FINAL REPORT – MARCH 30, 2022

South Street
Multi-Use Trail Feasibility Study

City of New Smyrna Beach

Prepared For:
River to Sea TPO

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EXECUTIVE SUMMARY

The City of New Smyrna Beach submitted an Application for Project Prioritization to the River to Sea Transportation Planning Organization for a multi-use trail along Sunset Drive and South Street from Turnbull Bay Road to U.S. 1, about 1.5 miles. With the corridor's current existing conditions, the presence of various businesses along South Street, utilities including electrical transmission poles with lights and fire hydrants, and based on current design guidelines and criteria for shared use paths, it was determined that a 12-foot-wide trail would be appropriate and financially feasible within the area of study with minimal reductions in width to 8-feet and 10-feet in restricted sections. Upon evaluation of the corridor's unique features, conceptual plans for the new 12-foot wide multi-use trail along the western side of Sunset Drive and the southern side of South Street were developed. This concept, presented in **Appendix A**, can be implemented within right-of-way in conjunction with agreements with the Federal Aviation Administration due to proximity of New Smyrna Beach Municipal Airport. Wetland impacts are minimal and will need to be permitted and there is low potential that impacts to threatened and endangered species will occur. For the purpose of this evaluation, the proposed improvements within the corridor are discussed as a whole in the report and cost is split into two segments as noted in the concept. The preliminary probable cost estimate for this concept is $1.18 million in 2022 dollars.

INTRODUCTION

This study is provided at the request of the River to Sea Transportation Planning Organization (R2CTPO) in response to an Application for Project Prioritization submitted by the City of New Smyrna Beach. The proposed area of study is part of the New Smyrna Beach Bike Trail Long Range Plan as well as the Florida Department of Transportation (FDOT) Shared-Use Nonmotorized (SUN) Trail Program with planned connections at both ends of this study area. The proposed improvements will serve residents of the Islesboro and North Mainland neighborhoods of New Smyrna Beach, as well as serve destinations such as the New Smyrna Beach Municipal Airport, Rocco Park, the City's Municipal Sports Complex, the VFW, and the Lions Club. This 1.5 mile connection along Sunset Drive and South Street would greatly enhance the safety characteristics of the corridor for all travel modes, advancing the City's Comprehensive Plan and State's goals of providing a network of paved trail corridors for bicyclists and pedestrians.

PROJECT PURPOSE AND SCOPE

The purpose of this study is to determine the feasibility of providing a 12-foot wide asphalt multi-use trail along Sunset Drive from Turnbull Bay Road to South Street and then continuing along South Street from Sunset Drive to U.S. 1. The trail will provide a critical need as noted in multiple neighborhood town hall meetings and planning efforts as pedestrians and bicyclists are currently using the South Street travel lanes which are relatively busy. These users are often forced to move off the paved roadway into heavy vegetation, drainage systems, or private properties to avoid passing motorists. In addition, the drivers' vision is often impaired by sunrise and sunset conditions adding to the necessity of a dedicated area for bicyclists and pedestrians alike. The trail will fill a gap identified by both the City of New Smyrna Beach Bike Trail Long Range Plan and the FDOT SUN Trail Program network, connecting surrounding residents of Islesboro and North Mainland neighborhoods to many local destinations of interest within the proposed trail corridor. The trail will connect to existing sidewalk along U.S. 1 that traverses an additional 0.6 miles north to Art Center Avenue and South to Downtown New Smyrna Beach. Furthermore, a Project Development and Environment (PD&E) study was conducted along U.S. 1 (FDOT Project # 439865-1) that evaluated the options for a multi-use trail along U.S. 1, or an alternate route from State Road (S.R.) 44 (Lytle Avenue) to Beville Road, crossing the cities of New Smyrna Beach, Port Orange, and South Daytona in Volusia County that completed in early 2020. The PD&E concluded that an independent study would take place at a future time from S.R. 44 to U.S. 1 at South

Street to evaluate alternatives to the west, outside the downtown area of New Smyrna Beach. The study also concluded a preferred alternative to propose a trail on the west side of U.S. 1 from South Street to Nova Road in Port Orange as well as many other preferred build alternatives ending at Beville Road. An additional PD&E by the FDOT has been programmed (FDOT Project #447963-1) as a result of the previous PD&E. At the time of this feasibility study, the proposed PD&E is included in the Adopted Work Program for FY 2023. A project location map, with limits is provided in ***Figure 1***.

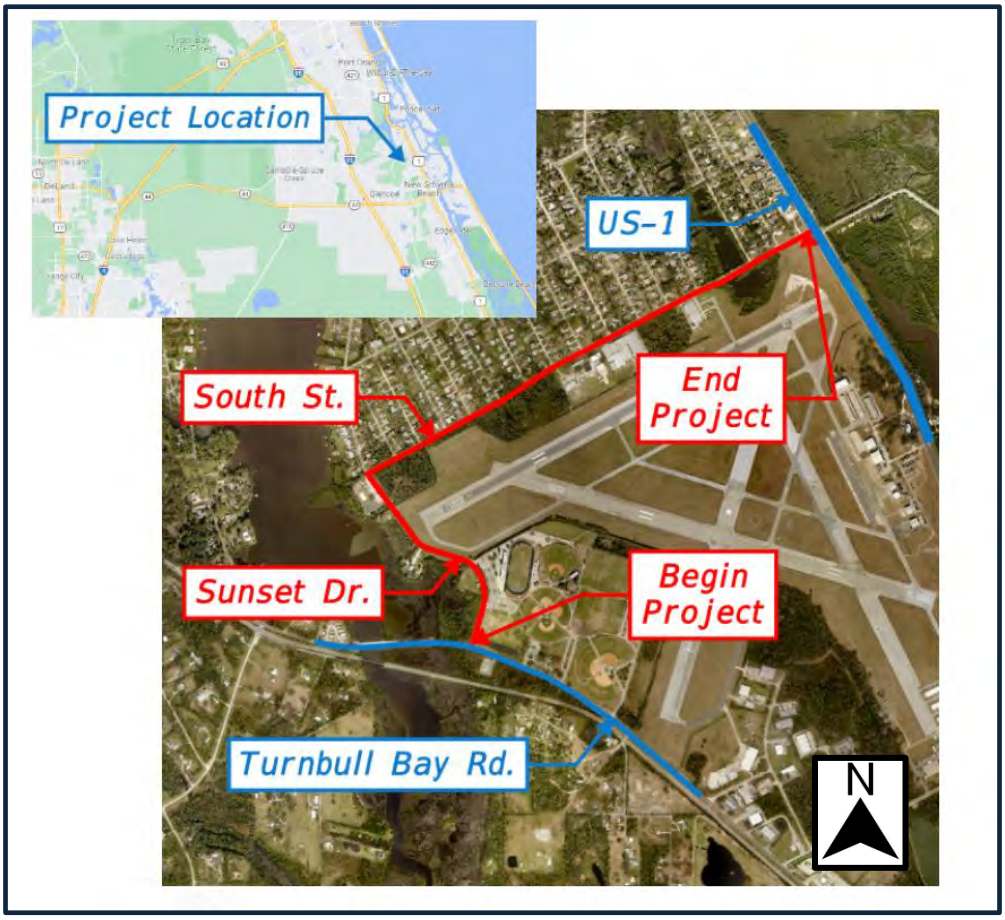


FIGURE 1: PROJECT LOCATION MAP

Field reviews were conducted for the purposes of data collection, concept development, corridor evaluation and cost estimation. The concept plans, analysis and cost estimate are based on field observations and available project information provided by the City. As such, this document should only be used for planning, estimating, and budgeting purposes. If the project is advanced to final design additional work, including the preparation of a detailed right-of-way survey, construction plans, and an updated cost estimate will be required.

The City requested the analysis of a 12-foot wide multi-use trail. It was determined that this is feasible within the project limits with minimal areas of 8-foot and 10-foot reductions due to utilities and other existing conflicts within the corridor. Therefore, a 12-foot wide multi-use trail is proposed and reflected on the Concept Plans presented in **Appendix A.** As previously mentioned, proposed improvements within the corridor are discussed as a whole in the report and the proposed cost is split into two segments as noted in the concept. Segment one begins at the beginning of the project and ends south of Rocco Park for a total length of approximately 0.37 miles and segment two begins where segment one ends and continues to the end of the project for a total length of approximately 1.13 miles, totaling 1.5 miles. The preliminary cost estimate for this concept is $1.18 million in 2022 dollars, segments one and two costing $296,076 and $880,529, respectively plus an annual fee associated with a lease agreement that will be needed between the City of New Smyrna Beach and the New Smyrna Beach Municipal Airport for the portions of the trail that extend on the airport's right-of-way.

The graphics within this report include notes, diagrams and callouts identifying the apparent right-of-way, existing utilities, location of proposed trail, and street names. Considerations include conformance to the requirements of the Americans with Disabilities Act (ADA), Florida Department of Transportation (FDOT) Florida Design Manual, American Association of State Highway and Transportation Officials (AASHTO) and the Manual on Uniform Traffic Control Devices (MUTCD).

EXISTING CONDITIONS

GENERAL DESCRIPTION

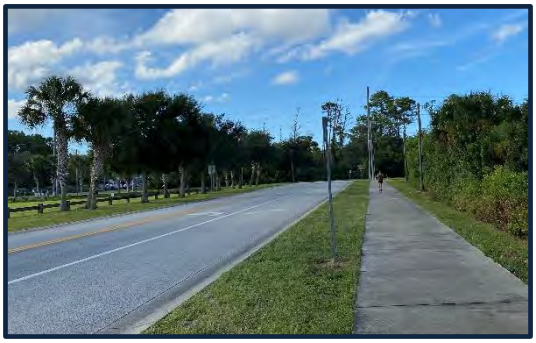


FIGURE 2: SUNSET DRIVE LOOKING SOUTH

FIGURE 3: SOUTH STREET LOOKING EAST

As stated previously, the project corridor is located within the City of New Smyrna Beach on Sunset Drive extending from Turnbull Bay Road turning onto South Street and continuing to U.S. 1, approximately 1.5 miles. Sunset Drive is a two-lane street with 12-foot wide travel lanes and a 25 mph posted speed limit reducing to 20 mph approaching South Street. Sunset Drive includes an existing 8-foot wide concrete sidewalk along the west side of the roadway with a short wooden fence in front of or behind portions of the sidewalk. The street widens to include an additional 12-foot turn lane at it's southern terminus with Turnbull Bay Road, ***Figure 2***. South Street has two 11-foot wide travel lanes and a 30 mph posted speed limit with isolated areas of 5-foot sidewalk along business fronts, ***Figure 3***. There are various driveway connections on both sides of the roadway along Sunset Drive servicing businesses and recreational areas. South Street has connections to multiple residential streets on the north side of the roadway and various business connections on the south side. The apparent right-of-way varies in width between 50 and 110 feet along South Street. Sunset Drive right-of-way extends beyond the roadway footprint as it shares it's ownership boundaries with the New Smyrna Beach Municipal Airport to the east of the roadway and extends to the west to Turnbull Bay. Along the north end of Sunset Drive, a public recreational area, Rocco Park, is present where the existing sidewalk traverses through today. Wooden bollards are located on both sides of the existing sidewalk as a prevention method of vehicles entering the existing path along the established parking area servicing the park. The Sunset Drive and South Street existing typical sections are provided in **Appendix B**.

