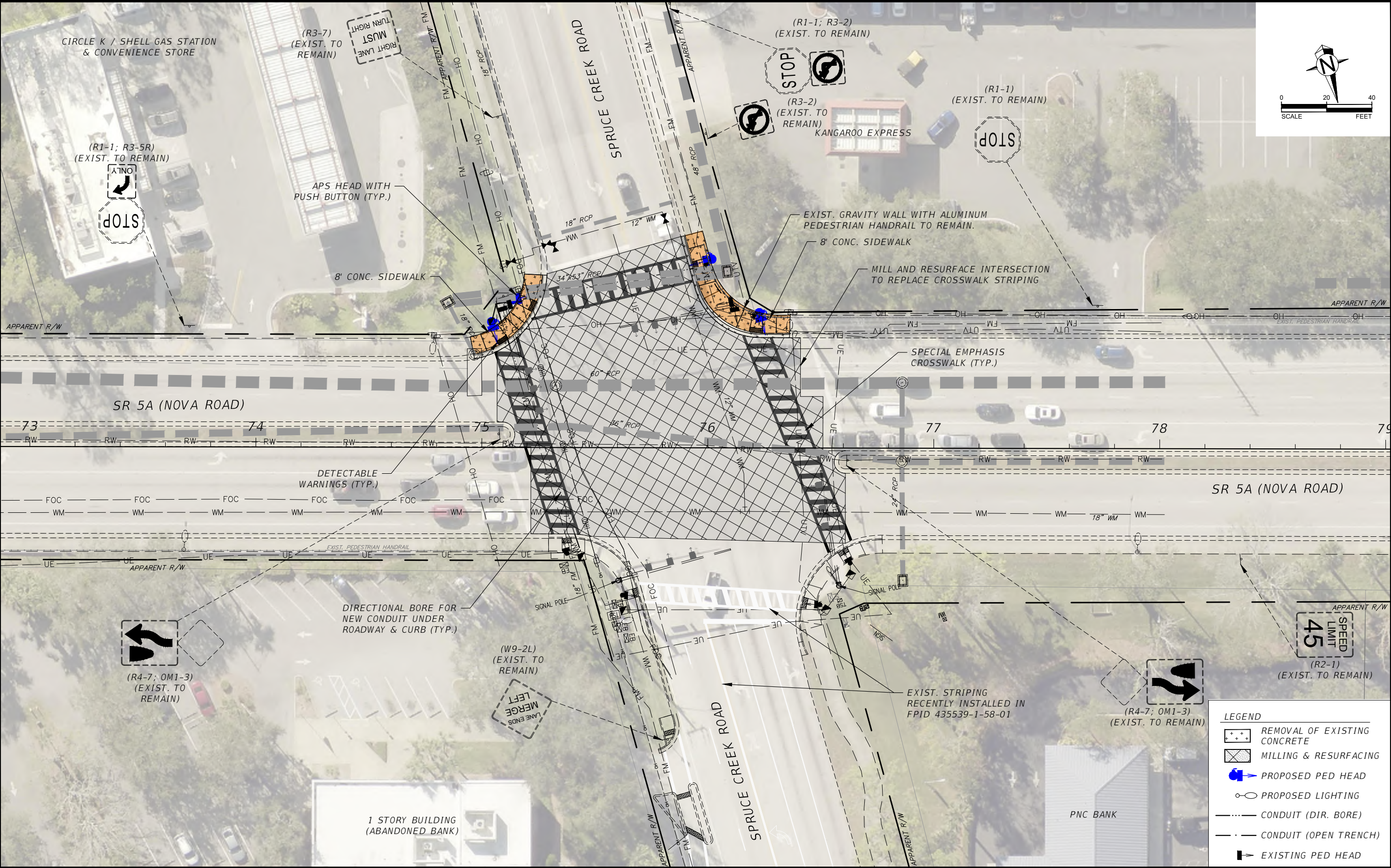
**TEDS**  
TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
Phone 386.753.0558 80 Spring Vista Drive  
Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

**CONCEPT PLAN  
SIDEWALK GAP  
N SWALLOW TAIL DR  
CITY COMPONENT #11**

SHEET NO.
8





REVISIONS	
DATE	DESCRIPTION



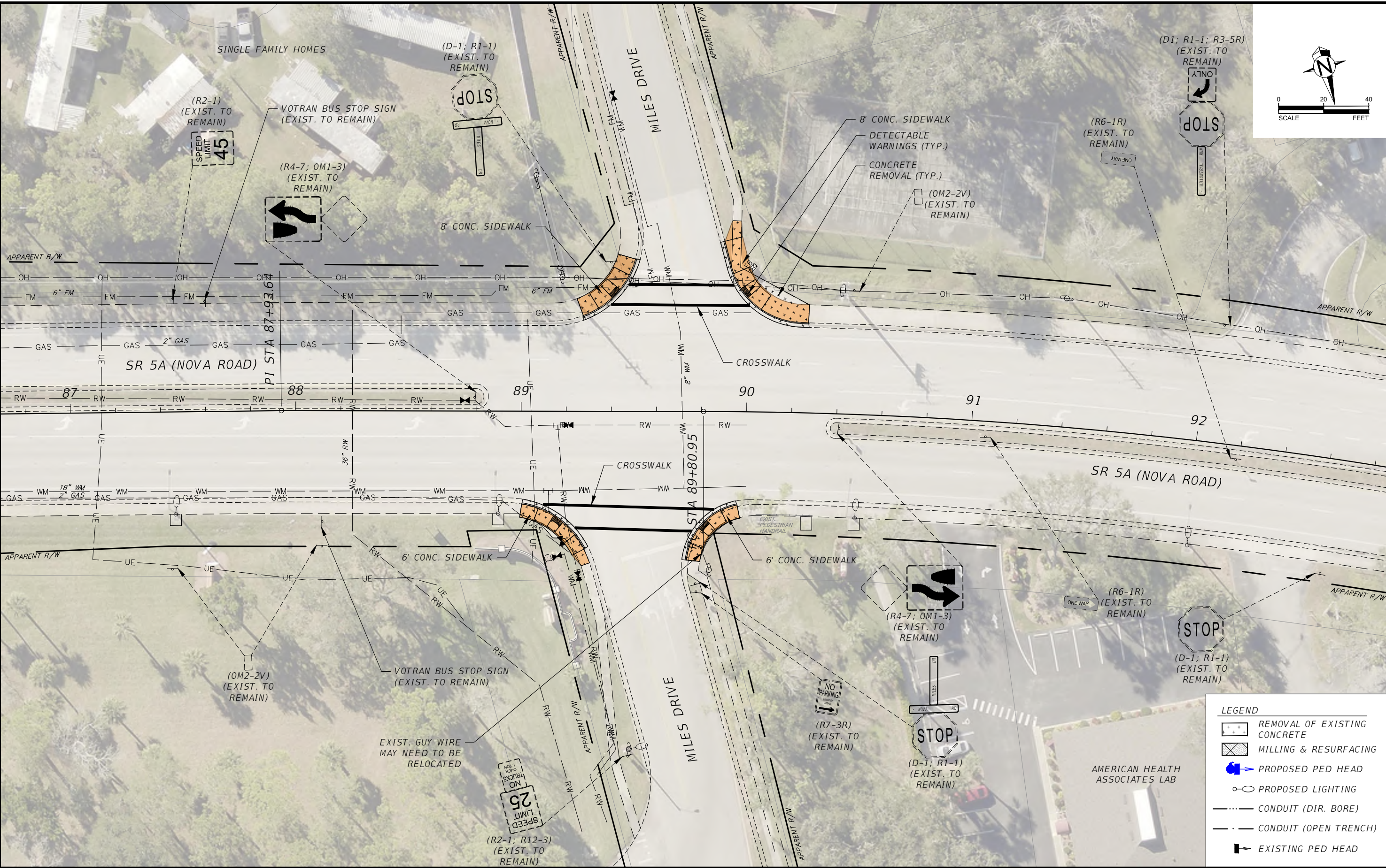
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TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
Phone 386.753.0558 80 Spring Vista Drive  
Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

**CONCEPT PLAN  
INTERSECTION IMPROVEMENTS  
NOVA RD & SPRUCE CREEK RD  
CITY COMPONENT #6**

SHEET NO.
9





REVISIONS	
DATE	DESCRIPTION



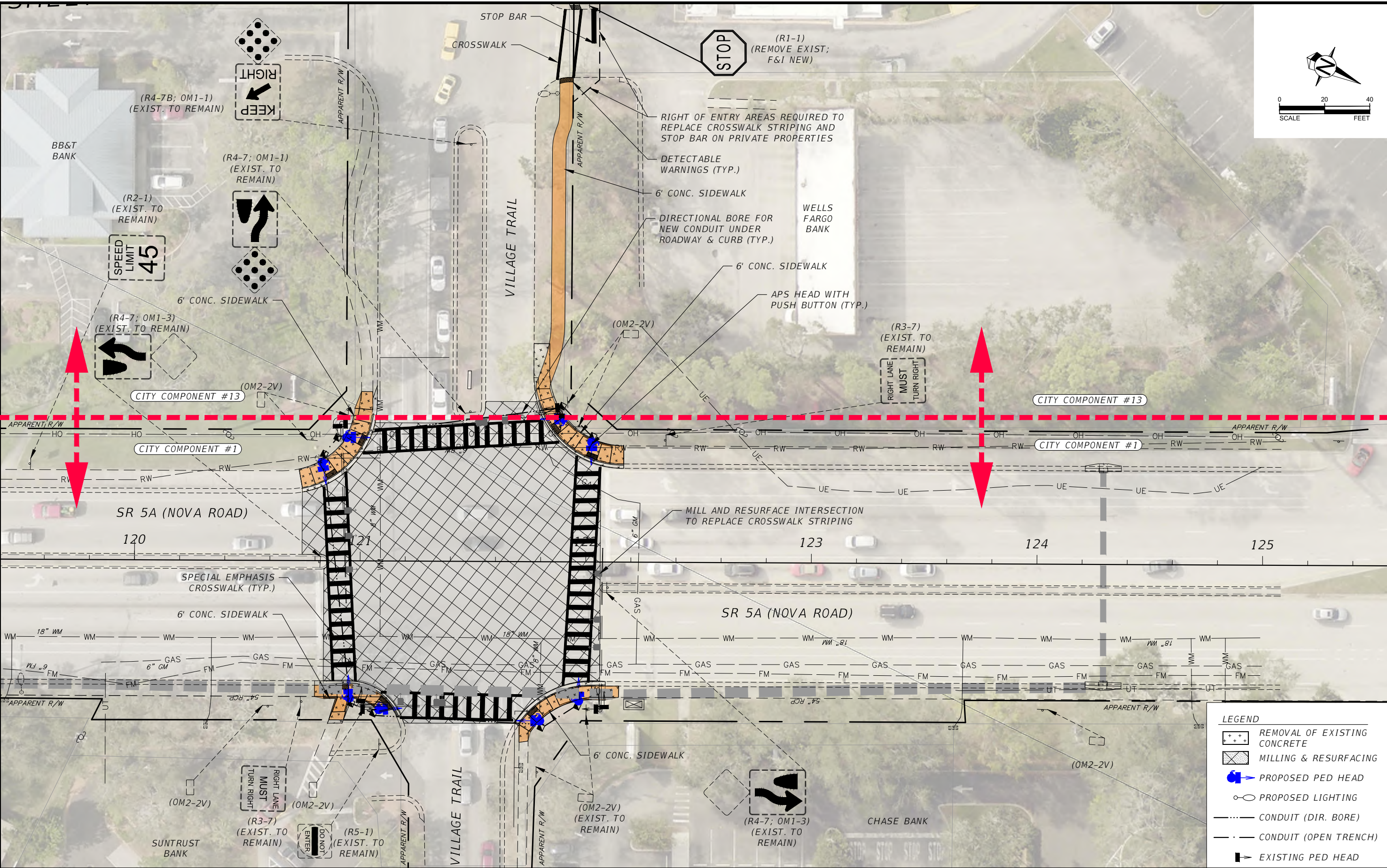
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TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
Phone 386.753.0558 80 Spring Vista Drive  
Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

**CONCEPT PLAN  
INTERSECTION IMPROVEMENTS  
NOVA RD & MILES DR  
CITY COMPONENT #7**

SHEET NO.
10





REVISIONS	
DATE	DESCRIPTION

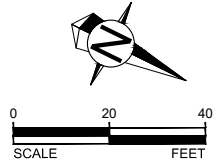
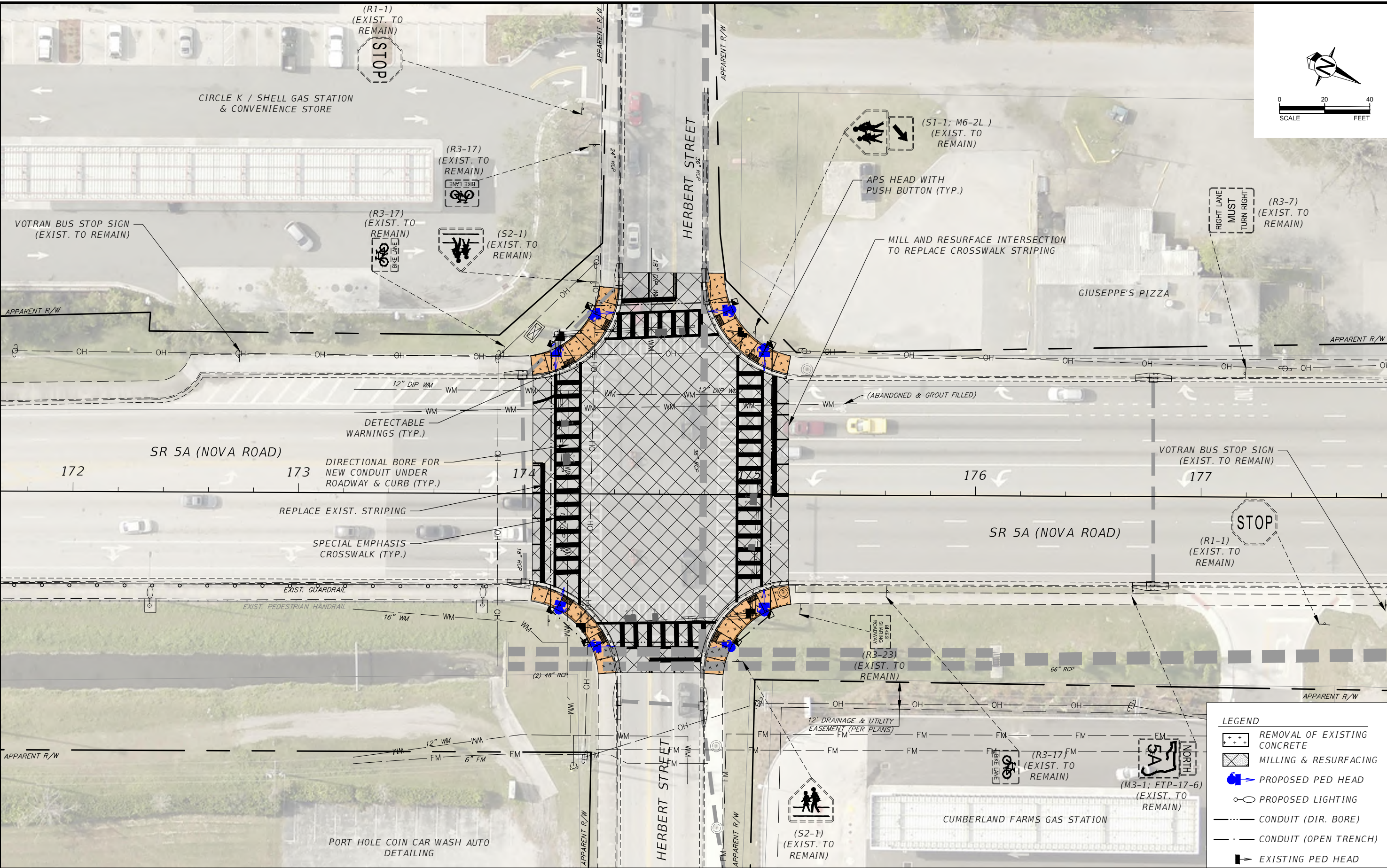


**TEDS**  
TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
Phone 386.753.0558 80 Spring Vista Drive  
Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

CONCEPT PLAN INTERSECTION IMP. & SIDEWALK GAP NOVA ROAD & VILLAGE TRAIL CITY COMPONENTS #1 & 13	
SHEET NO.	
11	





LEGEND	
	REMOVAL OF EXISTING CONCRETE
	MILLING & RESURFACING
	PROPOSED PED HEAD
	PROPOSED LIGHTING
	CONDUIT (DIR. BORE)
	CONDUIT (OPEN TRENCH)
	EXISTING PED HEAD