TRAFFIC CONTROLS

Sunset Drive has an intersection with Turnbull Bay Road at its southern terminus with a single stop sign controlling traffic on Sunset Drive for vehicles entering Turnbull Bay Road. Stop signs control the "T" intersection at Sunset Drive and South Street with a crosswalk provided across Sunset Drive to connect the existing sidewalk to the grass area along South Street, ***Figure 4***. South Street has an intersection with U.S. 1 at its eastern terminus with a single stop sign for vehicles entering the divided highway.

FIGURE 4: INTERSECTION AT SUNSET DRIVE AND SOUTH STREET LOOKING SOUTHEAST

DRAINAGE

Rainfall runoff from Sunset Drive beginning at Turnbull Bay Road and continuing to South Street is collected in Type C inlets on the east and west sides of the roadway and discharged to Turnbull Bay. The existing inlets were filled with water to the grates so the existing pipe sizes could not be determined. See ***Figure 5*** for an existing Type C inlet. From the Lions Club, which is located approximately 1000-ft from Turnbull Bay Road, stormwater sheet flows to adjacent grassed areas and percolates into the ground.

FIGURE 5: EXISTING TYPE C INLET ALONG SUNSET DRIVE

Rainfall runoff from South Street beginning at Sunset Drive and continuing to US-1 sheet flows to grassed areas and outfalls to the adjacent wetlands surrounding Murray Creek, which ultimately discharges to Turnbull Bay. There are existing inlets to the east of Edgewater Avenue on the north side of South Street that connect to a triple 54-inch

cross drain conveying Murray Creek under South Street. There are no stormwater management systems along the project corridor.

OUTFALLS

Along South Street there are two existing outfalls. Outfall #1 at Clarendon Avenue and South Street is a 48-inch pipe that is completely buried. See ***Figure 6*** for the existing headwall. Outfall #2 is an existing 54-inch headwall located to the east of Westwood Avenue that outfalls to Murray Creek. See ***Figure 7*** for the existing headwall. Both outfalls capture stormwater from the Isleboro community that is located along the north side of South Street.

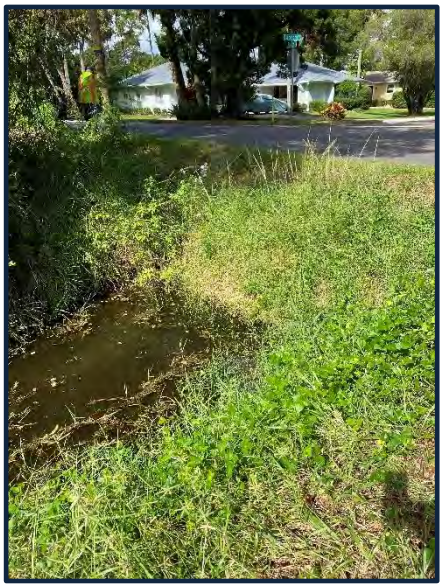


FIGURE 6: EXISTING 48-INCH OUTFALL #1 AT CLARENDON AVENUE

FIGURE 7: EXISTING 54-INCH OUTFALL #2 EAST OF WESTWOOD AVENUE

CROSS DRAINS

There are two cross drains along Sunset Drive that connect Murray Creek and an unnamed tributary to Turnbull Bay and one cross drain on South Street that conveys Murray Creek. Cross Drain #1 is located 920-ft north from Turnbull Bay Road and conveys the unnamed tributary under Sunset Drive. The pipe size could not be determined since it is completely submerged. See ***Figure 8*** for the existing cross drain. Cross Drain #2 is located 200-ft south of Rocco Park and is a 48-inch RCP. The existing headwall of Cross Drain #2 on the west side of Sunset Drive is damaged. See ***Figure 9*** for the damaged headwall. Cross Drain #3 is a triple 54-inch culvert located 260-ft east of Edgewater Avenue.

FIGURE 8: EXISTING HEADWALL & CROSS DRAIN #1 AT SUNSET DRIVE

FIGURE 9: EXISTING DAMAGED HEADWALL & CROSS DRAIN #2 AT SUNSET DRIVE

FEMA/FLOODPLAINS

According to the FEMA FIRM Panel 12127C0540J effective September 29, 2017, the project area is within Zone AE and Zone X floodplains. The FEMA FIRM panel is provided in **Appendix C.** Impacts to these floodplains are not anticipated.

APPARENT RIGHT-OF-WAY

Based on right-of-way and parcel boundary information generated from Volusia County GIS information, the apparent Sunset Drive and South Street right-of-way varies greatly along the study area. Along Sunset Drive, the City owns all land to the west towards Turnbull Bay in a shared parcel that also encompasses the New Smyrna Beach Municipal Airport. On South Street, right-of-way varies between 60 and 70 feet from Sunset Drive to Westwood Avenue and increases to 110 feet of right-of-way approaching Westwood Drive. From Westwood Drive, the corridor tapers back down from 110 feet to 45 feet of right-of-way over three-fourths of a mile approaching U.S. 1. Much of the property along the south side of South Street is owned by the New Smyrna Beach Municipal Airport, and agreements will be required along portions of South Street as described in the proposed section of this report.

UTILITIES

A utilities assessment was made during field reviews and supplemented with information provided by the City. Various above and below ground utilities are located along Sunset Drive and South Street**.** Light poles are located along the southern portion of Sunset Drive on the west side of the corridor. Overhead transmission and distribution power lines begin on Sunset Drive at Rocco Park and continue onto South Street, where they are intermittently located along the length of the corridor, some with light fixtures on top as shown in ***Figure 10.*** The poles are approximately seven to ten feet from the edge of existing sidewalk along Sunset Drive and five to ten feet from the edge of pavement along South Street. Poles along South Street also have guy wires extending an additional four to seven feet behind the poles. Conduit pull boxes for communications are located along portions of Sunset Drive near the VFW and Lions Club. There are additional conduit pull boxes on South Street isolated to areas where established businesses are located.

FIGURE 10: ELECTRIC DISTRIBUTION LINES WITH LIGHT FIXTURES ON SOUTH STREET

FIGURE 11: FIRE PROTECTION BACKFLOW PREVENTOR ON SOUTH STREET

The City provides potable water along the entire corridor. Fire hydrants are located throughout the corridor as well as various water meters along both Sunset Drive and South Street. Additionally, a fire protection backflow preventor protected by bollards is located in front of a business on South Street as shown in ***Figure 11***. The bollards are located five feet from the edge of roadway pavement and equipment encompasses area up to existing fence line.

WETLANDS AND SURFACE WATERS

The study corridor includes three wetland areas. As shown in ***Figure 8***, the first wetland, Wetland 1, is a tidal system located south of the Lions Club. Wetland 1 flows to Turnbull Bay. Wetland 1 is vegetated with black mangrove (*Avicennia germinans*). Wetland 2 is located south of Rocco Park. As shown in ***Figure 9***, Wetland 2 is Murray Creek. Murray Creek is vegetated with black mangrove, Brazilian pepper (*Schinus terebinthifolia*) and cabbage palm (*Sabal palmetto*).

Wetland 3 is located on South Street between Edgewater Avenue and Fairfax Avenue. Wetland 3 is a tidal portion of Murray Creek, which flows indirectly to Turnbull Bay, ***Figure 12***. Common vegetation within Wetland 3 includes black mangrove, Brazilian pepper, southern red cedar (*Juniperus silicicola*) and cabbage palm.

FIGURE 12: WETLAND 3 ALONG SOUTH STREET LOOKING WEST

Wetland 1 and Wetland 2 outfall directly to Turnbull Bay. As outlined in Florida Administrative Code 62-302.700, Turnbull Bay is classified as an Outstanding Florida Water. Outstanding Florida Waters are afforded the highest protection to Outstanding Florida Waters and Outstanding National Resource Waters. No degradation of water quality, other than that allowed in subsections 62-4.242(2) and (3), F.A.C., is to be permitted in Outstanding Florida Waters.

THREATENED AND ENDANGERED SPECIES

A field review for threatened species was conducted by a qualified biologist on October 16, 2021. No evidence of listed species was observed during this field review. ***Table 1*** lists all federally-protected species which have a potential for occurrence within the project corridor. Due to the developed nature of the project corridor, potential interaction with listed species is anticipated to be low.

TABLE 1: LISTED SPECIES

Category	Species Common Name	Species Scientific Name	Code
Mammals	West Indian (Florida) Manatee	*Trichechus manatus latirostris*	E/CH
Birds	Everglade Snail Kite	Rostrhamus sociabilis plumbeus	E
	Wood Stork	*Mycteria americana*	E
Reptiles	Gopher Tortoise	*Gopherus polyphemus*	C
	Eastern Indigo Snake	*Dymarchon corais couperi*	T
	Atlantic Salt Marsh Snake	*Nerodia clarkii (=fasciata) taeniata*	T
Plants	Rugel's Pawpaw	*Deeringothamus rugelii*	E

Code Key: E = Endangered, T = Threatened, CH = Critical Habitat Designated, C = Candidate

Any changes in drainage culverts under 8 feet in diameter will require implementation of manatee exclusion devices to prevent manatee entrapment.

The nearest documented bald eagle nest is VO911, which is located on the western shore of Turnbull Bay. No documented bald eagle nests are located within the project corridor.

SOILS AND CONTAMINATION

The study corridor consists primarily of somewhat poorly to poorly drained soils (Cassia fine sand, Myakka-Myakka wet fine sands, Myakka-Urban land complex, Smyrna-Smyrna wet fine sands, 0 to 2 percent slopes) with some areas encompassing moderately well drained to well drained soils (Cocoa sand and Orsino fine sand, 0 to 5 percent slopes) as depicted on the soils survey map prepared from United States Department of Agriculture Natural Resources Conservation Service, **Appendix D**.

A contamination screening evaluation of the project limits was conducted in accordance with FDOT's PD&E Manual, Part 2, Chapter 20. Desktop research was performed to identify potential contamination sites defined by the following distances from the ROW that have the potential to impact the project corridor or adjacent properties:

- All contamination sites within 500 feet
- Non-landfill solid waste sites within 1,000 feet
- Solid waste landfills, Comprehensive Environmental Response Compensation, and Liability Act (CERCLA), or National Priority List (NPL) sites within a ½ mile

Resources included historical aerial photographs, FDEP Map Direct Website, FDEP OCULUS Document Management System, DEP Enterprise Information Portal, topographic maps, soil surveys, and other information provided by the Florida

Department of Environmental Protection. No contamination sites were identified within the project corridor as shown in ***Figure 13***.