REVISIONS	
DATE	DESCRIPTION



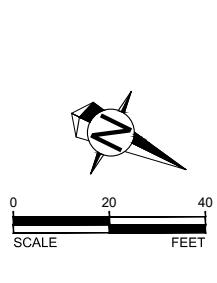
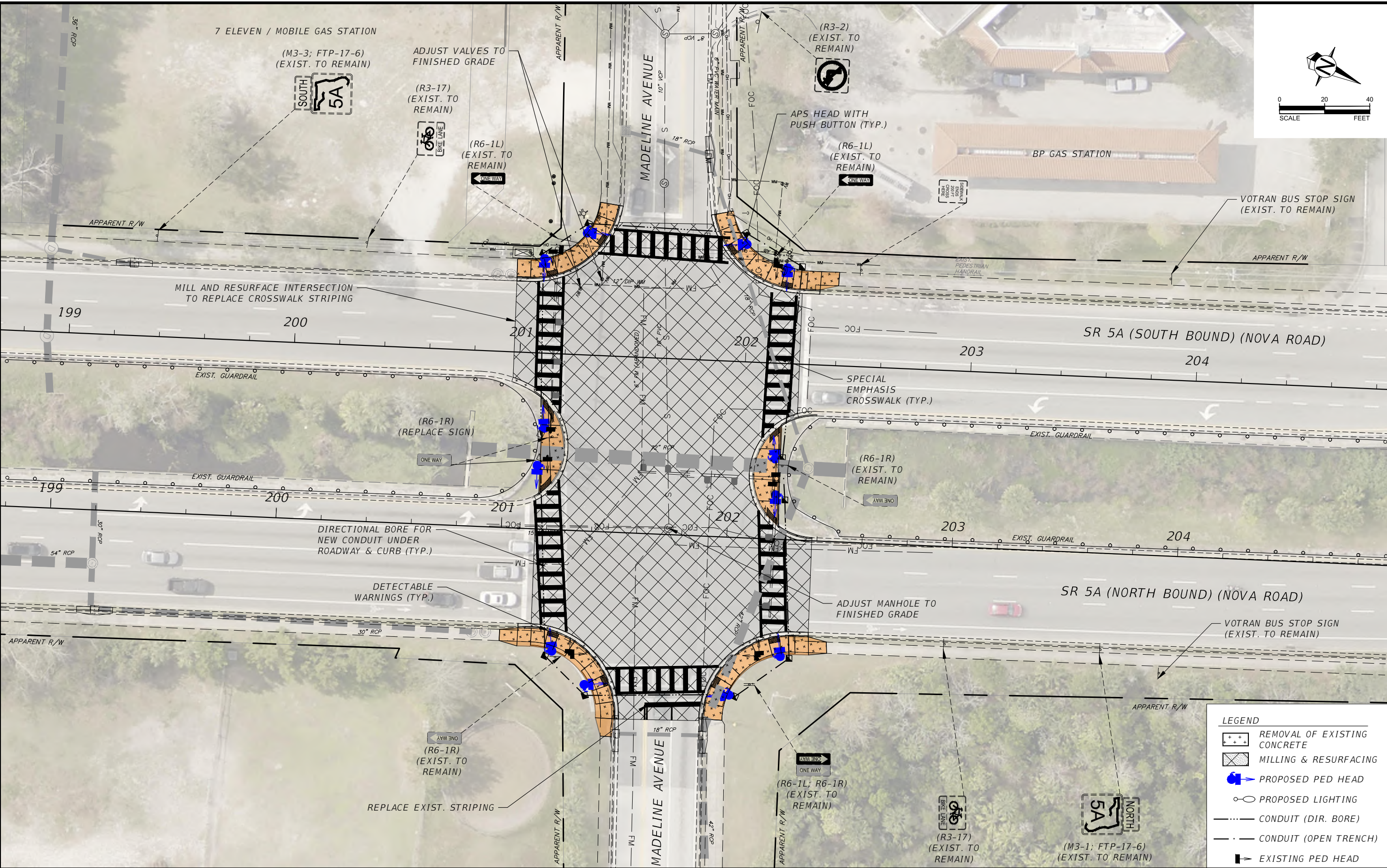
TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
Phone 386.753.0558 80 Spring Vista Drive  
Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

CONCEPT PLAN  
INTERSECTION IMPROVEMENTS  
NOVA RD & HERBERT ST  
CITY COMPONENT #4

SHEET NO.
12





LEGEND	
	REMOVAL OF EXISTING CONCRETE
	MILLING & RESURFACING
	PROPOSED PED HEAD
	PROPOSED LIGHTING
	CONDUIT (DIR. BORE)
	CONDUIT (OPEN TRENCH)
	EXISTING PED HEAD

REVISIONS	
DATE	DESCRIPTION

TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
Phone 386.753.0558 80 Spring Vista Drive  
Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

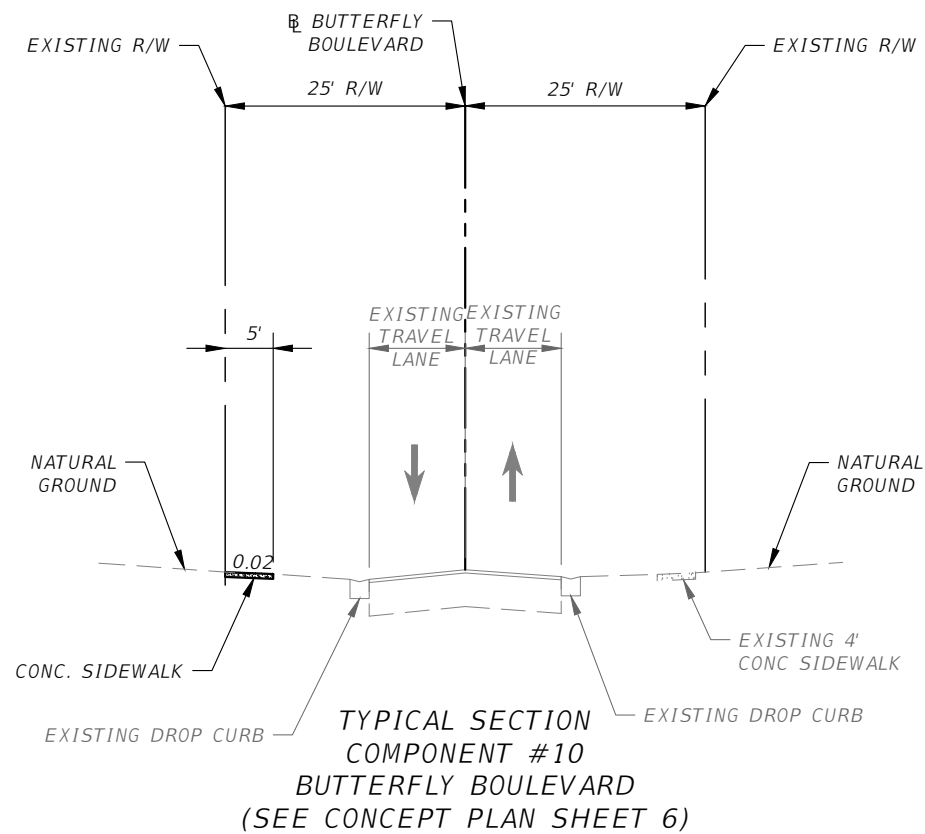
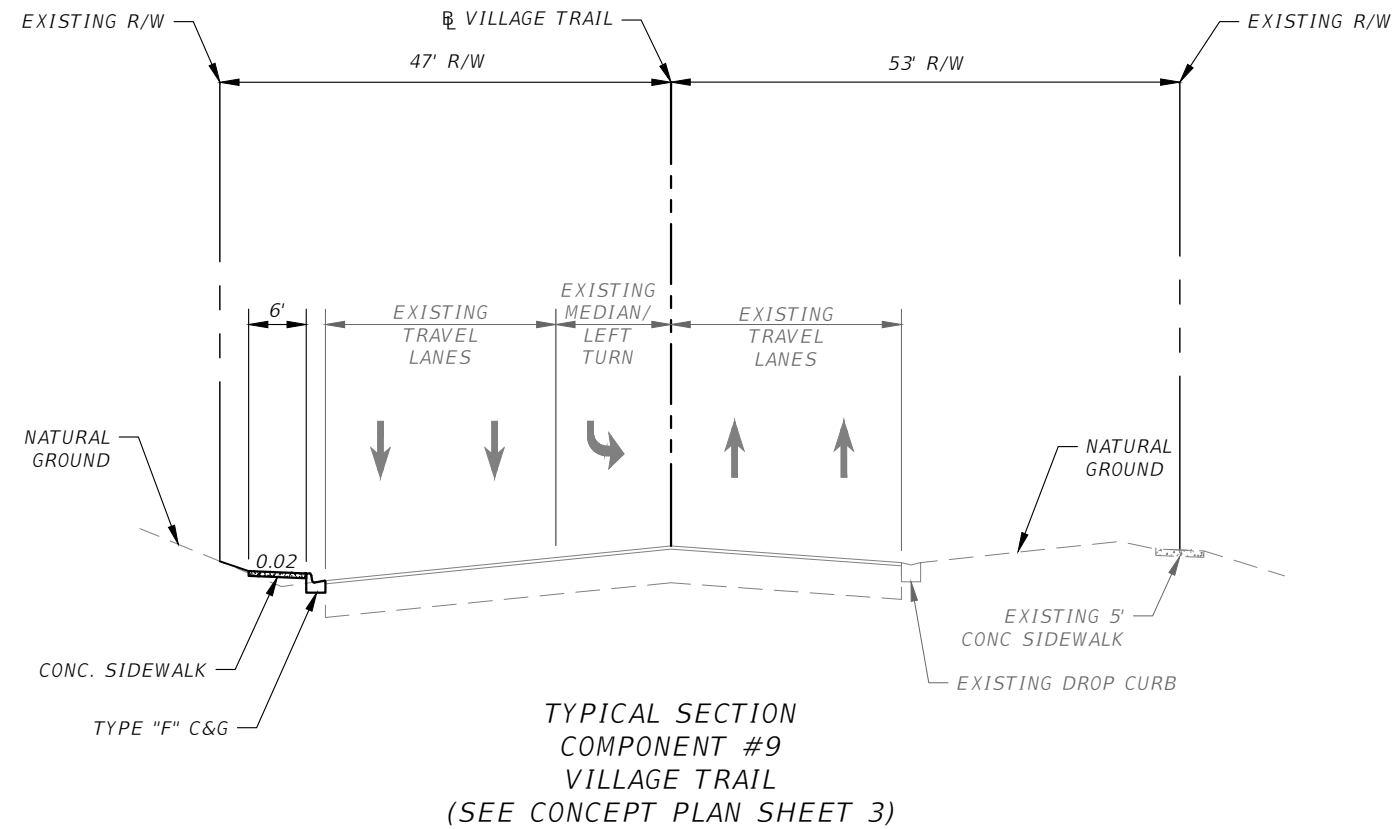
CONCEPT PLAN  
INTERSECTION IMPROVEMENTS  
NOVA RD & MADELINE AVE  
CITY COMPONENT #5

SHEET NO.
13

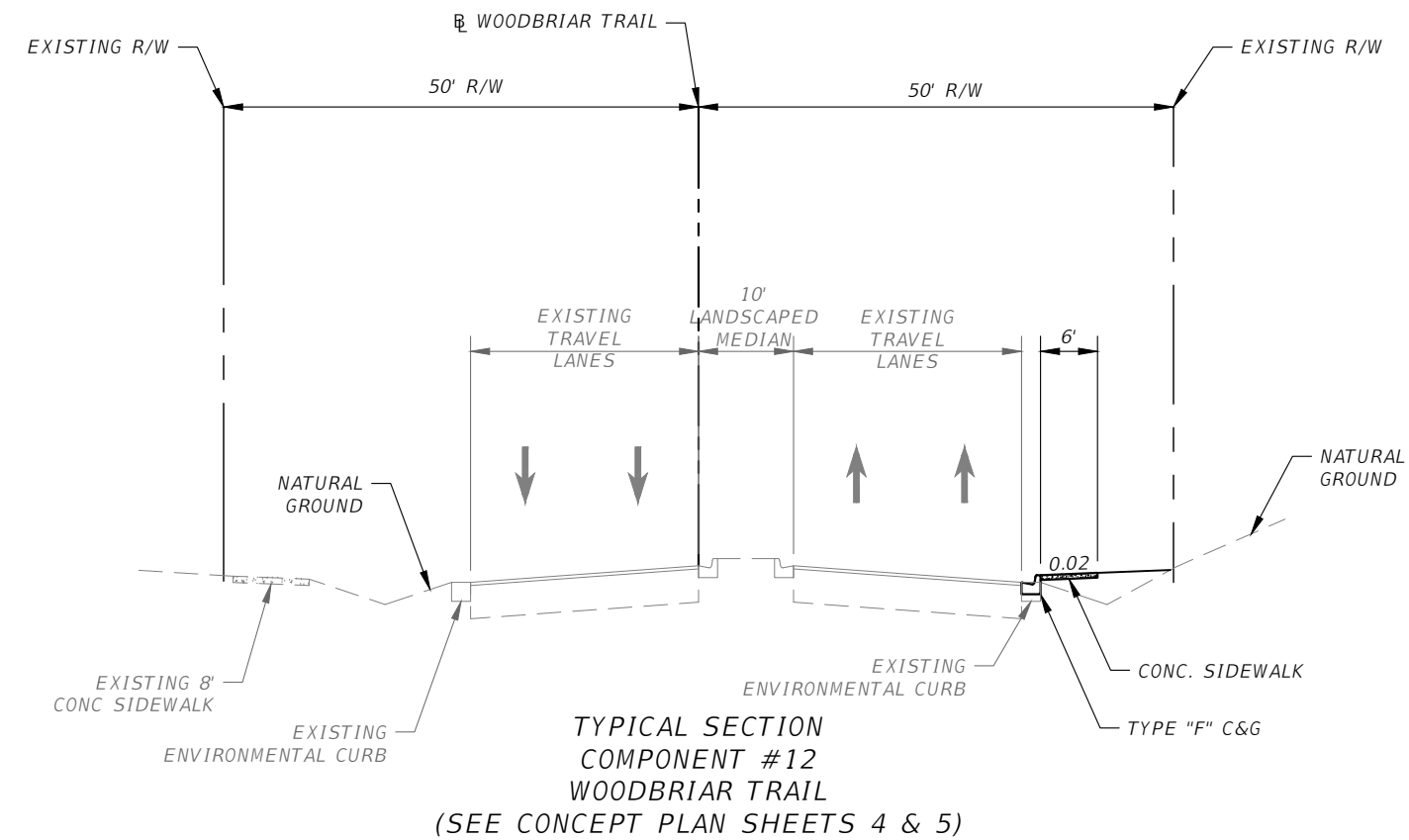
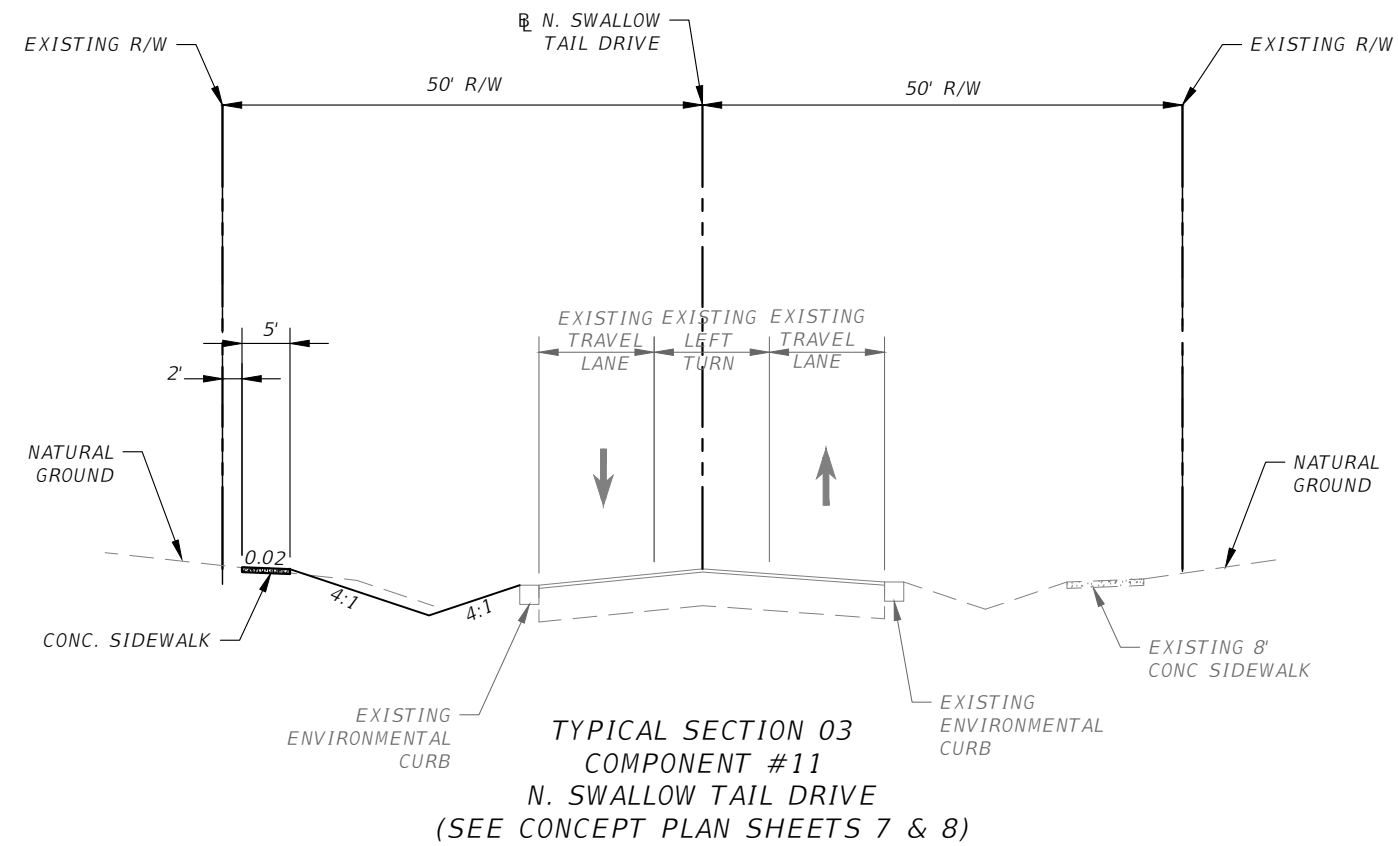








REVISIONS		 				TYPICAL SECTIONS		SHEET NO.
DATE	DESCRIPTION							
		ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY ROAD NO. COUNTY FINANCIAL PROJECT ID .. VOLUSIA 448907-1						1



REVISIONS		 			ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		TYPICAL SECTIONS	SHEET NO. 2
DATE	DESCRIPTION							
		<small>TRAFFIC ENGINEERING DATA SOLUTIONS, INC. Phone 386.753.0558 80 Spring Vista Drive Fax 386.753.0778 DelBary, FL 32713 CERTIFICATE OF AUTHORIZATION NO. 27392</small>			ROAD NO.	COUNTY		
					..	VOLUSIA	448907-1	



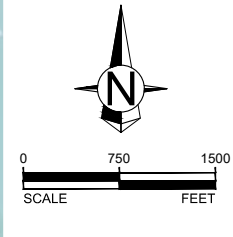
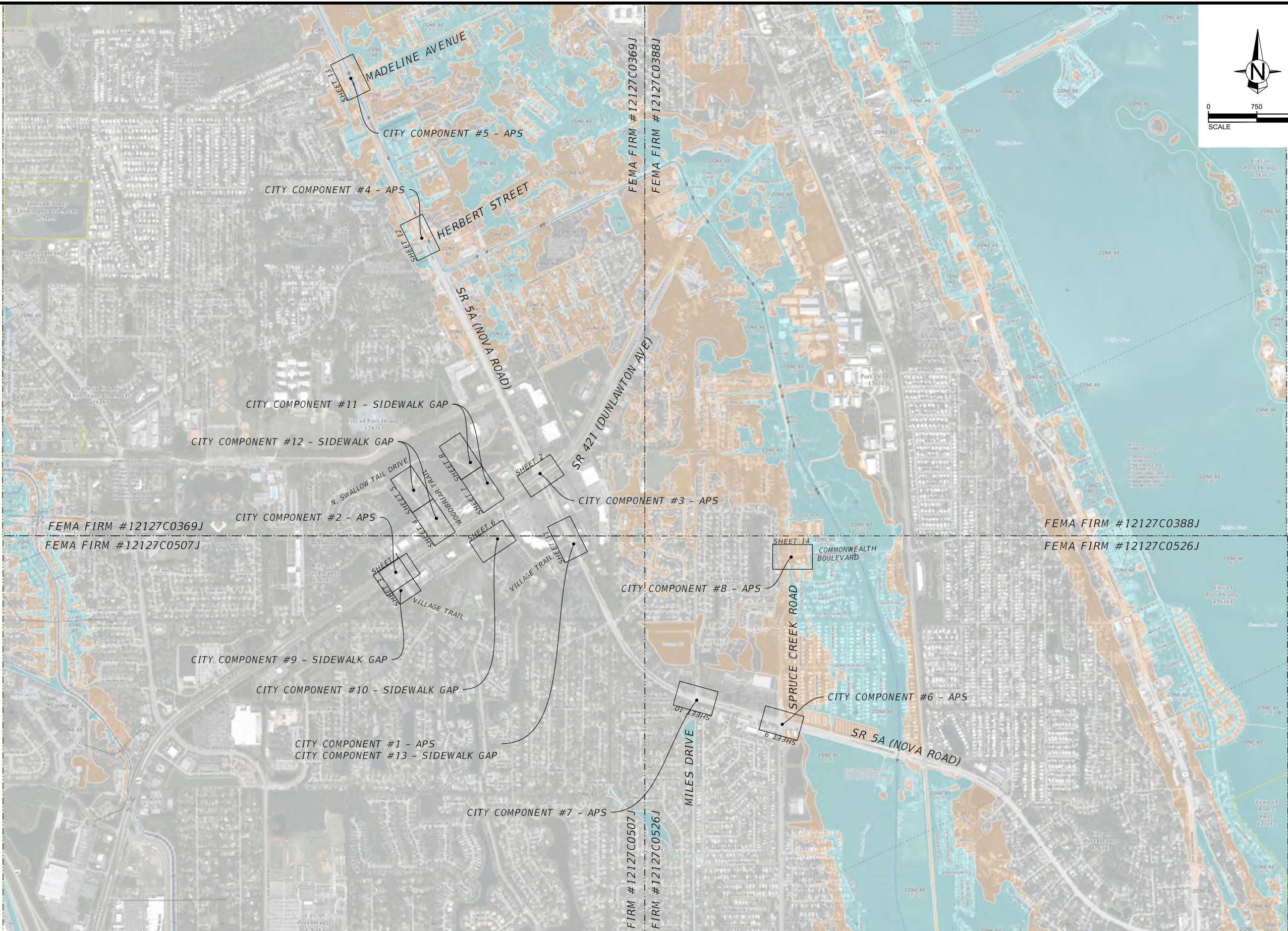


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## **APPENDIX C**

# **FEMA MAP OVERLAY**





REVISIONS	
DATE	DESCRIPTION



TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
Phone 386.753.0558 80 Spring Vista Drive  
Fax 386.753.0778 DelBary, FL 32713  
CERTIFICATE OF AUTHORIZATION NO. 27392

ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
..	VOLUSIA	448907-1

FEMA MAP OVERLAY	

SHEET NO.
C



**APPENDIX D**

**USDA SOILS MAPS**

# SOIL SURVEY COMPONENT #1 INTERSECTION IMPROVEMENTS - NOVA ROAD & VILLAGE TRAIL



## HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Area in AOT	Percent of AOT
AC	Seigneur-Smyrna, wet, fine sand, 0 to 2 percent slopes	A/C1	5.6	33.4%
AD	Tuscania fine sand	B/D	11.2	66.6%
Totals for Area of Interest			16.8	100.0%

SOIL SURVEY  
COMPONENT #2  
INTERSECTION IMPROVEMENTS - VILLAGE TRAIL & DUNLAWTON AVENUE

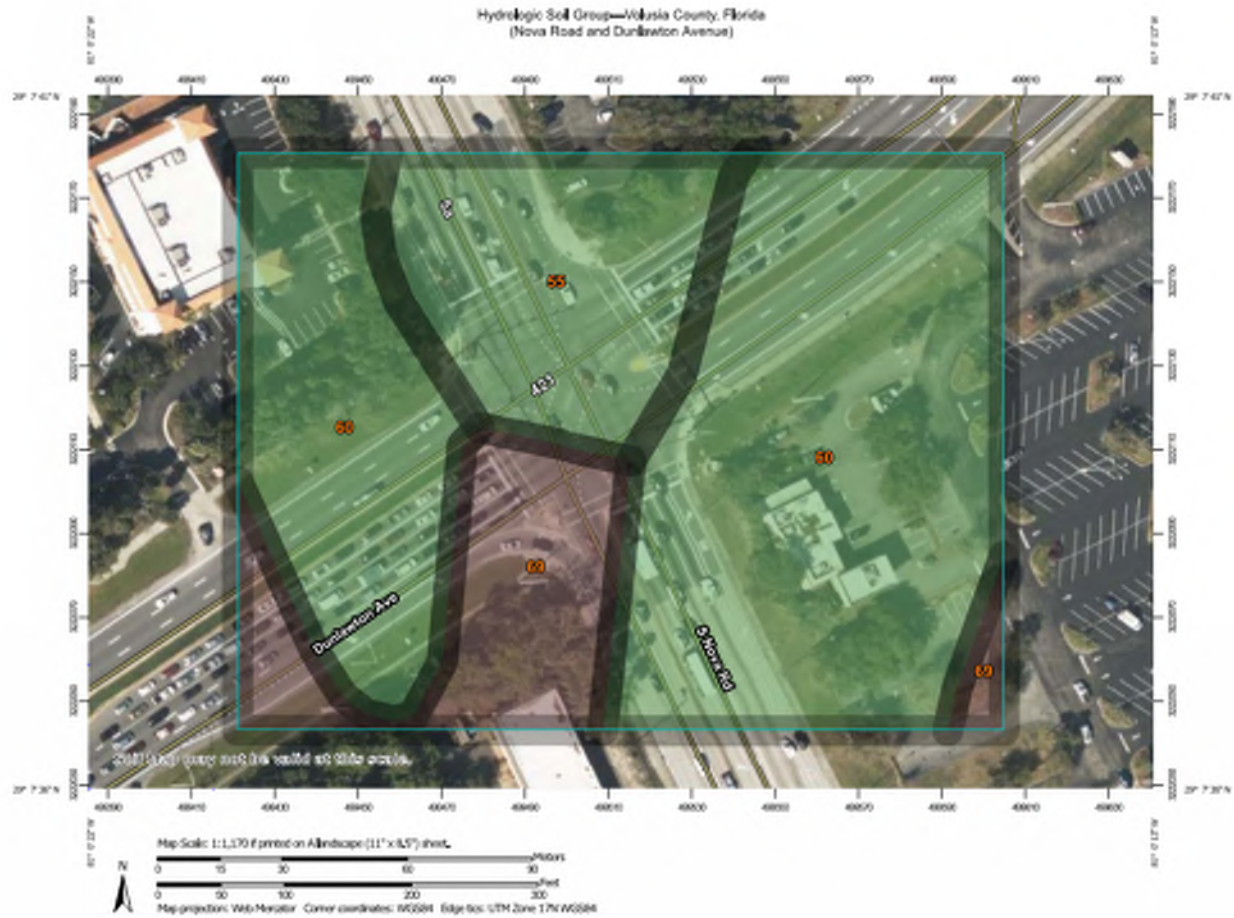


HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Acres in AQI	Percent of AQI
8	Basinger fine sand, frequently ponded, 0 to 1 percent slopes	A/D	0.1	0.9%
17	Daytona sand, 0 to 5 percent slopes	A	0.0	0.3%
29	Immokalee sand	B/D	5.1	78.0%
52	Pompano fine sand	A/D	1.3	19.9%
<b>Totals for Area of Interest</b>			<b>6.5</b>	<b>100.0%</b>



# SOIL SURVEY COMPONENT #3 INTERSECTION IMPROVEMENTS - NOVA ROAD & DUNLAWTON AVENUE



## HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
55	Riviera fine sand	A/D	1.2	18.9%
60	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	A/D	4.1	65.2%
69	Tuscawilla fine sand	B/D	1.0	15.9%
<b>Totals for Area of Interest</b>			<b>6.3</b>	<b>100.0%</b>

# SOIL SURVEY COMPONENT #4 INTERSECTION IMPROVEMENTS - NOVA ROAD & HERBERT STREET



## HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
7d	Tuscaulilla-Urban land complex	B/D	3.2	100.0%
Totals for Area of Interest			3.2	100.0%

SOIL SURVEY  
COMPONENT #5  
INTERSECTION IMPROVEMENTS - NOVA ROAD & MADELINE AVENUE

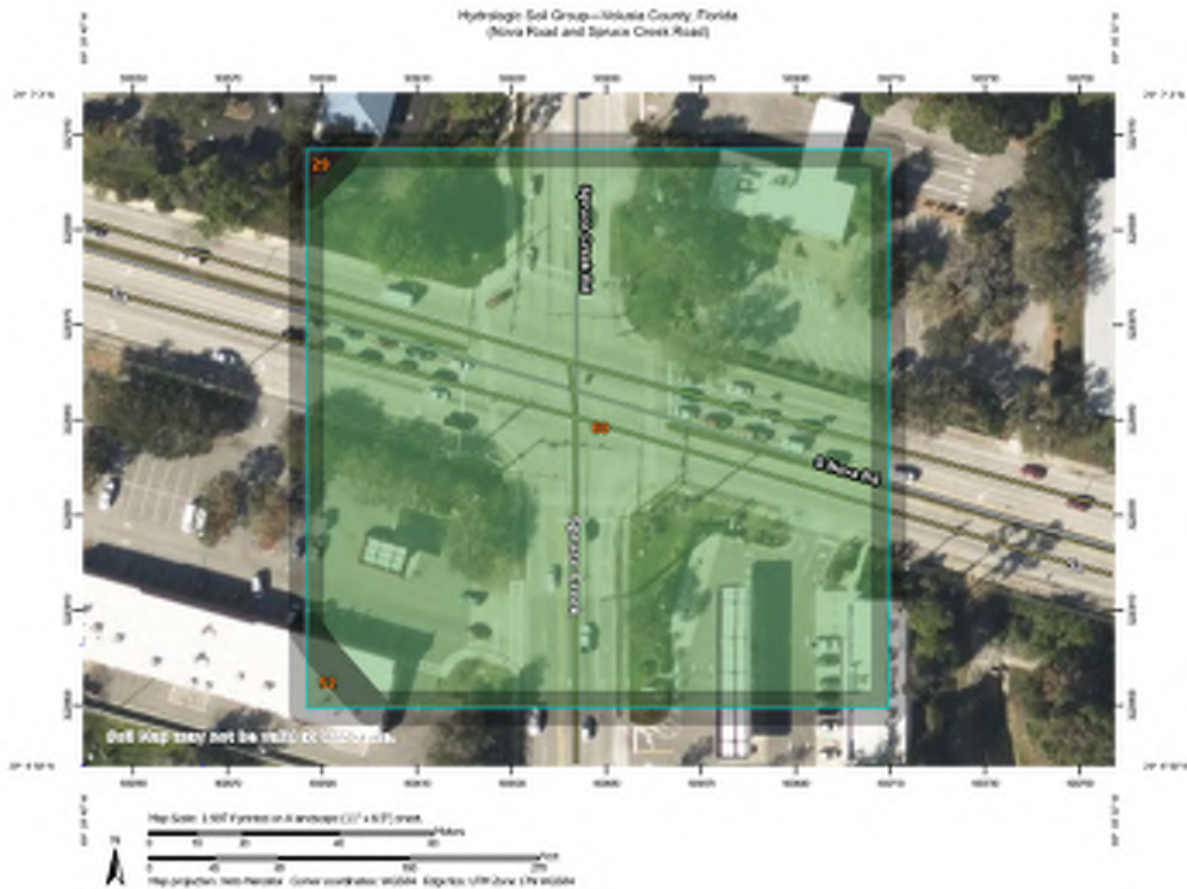


HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Area in AQI	Percent of AQI
G3	Turkey Creek sand	B-2	0.0	0.0%
T3	Interwheat-Khan land complex	D-2	2.9	100.0%
Totals for Area of Interest			2.9	100.0%