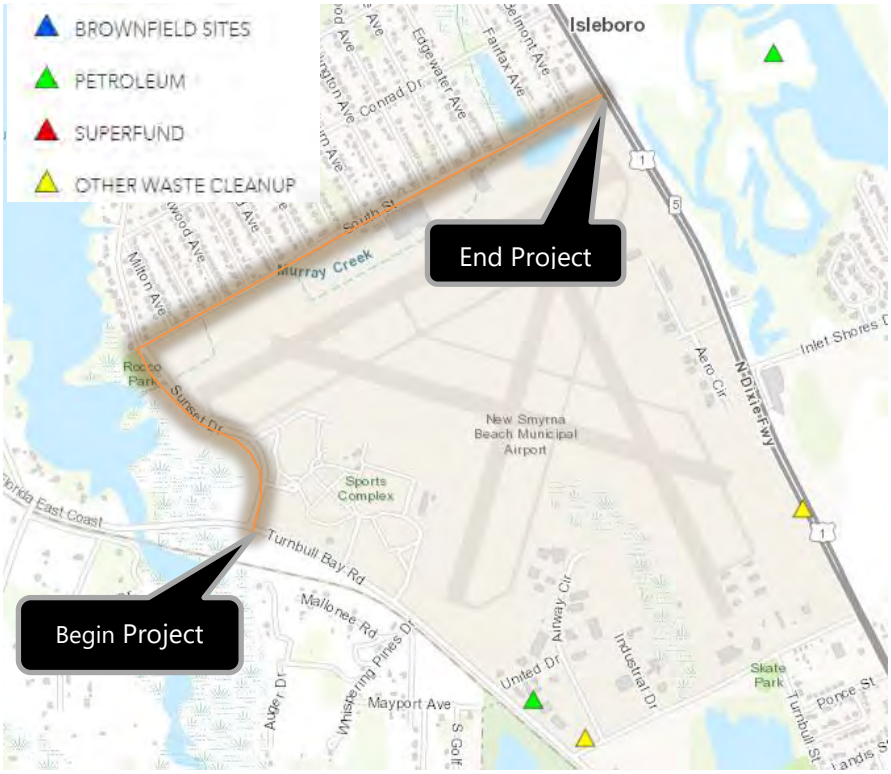


FIGURE 13: CONTAMINATION LOCATOR MAP

MULTI-USE TRAIL CONCEPT PLAN

The City application requested evaluation of a 12-foot wide multi-use trail on Sunset Drive and South Street from Turnbull Bay Drive to U.S. 1. Prior to field observations of the corridor, preferential locations of the proposed trail were determined along Sunset Drive and South Street. As mentioned previously, an 8-foot sidewalk exists along the west side of Sunset Drive, therefore, the concrete sidewalk would be removed, and the proposed 12-foot multi-use trail would be placed along the existing concrete sidewalk footprint. Along South Street, the north side of the corridor has 14 side streets that serve single-family homes that would create that many more conflicts for trail users on South Street, therefore, the south side of South Street was analyzed for a multi-use trail.

The FDOT Design Manual, January 1, 2021 (FDM) provides various guidelines and criteria for shared use paths. Chapter 224 of the FDM provides the following description:

> "Shared use paths are paved facilities physically separated from motorized vehicular traffic by an open space or barrier and are either within the highway right of way or an independent right of way. The term "shared use paths," used in this manual is synonymous with trails, multiuse trails, or other similar terms used in other Department manuals."

Key features of the FDM Shared Use Paths sections relevant to this project are provided below:

224.4 Widths - …Widths range from a minimum 10 feet to 14 feet, with a standard width of 12-feet. SUN Trail network facilities that are less than 12-feet require approval by the Chief Planner. For shared use paths not in the SUN Trail network: • 10-feet wide may be used where there is limited R/W. • Short 8-feet wide sections may be used in constrained conditions.

224.7 Horizontal Clearance - Provide a 4-foot clear area adjacent to both sides of the path, including placement of signs. Maintain a 2-foot wide graded area with a maximum 1:6 slope adjacent to both sides of the path. For restricted conditions, bridge abutments, sign columns, fencing and railing may be located within 4 feet of the edge of pavement.

224.12 Separation from Roadway - On flush shoulder roadways with design speed 45 mph or less, the edge of the path is to be at least 5 feet from the edge of the paved shoulder.

Using these criteria as guides, a conceptual multi-use trail plan was generated. The following sections describe the elements that make up the concept for this project. All proposed elements are depicted graphically on the Concept Plans **(Appendix A)** and Typical Sections **(Appendix B).**

MULTI-USE TRAIL PLAN

The multi-use trail is proposed to be located on the west side of Sunset Drive and south side of South Street. The key features described previously as it relates to design of shared use paths as well as the City's request for a 12-foot wide trail aligns with the proposed layout in the concept plans. Horizontal clearance on either side of the trail is typically four feet from each edge, however, some restricted locations will have objects within the prescribed four feet. The proposed layout also has a five-foot separation from the existing roadway in all locations and increases as right-of-way becomes available within the corridor. The intersection at Sunset Drive and South Street described previously in this report will have a special emphasis crossing to include pavement markings, detectable warnings and signage as recommended by the FDM and Manual on Uniform Traffic Control Devices (MUTCD) as depicted graphically on the Concept Plans. The proposed plan also includes roadway reconstruction along the southeast corner of the intersection. The existing asphalt is in very poor condition. It is necessary to repair in order to meet ADA requirements and allow for a smooth crossing of the road. The existing crossing on the north side of the intersection will be removed as part of these improvements to focus all pedestrian crossings to the newly established crossing and a small portion of 8-foot sidewalk will be reduced to five feet at this intersection to accommodate the proposed sign for the trail crossing. Although lighting can enhance the safety of any pedestrian or bicycle facility, it is not required at stop-controlled intersections. One existing streetlight on the west side of the intersection will remain and no lighting improvements are proposed.

As previously mentioned, Sunset Drive has an 8-foot concrete sidewalk along the west side of the existing roadway. Along most of the existing sidewalk a half-height wooden fence with occasional metal gates is located directly in front of or behind the sidewalk as shown in ***Figure 14***. As depicted in the plans, fence will be replaced as needed where currently located along the street side to ensure any previous pedestrian safety measures are maintained along the fence line.

FIGURE 14: EXISTING FENCE & GATE ALONG SUNSET DRIVE LOOKING NORTH

Where existing fence is located along the back of the existing sidewalk that is in conflict with the proposed trail, fence will be removed without replacement as coordinated with the City during this study. Additionally, wooden bollards are located along the path approaching Rocco Park and continuing through the park on Sunset Drive. All existing bollards are to be removed and replaced along the front of the proposed trail with a minimum of two feet of horizontal clearance from the trail and placed at a five-foot spacing to establish separation between the Rocco Park parking area and the proposed trail.

South Street is primarily undeveloped along the south side of the corridor and where right-of-way allows, the proposed trail increases in horizontal offset from the roadway to increase the offset from active traffic and reduce the amount of utility conflicts along the street. Approaching the Volusia County Mosquito Control from the west along the proposed corridor, it was observed in the field that vehicles were parked within the grassed right-of-way where the proposed trail is to be located. It is recommended to coordinate during design with the government office to limit or restrict parking outside the fenced perimeter of the complex to ensure safety of users along the trail and to only use the proposed driveways shown in the concept to cross the trail for safety and structural integrity of the asphalt trail. Continuing east along South Street, there are multiple businesses with established parking, curbing, utilities, signs, and fencing, among other items within the apparent right-of-way. A reduction in trail width to eight feet for a distance of 450 feet in this area is shown in the proposed plan. This allows an acceptable offset from the roadway and allows space behind the proposed trail to relocate any utilities and other features that are in conflict while minimizing the affected parking and operations of businesses in the area. A private storage facility along South Street adjacent to the existing businesses is being constructed during the time of this study and with the conditions observed during a field review, the area should be able to accommodate a 12-foot trail as depicted in the concept. A small run of existing sidewalk and other landscaping and decorative features will need to be removed and replaced by the asphalt trail in front of Baker Aviation as shown in the concept plans. During this study, the Airport stated that they plan to purchase Baker Aviation and anticipate coordination during design on the proposed elements which should not impose any operational impacts to the property. The proposed trail along South Street has one additional reduction to 10 feet along a newly constructed headwall east of Edgewater Avenue that will include proposed handrail behind the trail. As South Street approaches U.S. 1, the trail ties into existing sidewalk offset from the intersection.

The proposed multi-use trail will potentially impact water meters located along South Street, existing communication pull boxes along various areas of the corridor, and five fire hydrants. A pad mounted transformer was identified along Sunset Drive that will require a reduction in trail width to 8-ft if left in place. The Utilities Commission of New Smyrna Beach (UCNSB) provided a cost estimate for the relocation of this transformer further from the road, necessary to construct the full width of trail. Ten utility poles along South Street have been identified to be relocated or have guy wires adjusted. The poles identified have light fixtures and some have electric transmission lines attached to them. The proposed trail will also impact a fire protection backflow preventor system along South Street that will need to be relocated closer to the existing business the system services. Coordination with UCNSB provided cost estimates for the relocation and UCNSB stated that an easement agreement is necessary from the City of New Smyrna Beach to do the prescribed work. The potential location of the relocated fire protection backflow preventor system was unable to be determined without a UCNSB work order. However, it was discussed that the system would be able to be moved further from the roadway with minimal impacts to the parking area of the adjacent business along with minor fence and curb adjustments. Utility adjustments and relocation will need to be coordinated during the final design phase of the project. As previously mentioned, the proposed trail along Sunset Drive and South Street runs along parcels identified as being owned and maintained by the New Smyrna Beach Municipal Airport. Coordination with the airport manager at the time of this study provided guidance on submitting documentation during design through the Federal Aviation Administration's (FAA) Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) Notice Criteria Tool. As shown in **Appendix G,** the tool provided follows the regulations set forth by the Code of Federal Regulations Title 14 Part 77.9 that states the following:

> " If requested by the FAA, or if you propose any of the following types of construction or alteration, you must file notice with the FAA of: …Any construction or alteration on any of the following airports and heliports: (1) A public use airport listed in the Airport/Facility Directory, Alaska Supplement, or Pacific Chart Supplement of the U.S. Government Flight Information Publications;…"

Additionally, a Runway Protection Zone (RPZ) analysis would need to be considered and planned for as part of the OE/AAA. At the direction of the Airport, two "No Stopping" signs are included in the cost estimate within the RPZ as a possible measure that may be prescribed by the FAA through the RPZ analysis. Further recommendations may be considered as required by the FAA.

All work along Sunset Drive and two isolated locations along South Street require work in the apparent right-of-way of the Airport, however, does not intrude into any fence line delineating the Airport. Agreements will need to be obtained from the Airport to construct the proposed trail. The Airport recommends considering a 30-year lease agreement at 12% value of the property between the City and the Airport for the purpose of this study and cost estimates. The lease agreement would assess a property appraisal for current valuation, however, the cost associated with the lease agreement that is included in this study is based on similar agreements the Airport has with other leases at the time of this study. Further coordination to take place in final design between the New Smyrna Beach Municipal Airport and City of New Smyrna Beach to consider agreements at lower or no cost to the City as well as a permanent easement, rather than a termed lease.

DRAINAGE

The proposed trail will sheet flow into the existing grassed areas along both Sunset Drive and South Street like the existing drainage patterns. Swales will be proposed where the existing right-of-way allows. The proposed trail will not impact the existing inlets along Sunset Drive but will require Cross Drain #2 to be extended 15-ft to the west and the damaged headwall to be replaced with the extension. Outfall #1 will also need to be extended 15-ft to the south and the existing headwall is to be replaced with the extension. There is an existing inlet at Glenwood Avenue that will be impacted and will need to be relocated behind the proposed trail.