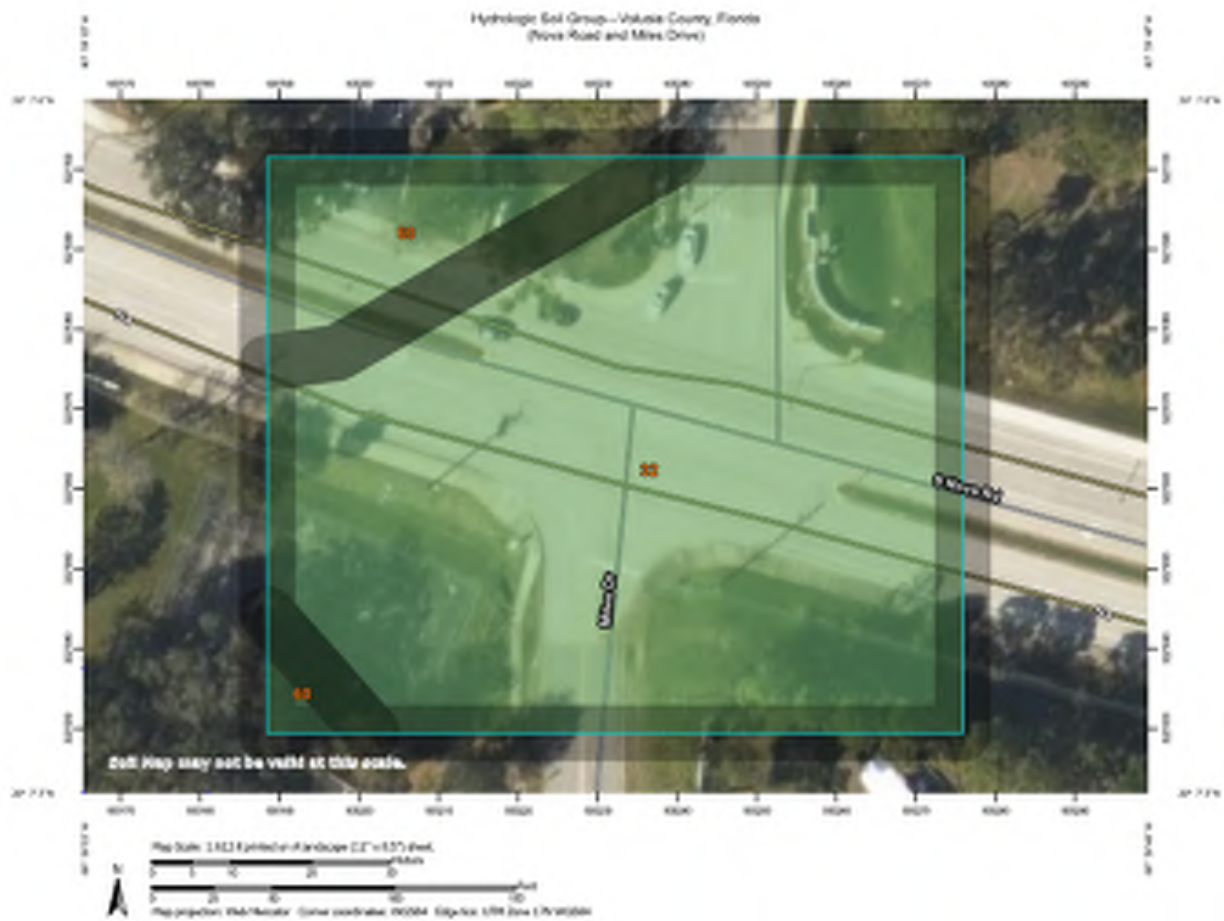


**SOIL SURVEY  
COMPONENT #6  
INTERSECTION IMPROVEMENTS - NOVA ROAD & SPRUCE CREEK ROAD**



Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
29	Immokalee sand	B/D	0.0	0.3%
52	Pompano fine sand	A/D	0.0	0.7%
60	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	A/D	3.5	99.0%
<b>Totals for Area of Interest</b>			<b>3.6</b>	<b>100.0%</b>

# SOIL SURVEY COMPONENT #7 INTERSECTION IMPROVEMENTS - NOVA ROAD & MILES DRIVE



## HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
32	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	A/D	1.4	86.6%
60	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	A/D	0.2	13.4%
<b>Totals for Area of Interest</b>			<b>1.6</b>	<b>100.0%</b>



# SOIL SURVEY COMPONENT #8 INTERSECTION IMPROVEMENTS - COMMONWEALTH BOULEVARD & SPRUCE CREEK ROAD



## HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
60	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	A/D	0.0	5.9%
63	Tavares fine sand, 0 to 5 percent slopes	A	0.6	94.1%
Totals for Area of Interest			0.6	100.0%

SOIL SURVEY  
COMPONENT #9  
SIDEWALK GAP - WEST SIDE OF VILLAGE TRAIL, SOUTH OF DUNLAWTON AVENUE

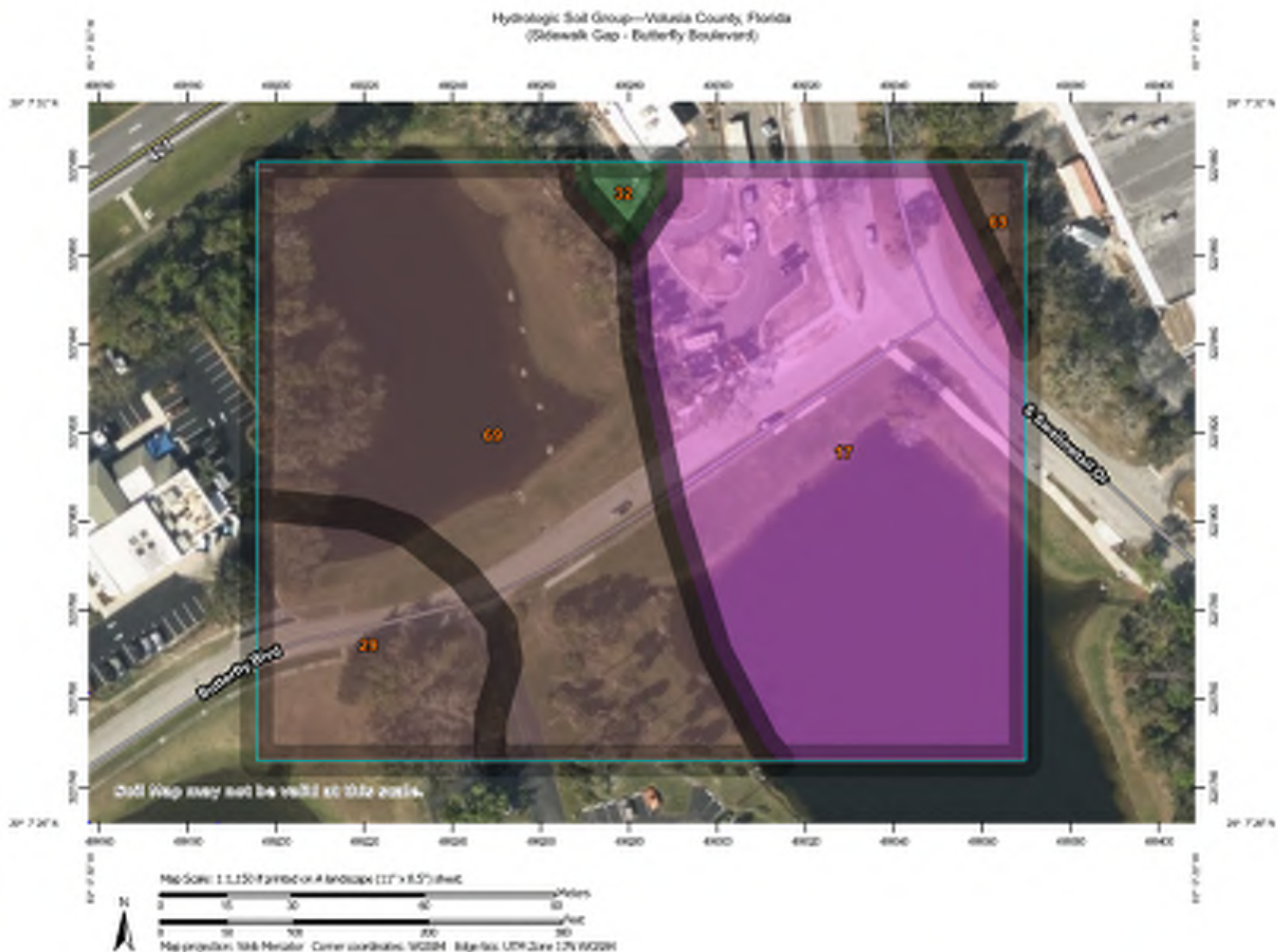


HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
29	Immokalee sand	B/D	2.4	99.3%
52	Pompano fine sand	A/D	0.0	0.7%
Totals for Area of Interest			2.4	100.0%



SOIL SURVEY  
COMPONENT #10  
SIDEWALK GAP - NORTH SIDE OF BUTTERFLY BOULEVARD, WEST OF S. SWALLOW TAIL DRIVE

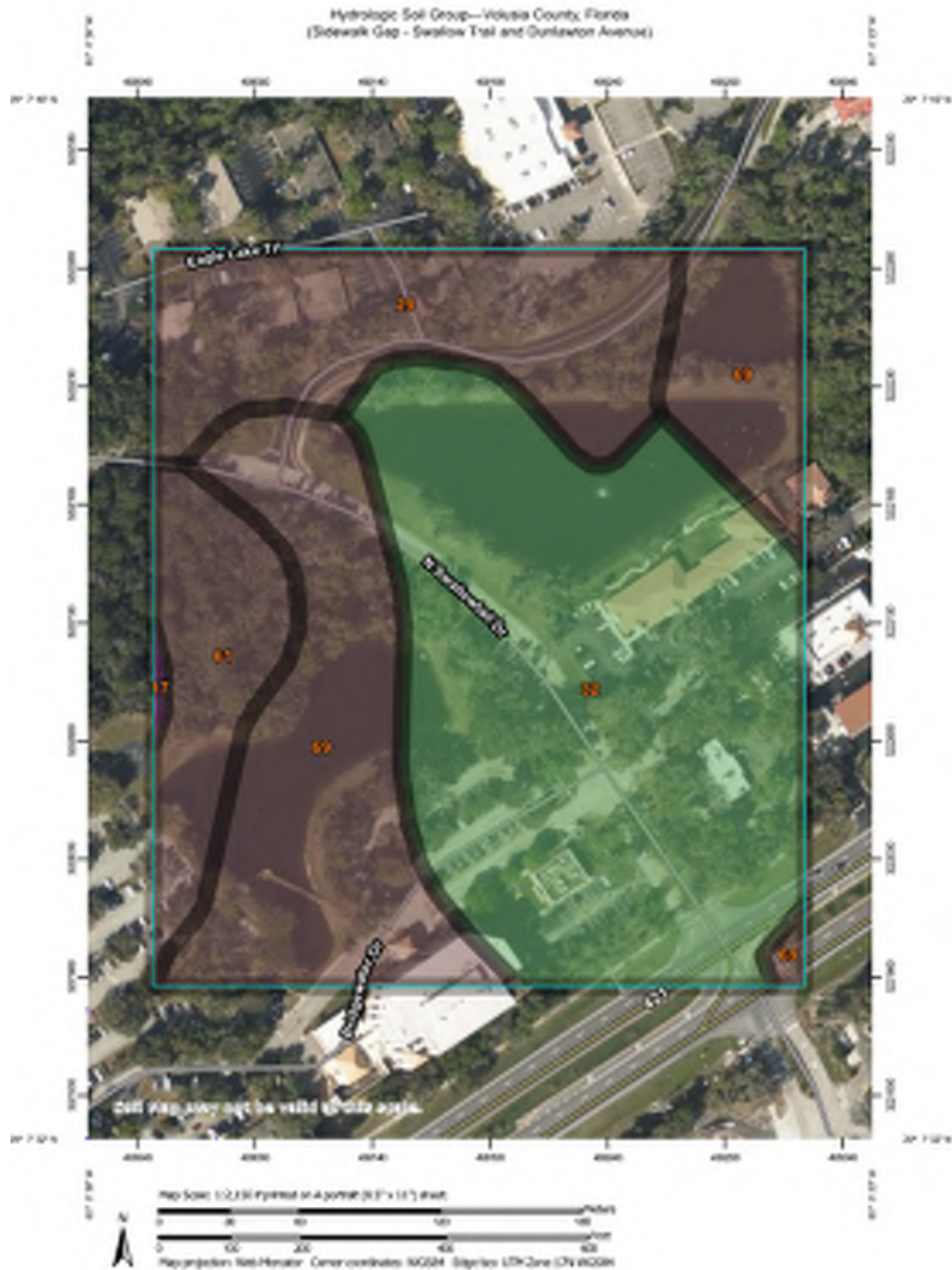


HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
17	Daytona sand, 0 to 5 percent slopes	A	2.6	43.8%
29	Unmokuale sand	B/D	0.7	11.8%
32	Myakka-Myakka, wel. fine sands, 0 to 2 percent slopes	A/D	0.1	1.1%
69	Tuscanella fine sand	B/D	2.5	43.3%
Totals for Area of Interest			5.8	100.0%

# SOIL SURVEY COMPONENT #11

SIDEWALK GAP - EAST SIDE OF N. SWALLOW TAIL DRIVE, NORTH OF DUNLAWTON AVENUE

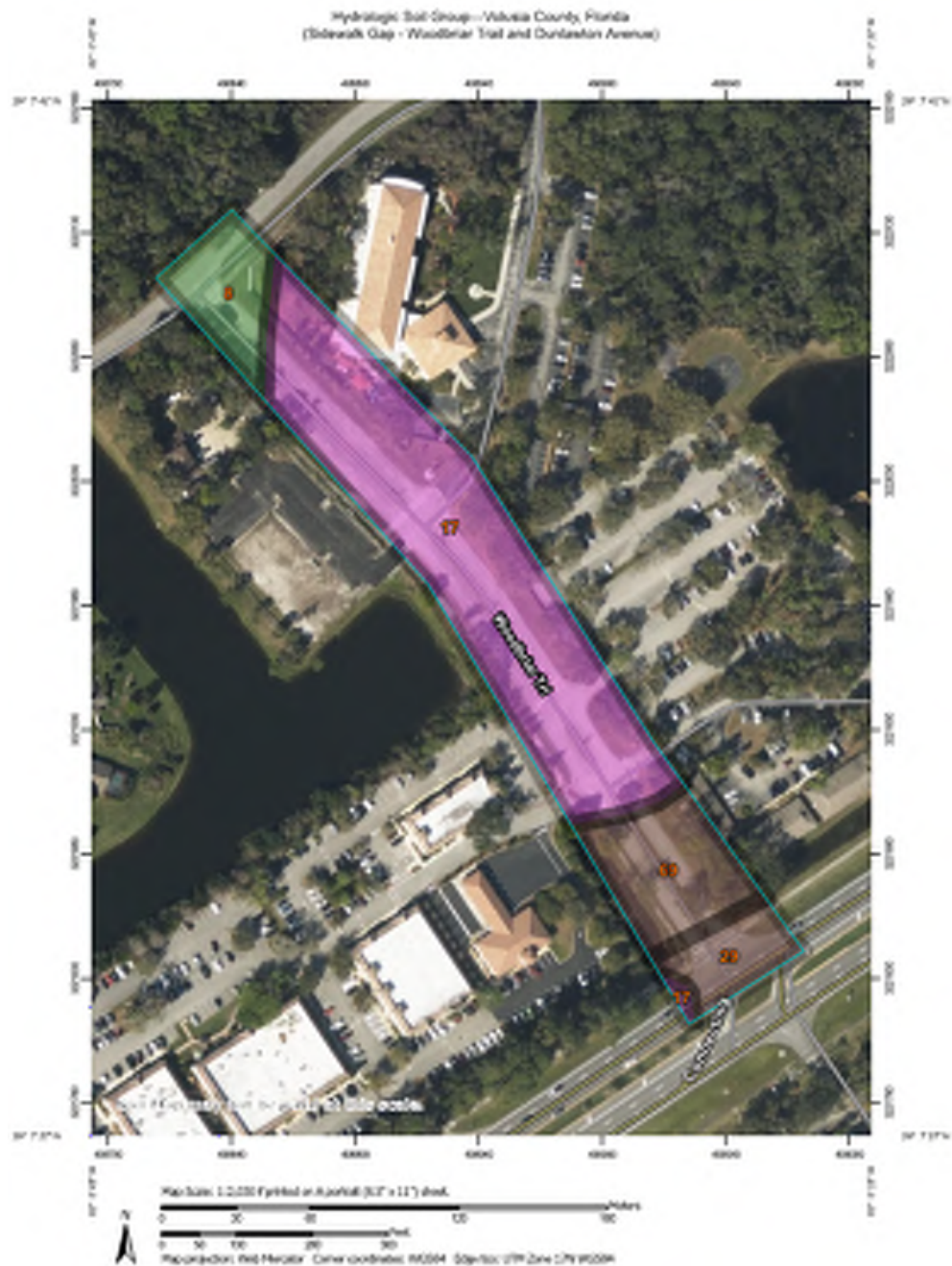


## HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
17	Daytona sand, 0 to 5 percent slopes	A	0.0	0.2%
29	Immokalee sand	B/D	3.7	17.4%
32	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	A/D	9.7	45.4%
61	St. Johns fine sand	B/D	2.0	9.1%
69	Yucowilla fine sand	B/D	6.0	27.9%
Totals for Area of Interest			21.5	100.0%



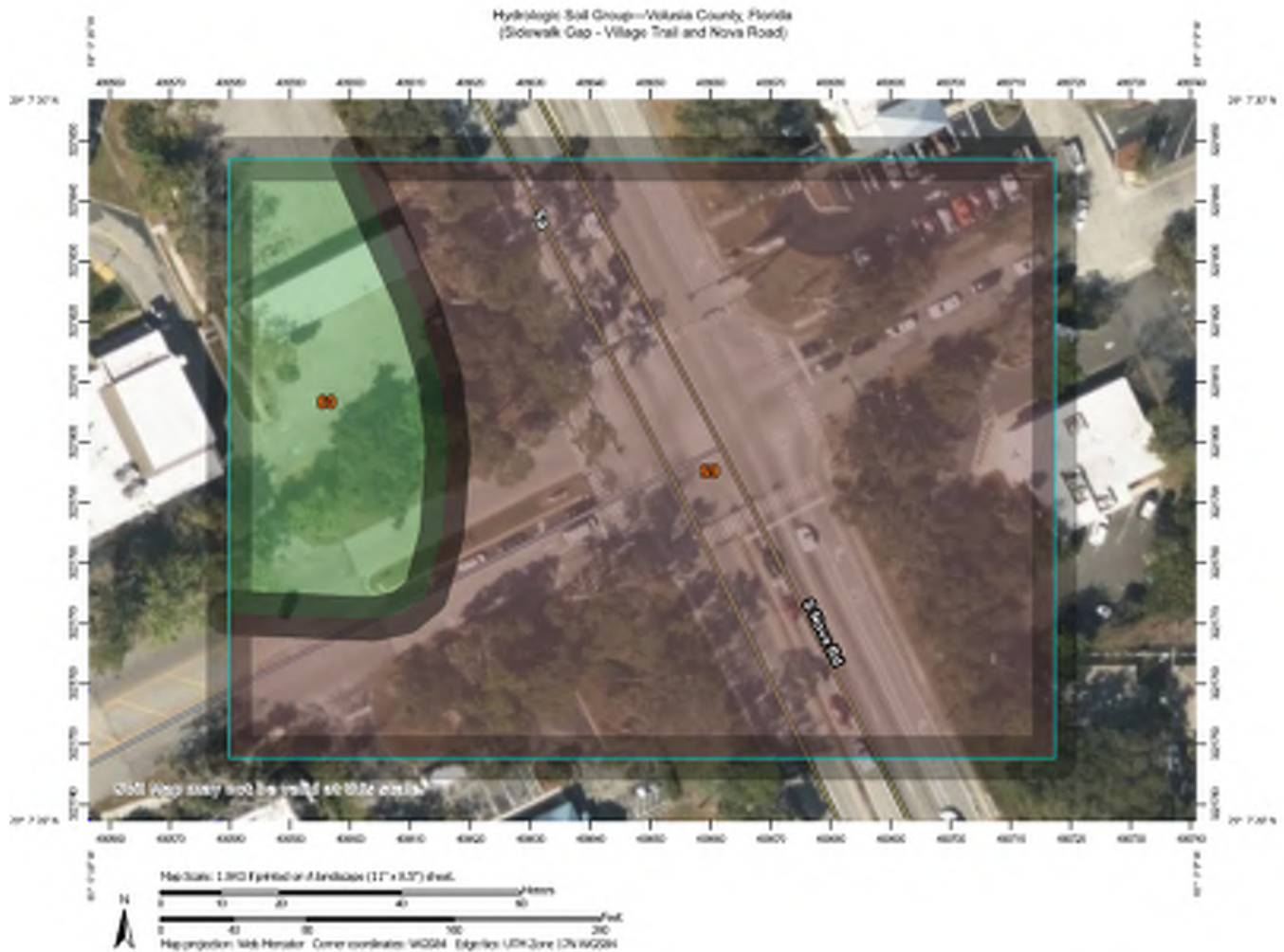
# SOIL SURVEY COMPONENT #12 SIDEWALK GAP - EAST SIDE OF WOODBRIAR TRAIL, NORTH OF DUNLAWTON AVENUE



## HYDROLOGICAL SOILS GROUP

Map unit symbol	Map unit name	Rating	Acres In AOI	Percent of AOI
8	Basinger fine sand, frequently ponded, 0 to 1 percent slopes	A/D	0.5	10.9%
17	Daytona sand, 0 to 5 percent slopes	A	2.7	64.3%
29	Immokalee sand	B/D	0.4	8.3%
69	Tusawilla fine sand	B/D	0.7	16.5%
<b>Totals for Area of Interest</b>			<b>4.3</b>	<b>100.0%</b>

**SOIL SURVEY  
COMPONENT #13  
SIDEWALK GAP - NORTH SIDE OF VILLAGE TRAIL, WEST OF NOVA ROAD**



**HYDROLOGICAL SOILS GROUP**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
60	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	A/D	0.6	17.7%
69	Tuscawilla fine sand	B/D	2.8	82.3%
<b>Totals for Area of Interest</b>			<b>3.4</b>	<b>100.0%</b>



**APPENDIX E**

**ECOLOGICAL DUE DILIGENCE**

**(by Terracon Consultants, Inc.)**

# **ECOLOGICAL DUE DILIGENCE DUNLAWTON AVENUE AND NOVA ROAD CORRIDOR APS AND GAPS FEASIBILITY STUDY**

**Dunlawton Avenue and Nova Road Corridor  
Port Orange, Volusia County, Florida**

**December 15, 2020**

**Terracon Project No. HK207287**



**Prepared for:**

Traffic Engineering Data Solutions, Inc  
DeBary, Florida

**Prepared by:**

Terracon Consultants Inc.  
Jacksonville, Florida

[terracon.com](http://terracon.com)

**Terracon**

**Environmental**



**Facilities**



**Geotechnical**



**Materials**



December 15, 2020



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

Attn: Mr. Mikal Hale

Re: Ecological Due Diligence  
Dunlawton Avenue and Nova Road Corridor APS and Gaps Feasibility Study  
City of Port Orange, Volusia County, Florida  
Terracon Project No. HK207287

Dear Mr. Hale:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed wetland and listed species report for the above-referenced site. The scope of this assessment included accessing the landward of extent of wetlands and surface waters on the site and a general wildlife assessment to determine the presence or potential presence of listed species and their habitat.

This work was performed in general accordance with the scope of services outlined in the Supplement to the Agreement for Services dated October 15, 2020. As requested, attached is the wetland delineation and listed species report. 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,

Joseph Brinson  
Group Manager

Gary K. Howalt, PWS  
Principal/Department Manager

## TABLE OF CONTENTS

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2.0	METHODOLOGY .....	1
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## **1.0 SITE DESCRIPTION AND PURPOSE**

The Dunlawton Avenue and Nova Road Bicycle/Pedestrian Project Feasibility Study is located in City of Port Orange, Volusia County, Florida. The subject property is further located in Sections 8, 9 and 16 of Township 16 South and Range 33 East. The footprint of the project area is described as five (5) gaps in the existing sidewalks and safety enhancements at eight (8) intersections. More specifically located:

### **Sidewalk Gaps**

1. 275 feet sidewalk gap on west side of Village Trail, south of Dunlawton Avenue
2. 400 feet sidewalk gap segment on the north side of Butterfly Blvd, west of N. Swallow Tail Drive
3. 850 feet sidewalk gap segment on the east side of N. Swallow Trail, north of Dunlawton Avenue
4. 1,000 feet sidewalk gap segment on the east side of Woodbriar Trail, north of Dunlawton Avenue
5. 115 feet sidewalk gap segment on the north side of Village Trail, west of Nova Road

### **Intersections**

- A. Nova Road and Village Trail
- B. Village Trail and Dunlawton Avenue
- C. Nova Road and Dunlawton Avenue
- D. Nova Road and Herbert Street
- E. Nova Road and Madeline Avenue
- F. Nova Road and Miles Drive
- G. Nova Road and Miles Drive
- H. Commonwealth Avenue and Spruce Creek Road

The overall site is located within the jurisdiction of the St. Johns River Water Management District (SJRWMD), and the United States Army Corps of Engineers (USACE). Therefore, the purpose of this assessment is to identify wetland areas and determine what permitting obligations may be present for the site as well as if the proposed project is likely to impact listed species. The following sections detail Terracon's methodologies and findings for these services.

## **2.0 METHODOLOGY**

### **2.1 Wetland Assessment**

Terracon initially conducted a desktop analysis of readily available published resources to preliminarily identify features indicative of jurisdictional resources on the project site or in the immediate vicinity. Resources reviewed included 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 (FLUCCS), and historical aerial imagery. A wetland delineation was then conducted on site utilizing the Routine On-site Determination Method described in the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual,<sup>1</sup> Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region,<sup>2</sup> and the Florida Department of Environmental Protection (FDEP) Wetlands Delineation Manual.<sup>3</sup> We also assessed the jurisdictional status of potential wetlands for USACE under the 2020 Navigable Waters Protection Rule (40 CFR 120). Potential wetland areas were located and evaluated based on the three wetland parameters of hydrophytic vegetation, hydrology, and hydric soil indicators. The state methodology generally requires two of the three parameters be present to be considered a wetland, and USACE requires all three parameters.

Hydrophytic vegetation was assessed by identifying plant species and their assigned wetland indicator rating of obligate (occur in wetlands >99% of the time), facultative wet (occur in wetlands 67-99% of the time), facultative (occur in wetlands 34-66% of the time), facultative upland (occur in wetland 1-33% of the time), and upland (occur in wetlands <1% of the time). The USACE manual defines hydrophytic vegetation as present when at least 50% of the dominant plant species are rated obligate, facultative wet, or facultative. Hydrology is determined based on several primary indicators (surface water, water marks, drift deposits, reduced iron presence, oxidized rhizospheres, etc.) and secondary indicators (soil surface cracks, drainage patterns, crawfish burrows, shallow aquitard, etc.). The USACE manual defines hydrology as present when at least one primary indicator and two secondary indicators are identified. State methodologies require one. Hydric soil is determined by investigating soil features such as soil color, and evidence of redoximorphic features which are features that are formed by the processes of reduction, translocation, and/or oxidation of Fe and Mn oxides formerly called mottles and low chroma colors<sup>5</sup>. These features are commonly found in hydric soils.

Potential wetland areas initially identified through the review of readily available resources were located and evaluated on site during the site investigation. No jurisdictional wetland was identified in the project corridor.

## **2.2 Listed Species Assessment**

The site was preliminarily investigated for the presence of state and federally protected animal species and their habitat.<sup>4</sup> Literature and agency file searches were conducted to identify the

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<sup>1</sup>Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.

<sup>2</sup>U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0). U.S. Army Engineer Research and Development Center, Vicksburg, MS.

<sup>3</sup>Gilbert, K.M., J.D. Tobe, R.W. Cantrell, M.E. Sweely, and J.R. Cooper. 1995. The Florida Wetlands Delineation Manual. FDEP, Tallahassee, FL.

<sup>4</sup>Species-specific survey methods were not used as this is a preliminary site inspection.



potential occurrence of state and federally protected animal species on the site. A review of Geographical Information System databases<sup>5</sup> containing listed species observations and a map review were performed prior to the field assessment. The U.S. Fish and Wildlife Service (FWS) Information, Planning, and Conservation (IPAC) and Florida Natural Areas Inventory (FNAI) search engines were also utilized to determine potential occurrences.

FWS-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 search results were supplemented by data from the Florida Fish and Wildlife Conservation Commission (FWC). Absence of documented sightings on-site or in the immediate vicinity does not ensure that protected species are not present. The lack of documented sightings in the databases may indicate that the area has not been surveyed or did not previously contain habitat. Additional FWC databases researched for this assessment include Map Direct, wading bird colonies, the eagle nest locator, and GIS data layers of species occurrences.

The site survey was performed along meandering pedestrian transects of each habitat type, and included visual and aural observations by ecologists, Joe Brinson and James Moody, on November 20, 2020.

### **3.0 PERMITTING HISTORY**

Terracon initiated the permitting history with a review of all available permits issued by SJRWMD along the project area. This review was performed to provide a clear historic picture of the on-site conditions prior to development along Dunlawton Avenue and Nova Road. Projects reviewed include Countryside (SJRWMD Permit #22603-1), Woodbriar Trail N. Swallow Tail Dr. (SJRWMD Permit # 22603-2), Arman Medical Center (SJRWMD Permit #22603-5), Countryside (SJRWMD Permit #22603-1), Elite Plaza (SJRWMD Permit #22603-12), Countryside (SJRWMD Permit #22614-2, 3 4, 5 , 6), Arbys at Country side PUD(SJRWMD Permit #22614-14), State Road 421 (SJRWMD Permit #23032-1), Spruce Creek Road Curve Area Drainage (SJRWMD Permit #29869-1), CarpetMax (SJRWMD Permit #29999-1), Cambridge Basin Flood Relief (SJRWMD Permit #100485-2), Cambridge Basin Flood Relief (SJRWMD Permit #100485-2), Huntley Commercial (SJRWMD Permit #103962-1) and 7-Eleven (SJRWMD Permit #103962-2). Based on this review, no indications of any historic wetlands were noted within the proposed corridor.

Terracon also reviewed relevant permitting documentation from the City of Port Orange and Volusia County that included engineering plans and as-built documentation. Terracon did not note anything within this documentation that indicated the potential presence of state or federally jurisdictional wetlands within our work area.

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<sup>5</sup>The data was obtained from the Florida Fish and Wildlife Conservation Commission and the Florida Natural Areas Inventory.

## 4.0 SITE RECONNAISSANCE AND WETLAND ASSESSMENT

The wetlands on-site were assessed by Joe Brinson and James Moody on November 20, 2020, using the Routine On-site Determination Method described in the USACE Manual, Supplemental, and FDEP Wetland Delineation Manual. No wetlands were identified in or within 50 feet of project corridor.

### Other Surface Waters

The following land use type was also observed on the site, but do not represent jurisdictional wetlands.

#### Retention Ponds (FLUCCS Code – 530)

There are eight (8) permitted wet retention facilities close to the project areas, north and south of Dunlawton Avenue. The permitted retention facilities were designed to provide stormwater retention for adjacent infrastructure and is surrounded by local roads, development, and are maintained through mowing and herbicide, therefore only marginal habitat exists in these ponds.

### Uplands

#### Highways (FLUCCS Code – 814)

The entire project area consisted of uplands and existing road right-of-way's and associated infrastructure is the majority of the current land use, which is 814 - Two-Lane Highways and is consistent with current proposed project.

## 5.0 LISTED SPECIES

The site was investigated for the presence of state and federally protected animal species and their habitat. The database searches identified four (4) listed animal species with the potential to occur on-site based on the marginal potential habitat on-site. During the site reconnaissance on October 20, 2020, Terracon conducted a general wildlife survey and investigated the project area for the potential presence of listed species. The general wildlife survey included walking meandering pedestrian transects through designated areas and collecting data of any listed species based on aural and visual observations. No suitable habitat for the following species was observed onsite.

#### Bald Eagles (*Haliaeetus leucocephalus*)

A research of the Florida Fish and Wildlife Commission (FWC) bald eagle nest locator, identified six (6) nest occur with 3 miles of the project area. With the closet nest (VO135) being approximately located 375 feet from the center point of the intersection of Dunlawton Avenue and North Swallow Tail Drive. (Latitude 29.12433, Longitude -81.01150) Last known date of activity was 2016, although after recent review of the nest it appears to be active. However, bald eagles



were not identified in or near nest. If this nest is active, Terracon recommends a consult with Federal Wildlife Service (FWS). However, the proposed project falls outside of the 330-foot primary zone and this eagle pair should be considered urbanized, as it has built and maintained a nest within 20 feet of a major highway and within feet of hospital parking lot that has heavy traffic. Therefore, this eagle pair should not be disturbed by any proposed activities from the project, and no Incidental Take Permit (ITP) should not be necessary. Specially, if the proposed work starts outside of nesting season, which is defined as the period from October 1<sup>st</sup> to May 15<sup>th</sup> or it starts when the eagles start building the nest and ends when the young eagles have fledged.

#### **Gopher Tortoise (*Gopherus polyphemus*)**

The gopher tortoise currently is a federal candidate species and is a state-threatened species which tend to inhabit well-drained sandy soil types. The USDA, NRCS web soil survey indicates well-drained soil types occur on-site which could provide gopher tortoise habitat. However, vegetative cover typically found in occupied areas was not present, and pedestrian surveys revealed no evidence of gopher tortoises or their burrows during the field investigation.

#### **Eastern Indigo Snake (*Drymarchon corais couperi*)**

The eastern indigo snake is listed as a threatened species at both the federal and state level. This species is considered a habitat generalist, as it may inhabit a wide variety of communities. This species is known to utilize gopher tortoise burrows, though may spend a great deal of time foraging within hydric communities and requires very large tracts of land to survive. As no gopher tortoise burrows were identified, this project should have no impact on the eastern indigo snake.

#### **Wood Stork (*Mycteria americana*)**

This species nests colonially in a variety of inundated forested wetlands, including cypress strands and domes, mixed hardwood swamps, sloughs, and mangroves. Increasingly nesting in artificial habitats (e.g., impoundments and dredged areas with native or exotic vegetation) in north and central Florida. The wood stork 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). There was marginal nesting and foraging habitat located near the project areas in the form of wet retention ponds. These ponds are maintained and do not contain high quality habitat. However, a group of wood storks were identified resting along the bank of the westernmost retention pond, located near the intersection of North Swallow Tail Drive and Dunlawton Avenue. More specifically located approximately 350 feet west of the proposed sidewalk gap improvement area along North Swallow Tail Drive. No nest was identified, and this location should not be considered a rockery. Therefore, the proposed project will have no effect on this resting activity, as this area is very busy and is surrounded by densely packed infrastructure.