ENVIRONMENTAL PERMITTING

As outlined in Florida Administrative Code 62-330.051, the construction of recreational paths for pedestrian, bicycles and golf carts are generally exempted from environmental resource permitting requirements. This exemption requires that there is no work in wetlands or surface waters. Because the proposed cross drain and outfall extensions will likely incur minor impacts to mangrove wetlands (approximately ¼ acre), an Individual Environmental Resource Permit will be required from the St. Johns River Water Management District.

Turnbull Bay is a retained water, and therefore under the jurisdiction of the U.S. Army Corps of Engineers for Clean Water Act Section 404 permitting. It is anticipated that the development of this project will qualify for Nationwide Permit #14 (Linear Transportation). A Pre-Construction Notification is normally required for this permit.

FINANCIAL FEASIBILITY

A preliminary cost estimate for the design and construction of the proposed multi-use trail is presented in **Appendix E**. This cost estimate is to be considered an opinion of probable costs based solely on the results of this feasibility study. Although this report discusses the entire corridor, the cost estimate provided is split into two segments. The two segments begin and end locations are denoted in the concept plans where segment one limits are from the beginning of the project at Sunset Drive and Turnbull Bay Road to just south of Rocco Park on Sunset Drive and segment two begins at the segment one end point and continues through the feasibility corridor to the end of the area of study at South Street and US 1. During coordination meetings with the City, due to the possible schedule and coordination difficulties with the New Smyrna Beach Municipal Airport, specifically as a result of a portion of the trail being located with in the limits of Runway 7, segment one could be postponed or programmed separately to keep the existing 8-foot concrete sidewalk up to just south of Rocco Park. Progressing the two separately may allow a faster resolution to the lack of pedestrian facilities along South Street and the improvements through Rocco Park to include the intersection crossing at Sunset Drive and South Street. The item numbers and units of measure are based on the FDOT Basis of Estimates Manual. The unit prices are based on historical average costs for each pay item as provided by FDOT or provided by the City of New Smyrna Beach or Utilities Commission of New Smyrna Beach. Some unit prices may have been inflated due to the small nature of the project. Based on the results of this study, an easement agreement will need to be obtained with the New Smyrna Beach Municipal Airport to accommodate the proposed conceptual design. For planning purposes, the City should anticipate a 30 year lease, with a cost of 12% of the land value per year, which is approximately $1,900/year, for a total of $57,000.

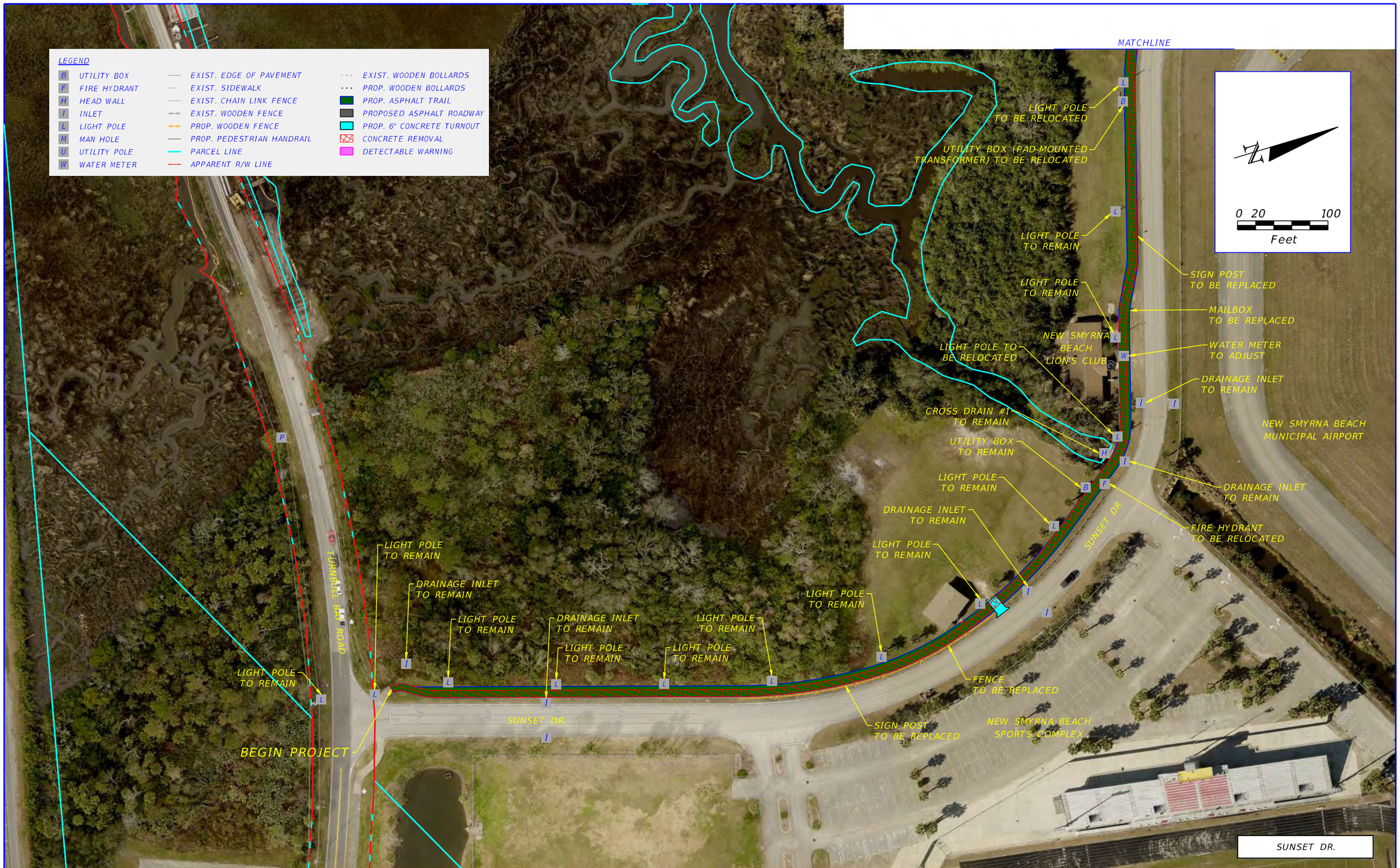
To adjust for potential future increases in the project's cost estimate, an annual inflationary factor may be applied. The FDOT provides annual inflation factors for roadway construction costs which may be used as a guideline for this sidewalk project. The cost estimate provided herein has been adjusted by the FDOT inflationary factors noted in **Appendix F** to determine inflation-adjusted cost estimates for the proposed trail concept. The total cost estimate in 2022 dollars for the multi-use trail concept presented in **Appendix A** is $1.18 million, segments one and two costing $296,076 and $880,529, respectively plus $1,900/year for the land lease. The inflation-adjusted cost estimates for 2023, 2024, and 2025 are $1.20 million, $1.23 million, and $1.27 million, respectively.

CONCLUSION

The purpose of this study was to evaluate the feasibility of constructing a 12-foot wide multi-use trail along Sunset Drive from Turnbull Bay Road to South Street and then continuing along south street from Sunset Drive to U.S. 1. It was determined that a 12-foot wide asphalt trail would be feasible along the entire study corridor with a few exceptions of 8-foot and 10-foot reductions due to constraints. Coordination with the New Smyrna Beach Municipal Airport is required along most of the corridor and easement agreements will be needed in order for the trail to be constructed within apparent right-of-way owned by the Airport. Moderate impacts to existing utilities are anticipated. Wetland impacts are minimal and will need to be permitted . There is low potential that impacts to threatened and endangered species will occur. As a result of this study, it has been determined that constructing this multi-use trail is feasible.

APPENDIX A:

CONCEPT PLAN



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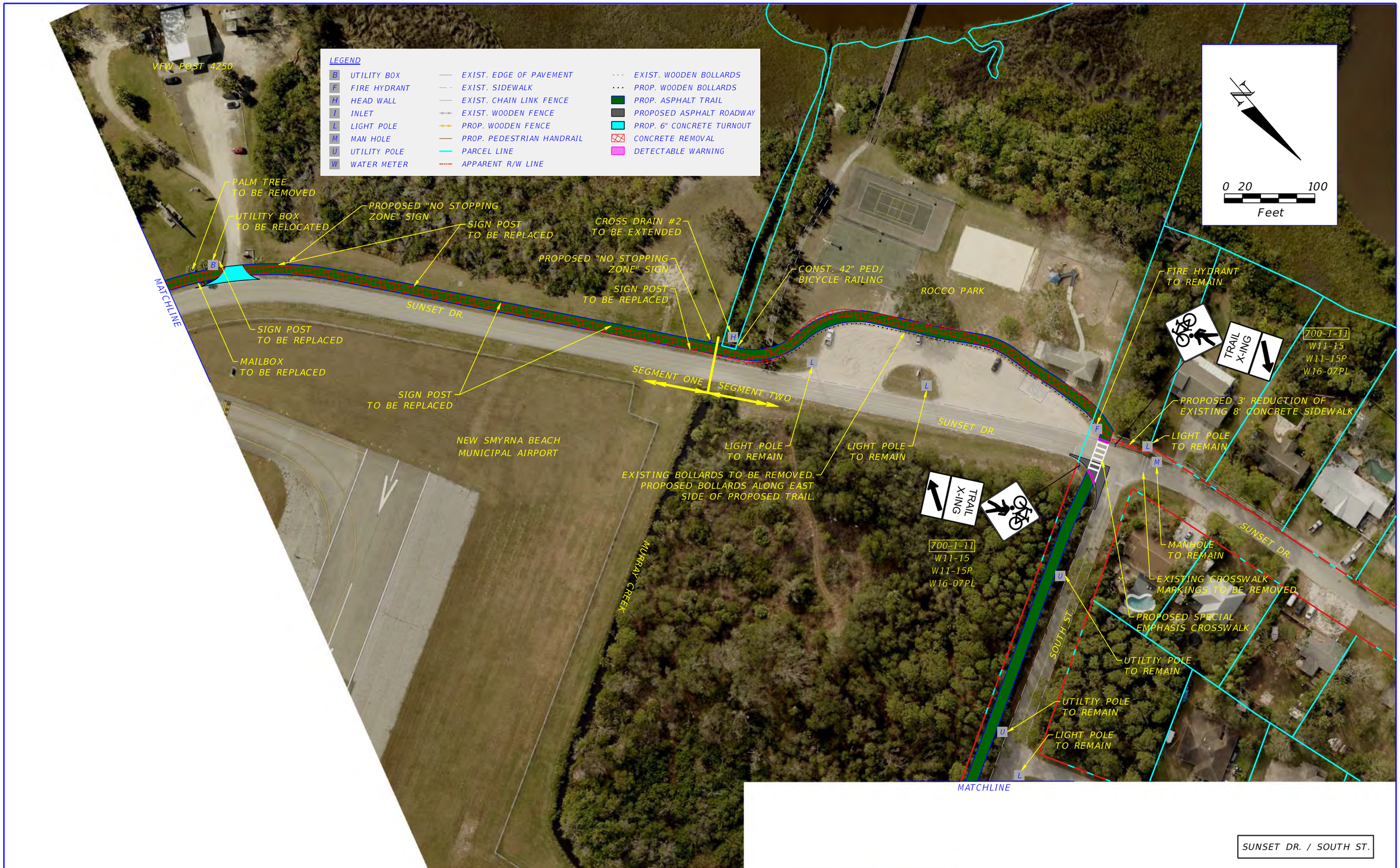
REVISIONS					
DATE	DESCRIPTION	DATE	DESCRIPTION		
				RS&H, INC. 301 E. PINE ST. SUITE 350 ORLANDO, FLORIDA 32801	RIVER TO SEA TPO Transportation Planning Organization VISION - PLAN - IMPLEMENT

SOUTH STREET MULTI-USE TRAIL FEASIBILITY STUDY

SHEET NO. A-2



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REVISIONS					
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				RS&H, INC. 301 E. PINE ST. SUITE 350 ORLANDO, FLORIDA 32801	RIVER TO SEA TPO Transportation Planning Organization VISION - PLAN - IMPLEMENT

SOUTH STREET MULTI-USE TRAIL FEASIBILITY STUDY

SHEET NO. A-3

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RS&H, INC.
301 E. PINE ST. SUITE 350
ORLANDO, FLORIDA 32801

RIVER TO SEA TPO
Transportation Planning Organization
VISION - PLAN - IMPLEMENT

SOUTH STREET MULTI-USE TRAIL FEASIBILITY STUDY

SHEET NO.
A-4

LEGEND

B	UTILITY BOX		EXIST. EDGE OF PAVEMENT		EXIST. WOODEN BOLLARDS
F	FIRE HYDRANT		EXIST. SIDEWALK		PROP. WOODEN BOLLARDS
H	HEAD WALL		EXIST. CHAIN LINK FENCE		PROP. ASPHALT TRAIL
I	INLET		EXIST. WOODEN FENCE		PROPOSED ASPHALT ROADWAY
L	LIGHT POLE		PROP. WOODEN FENCE		PROP. 6" CONCRETE TURNOUT
M	MAN HOLE		PROP. PEDESTRIAN HANDRAIL		CONCRETE REMOVAL
U	UTILITY POLE		PARCEL LINE		DETECTABLE WARNING
W	WATER METER		APPARENT R/W LINE		

N

0 20 100

Feet

WESTWOOD AVE.

FAIRMONT AVE.

CHESTER AVE.

AUBURN AVE.

ARLINGTON AVE

SOUTH ST.

MATCHLINE

MATCHLINE

DRAINAGE INLET TO REMAIN

DRAINAGE INLET TO REMAIN

DRAINAGE INLET TO REMAIN

LIGHT POLE TO REMAIN

DRAINAGE INLET TO REMAIN

LIGHT POLE TO REMAIN

DRAINAGE INLET TO REMAIN

UTILITY POLE TO REMAIN

WATER METER TO REMAIN

FIRE HYDRANT TO REMAIN

MANHOLE TO REMAIN

CONST. MODIFIED TYPE D CONCRETE CURB

LIGHT POLE TO REMAIN

MANHOLE TO REMAIN

WATER METER TO BE ADJUSTED

LIGHT POLE TO BE RELOCATED

CONST. 42" PED/ BICYCLE RAILING

OUTFALL #2 TO REMAIN

UTILITY POLE TO REMAIN

FIRE HYDRANT TO REMAIN

UTILITY POLE TO REMAIN

BEGIN TRAIL WIDTH REDUCTION TO 8 FEET

LIGHT POLE TO REMAIN

LIGHT POLE TO BE RELOCATED

CONST. MODIFIED TYPE D CONCRETE CURB

UTILITY BOX (x2) TO BE ADJUSTED

UTILITY POLE TO REMAIN

VOLUSIA COUNTY MOSQUITO CONTROL

MURRAY CREEK

MURRAY CREEK

MURRAY CREEK

SOUTH ST.

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RS&H, INC.
301 E. PINE ST. SUITE 350
ORLANDO, FLORIDA 32801

RIVER TO SEA TPO
Transportation Planning Organization
VISION - PLAN - IMPLEMENT

SOUTH STREET MULTI-USE TRAIL FEASIBILITY STUDY

SHEET NO.

A-5

LEGEND

B	UTILITY BOX		EXIST. EDGE OF PAVEMENT		EXIST. WOODEN BOLLARDS
F	FIRE HYDRANT		EXIST. SIDEWALK		PROP. WOODEN BOLLARDS
H	HEAD WALL		EXIST. CHAIN LINK FENCE		PROP. ASPHALT TRAIL
I	INLET		EXIST. WOODEN FENCE		PROPOSED ASPHALT ROADWAY
L	LIGHT POLE		PROP. WOODEN FENCE		PROP. 6" CONCRETE TURNOUT
M	MAN HOLE		PROP. PEDESTRIAN HANDRAIL		CONCRETE REMOVAL
U	UTILITY POLE		PARCEL LINE		DETECTABLE WARNING
W	WATER METER		APPARENT R/W LINE		

0 20 100
Feet

GLENWOOD AVE.
BROOKLINE AVE.
EDGEWATER AVE.
MURRAY CREEK
SOUTH ST.
MATCHLINE
MATCHLINE
WATER METER TO BE ADJUSTED
UTILITY POLE TO REMAIN
DRAINAGE INLET TO REMAIN
DRAINAGE INLET TO REMAIN
DRAINAGE INLET TO REMAIN
LIGHT POLE TO BE RELOCATED
FIRE HYDRANT TO BE RELOCATED
MOMENTIVE PERFORMANCE MATERIALS
UTILITY POLE TO BE RELOCATED
DRAINAGE INLET TO BE RELOCATED BEHIND TRAIL
UTILITY POLE TO BE RELOCATED
END TRAIL WIDTH REDUCTION TO 8 FEET
LIGHT POLE TO BE RELOCATED
FIRE HYDRANT TO BE RELOCATED
UTILITY POLE TO BE RELOCATED
WATER METER TO BE ADJUSTED
FIRE HYDRANT TO BE MOVED
BEGIN TRAIL WIDTH REDUCTION TO 10 FEET
CROSS DRAIN #3 TO REMAIN
CONST. 42" PED/ BICYCLE RAILING
END TRAIL WIDTH REDUCTION TO 10 FEET
LANDSCAPING AND DECORATIVE FEATURES TO BE REMOVED
BAKER AVIATION
NEW SMYRNA BEACH MUNICIPAL AIRPORT
MURRAY CREEK
MURRAY CREEK
SOUTH ST.

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RS&H, INC.
301 E. PINE ST. SUITE 350
ORLANDO, FLORIDA 32801

RIVER TO SEA TPO
Transportation Planning Organization
VISION - PLAN - IMPLEMENT

SOUTH STREET MULTI-USE TRAIL FEASIBILITY STUDY

SHEET NO.
A-6

LEGEND

B	UTILITY BOX		EXIST. EDGE OF PAVEMENT		EXIST. WOODEN BOLLARDS
F	FIRE HYDRANT		EXIST. SIDEWALK		PROP. WOODEN BOLLARDS
H	HEAD WALL		EXIST. CHAIN LINK FENCE		PROP. ASPHALT TRAIL
T	INLET		EXIST. WOODEN FENCE		PROPOSED ASPHALT ROADWAY
L	LIGHT POLE		PROP. WOODEN FENCE		PROP. 6" CONCRETE TURNOUT
M	MAN HOLE		PROP. PEDESTRIAN HANDRAIL		CONCRETE REMOVAL
U	UTILITY POLE		PARCEL LINE		DETECTABLE WARNING
W	WATER METER		APPARENT R/W LINE		

0 20 100
Feet

FAIRFAX AVE.
BELMONT AVE.
N. DIXIE FWY.
SOUTH ST.
BOAT RAMP DR.
N. DIXIE FWY.

LIGHT POLE TO REMAIN
UTILITY POLE TO REMAIN
LIGHT POLE TO REMAIN
UTILITY POLE TO REMAIN
LIGHT POLE GUY WIRES TO BE ADJUSTED
END PROJECT

MATCHLINE

NEW SMYRNA BEACH MUNICIPAL AIRPORT

SOUTH ST. / US-1

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

RS&H, INC.
301 E. PINE ST. SUITE 350
ORLANDO, FLORIDA 32801

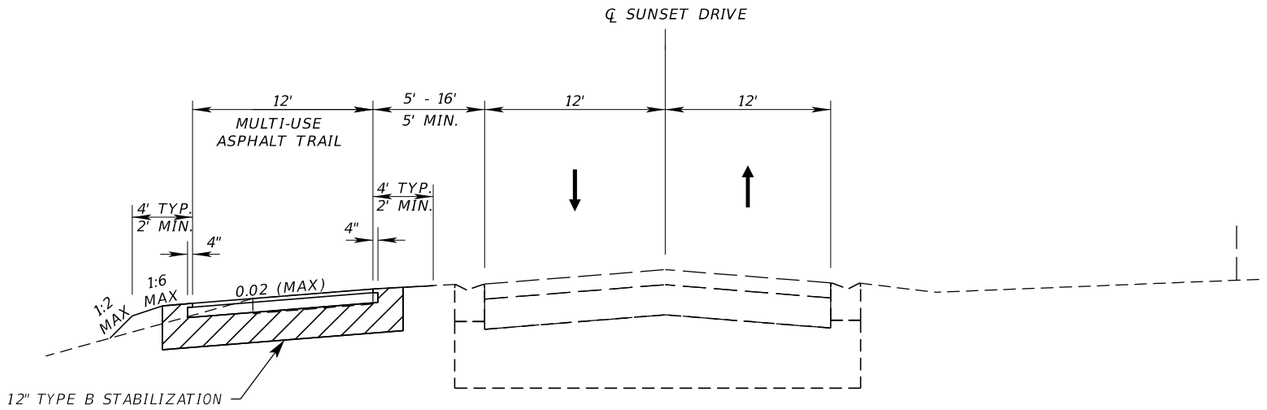
RIVER TO SEA TPO
Transportation Planning Organization
VISION - PLAN - IMPLEMENT

SOUTH STREET MULTI-USE TRAIL FEASIBILITY STUDY

SHEET NO.
A-7

APPENDIX B

TYPICAL SECTIONS

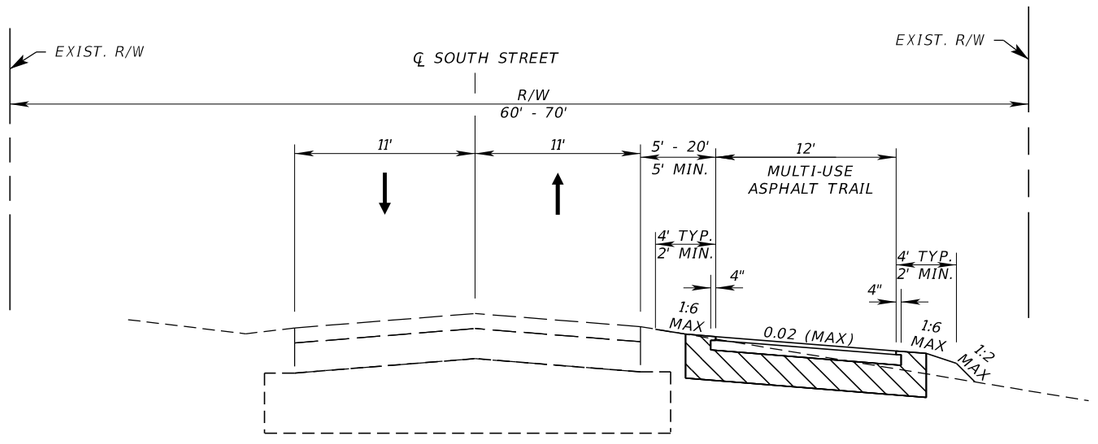


TYPICAL SECTION
SUNSET DRIVE

MULTI-USE TRAIL

OPTIONAL BASE GROUP 1 WITH

TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1 ½")