## **6.0 CONCLUSIONS AND RECOMMENDATIONS**

The site was investigated to determine the landward extent of wetlands on the site as well as the potential presence of listed species on the site. Based on the results of our assessment, Terracon makes the following recommendations.

- No wetlands were identified onsite, permitted retention ponds are adjacent to the project area. However, the site does not contain high quality listed species habitat.
- Based on our field investigation and desktop research, the wildlife assessment revealed the proposed project is unlikely to affect listed species and no critical habitat was identified within project corridor. Therefore, the project is not likely to effect listed species.
- Terracon does recommend coordination's with FWS on the bald eagle nest VO135. However, there should be no Incidental Take Permit Requirement.

An ERP permit application will need to be submitted to the SJRWMD to address stormwater management as it relates to the proposed project, but no environmental concerns will need to be reviewed.

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



## 8.0 REFERENCES

1. F.A.C. 62-340 "Delineation of the Landward Extent of Wetlands and Surface Waters" (Florida DEP 1994)
2. Munsell Soil Color Charts (Munsell 1931)
3. ISB: Atlas of Florida Vascular Plants (On-line Service 2014)
4. Google Earth on-line mapping services (Google 2014)
5. University of Florida Forest Stewardship, "Common Trees in Florida Hardwood Forests" (UF 2009) Wetland Delineation Methodology (Florida DEP 1997)
6. Wetland Delineation Methodology (Florida DEP 1997)
7. National Wetland Inventory "Wetlands Mapper" (U.S. Fish and Wildlife 2013)
8. University of Florida Aerial Photo Archive (UF 2014)
9. Volusia County Soil Survey (USDA)
10. Army Corps of Engineers "Corps of Engineers Wetland Delineation Manual," dated January 1987
11. U.S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0). U.S. Army Engineer Research and Development Center, Vicksburg, MS.

**APPENDIX F**

**CULTURAL RESOURCES ASSESSMENT SURVEY  
(CRAS) DETERMINATION**

**(by Terracon Consultants, Inc.)**



December 15, 2020



Mikal R. Hale, PE / LEED AP®  
Senior Project Manager  
Traffic Engineering Data Solutions, Inc.  
80 Spring Vista Drive  
DeBary, Florida 32713  
386.753.0558 (o) 386.547.4535 (c)

**RE: Request for Cultural Resource Assessment Survey (CRAS) Determination**

Name of Project: Accessible Pedestrian Signals and Sidewalk Gap Feasibility Study  
Location: Volusia County, Florida

Dear Mr. Hale:

This letter was prepared at the request of TEDS in order to determine if any cultural resources have been previously recorded within the areas of impact, or areas not previously tested.

A search of the Florida Master Site File (FMSF) data base revealed no cultural resources having been recorded within or nearby the study corridor. The closest cultural resources are three archaeological sites to the northeast and east (**Figure 1**).

The FMSF also revealed three historic structures to the east of the project areas; none of which are in close proximity to the areas of impact or in the viewshed. In addition to the FMSF data base, the Volusia County Property Appraiser website was searched to determine if any parcels within or adjacent to the study tract has any structures that were built prior to 1971; buildings 50 years or older are considered historic. According to the property appraiser search, there are no historic structures within or adjacent to the areas of impact.

In addition to known cultural resources, the FMSF was also searched for previous cultural resource assessment surveys (CRAS) within the project area. Two major surveys have been conducted within the project tract; these include the 1987 SR421 expansion to four lanes (FMSF# 1435) and the 1996 historic properties survey that focused on Nova Road throughout the project corridor.

According to past CRAS reports of the general area and observations from current aerial images, the entire project area and the general vicinity has been subjected to prior disturbance. According to the 1987 CRAS report, most areas that will be subjected to improvements are within areas of poorly drained soils. The few areas of moderately drained soils have been subjected to prior disturbance; additional research that included the USDA soil study revealed that many areas contain hydric soils.



Terracon Consultants, Inc. 2930 Wellington Circle, Suite 201 Tallahassee, FL 32309  
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Geotechnical



Environmental



Construction Materials



Facilities

If you have any questions, please contact me at (904) 470-2200 or at [bhandley@esinc.cc](mailto:bhandley@esinc.cc). Thank you.

Sincerely,  
**Terracon Consultants, Inc.**

Brent M. Handley  
Cultural Resource Department Manager  
Florida Division

Gary K. Howalt  
Principle and Department Manager  
Florida Division



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Geotechnical



Environmental



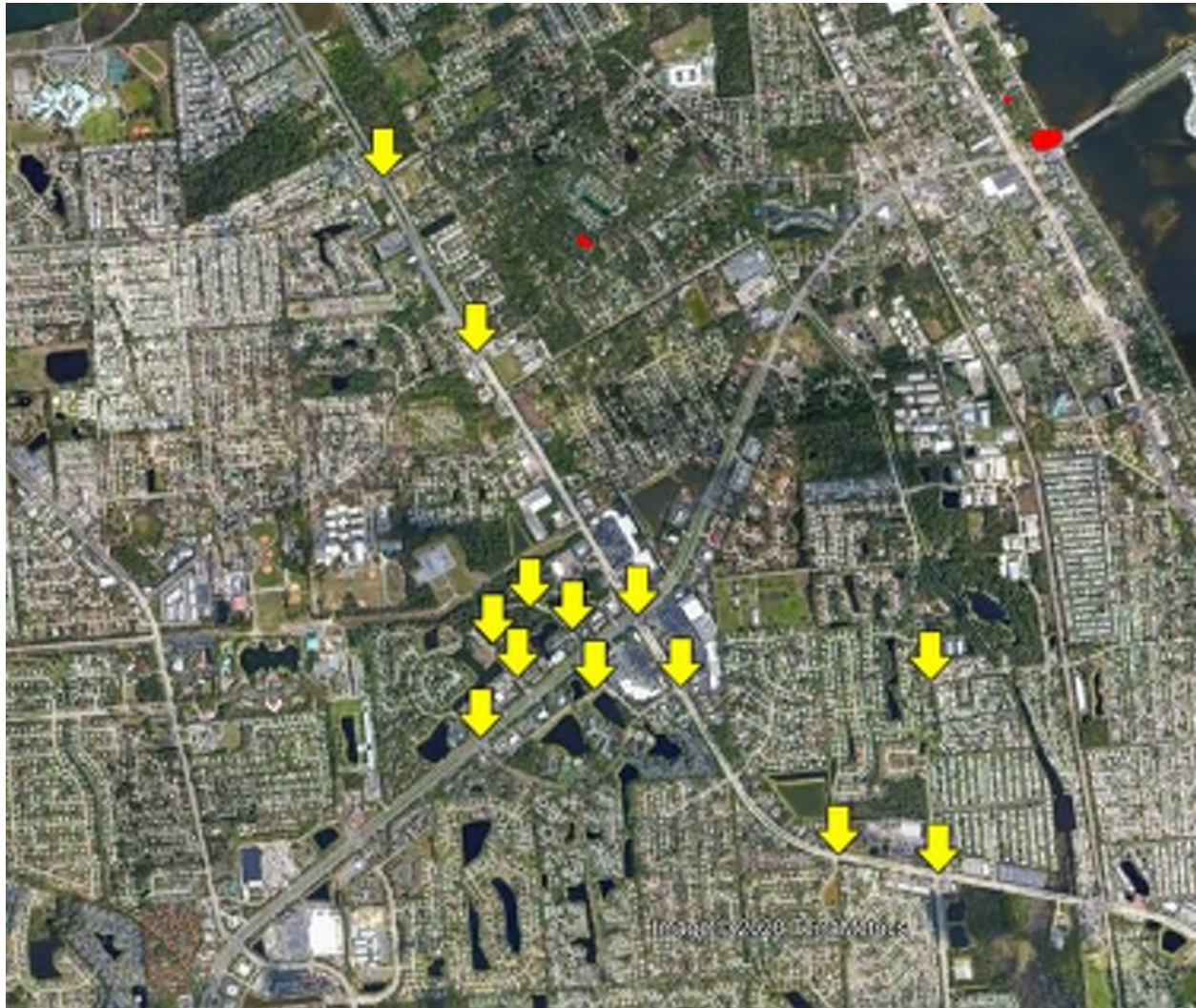
Construction Materials



Facilities



Attachment: Location Map with archaeological sites marked in red and areas of impact in yellow.



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Environmental



Construction Materials



Facilities

**APPENDIX G**

**COST ESTIMATES**

**&**

**FDOT APPROVED INFLATION FACTORS**



**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #1 (INTERSECTION IMPROVEMENTS) - NOVA ROAD & VILLAGE TRAIL**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$15,730.00	\$15,730.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$20,973.00	\$20,973.00
0104 10 3	SEDIMENT BARRIER	LF	170	\$1.82	\$309.40
0104 18	INLET PROTECTION SYSTEM	EA	0	\$94.94	\$0.00
0110 1 1	CLEARING & GRUBBING	AC	0.01	\$18,823.86	\$188.24
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	184	\$25.58	\$4,706.72
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	1672	\$2.62	\$4,380.64
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	92.0	\$137.97	\$12,693.24
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	196	\$30.91	\$6,058.36
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	0	\$41.88	\$0.00
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	149	\$65.54	\$9,765.46
0527 2	DETECTABLE WARNINGS	SF	72	\$30.45	\$2,192.40
0570 1 2	PERFORMANCE TURF, SOD	SY	81	\$3.07	\$248.67
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	56	\$7.98	\$446.88
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	290	\$24.29	\$7,044.10
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	1	\$6,499.13	\$6,499.13
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	8	\$780.33	\$6,242.64
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	8	\$1,575.20	\$12,601.60
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	0	\$234.78	\$0.00
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	8	\$681.75	\$5,454.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	8	\$88.71	\$709.68
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	8	\$1,409.18	\$11,273.44
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	8	\$55.45	\$443.60
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	1	\$1,997.46	\$1,997.46
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	0	\$335.34	\$0.00
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	460	\$7.93	\$3,647.80
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	530	\$15.02	\$7,960.60
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS- SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$141,567.06</b>

<b>RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)</b>					<b>\$0.00</b>
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-	SURVEYING & R/W MAPPING	LS	1	\$20,000.00	\$20,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$30,000.00	\$30,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$10,000.00	\$10,000.00
-	CEI	LS	1	\$15,500.00	\$15,500.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$77,500.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$219,067.06</b>

FDOT INFLATION-ADJUSTED ESTIMATE		INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST		2.7%	1.14	\$249,736.45
2023 ESTIMATED PROJECT COST		2.8%	1.172	\$256,746.59
2024 ESTIMATED PROJECT COST		2.9%	1.206	\$264,194.87

**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #2 (INTERSECTION IMPROVEMENTS) - VILLAGE TRAIL & DUNLAWTON AVENUE**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$28,995.00	\$28,995.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$38,660.00	\$38,660.00
0104 10 3	SEDIMENT BARRIER	LF	228	\$1.82	\$414.96
0104 18	INLET PROTECTION SYSTEM	EA	2	\$94.94	\$189.88
0110 1 1	CLEARING & GRUBBING	AC	0.03	\$18,823.86	\$564.72
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	60	\$25.58	\$1,534.80
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	2728	\$2.62	\$7,147.36
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	150.0	\$137.97	\$20,695.50
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	0	\$30.91	\$0.00
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY		\$41.88	\$0.00
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	92	\$65.54	\$6,029.68
0527 2	DETECTABLE WARNINGS	SF	97	\$30.45	\$2,953.65
0570 1 2	PERFORMANCE TURF, SOD	SY	187	\$3.07	\$574.09
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	600	\$7.98	\$4,788.00
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	500	\$24.29	\$12,145.00
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	1	\$6,499.13	\$6,499.13
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	16	\$780.33	\$12,485.28
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	8	\$1,575.20	\$12,601.60
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	6	\$234.78	\$1,408.68
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	8	\$681.75	\$5,454.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	0	\$88.71	\$0.00
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	8	\$1,409.18	\$11,273.44
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	0	\$55.45	\$0.00
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	1	\$1,997.46	\$1,997.46
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	0	\$335.34	\$0.00
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	760	\$7.93	\$6,026.80
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	652	\$15.02	\$9,793.04
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS-SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	800	\$1.68	\$1,344.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	8	\$6,366.00	\$50,928.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	1	\$11,670.79	\$11,670.79
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	8	\$597.20	\$4,777.60
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$260,952.46</b>

RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)					\$0.00
-	SURVEYING & R/W MAPPING	LS	1	\$20,000.00	\$20,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$30,000.00	\$30,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$10,000.00	\$10,000.00
-	CEI	LS	1	\$15,500.00	\$15,500.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$77,500.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$338,452.46</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$385,835.80
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$396,666.28
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$408,173.66



**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #3 (INTERSECTION IMPROVEMENTS) - NOVA ROAD & DUNLAWTON AVENUE**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$19,909.00	\$19,909.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$26,545.00	\$26,545.00
0104 10 3	SEDIMENT BARRIER	LF	173	\$1.82	\$314.86
0104 18	INLET PROTECTION SYSTEM	EA	1	\$94.94	\$94.94
0110 1 1	CLEARING & GRUBBING	AC	0.01	\$18,823.86	\$188.24
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	253	\$25.58	\$6,471.74
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	3004	\$2.62	\$7,870.48
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	165.2	\$137.97	\$22,792.64
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	99	\$22.77	\$2,254.23
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	135	\$30.91	\$4,172.85
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	38	\$41.88	\$1,591.44
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	142	\$65.54	\$9,306.68
0527 2	DETECTABLE WARNINGS	SF	97	\$30.45	\$2,953.65
0570 1 2	PERFORMANCE TURF, SOD	SY	64	\$3.07	\$196.48
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	61	\$7.98	\$486.78
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	405	\$24.29	\$9,837.45
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	1	\$6,499.13	\$6,499.13
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	8	\$780.33	\$6,242.64
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	8	\$1,575.20	\$12,601.60
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	6	\$234.78	\$1,408.68
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	8	\$681.75	\$5,454.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	1	\$88.71	\$88.71
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	8	\$1,409.18	\$11,273.44
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	1	\$55.45	\$55.45
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	1	\$1,997.46	\$1,997.46
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	0	\$335.34	\$0.00
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	867	\$7.93	\$6,875.31
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	760	\$15.02	\$11,415.20
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS-SURFACE TO REMAIN	SF	92	\$3.04	\$279.68
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$179,177.76</b>

RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)					\$0.00
-	SURVEYING & R/W MAPPING	LS	1	\$20,000.00	\$20,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$30,000.00	\$30,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$10,000.00	\$10,000.00
-	CEI	LS	1	\$15,500.00	\$15,500.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$77,500.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$256,677.76</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$292,612.65
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$300,826.34
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$309,553.38

**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #4 (INTERSECTION IMPROVEMENTS) - NOVA ROAD & HERBERT STREET**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$16,573.00	\$16,573.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$22,097.00	\$22,097.00
0104 10 3	SEDIMENT BARRIER	LF	215	\$1.82	\$391.30
0104 18	INLET PROTECTION SYSTEM	EA	6	\$94.94	\$569.64
0110 1 1	CLEARING & GRUBBING	AC	0.02	\$18,823.86	\$376.48
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	259	\$25.58	\$6,625.22
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	1641	\$2.62	\$4,299.42
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	90.3	\$137.97	\$12,458.69
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	1	\$902.25	\$902.25
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	117	\$30.91	\$3,616.47
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	0	\$41.88	\$0.00
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	194	\$65.54	\$12,714.76
0527 2	DETECTABLE WARNINGS	SF	78	\$30.45	\$2,375.10
0570 1 2	PERFORMANCE TURF, SOD	SY	56	\$3.07	\$171.92
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	58	\$7.98	\$462.84
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	255	\$24.29	\$6,193.95
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	1	\$6,499.13	\$6,499.13
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	8	\$780.33	\$6,242.64
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	8	\$1,575.20	\$12,601.60
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	2	\$234.78	\$469.56
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	8	\$681.75	\$5,454.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	4	\$88.71	\$354.84
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	8	\$1,409.18	\$11,273.44
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	4	\$55.45	\$221.80
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	1	\$1,997.46	\$1,997.46
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	0	\$335.34	\$0.00
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.012	\$974.19	\$11.69
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.011	\$1,003.23	\$11.04
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	562	\$7.93	\$4,456.66
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	648	\$15.02	\$9,732.96
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS-SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$149,154.85</b>

RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)					\$0.00
-	SURVEYING & R/W MAPPING	LS	1	\$20,000.00	\$20,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$30,000.00	\$30,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$10,000.00	\$10,000.00
-	CEI	LS	1	\$15,500.00	\$15,500.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$77,500.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$226,654.85</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$258,386.53
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$265,639.49
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$273,345.75