TYPICAL SECTION
SOUTH STREET

MULTI-USE TRAIL

OPTIONAL BASE GROUP 1 WITH

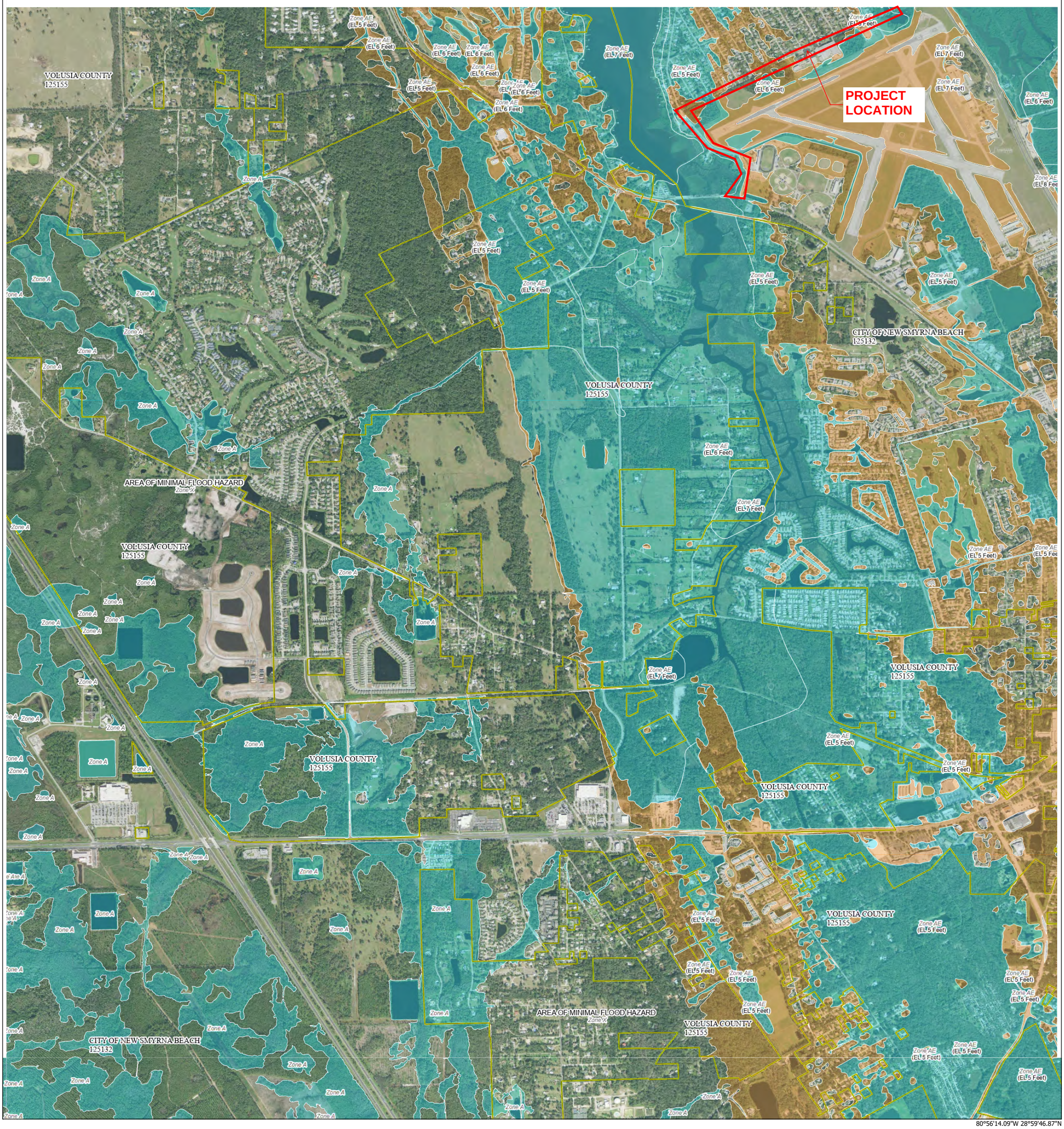
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1 ½")

REVISIONS				RS&H, INC. 301 E. PINE ST. SUITE 350 ORLANDO, FLORIDA 32801	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SOUTH STREET MULTI-USE TRAIL FEASIBILITY STUDY	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		B-2
						VOLUSIA			

APPENDIX C

FEMA MAPS

81°W 29°3'58.22"N



80°56'14.09"W 28°59'46.87"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

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

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

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on **10/19/2021 8:27 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The digital data contained within this map are subject to the following specifications: flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map elements that do not appear in this list may be displayed differently or not at all.

COASTAL BARRIER RESOURCES SYSTEM (CBRS)
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map elements that do not appear in this list may be displayed differently or not at all.
This map is for insurance purposes only. Flood insurance is not available within CBRS areas for structures that are newly built or substantially improved on or after the date(s) indicated on the map. For more information see http://www.fws.gov/cbra, the FIS Report, or call the U.S. Fish and Wildlife Service Customer Service Center at 1-800-344-WILD.

CBRS AREA OTHERWISE PROTECTED AREA

SCALE

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at https://msc.fema.gov

1 inch = 1,000 feet 1:12,000

0 500 1,000 2,000 3,000 4,000 Feet

N

0 105 210 420 630 840 Meters

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PANEL **540** OF **930**

Panel Contains:

COMMUNITY	NUMBER	PANEL
CITY OF NEW SMYRNA BEACH	125132	0540
VOLUSIA COUNTY	125155	0540
CITY OF EDGEWATER	120308	0540

MAP NUMBER
12127C0540J
EFFECTIVE DATE
September 29, 2017

APPENDIX D

SOIL SURVEY MAP

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


80° 57' 58" W
80° 56' 17" W
29° 3' 55" N
29° 2' 58" N
503400
503600
503800
504000
504200
504400
504600
504800
505000
505200
505400
505600
505800
506000
3215100
3214900
3214700
3214500
3214300
3214100
3213900
3213700
3213500
Fairmont Ave
Sunset Dr
N Dixie Fwy
Skyline
Turnbull Creek
1
28
99
15
16
67
99
32
35
37
60
13
60
13
60
67
37
67
13
35
13
32
Soil Map may not be valid at this scale.
Map Scale: 1:12,500 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 150 300 600 900
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

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

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

Date(s) aerial images were photographed: Mar 30, 2015—Feb 25, 2019

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

Map Unit Legend (R2CTPO - South Street Trail)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13	Cassia fine sand, 0 to 2 percent slopes	27.3	33.7%
15	Cocoa sand, 0 to 5 percent slopes	5.7	7.0%
16	Cocoa-Urban land complex, 0 to 5 percent slopes	3.4	4.2%
28	Hydraquents	0.5	0.7%
32	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	6.5	8.1%
35	Myakka-Urban land complex	5.1	6.4%
37	Orsino fine sand, 0 to 5 percent slopes	16.2	20.0%
60	Smyrna-Smyrna, wet, fine sand, 0 to 2 percent slopes	11.3	13.9%
67	Turnbull muck	0.2	0.2%
99	Water	4.7	5.8%
Totals for Area of Interest		**81.0**	**100.0%**

APPENDIX E

COST ESTIMATE

Multi-Use Trail Concept
Sunset Drive & South Street
Feasibility Study
Cost Estimate - Segment 1

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
104-10-3	SEDIMENT BARRIER	LF	1,954	$ 0.94	$ 1,836.38
104-11	FLOATING TURBIDITY	LF	29	$ 5.19	$ 150.51
110-1-1	CLEARING AND GRUBBING	AC	1.12	$ 12,098.36	$ 13,550.16
110-4-10	REMOVAL OF EXISTING CONCRETE	SY	1,812	$ 20.64	$ 37,403.09
110-7-1	MAILBOX, F&I SINGLE	EA	2	$ 172.24	$ 344.48
120-1	REGULAR EXCAVATION	CY	229.3	$ 18.96	$ 4,346.58
120-6	EMBANKMENT	CY	131.0	$ 16.59	$ 2,173.29
160-4	TYPE B STABILIZATION	SY	3,443	$ 6.59	$ 22,689.37
285-701	OPTIONAL BASE, BASE GROUP 01	SY	2,711	$ 25.53	$ 69,211.83
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	211.6	$ 130.00	$ 27,511.57
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	93	$ 44.58	$ 4,135.33
550-10-410	FENCING, WOOD FENCE, 0.0-5.0'	LF	306	$ 17.00	$ 5,202.00
570-1-2	PERFORMANCE TURF, SOD	SY	1,723	$ 3.23	$ 5,566.62
700-1-11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	10.00	$ 514.30	$ 5,143.00
715-4-60	LIGHT POLE COMPLETE, RELOCATE	EA	2	$ 2,662.48	$ 5,324.96
1060 21 11	UTILITY STRUCTURE- ABOVE GROUND, 0-1 CY PAD, WITH COVER	EA	1	$ 7,500.00	$ 7,500.00
1080 21500	UTILITY FIXTURE, VALVE/METER BOX, ADJUST	EA	1.00	$ 447.18	$ 447.18
1644-800	FIRE HYDRANT, RELOCATE	EA	1	$ 3,075.60	$ 3,075.60
				SUBTOTAL	**$ 215,611.95**
101-1	MOBILIZATION	LS	1	10.00%	$ 21,561.20
102-1	MAINTENANCE OF TRAFFIC	LS	1	10.00%	$ 21,561.20
N/A	ENGINEERING AND DESIGN	LS	1	15.00%	$ 32,341.79
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
				TOTAL	**$ 296,076.14**

	FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
	Year 1 Inflation-adjusted Estimate (2023)		2.7%	1.027	**$ 304,070.19**
	Year 2 Inflation-adjusted Estimate (2024)		2.8%	1.056	**$ 312,656.40**
	Year 3 Inflation-adjusted Estimate (2025)		2.9%	1.086	**$ 321,538.69**

Multi-Use Trail Concept
Sunset Drive & South Street
Feasibility Study
Cost Estimate - Segment 2

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
104-10-3	SEDIMENT BARRIER	LF	5,966	$ 0.94	$ 5,608.42
104-11	FLOATING TURBIDITY	LF	87	$ 5.19	$ 451.53
110-1-1	CLEARING AND GRUBBING	AC	2.49	$ 12,098.36	$ 30,088.62
110-4-10	REMOVAL OF EXISTING CONCRETE	SY	1,182	$ 20.64	$ 24,393.82
120-1	REGULAR EXCAVATION	CY	693.6	$ 18.96	$ 13,150.34
120-6	EMBANKMENT	CY	396.3	$ 16.59	$ 6,575.17
160-4	TYPE B STABILIZATION	SY	9,903	$ 6.59	$ 65,260.77
285-701	OPTIONAL BASE, BASE GROUP 01	SY	7,746	$ 25.53	$ 197,755.38
285-706	OPTIONAL BASE, BASE GROUP 06	SY	70.9	$ 56.00	$ 3,969.78
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	603.8	$ 130.00	$ 78,490.91
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	TN	7.8	$ 130.00	$ 1,013.71
337-7-83	ASPHALT CONCRETE FRICTION COURSE,TRAFFIC C, FC-12.5, PG 76-22	TN	5.8	$ 113.72	$ 665.07
0425-71	INLETS RELOCATING	EA	1	$ 1,500.00	$ 1,500.00
430-174-142	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 42" SD	LF	15	$ 304.62	$ 4,569.30
430-174-148	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 48" SD	LF	15	$ 260.00	$ 3,900.00
430-542-100	STRAIGHT CONCRETE ENDWALLS, 42", SINGLE, 0 DEGREES, ROUND	EA	1	$ 6,000.00	$ 6,000.00
430-548-100	STRAIGHT CONCRETE ENDWALLS, 48", SINGLE, 0 DEGREES, ROUND	EA	1	$ 8,000.00	$ 8,000.00
515-2-311	PEDESTRIAN/ BICYCLE RAILING, ALUMINUM ONLY,42" TYPE 1	LF	122	$ 147.00	$ 17,934.00
519-78	BOLLARDS	EA	171	$ 200.00	$ 34,200.00
520-2-4	CONCRETE CURB, TYPE D	LF	92	$ 29.93	$ 2,753.56
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6" THICK	SY	706	$ 44.58	$ 31,473.78
527-2	DETECTABLE WARNING SURFACE	SF	55	$ 35.22	$ 1,937.10
570-1-2	PERFORMANCE TURF, SOD	SY	6,523	$ 3.23	$ 21,067.96
700-1-11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	2.00	$ 514.30	$ 1,028.60
711-11-123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND ROUNDABOUT	LF	80	$ 3.02	$ 241.60
711-11-125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE AND CROSSWALK	LF	72	$ 5.21	$ 375.12
715-4-60	LIGHT POLE COMPLETE, RELOCATE	EA	9	$ 2,662.48	$ 23,962.32
1080 21500	UTILITY FIXTURE, VALVE/METER BOX, ADJUST	EA	7.00	$ 447.18	$ 3,130.26
1080 22400	UTILITY FIXTURE, BACKFLOW ASSEMBLY, RELOCATE	EA	1.00	$ 6,000.00	$ 6,000.00
1644-800	FIRE HYDRANT, RELOCATE	EA	4	$ 3,075.60	$ 12,302.40
				SUBTOTAL	**$ 607,799.52**
101-1	MOBILIZATION	LS	1	10.00%	$ 60,779.95
102-1	MAINTENANCE OF TRAFFIC	LS	1	10.00%	$ 60,779.95
N/A	ENGINEERING AND DESIGN	LS	1	15.00%	$ 91,169.93
N/A	Enviornmental - Wetland Impacts	AC	0.25	$ 200,000.00	$ 50,000.00
N/A	SURVEY	LS	1	$ 10,000.00	$ 10,000.00
				TOTAL	**$ 880,529.35**

	FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
	Year 1 Inflation-adjusted Estimate (2023)		2.7%	1.027	**$ 904,303.64**
	Year 2 Inflation-adjusted Estimate (2024)		2.8%	1.056	**$ 929,838.99**
	Year 3 Inflation-adjusted Estimate (2025)		2.9%	1.086	**$ 956,254.87**

An easement agreement with the New Smyrna Beach Municipal Airport is estimated to cost approximately $1,900 a year not included in the project construction costs

APPENDIX F

FDOT INFLATION FACTOR

Work Program
Highway Construction Cost Inflation Factors

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

APPENDIX G

FEDERAL AVIATION ADMINISTRATION'S NOTICE CRITERIA TOOL

Federal Aviation Administration

FEDERAL AVIATION ADMINISTRATION

OE/AAA®

OBSTRUCTION EVALUATION / AIRPORT AIRSPACE ANALYSIS

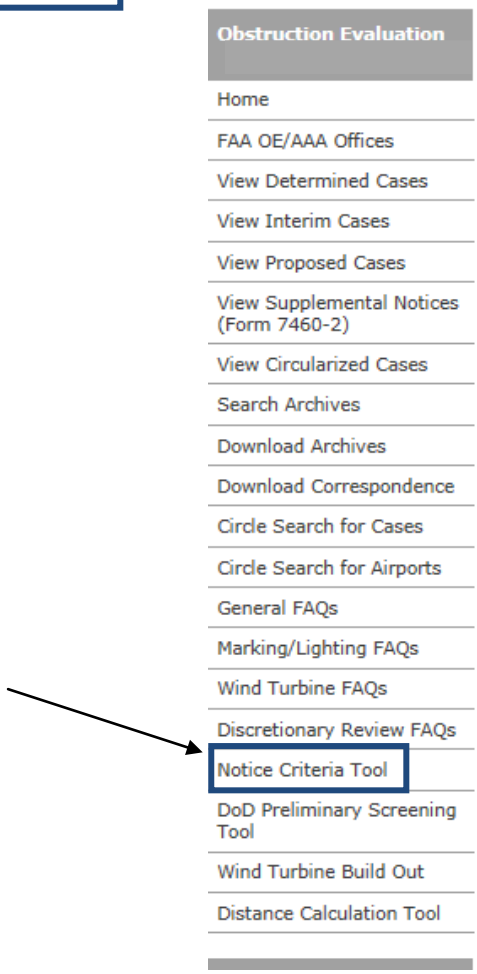
DESK REFERENCE GUIDE

SUBJECT: Notice Criteria Tool

**You are not required to have a registered e-filing account*

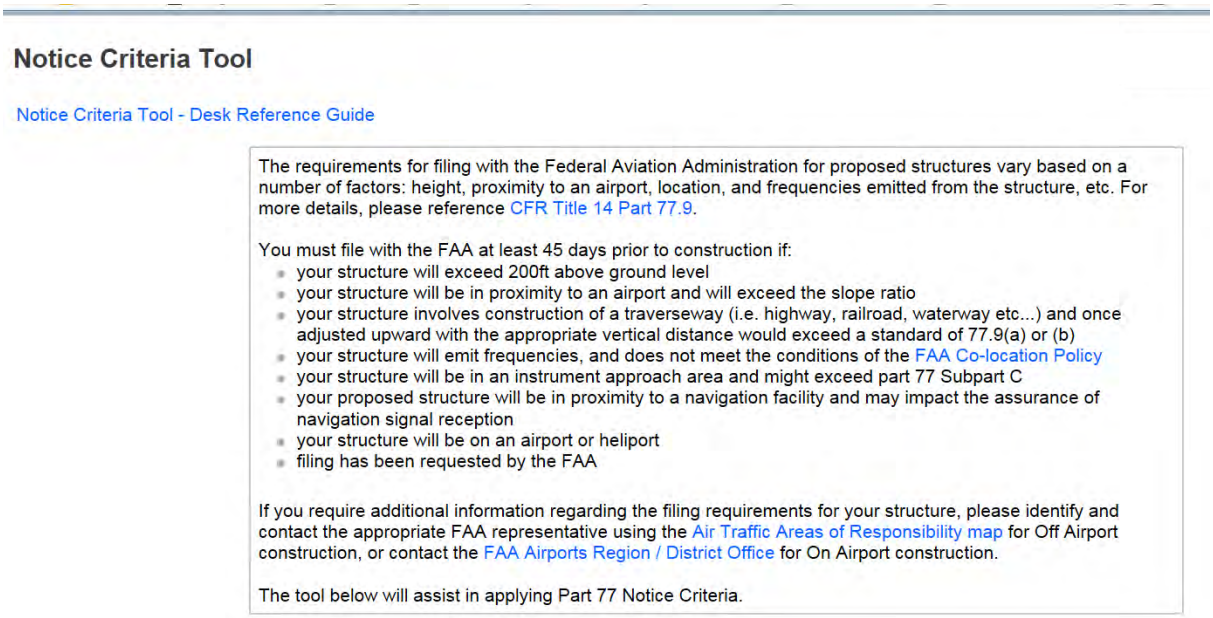
Federal Aviation Administration

Notice Criteria Tool



To access the OE/AAA Notice Criteria screen, select the **Notice Criteria Tool** link located on the left sidebar of the website, under the gray Obstruction Evaluation header.

As shown below, the Notice Criteria screen summarizes the filing requirements specified in Title 14 of the Code of Federal Regulations Part 77.9 Notice Criteria.



There is a **CFR Title 14 Part 77.9** link in the first paragraph above. Selecting this link, opens a new browser window where you can view text or PDF sections of the Part 77 regulation. You must ensure that your proposal does not require notice under *any* Notice Criteria prescribed in Part 77.9.

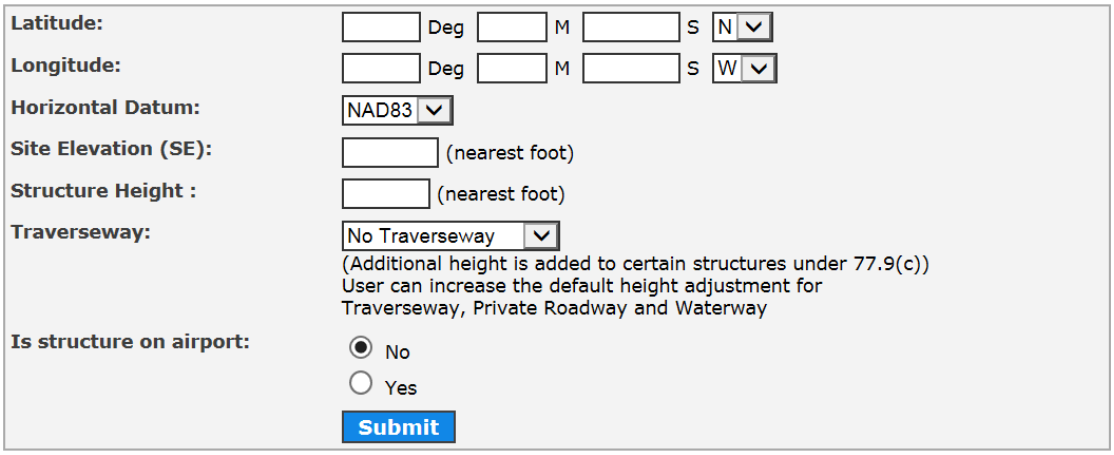
In the bulleted list above, there is a link to the **FAA Co-location Policy**. In the second paragraph above, there are links to the **Air Traffic Areas of Responsibility map** and the **FAA Airports Region / District Office**.

Use the calculation tool to determine if your proposal exceeds the FAA slope ratio criteria.

The Notice Criteria (slope calculation) tool is only provided to assist you in applying the appropriate calculation for Part 77.9.