**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #5 (INTERSECTION IMPROVEMENTS) – NOVA ROAD & MADELINE AVENUE**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$23,585.00	\$23,585.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$31,446.00	\$31,446.00
0104 10 3	SEDIMENT BARRIER	LF	244	\$1.82	\$444.08
0104 18	INLET PROTECTION SYSTEM	EA	4	\$94.94	\$379.76
0110 1 1	CLEARING & GRUBBING	AC	0.02	\$18,823.86	\$376.48
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	354	\$25.58	\$9,055.32
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	2309	\$2.62	\$6,049.58
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	127.0	\$137.97	\$17,522.19
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	405	\$30.91	\$12,518.55
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	0	\$41.88	\$0.00
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	262	\$65.54	\$17,171.48
0527 2	DETECTABLE WARNINGS	SF	134	\$30.45	\$4,080.30
0570 1 2	PERFORMANCE TURF, SOD	SY	96	\$3.07	\$294.72
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	113	\$7.98	\$901.74
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	466	\$24.29	\$11,319.14
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	1	\$6,499.13	\$6,499.13
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	10	\$780.33	\$7,803.30
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	12	\$1,575.20	\$18,902.40
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	5	\$234.78	\$1,173.90
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	12	\$681.75	\$8,181.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	9	\$88.71	\$798.39
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	12	\$1,409.18	\$16,910.16
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	4	\$55.45	\$221.80
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	1	\$1,997.46	\$1,997.46
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	1	\$335.34	\$335.34
0700 1 60	SINGLE POST SIGN, REMOVE	AS	1	\$31.91	\$31.91
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.001	\$974.19	\$0.97
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.002	\$1,003.23	\$2.01
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	671	\$7.93	\$5,321.03
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	595	\$15.02	\$8,936.90
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS-SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$212,260.04</b>

<b>RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)</b>					<b>\$0.00</b>
-	SURVEYING & R/W MAPPING	LS	1	\$20,000.00	\$20,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$30,000.00	\$30,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$10,000.00	\$10,000.00
-	CEI	LS	1	\$15,500.00	\$15,500.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$77,500.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$289,760.04</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$330,326.44
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$339,598.76
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$349,450.61

**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #6 (INTERSECTION IMPROVEMENTS) - NOVA ROAD & SPRUCE CREEK ROAD**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$11,437.00	\$11,437.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$15,249.00	\$15,249.00
0104 10 3	SEDIMENT BARRIER	LF	100	\$1.82	\$182.00
0104 18	INLET PROTECTION SYSTEM	EA	2	\$94.94	\$189.88
0110 1 1	CLEARING & GRUBBING	AC	0.01	\$18,823.86	\$188.24
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	134	\$25.58	\$3,427.72
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	1652	\$2.62	\$4,328.24
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	90.9	\$137.97	\$12,541.47
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	124	\$30.91	\$3,832.84
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	0	\$41.88	\$0.00
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	104	\$65.54	\$6,816.16
0527 2	DETECTABLE WARNINGS	SF	41	\$30.45	\$1,248.45
0570 1 2	PERFORMANCE TURF, SOD	SY	17	\$3.07	\$52.19
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	47	\$7.98	\$375.06
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	223	\$24.29	\$5,416.67
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	1	\$6,499.13	\$6,499.13
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	4	\$780.33	\$3,121.32
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	4	\$1,575.20	\$6,300.80
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	0	\$234.78	\$0.00
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	4	\$681.75	\$2,727.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	4	\$88.71	\$354.84
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	4	\$1,409.18	\$5,636.72
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	4	\$55.45	\$221.80
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	1	\$1,997.46	\$1,997.46
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	0	\$335.34	\$0.00
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	513	\$7.93	\$4,068.09
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	447	\$15.02	\$6,713.94
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS- SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$102,926.02</b>

<b>RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)</b>					<b>\$0.00</b>
-	SURVEYING & R/W MAPPING	LS	1	\$20,000.00	\$20,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$30,000.00	\$30,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$10,000.00	\$10,000.00
-	CEI	LS	1	\$15,500.00	\$15,500.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$77,500.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$180,426.02</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$205,685.66
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$211,459.30
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$217,593.78



**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #7 (INTERSECTION IMPROVEMENTS) - NOVA ROAD & MILES DRIVE**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$4,324.00	\$4,324.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$5,404.00	\$5,404.00
0104 10 3	SEDIMENT BARRIER	LF	163	\$1.82	\$296.66
0104 18	INLET PROTECTION SYSTEM	EA	0	\$94.94	\$0.00
0110 1 1	CLEARING & GRUBBING	AC	0.02	\$18,823.86	\$376.48
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	164	\$25.58	\$4,195.12
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	0	\$2.62	\$0.00
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	0.0	\$137.97	\$0.00
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	167	\$30.91	\$5,161.97
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	0	\$41.88	\$0.00
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	127	\$65.54	\$8,323.58
0527 2	DETECTABLE WARNINGS	SF	39	\$30.45	\$1,187.55
0570 1 2	PERFORMANCE TURF, SOD	SY	66	\$3.07	\$202.62
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	0	\$7.98	\$0.00
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	0	\$24.29	\$0.00
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	0	\$6,499.13	\$0.00
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	0	\$780.33	\$0.00
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	0	\$1,575.20	\$0.00
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	0	\$234.78	\$0.00
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	0	\$681.75	\$0.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	0	\$88.71	\$0.00
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	0	\$1,409.18	\$0.00
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	0	\$55.45	\$0.00
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	0	\$1,997.46	\$0.00
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	0	\$335.34	\$0.00
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	236	\$7.93	\$1,871.48
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	0	\$15.02	\$0.00
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS-SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$31,343.46</b>

<b>RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)</b>					<b>\$0.00</b>
-	SURVEYING & R/W MAPPING	LS	1	\$15,000.00	\$15,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$25,000.00	\$25,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$10,000.00	\$10,000.00
-	CEI	LS	1	\$13,000.00	\$13,000.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$65,000.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$96,343.46</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$109,831.54
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$112,914.53
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$116,190.21

**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #8 (INTERSECTION IMPROVEMENTS) - COMMONWEALTH BOULEVAD & SPRUCE CREEK ROAD**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$13,086.00	\$13,086.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$17,448.00	\$17,448.00
0104 10 3	SEDIMENT BARRIER	LF	74	\$1.82	\$134.68
0104 18	INLET PROTECTION SYSTEM	EA	0	\$94.94	\$0.00
0110 1 1	CLEARING & GRUBBING	AC	0.01	\$18,823.86	\$188.24
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	37	\$25.58	\$946.46
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	395	\$2.62	\$1,034.90
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	21.7	\$137.97	\$2,993.95
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	44	\$30.91	\$1,360.04
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	0	\$41.88	\$0.00
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	42	\$65.54	\$2,752.68
0527 2	DETECTABLE WARNINGS	SF	32	\$30.45	\$974.40
0570 1 2	PERFORMANCE TURF, SOD	SY	18	\$3.07	\$55.26
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	200	\$7.98	\$1,596.00
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	200	\$24.29	\$4,858.00
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	1	\$6,499.13	\$6,499.13
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	6	\$780.33	\$4,681.98
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	3	\$1,575.20	\$4,725.60
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	3	\$234.78	\$704.34
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	2	\$681.75	\$1,363.50
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	1	\$1,203.83	\$1,203.83
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	0	\$88.71	\$0.00
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	4	\$1,409.18	\$5,636.72
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	0	\$55.45	\$0.00
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	1	\$1,997.46	\$1,997.46
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	0	\$335.34	\$0.00
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	186	\$7.93	\$1,474.98
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	135	\$15.02	\$2,027.70
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS-SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	300	\$1.68	\$504.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	4	\$6,366.00	\$25,464.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	1	\$11,670.79	\$11,670.79
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	4	\$597.20	\$2,388.80
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$117,771.44</b>

RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)					\$0.00
-	SURVEYING & R/W MAPPING	LS	1	\$20,000.00	\$20,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$30,000.00	\$30,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$10,000.00	\$10,000.00
-	CEI	LS	1	\$15,500.00	\$15,500.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$77,500.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$195,271.44</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$222,609.44
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$228,858.12
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$235,497.35



**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #9 (SIDEWALK GAP) - WEST SIDE OF VILLAGE TRAIL, SOUTH OF DUNLAWTON AVENUE**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$7,105.00	\$7,105.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$8,881.00	\$8,881.00
0104 10 3	SEDIMENT BARRIER	LF	232	\$1.82	\$422.24
0104 18	INLET PROTECTION SYSTEM	EA	3	\$94.94	\$284.82
0110 1 1	CLEARING & GRUBBING	AC	0.01	\$18,823.86	\$188.24
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	16	\$25.58	\$409.28
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	0	\$2.62	\$0.00
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	0.0	\$137.97	\$0.00
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	3	\$7,358.33	\$22,074.99
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	0	\$30.91	\$0.00
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	244	\$41.88	\$10,218.72
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	0	\$65.54	\$0.00
0527 2	DETECTABLE WARNINGS	SF	0	\$30.45	\$0.00
0570 1 2	PERFORMANCE TURF, SOD	SY	52	\$3.07	\$159.64
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	0	\$7.98	\$0.00
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	0	\$24.29	\$0.00
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	0	\$6,499.13	\$0.00
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	0	\$780.33	\$0.00
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	0	\$1,575.20	\$0.00
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	0	\$234.78	\$0.00
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	0	\$681.75	\$0.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	0	\$88.71	\$0.00
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	0	\$1,409.18	\$0.00
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	0	\$55.45	\$0.00
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	0	\$1,997.46	\$0.00
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	1	\$335.34	\$335.34
0700 1 60	SINGLE POST SIGN, REMOVE	AS	1	\$31.91	\$31.91
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	176	\$7.93	\$1,395.68
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	0	\$15.02	\$0.00
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS- SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00

**SUBTOTAL CONSTRUCTION COST \$51,506.86**

<b>RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)</b>	<b>\$5,000.00</b>
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-	SURVEYING & R/W MAPPING	LS	1	\$15,000.00	\$15,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$35,000.00	\$35,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$4,000.00	\$4,000.00
-	CEI	LS	1	\$14,000.00	\$14,000.00

**SURVEY / DESIGN / CEI SUBTOTAL \$70,000.00**

**TOTAL PROJECT COSTS \$126,506.86**

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$144,217.82
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$148,266.04
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$152,567.27

**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #10 (SIDEWALK GAP) - NORTH SIDE OF BUTTERFLY BOULEVARD, WEST OF S. SWALLOW TAIL DRIVE**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$2,829.00	\$2,829.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$3,536.00	\$3,536.00
0104 10 3	SEDIMENT BARRIER	LF	317	\$1.82	\$576.94
0104 18	INLET PROTECTION SYSTEM	EA	2	\$94.94	\$189.88
0110 1 1	CLEARING & GRUBBING	AC	0.19	\$18,823.86	\$3,576.53
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	15	\$25.58	\$383.70
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	0	\$2.62	\$0.00
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	0.0	\$137.97	\$0.00
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	0	\$30.91	\$0.00
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	177	\$41.88	\$7,412.76
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	0	\$65.54	\$0.00
0527 2	DETECTABLE WARNINGS	SF	0	\$30.45	\$0.00
0570 1 2	PERFORMANCE TURF, SOD	SY	142	\$3.07	\$435.94
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	0	\$7.98	\$0.00
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	0	\$24.29	\$0.00
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	0	\$6,499.13	\$0.00
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	0	\$780.33	\$0.00
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	0	\$1,575.20	\$0.00
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	0	\$234.78	\$0.00
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	0	\$681.75	\$0.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	0	\$88.71	\$0.00
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	0	\$1,409.18	\$0.00
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	0	\$55.45	\$0.00
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	0	\$1,997.46	\$0.00
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	3	\$335.34	\$1,006.02
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	42	\$7.93	\$333.06
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	15	\$15.02	\$225.30
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS-SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$20,505.13</b>

RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)					\$0.00
-	SURVEYING & R/W MAPPING	LS	1	\$15,000.00	\$15,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$35,000.00	\$35,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$4,000.00	\$4,000.00
-	CEI	LS	1	\$14,000.00	\$14,000.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$70,000.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$90,505.13</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$103,175.85
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$106,072.02
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$109,149.19



**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #11 (SIDEWALK GAP) – EAST SIDE OF N. SWALLOW TAIL DRIVE, NORTH OF DUNLAWTON AVENUE**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$5,673.00	\$5,673.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$7,092.00	\$7,092.00
0104 10 3	SEDIMENT BARRIER	LF	809	\$1.82	\$1,472.38
0104 18	INLET PROTECTION SYSTEM	EA	3	\$94.94	\$284.82
0110 1 1	CLEARING & GRUBBING	AC	0.18	\$18,823.86	\$3,388.29
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	0	\$25.58	\$0.00
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	0	\$2.62	\$0.00
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	0.0	\$137.97	\$0.00
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	0	\$30.91	\$0.00
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	443	\$41.88	\$18,552.84
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	0	\$65.54	\$0.00
0527 2	DETECTABLE WARNINGS	SF	40	\$30.45	\$1,218.00
0570 1 2	PERFORMANCE TURF, SOD	SY	352	\$3.07	\$1,080.64
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	0	\$7.98	\$0.00
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	0	\$24.29	\$0.00
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	0	\$6,499.13	\$0.00
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	0	\$780.33	\$0.00
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	0	\$1,575.20	\$0.00
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	0	\$234.78	\$0.00
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	0	\$681.75	\$0.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	0	\$88.71	\$0.00
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	0	\$1,409.18	\$0.00
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	0	\$55.45	\$0.00
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	0	\$1,997.46	\$0.00
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	2	\$335.34	\$670.68
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	151	\$7.93	\$1,197.43
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	28	\$15.02	\$420.56
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS-SURFACE TO REMAIN	SF	26	\$3.04	\$79.04
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$41,129.68</b>

RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)					\$10,000.00
-	SURVEYING & R/W MAPPING	LS	1	\$20,000.00	\$20,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$45,000.00	\$45,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$4,000.00	\$4,000.00
-	CEI	LS	1	\$17,750.00	\$17,750.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$88,750.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$139,879.68</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$159,462.84
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$163,938.99
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$168,694.90

**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #12 (SIDEWALK GAP) - EAST SIDE OF WOODBRIAR TRAIL, NORTH OF DUNLAWTON AVENUE**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$17,920.00	\$17,920.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$22,400.00	\$22,400.00
0104 10 3	SEDIMENT BARRIER	LF	1012	\$1.82	\$1,841.84
0104 18	INLET PROTECTION SYSTEM	EA	8	\$94.94	\$759.52
0110 1 1	CLEARING & GRUBBING	AC	0.29	\$18,823.86	\$5,458.92
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	8	\$25.58	\$204.64
0120 1	REGULAR EXCAVATION	CY	150.0	\$13.09	\$1,963.50
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	100.0	\$20.18	\$2,018.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	0	\$2.62	\$0.00
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE, TRAFFIC C, FC-9.5, PG 76-22	TN	0.0	\$137.97	\$0.00
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	2	\$5,880.45	\$11,760.90
0425 1521	INLETS, DT BOT, TYPE C, <10'	EA	1	\$3,645.87	\$3,645.87
0425 2 41	MANHOLES, P-7, <10'	EA	1	\$4,824.66	\$4,824.66
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	50	\$99.64	\$4,982.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	60	\$72.91	\$4,374.60
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	2	\$3,809.35	\$7,618.70
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	0	\$30.91	\$0.00
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	626	\$41.88	\$26,216.88
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	51	\$65.54	\$3,342.54
0527 2	DETECTABLE WARNINGS	SF	78	\$30.45	\$2,375.10
0570 1 2	PERFORMANCE TURF, SOD	SY	749	\$3.07	\$2,299.43
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	0	\$7.98	\$0.00
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	0	\$24.29	\$0.00
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	0	\$6,499.13	\$0.00
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	0	\$780.33	\$0.00
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	0	\$1,575.20	\$0.00
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	0	\$234.78	\$0.00
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	0	\$681.75	\$0.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	0	\$88.71	\$0.00
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	0	\$1,409.18	\$0.00
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	0	\$55.45	\$0.00
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	0	\$1,997.46	\$0.00
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	2	\$335.34	\$670.68
0700 1 60	SINGLE POST SIGN, REMOVE	AS	1	\$31.91	\$31.91
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	338	\$7.93	\$2,680.34
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	163	\$15.02	\$2,448.26
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS- SURFACE TO REMAIN	SF	26	\$3.04	\$79.04
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$129,917.33</b>

<b>RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)</b>					<b>\$5,000.00</b>
-	SURVEYING & R/W MAPPING	LS	1	\$20,000.00	\$20,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$45,000.00	\$45,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$4,000.00	\$4,000.00
-	CEI	LS	1	\$17,750.00	\$17,750.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$88,750.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$223,667.33</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$254,980.76
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$262,138.11
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$269,742.80