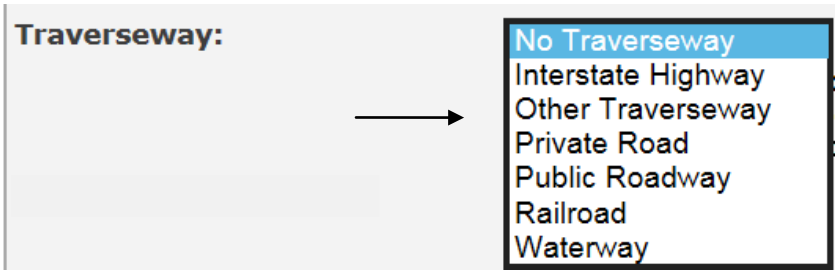
Federal Aviation Administration

Notice Criteria Tool:



1. Enter the proposed Latitude, Longitude, Horizontal Datum, Site Elevation, and proposed Structure Height.

2. Traverseway - use the default entry of "No Traverseway" in this field **unless** your structure is going to cross one of the dropdown entries.



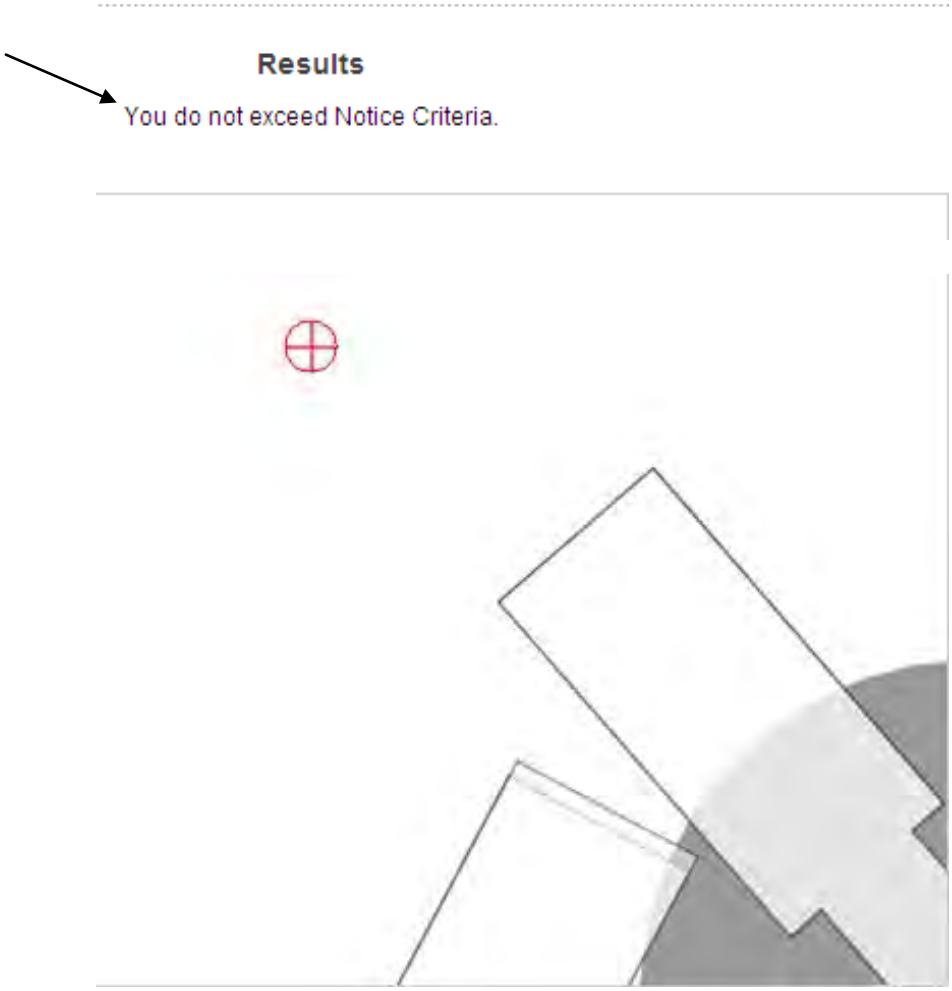
3. Select whether the calculation is being run for a structure on an airport.

4. Then, select the **[Submit]** button.

The results will advise if there's an exceed requiring you to file notice to the FAA.

The following is an example of a slope calculation that **did not** exceed FAA Part 77 Notice Criteria:

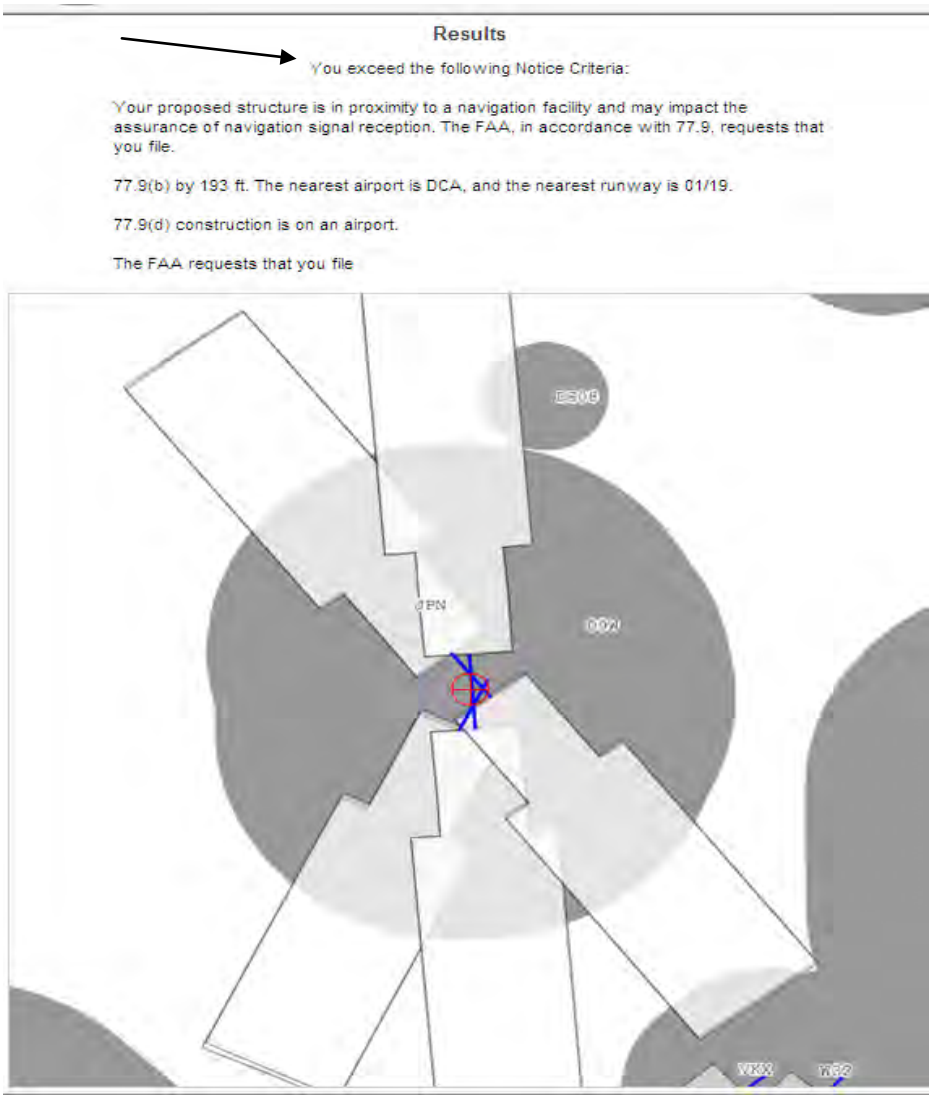
Example 1: "Does Not Exceed"



The following two examples illustrate On and OFF airport slope calculations that exceed FAA Part 77 Notice Criteria:

In both Exceed result examples below, the slope calculation exceed is provided in feet; the nearest airport and affected runway(s) are also identified.

Example 2: On Airport "Exceed"



Example 3: Off Airport "Exceed"

Results

You exceed the following Notice Criteria:

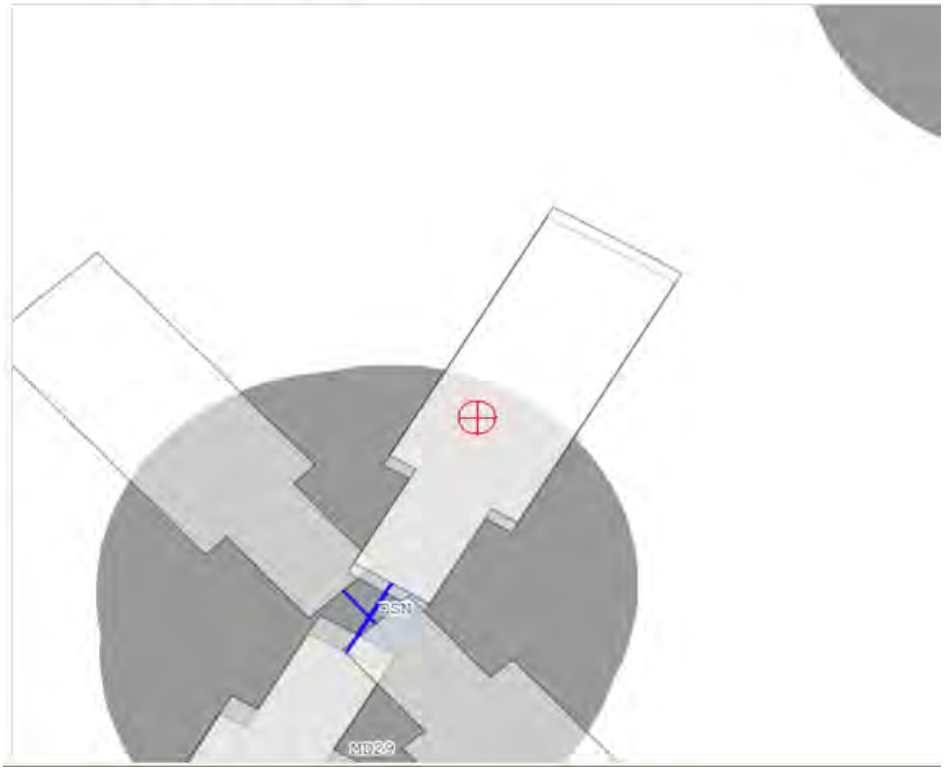
Your proposed structure exceeds an instrument approach area by 193 feet and aeronautical study is needed to determine if it will exceed a standard of subpart C of 14CFR Part 77. The FAA, in accordance with 77.9, requests that you file.

Your proposed structure is in proximity to a navigation facility and may impact the assurance of navigation signal reception. The FAA, in accordance with 77.9, requests that you file.

77.9(a) by 145 ft.

77.9(b) by 136 ft. The nearest airport is ESN, and the nearest runway is 15/33.

The FAA requests that you file



If requested to file notice under Part 77.9, submit to the FAA a completed FAA Notice of Proposed Construction or Alteration; refer to the applicable desk reference guide below:

- Add a New Case Off Airport - Desk Reference Guide
- Add New Case Off Airport for Wind Turbines and MET Towers - Desk Reference Guide
- Add New Multiple Cases Off Airport - Desk Reference Guide
- Add New Multiple Cases Off Airport for Wind Turbines and MET Towers - Desk Reference Guide
- Add New Case On Airport - Desk Reference Guide

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the website **Air Traffic Areas of Responsibility map** for **Off Airport** construction, or contact the **FAA Airports Region / District Office** for **On Airport** construction.