**ENGINEER'S OPINION OF PROBABLE COSTS**  
**COMPONENT #13 (SIDEWALK GAP) - NORTH SIDE OF VILLAGE TRAIL, WEST OF NOVA ROAD**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$1,983.00	\$1,983.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$2,314.00	\$2,314.00
0104 10 3	SEDIMENT BARRIER	LF	139	\$1.82	\$252.98
0104 18	INLET PROTECTION SYSTEM	EA	0	\$94.94	\$0.00
0110 1 1	CLEARING & GRUBBING	AC	0.03	\$18,823.86	\$564.72
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	15	\$25.58	\$383.70
0120 1	REGULAR EXCAVATION	CY	0.0	\$13.09	\$0.00
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	0.0	\$20.18	\$0.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	0	\$2.62	\$0.00
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-9.5, PG 76-22	TN	0.0	\$137.97	\$0.00
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	0	\$7,358.33	\$0.00
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	0	\$5,880.45	\$0.00
0425 1521	INLETS, DT BOT, TYPE C,<10'	EA	0	\$3,645.87	\$0.00
0425 2 41	MANHOLES, P-7, <10'	EA	0	\$4,824.66	\$0.00
0425 5	MANHOLE, ADJUST	EA	0	\$902.25	\$0.00
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	0	\$99.64	\$0.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	0	\$72.91	\$0.00
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	0	\$3,809.35	\$0.00
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	0	\$22.77	\$0.00
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	0	\$30.91	\$0.00
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	93	\$41.88	\$3,894.84
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	0	\$65.54	\$0.00
0527 2	DETECTABLE WARNINGS	SF	20	\$30.45	\$609.00
0570 1 2	PERFORMANCE TURF, SOD	SY	61	\$3.07	\$187.27
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	0	\$7.98	\$0.00
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	0	\$24.29	\$0.00
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	0	\$6,499.13	\$0.00
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	0	\$780.33	\$0.00
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	0	\$1,575.20	\$0.00
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	0	\$234.78	\$0.00
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	0	\$681.75	\$0.00
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	0	\$1,203.83	\$0.00
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	0	\$88.71	\$0.00
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	0	\$1,409.18	\$0.00
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	0	\$55.45	\$0.00
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	0	\$1,997.46	\$0.00
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	0	\$335.34	\$0.00
0700 1 60	SINGLE POST SIGN, REMOVE	AS	0	\$31.91	\$0.00
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.000	\$974.19	\$0.00
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.000	\$1,003.23	\$0.00
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	62	\$7.93	\$491.66
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	15	\$15.02	\$225.30
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS-SURFACE TO REMAIN	SF	0	\$3.04	\$0.00
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	0	\$1.68	\$0.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	0	\$6,366.00	\$0.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	0	\$11,670.79	\$0.00
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	0	\$597.20	\$0.00
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL CONSTRUCTION COST</b>					<b>\$10,906.47</b>

RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)					\$3,000.00
-	SURVEYING & R/W MAPPING	LS	1	\$10,000.00	\$10,000.00
-	CULTURAL RESOURCES	LS	1	\$1,000.00	\$1,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$1,000.00	\$1,000.00
-	ENGINEERING	LS	1	\$35,000.00	\$35,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$4,000.00	\$4,000.00
-	CEI	LS	1	\$12,750.00	\$12,750.00
<b>SURVEY / DESIGN / CEI SUBTOTAL</b>					<b>\$63,750.00</b>
<b>TOTAL PROJECT COSTS</b>					<b>\$77,656.47</b>

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$88,528.37
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$91,013.38
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$93,653.70

**ENGINEER'S OPINION OF PROBABLE COSTS**  
**ALL COMPONENTS - ACCESSIBLE PEDESTRIAN SIGNALS & SIDEWALK GAPS FEASIBILITY STUDY - DUNLAWTON AVENUE & NOVA ROAD CORRIDORS**  
**CITY OF PORT ORANGE**

PAY ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
0101 1	MOBILIZATION	LS	1	\$169,149.00	\$169,149.00
0102 1	MAINTENANCE OF TRAFFIC	LS	1	\$222,045.00	\$222,045.00
0104 10 3	SEDIMENT BARRIER	LF	3876	\$1.82	\$7,054.32
0104 18	INLET PROTECTION SYSTEM	EA	31	\$94.94	\$2,943.14
0110 1 1	CLEARING & GRUBBING	AC	0.83	\$18,823.86	\$15,623.80
0110 4 10	REMOVAL OF EXISTING CONCRETE	SY	1499	\$25.58	\$38,344.42
0120 1	REGULAR EXCAVATION	CY	150.0	\$13.09	\$1,963.50
0120 2 2	BORROW EXCAVATION, TRUCK MEASURE	CY	100.0	\$20.18	\$2,018.00
0327 70 1	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	SY	13401	\$2.62	\$35,110.62
0334 1 13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	0.0	\$97.23	\$0.00
0337 7 82	ASPHALT CONCRETE FRICTION COURSE, TRAFFIC C, FC-9.5, PG 76-22	TN	737.1	\$137.97	\$101,697.69
0425 1203	INLETS, CURB, TYPE 9, J BOT, <10'	EA	3	\$7,358.33	\$22,074.99
0425 1341	INLETS, CURB, TYPE P-4, <10'	EA	2	\$5,880.45	\$11,760.90
0425 1521	INLETS, DT BOT, TYPE C, <10'	EA	1	\$3,645.87	\$3,645.87
0425 2 41	MANHOLES, P-7, <10'	EA	1	\$4,824.66	\$4,824.66
0425 5	MANHOLE, ADJUST	EA	1	\$902.25	\$902.25
0425 5 1	MANHOLE, ADJUST, UTILITIES	EA	0	\$840.83	\$0.00
0425 6	VALVE BOXES, ADJUST	EA	0	\$474.30	\$0.00
430174115	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 15"SD	LF	50	\$99.64	\$4,982.00
430174118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"SD	LF	60	\$72.91	\$4,374.60
430610223	U-ENDWALL, INDEX 261 / 430-011, 1:3 SLOPE, 15"PIPE	EA	2	\$3,809.35	\$7,618.70
0520 1 7	CONCRETE CURB & GUTTER, TYPE E	LF	99	\$22.77	\$2,254.23
0520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	1188	\$30.91	\$36,721.08
0522 1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	SY	1621	\$41.88	\$67,887.48
0522 2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	1163	\$65.54	\$76,223.02
0527 2	DETECTABLE WARNINGS	SF	728	\$30.45	\$22,167.60
0570 1 2	PERFORMANCE TURF, SOD	SY	1941	\$3.07	\$5,958.87
0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	LF	1135	\$7.98	\$9,057.30
0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	LF	2339	\$24.29	\$56,814.31
0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	PI	7	\$6,499.13	\$45,493.91
0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	EA	60	\$780.33	\$46,819.80
0646 1 11	ALUMINUM SIGNALS POLE, PEDESTAL	EA	51	\$1,575.20	\$80,335.20
0646 1 12	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTRIAN DETECTOR POST	EA	0	\$1,785.00	\$0.00
0646 1 60	ALUMINUM SIGNALS POLE, REMOVE	EA	22	\$234.78	\$5,165.16
0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	AS	50	\$681.75	\$34,087.50
0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	AS	1	\$1,203.83	\$1,203.83
0653 1 60	PEDESTRIAN SIGNAL, REMOVE PED SIGNAL- POLE/PEDESTAL TO REMAIN	AS	26	\$88.71	\$2,306.46
0665 1 12	PEDESTRIAN DETECTOR, FURNISH & INSTALL, ACCESSIBLE	EA	52	\$1,409.18	\$73,277.36
0665 1 60	PEDESTRIAN DETECTOR, REMOVE- POLE/PEDESTAL TO REMAIN	EA	21	\$55.45	\$1,164.45
0670 5400	TRAFFIC CONTROLLER ASSEMBLY, MODIFY	AS	7	\$1,997.46	\$13,982.22
0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	9	\$335.34	\$3,018.06
0700 1 60	SINGLE POST SIGN, REMOVE	AS	3	\$31.91	\$95.73
0710 11101	PAINTED PAVEMENT MARKINGS, STANDARD, WHITE, SOLID, 6"	GM	0.013	\$974.19	\$12.66
0710 11201	PAINTED PAVEMENT MARKINGS, STANDARD, YELLOW, SOLID, 6"	GM	0.013	\$1,003.23	\$13.04
0711 14123	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 12" FOR CROSSWALK	LF	5024	\$7.93	\$39,840.32
0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	LF	3988	\$15.02	\$59,899.76
0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS- SURFACE TO REMAIN	SF	144	\$3.04	\$437.76
0715 1 12	LIGHTING CONDUCTORS, F&I, INSULATED, NO.8 - 6	LF	1100	\$1.68	\$1,848.00
0715 4 12	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 35' MOUNTING HEIGHT	EA	12	\$6,366.00	\$76,392.00
0715 7 11	LOAD CENTER, F&I, SECONDARY VOLTAGE	EA	2	\$11,670.79	\$23,341.58
0715500 1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	EA	12	\$597.20	\$7,166.40
-	LIGHT POLE BY POWER COMPANY	EA	0	\$2,000.00	\$0.00
<b>SUBTOTAL (CONSTRUCTION COSTS FOR ALL CITY COMPONENTS)</b>					<b>\$1,449,118.56</b>

RIGHT-OF-WAY (INCLUDING RIGHT OF ENTRY)					\$23,000.00
-	SURVEYING & R/W MAPPING	LS	1	\$235,000.00	\$235,000.00
-	CULTURAL RESOURCES	LS	1	\$13,000.00	\$13,000.00
-	ENVIRONMENTAL (WETLANDS AND PROTECTED SPECIES ASSIGNMENT)	LS	1	\$13,000.00	\$13,000.00
-	ENGINEERING	LS	1	\$430,000.00	\$430,000.00
-	STRUCTURAL	LS	1	\$0.00	\$0.00
-	SUE	LS	1	\$100,000.00	\$100,000.00
-	CEI	LS	1	\$197,750.00	\$197,750.00
SURVEY / DESIGN / CEI SUBTOTAL					\$988,750.00
TOTAL PROJECT COSTS					\$2,460,868.56

FDOT INFLATION-ADJUSTED ESTIMATE	INFLATION FACTOR	PDC MULTIPLIER	ADJUSTED COST
2022 ESTIMATED PROJECT COST	2.7%	1.14	\$2,805,390.16
2023 ESTIMATED PROJECT COST	2.8%	1.172	\$2,884,137.95
2024 ESTIMATED PROJECT COST	2.9%	1.206	\$2,967,807.48

\*\* Unit Prices were held constant between all Components (#1 through #13), with overall costs evaluated in the total reported for all projects. In the event that all Components are not completed in the same construction project, the unit prices may need to be inflated to account for the reduced quantities being performed, which would likely result in increase of the overall project costs.

\*\* In the event that all Components (#1 through #13) are not completed in the same construction project, the soft costs estimated for each Component may also need to be inflated, which would also likely result in increase of the overall project costs.





# FLORIDA DEPARTMENT OF TRANSPORTATION

## TRANSPORTATION COSTS REPORTS

### Inflation Factors

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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 2019 dollars (FY 2019 runs from July 1, 2018 to June 30, 2019).

#### 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
2019	Base	1.000
2020	2.6%	1.026
2021	2.6%	1.053
2022	2.7%	1.081
2023	2.8%	1.111
2024	2.9%	1.144
2025	3.0%	1.178
2026	3.1%	1.214
2027	3.2%	1.253
2028	3.3%	1.295
2029	3.3%	1.337
2030	3.3%	1.381
2031	3.3%	1.427
2032	3.3%	1.474
2033	3.3%	1.523
2034	3.3%	1.573
2035	3.3%	1.625
2036	3.3%	1.679
2037	3.3%	1.734
2038	3.3%	1.791
2039	3.3%	1.850
Source: Offices of Work Program and Budget and Policy Planning (Fiscal Year 2019 is July 1, 2018 to June 30, 2019)		

### Advisory Inflation Factors For Previous Years

Another “*Transportation Costs*” report covers highway construction cost inflation for previous years. “*Advisory Inflation Factors For Previous Years (1987-2018)*” provides Present Day Cost (PDC) multipliers that enable project cost estimates from previous years to be updated to FY 2018. For the table and text providing this information, please go to

[https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/policy/economic/retrocostinflation220259309.pdf?sfvrsn=ce29b2b6\\_2](https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/policy/economic/retrocostinflation220259309.pdf?sfvrsn=ce29b2b6_2)

## **APPENDIX H**

# **RESPONSE TO COMMENTS TECHNICAL MEMORANDUM**





Ref: 11076, TWO 6

**TECHNICAL MEMORANDUM**

**To:** Mr. Stephan Harris, Transportation Planner–Project Manager  
**From:** Mr. Chris Walsh, P.E., Mr. Mikal Hale, P.E.  
**Subject:** APS & Sidewalk Gaps Feasibility study (FM 448907-1)  
**Date:** February 25, 2021

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We have received comments on the Accessible Pedestrian Signals & Sidewalk Gaps 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 - Engineering Division:

(Valerie Duhl, Comm. Dev. Engineer – [vduhl@port-orange.org](mailto:vduhl@port-orange.org) / 386-506-5664)

(Lisa Epstein, Project Manager – [Lepstein@port-orange.org](mailto:Lepstein@port-orange.org) / 386-506-5662)

(Greg Holden, Engineering Specialist – [gholden@port-orange.org](mailto:gholden@port-orange.org) / 386-506-5662)

1. Component #5 - There is no mention of why the curb ramps are not being replaced in the medians on Nova Road. They appear to be out of compliance.

**Response:** Per discussion on February 19, 2021 phone conference, the study has been revised to include replacement of the sidewalk, curb, and curb ramps within the medians on Nova Road. See revised Sheet 13 in Appendix B and the revised the cost estimate for component #5.

2. Component #5 Concept Plan - Two (2) APS signal symbols are missing in the North median.

**Response:** See revised Sheet 13 in Appendix B where two (2) APS signal symbols have been depicted on the south median on sheet 13 in Appendix B. The cost estimate for component #5 previously accounted for these items, with 12 new APS signals provided for the intersection.

3. Component #7 - There is no mention of why APS is not recommended for the crossing of Miles Drive. Is this standard for a side street crossing with no main street crossing? Can APS be used at this location?

**Response:** As noted during the scoping meeting, the intersection of Nova Road & Miles Drive is not a signalized intersection (would not likely meet warrants). As such, there is no way to control the flow of traffic from Nova Road onto Miles Drive (i.e. SB left turn) that would allow the APS to operate safely.

4. Component #9 - West Side of Village Trail, South of Dunlawton Avenue – Note that flooding occurs in front of Circle K with existing stormwater system and issue shall be addressed in the design phase.

Supplemental Information (per 02/23/2021 e-mail): The City's Stormwater Drainage Supervisor noted that flooding occurs the full width of the single southbound lane during heavy rain events. The Drainage Supervisor stated that they have cleaned the drainage pipes with the Vac-Con many times to try resolve the issue but it hasn't helped much. He also reported that the road flooding dissipates when the rain stops.

**Response:** Since the pipes have been vacuumed several times, it is presumed that debris is commonly accumulating in the storm system, which could be contributing to the flooding issues, though it could also be caused by several other factors. It appears runoff is trapped in the northern driveway due to sands/silts within the curb that are building up and not allowing positive drainage to the inlet. The proposed curb & gutter included in the study may help alleviate some of this issue, and due to the limited system depths, an additional Type 9 inlet has been proposed to promote the intake of runoff from the roadway (in lieu of using larger inlets). Please see revised Sheet 3 in Appendix B and the revised cost estimate for component #9. Please also see revised Drainage narrative within the report (page 28), where the flooding concerns have now been mentioned along with indicating the design scope of services is to provide for the engineer to further investigate the cause of flooding and provide long term solutions.

Comments from the City of Port Orange- Public Utilities Department:

(Junos Reed, P.E. Engineering & Construction Manager – [jureed@port-orange.org](mailto:jureed@port-orange.org) / 386-506-5754)

(Gregg Marino, Engineering Intern – [gmarino@port-orange.org](mailto:gmarino@port-orange.org) / 386-506-5756)

PU/PW/ROW has finished our review. Overall status is “APC” with 1 comment from PW:

1. Component #12: An existing swale and inlet exist along the east side of N. Woodbriar Trail from 11+60 to 18+60 (see below). Curb inlets within proposed Type F curb will be needed to maintain runoff management,



If you have any questions, please feel free to contact me at (386) 506-5675 or email [tburman@port-orange.org](mailto:tburman@port-orange.org).

**Response:** Per discussion on February 19, 2021 phone conference, we concur with this comment. Please see revised Sheet 5 in Appendix B where the existing catch basin near station 17+80 (RT) has now been specified to be removed and replaced with a new Type 4 curb inlet to maintain existing drainage patterns. In addition, please see the revised cost estimate for component #12.

Comments from R2CTPO - Transportation:

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

1. Component #7 - Intersection of Nova Road and Miles Drive is listed as an existing signalized intersection to receive APS facilities on page 3. Note: this is an unsignalized intersection.

**Response:** Please see the revised page 3 of the study where component #7 has been moved from the *Existing Signalized Intersection to Receive APS Facilities* list to the *Existing Unsignalized Intersection to Receive Pedestrian Facility Upgrades* list.

We anticipate this information satisfactorily addresses these comments. Please let us know should you require any additional information.

Sincerely,

TRAFFIC ENGINEERING DATA SOLUTIONS, INC.

Mikal Reed Hale, P.E.  
Sr. Project Manager